May 2018 **Issue 2**

Southern Africa HIV and AIDS Regional Exchange (SHARE) Research Digest, February – March 2018

The Southern Africa HIV and AIDS Regional Exchange (SHARE) is pleased to present the second issue of the project's research digest. The digest offers article abstracts from peer-reviewed literature related to HIV and AIDS in Southern Africa and is designed to keep you in touch with the rapidly expanding evidence base pertaining to HIV in the region.

In this issue we have assembled 84 abstracts from February through March 2018 that feature articles from Botswana (4), DRC (1), Lesotho (5), Malawi (16), South Africa (39), Swaziland (5), Zambia (5) and Zimbabwe (9).

Click on the links below to browse abstracts by audience group. For open access articles, we provide a link:

- **HEALTH CARE PROVIDERS** – 12 abstracts
  Medical science and research findings that can be utilized by health care providers who serve people at risk for, or living with, HIV.
- **IMPLEMENTERS/PROGRAMMERS** – 32 abstracts
  Research and evidence to strengthen HIV programming, including implementation science.
- **LAY HEALTH WORKERS** – 9 abstracts
  All article abstracts related to lay health workers.
- **POLICYMAKERS/GOVERNMENT OFFICIALS** – 10 abstracts
  Policy briefs and research with implications around policy change or government involvement.
- **RESEARCHERS** - 21 abstracts
  Randomized controlled trials and other scientific studies and protocols related to HIV implemented in Southern Africa.

FEATURED ARTICLES

- A systematic review from Zambia on trends and key factors associated with facilitators and barriers to HIV testing.

- Findings from a cross-sectional study in Zimbabwe on the uptake of HIV treatment services among female sex workers compared to non-sex workers.

- Findings from a cross-sectional study in Malawi on the effect of burnout among health care workers on provision of patient care.

HEALTH CARE PROVIDERS (12)

1. **Sesotho trial ("switch either near suppression or thousand") - switch to second-line versus WHO-guided standard of care for unsuppressed patients on first-line art with viremia below 1000 copies/ml: Protocol of a multicenter, parallel-group, open-label, randomized clinical trial in Lesotho, southern Africa.**
   Amstutz, A., Nsakala, B. L., et al. BMC Infect Dis. 2018.
   https://www.ncbi.nlm.nih.gov/pubmed/29433430

   BACKGROUND: The World Health Organization (WHO) recommends viral load (VL) measurement as the preferred monitoring strategy for HIV-infected individuals on antiretroviral therapy (ART) in resource-limited settings. The new WHO guidelines 2016 continue to define virologic failure as two consecutive VL >/=1000 copies/mL (at least 3 months apart) despite good adherence, triggering switch to second-line therapy. However, the threshold of 1000 copies/mL for defining virologic failure is based on low-quality evidence. Observational studies have shown that individuals with low-level viremia (measurable but below 1000 copies/mL) are at increased risk for accumulation of resistance mutations and subsequent virologic failure. The SESOTHO trial assesses a lower threshold for switch to second-line ART in patients with sustained unsuppressed VL.

   METHODS: In this multicenter, parallel-group, open-label, randomized controlled trial conducted in Lesotho, patients on first-line ART with two consecutive unsuppressed VL measurements >/=100 copies/mL, where the second VL is between 100 and 999 copies/mL, will either be switched to second-line ART immediately (intervention group) or not be switched (standard of care, according to WHO guidelines). The primary endpoint is viral re-suppression (VL < 50 copies/mL) 9 months after randomization. We will enroll 80 patients, giving us 90% power to detect a difference of 35% in viral re-suppression between the groups (assuming two-sided 5% alpha error). For our primary analysis, we will use a modified intention-to-treat set, with those lost to care, death, or

crossed over considered failure to re-suppress, and using logistic regression models adjusted for the prespecified stratification variables.

DISCUSSION: The SESOTHO trial challenges the current WHO guidelines, assessing an alternative, lower VL threshold for patients with unsuppressed VL on first-line ART. This trial will provide data to inform future WHO guidelines on VL thresholds to recommend switch to second-line ART.

2. **Outcomes of HIV-infected versus HIV-non-infected patients treated for drug-resistance tuberculosis: Multicenter cohort study.**
Bastard, M., Sanchez-Padilla, E., et al. PLoS One. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29518098

BACKGROUND: The emergence of resistance to anti-tuberculosis (DR-TB) drugs and the HIV epidemic represent a serious threat for reducing the global burden of TB. Although data on HIV-negative DR-TB treatment outcomes are well published, few data on DR-TB outcomes among HIV co-infected people is available despite the great public health importance.

METHODS: We retrospectively reported and compared the DR-TB treatment outcomes of HIV-positive and HIV-negative patients treated with an individualized regimen based on WHO guidelines in seven countries: Abkhazia, Armenia, Colombia, Kenya, Kyrgyzstan, Swaziland and Uzbekistan.

RESULTS: Of the 1,369 patients started DRTB treatment, 809 (59.1%) were multi-drug resistant (MDR-TB) and 418 (30.5%) were HIV-positive. HIV-positive patients were mainly from African countries (90.1%) while HIV-negative originated from Former Soviet Union (FSU) countries. Despite a higher case fatality rate (19.0% vs 9.4%), HIV-positive MDR-TB patients had a 10% higher success rate than HIV-negative patients (64.0% vs 53.2%, p = 0.007). No difference in treatment success was found among polydrug-resistant (PDR-TB) patients. Overall, lost to follow-up rate was much higher among HIV-negative (22.0% vs. 8.4%). Older age and not receiving ART were the only factors associated with unfavorable treatment outcome among HIV-positive patients.

CONCLUSIONS: As already known for HIV-negative patients, success rate of DR-TB HIV-positive patients remains low and requires more effective DR-TB regimen using new drugs also suitable to HIV-infected patients on ART. The study also confirms the need of ART introduction in HIV co-infected patients.

3. **Preterm delivery and small-for-gestation outcomes in HIV-infected pregnant women on antiretroviral therapy in rural South Africa: Results from a cohort study, 2010-2015.**
Chetty, T., Thorne, C., et al. PLoS One. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29470508

OBJECTIVES: Increasingly more women conceive on antiretroviral therapy (ART) with non-nucleoside reverse transcriptase-based regimens. This study assessed the effect of preconception tenofovir disoproxil fumarate (TDF)-lamivudine (3TC)/emtricitabine (FTC)-efavirenz (EFV) and post-conception TDF-(3TC/FTC)-EFV (versus other regimens) on preterm delivery (PTD) and small-for-gestational age (SGA) births.

METHODS: We analysed data of 2549 HIV-infected women attending antenatal clinics in KwaZulu-Natal from 2010 through 2015 in this retrospective cohort study. Preconception, TDF-(3TC/FTC)-EFV was compared to nevirapine (NVP)-based regimens and other 3-drug EFV-based regimens. Post-conception, TDF-(3TC/FTC)-EFV was compared to NVP-based ART and zidovudine (ZDV) prophylaxis. Outcomes included PTD <37 weeks and SGA births. Generalized linear mixed effects were used to fit logistic regression models to account for repeat pregnancies.

RESULTS: Among 2549 singleton live births, 10.4% (n = 264) were PTD and 10.4% (n = 265) SGA. PTD declined from 16.3% in 2010 to 9.3% in 2015 and SGA remained stable from 9.9% in 2010 to 10% in 2015. Preconception NVP-based regimens [adjusted odds ratio (aOR) 0.66; 95% CI 0.27-1.63] and other 3-drug EFV-based regimens (aOR 0.72; 95% CI 0.24-2.12) were not associated with PTD versus TDF-(3TC/FTC)-EFV. NVP-based (aOR 0.75; 95% CI 0.40-1.42) and other 3-drug EFV-based regimens (aOR 1.55; 95% CI 0.76-3.16) were not associated with SGA births versus TDF-(3TC/FTC)-EFV. Post-conception NVP-based ART (1.77; 95% CI 0.89-3.51) and ZDV (1.03; 95% CI 0.68-1.58) were not associated with PTD versus TDF-(3TC/FTC)-EFV. NVP-based ART (1.55; 95% CI 0.66-3.61) and ZDV (0.89; 95% CI 0.53-1.47) were not associated with SGA versus TDF-(3TC/FTC)-EFV.

CONCLUSIONS: Preconception TDF-(3TC/FTC)-EFV and post-conception TDF-(3TC/FTC)-EFV were not associated with PTD or SGA, compared with other regimens. Increasing ART use merits further study of the optimum ART regimen for safe birth outcomes.

4. **HIV-1 drug resistance and third-line therapy outcomes in patients failing second-line therapy in Zimbabwe.**
Chimbetete, C., Katzenstein, D., et al. Open Forum Infect Dis. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29435471

OBJECTIVES: To analyze the patterns and risk factors of HIV drug resistance mutations among patients failing second-line treatment and to describe early treatment responses to recommended third-line antiretroviral therapy (ART) in a national referral HIV clinic in Zimbabwe.

METHODS: Patients on boosted protease inhibitor (PI) regimens for more than 6 months with treatment failure confirmed by 2 viral load (VL) tests >1000 copies/mL were genotyped, and susceptibility to available antiretroviral drugs was estimated by the Stanford HIVdb program. Risk factors for major PI resistance were assessed by logistic

regression. Third-line treatment was provided as Darunavir/r, Raltegravir, or Dolutegravir and Zidovudine, Abacavir Lamivudine, or Tenofovir.

RESULTS: Genotypes were performed on 86 patients who had good adherence to treatment. The median duration of first- and second-line ART was 3.8 years (interquartile range [IQR], 2.3-5.1) and 2.6 years (IQR, 1.6-4.9), respectively. The median HIV viral load and CD4 cell count were 65 210 copies/mL (IQR, 8728-208 920 copies/mL) and 201 cells/mm(3) (IQR, 49-333 cells/mm(3)). Major PI resistance-associated mutations (RAMs) were demonstrated in 44 (51%) non-nucleoside reverse transcriptase inhibitor RAMs in 72 patients (83%) and nucleoside reverse transcriptase inhibitors RAMs in 62 patients (72%). PI resistance was associated with age >24 years (P = .003) and CD4 cell count <200 cells/mm(3) (P = .007). In multivariable analysis, only age >24 years was significantly associated (adjusted odds ratio, 4.75; 95% confidence interval, 1.69-13.38; P = .003) with major PI mutations. Third-line DRV/r- and InSTI-based therapy achieved virologic suppression in 29/36 patients (81%) after 6 months.

CONCLUSIONS: The prevalence of PI mutations was high. Adolescents and young adults had a lower risk of acquiring major PI resistance mutations, possibly due to poor adherence to ART. Third-line treatment with a regimen of Darunavir/r, Raltegravir/Dolutegravir, and optimized nucleoside reverse transcriptase inhibitors was effective.

5. **Bleeding and blood disorders in clients of voluntary medical male circumcision for HIV prevention - eastern and southern Africa, 2015-2016.**
Hinkle, L. E., Toledo, C., et al. MMWR Morb Mortal Wkly Rep. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29565839

Male circumcision reduces the risk for female-to-male human immunodeficiency virus (HIV) transmission by approximately 60% (1) and has become a key component of global HIV prevention programs in countries in Eastern and Southern Africa where HIV prevalence is high and circumcision coverage is low. Through September 2017, the President's Emergency Plan for AIDS Relief (PEPFAR) had supported 15.2 million voluntary medical male circumcisions (VMMCs) in 14 priority countries in Eastern and Southern Africa (2). Like any surgical intervention, VMMC carries a risk for complications or adverse events. Adverse events during circumcision of males aged >/=10 years occur in 0.5% to 8% of procedures, though the majority of adverse events are mild (3,4). To monitor safety and service quality, PEPFAR tracks and reports qualifying notifiable adverse events. Data reported from eight country VMMC programs during 2015-2016 revealed that bleeding resulting in hospitalization for >/=3 days was the most commonly reported qualifying adverse event. In several cases, the bleeding adverse event revealed a previously undiagnosed or undisclosed bleeding disorder. Bleeding adverse events in men with potential bleeding disorders are serious and can be fatal. Strategies to improve pre-circumcision screening and performance of circumcisions on clients at risk

in settings where blood products are available are recommended to reduce the occurrence of these adverse events or mitigate their effects (5).

6. **Stumbling blocks at the clinic: Experiences of seeking HIV treatment and care in South Africa.**
   Maughan-Brown, B., Kuo, C., et al. AIDS Behav. 2018.
   https://www.ncbi.nlm.nih.gov/pubmed/28815325

   Prompt antiretroviral therapy (ART) initiation maximises the therapeutic and prevention benefits of a treat-all strategy for HIV therapy. Using in-depth semi-structured interviews with men and women 18 years and older (N = 41), who were highly motivated and seeking treatment, this study examined salient factors that were associated with delays in treatment access and initiation. Results revealed clinic-related barriers including an onerous, inefficient multi-step process to initiate ART. Participants experienced additional delays due to difficulties accessing care (e.g., being turned away from clinics and referred elsewhere) and health service challenges. Health service challenges included difficulty securing appointments, administrative mistakes (especially lost clinic folders and test results), difficulty navigating the clinic system (e.g., failure to collect a queue card or waiting for incorrect services) and negative clinic-patient interactions. Overall, there was a pervasive negative perception of clinics. Results strongly indicate the need for more patient-centred models of care and the need to reduce unnecessary patient-days at clinics.

7. **Integration of postpartum healthcare services for HIV-infected women and their infants in South Africa: A randomised controlled trial.**
   Myer, L., Phillips, T. K., et al. PLoS Med. 2018.
   https://www.ncbi.nlm.nih.gov/pubmed/29601570

   BACKGROUND: As the number of HIV-infected women initiating lifelong antiretroviral therapy (ART) during pregnancy increases globally, concerns have emerged regarding low levels of retention in HIV services and suboptimal adherence to ART during the postpartum period. We examined the impact of integrating postpartum ART for HIV+ mothers alongside infant follow-up within maternal and child health (MCH) services in Cape Town, South Africa.

   METHODS AND FINDINGS: We conducted a randomised trial among HIV+ postpartum women aged >/=18 years who initiated ART during pregnancy in the local antenatal care clinic and were breastfeeding when screened before 6 weeks postpartum. We compared an integrated postnatal service among mothers and their infants (the MCH-ART intervention) to the local standard of care (control)-immediate postnatal referral of HIV+ women on ART to general adult ART services and their infants to separate routine infant follow-up. Evaluation data were collected through medical records and trial measurement visits scheduled and located separately from healthcare services involved in either arm. The primary trial outcome was a composite endpoint of women's

retention in ART care and viral suppression (VS) (viral load < 50 copies/ml) at 12 months postpartum; secondary outcomes included duration of any and exclusive breastfeeding, mother-to-child HIV transmission, and infant mortality. Between 5 June 2013 and 10 December 2014, a total of 471 mother-infant pairs were enrolled and randomised (mean age, 28.6 years; 18% nulliparous; 57% newly diagnosed with HIV in pregnancy; median duration of ART use at randomisation, 18 weeks). Among 411 women (87%) with primary endpoint data available, 77% of women (n = 155) randomised to the MCH-ART intervention achieved the primary composite outcome of retention in ART services with VS at 12 months postpartum, compared to 56% of women (n = 117) randomised to the control arm (absolute risk difference, 0.21; 95% CI: 0.12-0.30; p < 0.001). The findings for improved retention in care and VS among women in the MCH-ART intervention arm were consistent across subgroups of participants according to demographic and clinical characteristics. The median durations of any breastfeeding and exclusive breastfeeding were longer in women randomised to the intervention versus control arm (6.9 versus 3.0 months, p = 0.006, and 3.0 versus 1.4 months, p < 0.001, respectively). For the infants, overall HIV-free survival through 12 months of age was 97%: mother-to-child HIV transmission was 1.2% overall (n = 4 and n = 1 transmissions in the intervention and control arms, respectively), and infant mortality was 1.9% (n = 6 and n = 3 deaths in the intervention and control arms, respectively), and these outcomes were similar by trial arm. Interpretation of these findings should be qualified by the location of this study in a single urban area as well as the self-reported nature of breastfeeding outcomes.

CONCLUSIONS: In this study, we found that integrating ART services into the MCH platform during the postnatal period was a simple and effective intervention, and this should be considered for improving maternal and child outcomes in the context of HIV.

8. **Multidisease testing for HIV and TB using the GeneXpert platform: A feasibility study in rural Zimbabwe.**
Ndlovu, Z., Fajardo, E., et al. PLoS One. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29499042

BACKGROUND: HIV Viral Load and Early Infant Diagnosis technologies in many high burden settings are restricted to centralized laboratory testing, leading to long result turnaround times and patient attrition. GeneXpert (Cepheid, CA, USA) is a polyvalent near point-of-care platform and is widely implemented for Xpert MTB/RIF diagnosis. This study sought to evaluate the operational feasibility of integrated HIV VL, EID and MTB/RIF testing in new GeneXpert platforms.

METHODS: Whole blood samples were collected from consenting patients due for routine HIV VL testing and DBS samples from infants due for EID testing, at three rural health facilities in Zimbabwe. Sputum samples were collected from all individuals suspected of TB. GeneXpert testing was reserved for all EID, all TB suspects and priority HIV VL at each site. Blood samples were further sent to centralized laboratories for

confirmatory testing. GeneXpert polyvalent testing results and patient outcomes, including infrastructural and logistical requirements are reported. The study was conducted over a 10-month period.

RESULTS: The fully automated GeneXpert testing device, required minimal training and biosafety considerations. A total of 1,302 HIV VL, 277 EID and 1,581 MTB/RIF samples were tested on a four module GeneXpert platform in each study site. Xpert HIV-1 VL testing was prioritized for patients who presented with advanced HIV disease, pregnant women, adolescents and suspected ART failures patients. On average, the study sites had a GeneXpert utilization rate of 50.4% (Gutu Mission Hospital), 63.5% (Murambinda Mission Hospital) and 17.5% (Chimombe Rural Health Centre) per month. GeneXpert polyvalent testing error rates remained lower than 4% in all sites. Decentralized EID and VL testing on Xpert had shorter overall median TAT (1 day [IQR: 0-4] and 1 day [IQR: 0-1] respectively) compared to centralized testing (17 days [IQR: 13-21] and 26 days [IQR: 23-32] respectively). Among patients with VL >1000 copies/ml (73/640; 11.4%) at GMH health facility, median time to enhanced adherence counselling was 8 days and majority of those with documented outcomes had re-suppressed VL (20/32; 62.5%). Median time to ART initiation among Xpert EID positive infants at GMH was 1 day [IQR: 0-1].

CONCLUSION: Implementation of near point-of-care GeneXpert platform for integrated multi-disease testing within district and sub-district healthcare settings is feasible and will increase access to VL, and EID testing to priority populations. Quality management systems including monitoring of performance indicators, together with regular on-site supervision are crucial, and near-POC test results must be promptly actioned-on by clinicians for patient management.

9. **Delay in seeking care for tuberculosis symptoms among adults newly diagnosed with HIV in rural Malawi.**
Ngwira, L. G., Dowdy, D. W., et al. Int J Tuberc Lung Dis. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29471905

SETTING: Ten primary health clinics in rural Thyolo District, Malawi.

OBJECTIVE: Tuberculosis (TB) is a common initial presentation of human immunodeficiency virus (HIV) infection. We investigated the time from TB symptom onset to HIV diagnosis to describe TB health-seeking behaviour in adults newly diagnosed with HIV.

DESIGN: We asked adults (>/=18 years) about the presence and duration of TB symptoms at the time of receiving a new HIV diagnosis. Associations with delayed health seeking (defined as >30 and >90 days from the onset of TB symptoms) were evaluated using multivariable logistic regression.

RESULTS: TB symptoms were reported by 416 of 1265 participants (33%), of whom 36% (150/416) had been symptomatic for >30 days before HIV testing. Most participants (260/416, 63%) were below the poverty line (US$0.41 per household member per day). Patients who first sought care from informal providers had an increased odds of delay of >30 days (adjusted odds ratio [aOR] 1.6, 95%CI 0.9-2.8) or 90 days (aOR 2.0, 95%CI 1.1-3.8).

CONCLUSIONS: Delayed health seeking for TB-related symptoms was common. Poverty was ubiquitous, but had no clear relationship to diagnostic delay. HIV-positive individuals who first sought care from informal providers were more likely to experience diagnostic delays for TB symptoms.

10. **A time-motion study of cardiovascular disease risk factor screening integrated into HIV clinic visits in Swaziland.**
Palma, A. M., Rabkin, M., et al. J Int AIDS Soc. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29577617

INTRODUCTION: Screening of modifiable cardiovascular disease (CVD) risk factors is recommended but not routinely provided for HIV-infected patients, especially in low-resource settings. Potential concerns include limited staff time and low patient acceptability, but little empirical data exists. As part of a pilot study of screening in a large urban HIV clinic in Swaziland, we conducted a time-motion study to assess the impact of screening on patient flow and HIV service delivery and exit interviews to assess patient acceptability.

METHODS: A convenience sample of patients >/=40 years of age attending routine HIV clinic visits was screened for hypertension, diabetes, hyperlipidemia and tobacco smoking. We observed HIV visits with and without screening and measured time spent on HIV and CVD risk factor screening activities. We compared screened and unscreened patients on total visit time and time spent receiving HIV services using Wilcoxon rank-sum tests. A separate convenience sample of screened patients participated in exit interviews to assess their satisfaction with screening.

RESULTS: We observed 172 patient visits (122 with CVD risk factor screening and 50 without). Screening increased total visit time from a median (range) of 4 minutes (2 to 11) to 15 minutes (9 to 30) ($p < 0.01$). Time spent on HIV care was not affected: 4 (2 to 10) versus 4 (2 to 11) ($p = 0.57$). We recruited 126 patients for exit interviews, all of whom indicated that they would recommend screening to others.

CONCLUSION: Provision of CVD risk factor screening more than tripled the length of routine HIV clinic visits but did not reduce the time spent on HIV services. Programme managers need to take longer visit duration into account in order to effectively integrate CVD risk factor screening and counselling into HIV programmes.

11. **Incidence of diabetes mellitus-related comorbidities among patients attending two major HIV clinics in Botswana: A 12-year retrospective cohort study.**
Rankgoane-Pono, G., Tshikuka, J. G., et al. BMC Res Notes. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29391039

OBJECTIVES: Exposure to combination antiretroviral therapy (cART) is associated with the development of diabetes mellitus related comorbidities (DRCs). This study aims to: (i) estimate the incidence of DRCs among cART recipients, (ii) assess the time-to-event (development of DRC) and, (iii) compare survival function between recipients on first-line regimen and those on second-, third-line cART regimen.

RESULTS: The incidence of DRCs was 26.8/1000 person-years, with total time of exposure of 3316 person-years. The average time to event for all the three regimens was 11.72 +/- 0.20 years. The first-line cART regimen had a shorter mean +/- SE of 10.59 +/- 0.26 years to the event compared to 12.69 +/- 0.24 years for the second-, third-line cART regimen. Recipients on the first-line had a shorter survival than recipients on second-, third-line cART (Log-rank $X(2) = 8.98$, $p < 0.003$). Data from this study showed that the risk of developing DRCs per year of exposure was significantly greater for patients on first-line compared to those who were on second-, third-line regimen; which, suggests that monitoring of cART long-term side effects and regular reviewing of cART regimens is important. Meticulous selection of drug combinations is a key to improving recipients' survival.

12. **Navigating multiple sources of healing in the context of HIV/AIDS and wide availability of antiretroviral treatment: A qualitative study of community participants' perceptions and experiences in rural South Africa.**
Zuma, T., Wight, D., et al. Front Public Health. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29594094

BACKGROUND: South Africa introduced the world's largest antiretroviral treatment (ART) program in 2004 and since 2016 the Department of Health implemented a universal Treatment as Prevention (TasP) strategy. However, some studies have shown that increasing the availability of ART is insufficient for the comprehensive treatment of HIV, since many people still use traditional health practitioners (THPs) to avoid being identified as HIV positive, and for reasons unrelated to HIV/AIDS. This qualitative study explored the factors influencing how both HIV-negative and HIV-positive people choose amongst multiple sources of healing and how they engage with them, in the context of HIV/AIDS and wide availability of ART.

METHODS: Data were collected as part of a larger TasP trial at the Africa Health Research Institute, KwaZulu-Natal. Repeat in-depth individual interviews were conducted with 10 participants. Repeat group discussions were conducted with 42 participants. Group discussion data were triangulated using community walks and photo-voice techniques to give more insight into the perceptions of community

members. All data were collected over 18 months. Thematic analysis was used to analyze participants' narratives from both individual interviews and group discussions.

FINDINGS: In the context of HIV/AIDS and wide availability of ART, use of biomedical and traditional healing systems seemed to be common in this locality. People used THPs to meet family expectations, particularly those of authoritative heads of households such as parents or grandparents. Most participants believed that THPs could address specific types of illnesses, especially those understood to be spiritually caused and which could not be addressed or cured by biomedical practitioners. However, it was not easy for participants to separate some spiritually caused illnesses from biological illnesses in the context of HIV/AIDS. These data demonstrate that in this context, the use of THPs continues regardless of the wide availability of ART. To meet the health care needs of those patients requiring a health care system which combines biomedical and traditional approaches, collaboration and integration of biomedical and traditional health care should be considered.

Back to top

IMPLEMENTERS/PROGRAMMERS (32)

13. **High rate of unplanned pregnancy in the context of integrated family planning and HIV care services in South Africa.**
Adeniyi, O. V., Ajayi, A. I., et al. BMC Health Serv Res. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29482587

BACKGROUND: Integration of family planning services into HIV care was implemented in South Africa as a core strategy aimed at reducing unintended pregnancies among childbearing women living with HIV. However, it is unclear whether this strategy has made any significant impact at the population level. This paper describes the prevalence and correlates of self-reported unplanned pregnancy among HIV-infected parturient women attending three large maternity centres in the Eastern Cape, South Africa. We also compare unplanned pregnancy rates between HIV-infected parturient women already in care (who have benefitted from services' integration) and newly diagnosed parturient women (who have not benefitted from services' integration).

METHODS: Drawing from the baseline data of the East London Prospective Cohort Study (ELPCS), data of 594 parturient women living with HIV in the Eastern Cape were included. Chi-square statistics and binary logistics regression were employed to determine the correlates of unplanned pregnancy among the cohort.

RESULTS: The prevalence of unplanned pregnancy was 71% (n = 422) with a higher rate among parturient women newly diagnosed during the index pregnancy (87%).

Unplanned pregnancy was significantly associated with younger age, single status, HIV diagnosis at booking, high parity and previous abortion. Women who reported unplanned pregnancy were more likely to book late and have lower CD4 counts. After adjusting for confounding variables, having one child and five to seven children (AOR = 2.2; CI = 1.3-3.1), age less than 21 years (AOR = 3.3; CI = 1.1-9.8), late booking after 27 weeks (AOR = 2.7; CI = 1.5-5.0), not married (AOR = 4.3; CI = 2.7-6.8) and HIV diagnosis at booking (AOR = 3.0; CI = 1.6-5.8) were the significant correlates of unplanned pregnancy in the cohort.

CONCLUSION: Unplanned pregnancy remains high overall among parturient women living with HIV in the region, however, with significant reduction among those who were exposed to integrated services. The study confirms that integration of HIV care and family planning services is an important strategy to reduce unplanned pregnancy among women living with HIV. The study's findings have significant implications for the elimination of mother-to-child transmission of HIV in South Africa. Innovative interventions are needed to further consolidate and maximise the benefit of the integration of family planning services with HIV care.

14. **Population size estimation of gay and bisexual men and other men who have sex with men using social media-based platforms.**
Baral, S., Turner, R. M., et al. JMIR Public Health Surveill. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29422452

BACKGROUND: Gay, bisexual, and other cisgender men who have sex with men (GBMSM) are disproportionately affected by the HIV pandemic. Traditionally, GBMSM have been deemed less relevant in HIV epidemics in low- and middle-income settings where HIV epidemics are more generalized. This is due (in part) to how important population size estimates regarding the number of individuals who identify as GBMSM are to informing the development and monitoring of HIV prevention, treatment, and care programs and coverage. However, pervasive stigma and criminalization of same-sex practices and relationships provide a challenging environment for population enumeration, and these factors have been associated with implausibly low or absent size estimates of GBMSM, thereby limiting knowledge about the dynamics of HIV transmission and the implementation of programs addressing GBMSM.

OBJECTIVE: This study leverages estimates of the number of members of a social app geared towards gay men (Hornet) and members of Facebook using self-reported relationship interests in men, men and women, and those with at least one reported same-sex interest. Results were categorized by country of residence to validate official size estimates of GBMSM in 13 countries across five continents. METHODS: Data were collected through the Hornet Gay Social Network and by using an a priori determined framework to estimate the numbers of Facebook members with interests associated with GBMSM in South Africa, Ghana, Nigeria, Senegal, Cote d'Ivoire, Mauritania, The Gambia, Lebanon, Thailand, Malaysia, Brazil, Ukraine, and the United States. These

estimates were compared with the most recent Joint United Nations Programme on HIV/AIDS (UNAIDS) and national estimates across 143 countries.

RESULTS: The estimates that leveraged social media apps for the number of GBMSM across countries are consistently far higher than official UNAIDS estimates. Using Facebook, it is also feasible to assess the numbers of GBMSM aged 13-17 years, which demonstrate similar proportions to those of older men. There is greater consistency in Facebook estimates of GBMSM compared to UNAIDS-reported estimates across countries.

CONCLUSIONS: The ability to use social media for epidemiologic and HIV prevention, treatment, and care needs continues to improve. Here, a method leveraging different categories of same-sex interests on Facebook, combined with a specific gay-oriented app (Hornet), demonstrated significantly higher estimates than those officially reported. While there are biases in this approach, these data reinforce the need for multiple methods to be used to count the number of GBMSM (especially in more stigmatizing settings) to better inform mathematical models and the scale of HIV program coverage. Moreover, these estimates can inform programs for those aged 13-17 years; a group for which HIV incidence is the highest and HIV prevention program coverage, including the availability of pre-exposure prophylaxis (PrEP), is lowest. Taken together, these results highlight the potential for social media to provide comparable estimates of the number of GBMSM across a large range of countries, including some with no reported estimates.

15. **Partner age differences and associated sexual risk behaviours among adolescent girls and young women in a cash transfer programme for schooling in Malawi.**
Beauclair, R., Dushoff, J., et al. BMC Public Health. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29587710

BACKGROUND: Age disparities in sexual relationships have been proposed as a key risk factor for HIV transmission in Sub-Saharan Africa, but evidence remains inconclusive. The SIHR study, a cluster randomised trial of a cash transfer programme in Malawi, found that young women in the intervention groups were less likely to have had a sexual partner aged 25 or older, and less likely to test positive for HIV and HSV-2 at follow-up compared to control groups. We examined the hypotheses that girls in the intervention groups had smaller age differences than control groups and that large age differences were associated with relationship-level HIV transmission risk factors: inconsistent condom use, sex frequency, and relationship duration.

METHODS: We conducted an analysis of schoolgirls in the Schooling, Income, and Health Risk (SIHR) study aged 13-22 at baseline (n = 2907). We investigated the effects of study arm, trial stage and participant age on age differences in sexual relationships using a linear mixed-effects model. Cumulative-link mixed-effects models were used to estimate the effect of relationship age difference on condom use and sex frequency, and a Cox proportional hazard model was used to estimate the effect of relationship age

difference on relationship duration. We controlled for the girl's age, number of partners, study group and study round.

RESULTS: Girls receiving cash transfers, on average, had smaller age differences in relationships compared to controls, though the estimated difference was not statistically significant (- 0.43 years; 95% CI: -1.03, 0.17). The older the participant was, the smaller her age differences (- 0.67 per 4-year increase in age; 95% CI: -0.99, - 0.35). Among controls, after the cash transfers had ended the average age difference was 0.82 years larger than during the intervention (95% CI: 0.43, 1.21), suggesting a possible indirect effect of the study on behaviour in the community as a whole. Across treatment groups, larger age differences in relationships were associated with lower levels of condom use, more frequent sex, and longer relationship durations.

CONCLUSIONS: Cash-transfer programmes may prevent HIV transmission in part by encouraging young women to form age-similar relationships, which are characterised by increased condom use and reduced sex frequency. The benefits of these programmes may extend to those who are not directly receiving the cash.

16. **The role of agency in the implementation of isoniazid preventive therapy (IPT): Lessons from oMakoti in uMgungundlovu District, South Africa.**
Boffa, J., Mayan, M., et al. PLoS One. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29513719

INTRODUCTION: In response to revisions in global and national policy in 2011, six-month isoniazid preventive therapy (IPT) became freely available as a preventive measure for people living with HIV in the uMgungundlovu District of KwaZulu-Natal province, South Africa. Given a difference in uptake and completion by sex, we sought to explore the reasons why Zulu women were more likely to accept and complete IPT compared to men in an effort to inform future implementation.

METHODS: Utilising a community-based participatory research approach and ethnographic methods, we undertook 17 individual and group interviews, and met regularly with grassroots community advisory teams in three Zulu communities located in uMgungundlovu District between March 2012-December 2016.

FINDINGS & DISCUSSION: Three categories described women's willingness to initiate IPT: women are caregivers, women are obedient, and appearance is important. The findings suggest that the success of IPT implementation amongst clinic-utilising women of uMgungundlovu is related to the cultural gender norms of uMakoti, isiZulu for "the bride" or "the wife." We invoke the cultural concept of inhlonipho, meaning "to show respect," to discuss how the cultural values of uMakoti may conflict with biomedical expectations of adherence. Such conflict can result in misinterpretations by healthcare providers or patients, and lead some patients to fear the repercussions of asking questions or contemplating discontinuation with the provider, preferring instead to

appear obedient. We propose a shift in emphasis from adherence-focussed strategies, characteristic of the current biomedical approach, to practices that promote patient agency in an effort to offer IPT more appropriately.

IMPLICATIONS: Building on existing tools, namely the harm reduction model and the use of mini-ethnography, we provide guidance on how to support women to participate as agents in the decision to initiate or continue IPT, decisions which may also impact the health and choices of the family.

17. **Persistent high burden of advanced HIV disease among patients seeking care in South Africa's national HIV program: Data from a nationwide laboratory cohort.**
Carmona, S., Bor, J., et al. Clin Infect Dis. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29514238

BACKGROUND: The South African national HIV program has increased antiretroviral therapy (ART) coverage over the last decade, supported by policy changes allowing for earlier ART initiation. However, many patients still enter care with advanced (<200 cells/muL) and very advanced (<100 cells/muL) HIV disease. We assessed disease progression at entry to care using nationwide laboratory data.

METHODS: We constructed a national HIV cohort using laboratory records containing HIV RNA loads and CD4 counts from 2004 to 2016 to determine entry into care. We estimated numbers and proportions of adults with the first CD4 count <100 cells/ muL or 100-199 cells/muL. We calculated relative risks of presenting with advanced disease associated with male sex.

RESULTS: 8.04 million first CD4 results were identified. From 2005 to 2011, the proportion of patients entering into care with CD4 count <200 cells/muL declined from 46.8% to 35.6%. From 2011 onward, the proportion of patients entering ART with advanced HIV disease has remained relatively unchanged. In 2016, we estimated that of 654 868 patients entering care, 32.9% had advanced HIV disease, and 16.8% had very advanced HIV disease. Men were almost twice as likely as women (23.1% vs 12.6%) to enter care with very advanced HIV disease.

CONCLUSIONS: The proportion of patients presenting with advanced HIV disease in South Africa remains consistently high despite ART scale-up, representing a large and avoidable burden of morbidity. Early HIV diagnosis, rapid linkage to ART and approaches to attract men into early ART initiation should be prioritized.

18. **Exploring acceptability of oral PrEP prior to implementation among female sex workers in South Africa.**
Eakle, R., Bourne, A., et al. J Int AIDS Soc. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29457868

INTRODUCTION: Female sex workers (FSWs) are at high-risk for HIV acquisition in South Africa, where the advent of new HIV prevention and treatment interventions represent the potential to significantly impact the epidemic. This paper focuses on aspects of PrEP acceptability as a new intervention within the context of a larger service delivery programme including the simultaneous rollout of early ART. This paper explores PrEP acceptability among the FGD participants as future potential users.

METHODS: FGDs were conducted in two clinic-based sites in Johannesburg and Pretoria. They aimed to explore community-level, multi-dimensional acceptability of PrEP within the context of imminent implementation alongside early ART in the TAPS Demonstration Project. Sex worker peer educators recruited participants from varying sex work locales. Facilitation was in English with adaptation by facilitators into local languages as needed. Transcripts were translated and transcribed into English. Thematic analysis was used to analyse the data.

RESULTS: Four FGDs were conducted in each site for a total of eight FDGs and 69 participants. Demographics were largely similar across the sites. Overall, there was strong acceptability of PrEP among participants and positive anticipation for the imminent delivery of PrEP in the local sex worker clinics. Themes arising from the discussions exploring aspects of PrEP acceptability included: awareness and understanding of PrEP; PrEP motivations including choice, control, and vulnerability, managing PrEP risks and worries; and, de-stigmatizing and empowering PrEP delivery. Participant discussions and recommendations highlighted the importance of developing clear education and messaging to accurately convey the concept of PrEP, and intervention integration into supportive and tailored services.

CONCLUSIONS: Through the course of these FGDs, PrEP became a positive and highly anticipated prevention option among the FSWs participants who endorsed implementation in their communities. Effective integration of PrEP into existing services will include comprehensive health programming where ART is also available, appropriate messaging, and support.

19. **Challenges and successes in the implementation of Option B+ to prevent mother-to-child transmission of HIV in southern Swaziland.**
Etoori, D., Kerschberger, B., et al. BMC Public Health. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29558896

BACKGROUND: Universal antiretroviral therapy (ART) for all pregnant/ breastfeeding women living with Human Immunodeficiency Virus (HIV), known as Prevention of mother-to child transmission of HIV (PMTCT) Option B+ (PMTCT B+), is being scaled up in most countries in Sub-Saharan Africa. In the transition to PMTCT B+, many countries face challenges with proper implementation of the HIV care cascade. We aimed to describe the feasibility of a PMTCT B+ approach in the public health sector in Swaziland.

METHODS: Lifelong ART was offered to a cohort of HIV+ pregnant women aged >/=16 years at the first antenatal care (ANC1) visit in 9 public sector facilities, between 01/2013 and 06/2014. The study enrolment period was divided into 3 phases (early: 01-06/2013, mid: 07-12/2013 and late: 01-06/2014) to account for temporal trends. Kaplan-Meier estimates and Cox proportional-hazards regression models were applied for ART initiation and attrition analyses.

RESULTS: Of 665 HIV+ pregnant women, 496 (74.6%) initiated ART. ART initiation increased in later study enrolment phases (mid: aHR: 1.41; later: aHR: 2.36), and decreased at CD4 >/= 500 (aHR: 0.69). 52.9% were retained in care at 24 months. Attrition was associated with ANC1 in the third trimester (aHR: 2.37), attending a secondary care facility (aHR: 1.98) and ART initiation during later enrolment phases (mid aHR: 1.48; late aHR: 1.67). Of 373 women eligible, 67.3% received a first VL. 223/251 (88.8%) were virologically suppressed (< 1000 copies/mL). Of 670 infants, 53.6% received an EID test, 320/359 had a test result recorded and of whom 7 (2.2%) were HIV+.

CONCLUSIONS: PMTCT B+ was found to be feasible in this setting with high rates of maternal viral suppression and low transmission to the infant. High treatment attrition, poor follow-up of mother-baby pairs and under-utilisation of VL and EID testing are important programmatic challenges.

20. **Prevalence of sexually transmitted infections among young people in South Africa: A nested survey in a health and demographic surveillance site.**
Francis, S. C., Mthiyane, T. N., et al. PLoS Med. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29485985

BACKGROUND: Sexually transmitted infections (STIs) and bacterial vaginosis (BV) are associated with increased transmission of HIV, and poor reproductive and sexual health. The burden of STIs/BV among young people is unknown in many high HIV prevalence settings. We conducted an acceptability, feasibility, and prevalence study of home-based sampling for STIs/BV among young men and women aged 15-24 years old in a health and demographic surveillance site (HDSS) in rural KwaZulu-Natal, South Africa.

METHODS AND FINDINGS: A total of 1,342 young people, stratified by age (15-19 and 20-24 years) and sex were selected from the HDSS sampling frame; 1,171/1,342 (87%) individuals had >/=1 attempted home visit between 4 October 2016 and 31 January 2017, of whom 790 (67%) were successfully contacted. Among the 645 who were contacted and eligible, 447 (69%) enrolled. Consenting/assenting participants were interviewed, and blood, self-collected urine (men), and vaginal swabs (women) were tested for herpes simplex virus type 2 (HSV-2), chlamydia, gonorrhoea, syphilis, trichomoniasis, and BV. Both men and women reported that sample collection was easy. Participants disagreed that sampling was painful; more than half of the participants disagreed that they felt anxious or embarrassed. The weighted prevalence of STIs/BV

among men and women, respectively, was 5.3% and 11.2% for chlamydia, 1.5% and 1.8% for gonorrhoea, 0% and 0.4% for active syphilis, 0.6% and 4.6% for trichomoniasis, 16.8% and 28.7% for HSV-2, and 42.1% for BV (women only). Of the women with >/=1 curable STI, 75% reported no symptoms. Factors associated with STIs/BV included having older age, being female, and not being in school or working. Among those who participated in the 2016 HIV serosurvey, the prevalence of HIV was 5.6% among men and 19% among women. Feasibility was impacted by the short study duration and the difficulty finding men at home.

CONCLUSIONS: A high prevalence of STIs/BV was found in this rural setting with high HIV prevalence in South Africa. Most STIs and HIV infections were asymptomatic and would not have been identified or treated under national syndromic management guidelines. A nested STI/BV survey within a HDSS proved acceptable and feasible. This is a proof of concept for population-based STI surveillance in low- and middle-income countries that could be utilised in the evaluation of STI/HIV prevention and control programmes.

21. **Sexual risk during pregnancy and postpartum periods among HIV-infected and -uninfected South African women: Implications for primary and secondary HIV prevention interventions.**
Joseph Davey, D., Farley, E., et al. PLoS One. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29509759

BACKGROUND: HIV acquisition in pregnancy and breastfeeding contributes significantly toward pediatric HIV infection. However, little is known about how sexual behavior changes during pregnancy and postpartum periods which will help develop targeted HIV prevention and transmission interventions, including pre-exposure prophylaxis (PrEP).

METHODS: Cross-sectional study in HIV-infected and uninfected pregnant and postpartum women in Cape Town, South Africa. Interviewers collected survey data on demographic, sexual behaviors, and alcohol use among pregnant and post-partum women. We report descriptive results of sexual behavior by trimester and postpartum period, and results of multivariable logistic regression stratified by pregnancy status.

RESULTS: We enrolled 377 pregnant and postpartum women (56% pregnant, 40% HIV-infected). During pregnancy, 98% of women reported vaginal sex (8% anal sex, 44% oral sex) vs. 35% and 88% during the periods 0-6 and 7-12 months postpartum, respectively ($p<0.05$). More pregnant women reported having >1 partner in the past 12-months compared to postpartum women (18% vs. 13%, respectively, $p<0.05$). Sex frequency varied by trimester with greatest mean sex acts occurring during first trimester and >6-months postpartum (13 mean sex acts in first trimester; 17 mean sex acts >6-months postpartum). Pregnant women had increased odds of reporting condomless sex at last sex (aOR = 2.96;95%CI = 1.84-4.78) and ever having condomless sex in past 3-months

(aOR = 2.65;95%CI = 1.30-5.44) adjusting for age, HIV status, and sex frequency compared to postpartum women.

CONCLUSION: We identified that sexual behaviors and risk behaviors were high and changing during pregnancy and postpartum periods, presenting challenges to primary and secondary HIV prevention efforts, including PrEP delivery to pregnant and breastfeeding women.

22. **Economic incentives for HIV testing by adolescents in Zimbabwe: A randomised controlled trial.**
Kranzer, K., Simms, V., et al. Lancet HIV. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29170030

BACKGROUND: HIV testing is the important entry point for HIV care and prevention service, but uptake of HIV testing and thus coverage of antiretroviral therapy are much lower in older children and adolescents than in adults. We investigated the effect of economic incentives provided to caregivers of children aged 8-17 years on uptake of HIV testing and counselling in Harare, Zimbabwe.

METHODS: This randomised controlled trial was nested within a household HIV prevalence survey of children aged 8-17 years in Harare. Households with one or more survey participants whose HIV status was unknown were eligible to participate in the trial. Eligible households were randomly assigned (1:1:1) to either receive no incentive, receive a fixed US$2 incentive, or participate in a lottery for $5 or $10 if the participant presented for HIV testing and counselling at a local primary health-care centre. The survey fieldworkers who enrolled participants were not blinded to trial arm allocation, but the statistician was blinded for analysis of outcome. The primary outcome was the proportion of households in which at least one child had an HIV test within 4 weeks of enrolment. HIV test uptake in the incentivised groups was compared with uptake in the non-incentivised group using logistic regression, adjusting for community and number of children as fixed effects and research assistant as a random effect. All analyses were by intention to treat.

FINDINGS: Between Aug 4, and Dec 18, 2015, 2050 eligible households were enrolled in the prevalence survey. 649 (32%) households were assigned no incentive, 740 (34%) households were assigned a $2 incentive, and 661 (32%) households were assigned to lottery participation. Children were unavailable in 148 households in the no-incentive group, 63 households in the $2 incentive group, and 81 households in the lottery group. 1688 households had at least one child with unknown HIV status and were enrolled into the trial. 22 households had no undiagnosed child, and one household refused consent. The primary outcome of HIV testing was assessed in 472 (28%) households in the no-incentive group, 654 (39%) households in the $2 incentive group, and 562 (33%) households in the lottery group. At least one child was HIV tested in 93 (20%) households in the no-incentive group, in 316 (48%) households in the $2 incentive group

(adjusted odds ratio 3.67, 95% CI 2.77-4.85; p<0.0001), and in 223 (40%) of 562 households in the lottery group (2.66, 2.00-3.55; p<0.0001). No adverse events were reported.

INTERPRETATION: Fixed incentives and lottery-based incentives increased the uptake of HIV testing by older children and adolescents, a key hard-to-reach population. This strategy would be sustainable in the context of vertical HIV infection as repeated testing would not be necessary until sexual debut.

23. **Sexual behavior experiences and characteristics of male-female partnerships among HIV positive adolescent girls and young women: Qualitative findings from Zimbabwe.** Mavhu, W., Rowley, E., et al. PLoS One. 2018. https://www.ncbi.nlm.nih.gov/pubmed/29566062

BACKGROUND: New HIV infections among sub-Saharan Africa's adolescent girls and young women (AGYW, ages 15-24) greatly exceed those of their male peers. In addition, AGYW tend to acquire HIV at a much earlier age. Understanding the factors associated with HIV infection in AGYW could inform effective prevention and treatment interventions for these populations and their male sexual partners.

METHODS: This qualitative study, conducted October-November 2016, was a follow on to a quantitative survey that sought to characterize male sexual partners and sexual behaviors of sexually active HIV positive AGYW in Zimbabwe. The qualitative study explored sexual behavior experiences and characteristics of male-female partnerships among the same participants. We conducted in-depth interviews with purposively sampled AGYW (16-24 years). Audio recorded qualitative data were transcribed, translated into English, and thematically coded using NVivo.

RESULTS: 28 AGYW (n = 14 urban, n = 14 rural) took part in the in-depth interviews. 50% were 16-19 years old. Discussions with 10/11 (91%) AGYW who were reportedly infected through sex suggested that they had acquired HIV from their husbands or romantic partners. Accounts also suggested that the age difference between respondents and their male sexual partners was >/=5 years. Overall, respondents described two types of male partners: those older (''sugar daddies'', men >/=35 years old) and younger (<35 years). Respondents felt unable to suggest condom use to both older and younger partners. Evident in respondents' accounts was a general low HIV risk perception, particularly with younger men, which was largely due to poor HIV knowledge. Discussions suggested that an AGYW's relationship with either male partner was characterized by some form of violence.

CONCLUSIONS: Discussions highlighted the nature and characteristics of relationships between AGYW and their male sexual partners. Findings could inform interventions to engender risk perception among AGYW, promote female-controlled HIV prevention efforts and, foster risk-reduction among men.

24. **High risk exposure to HIV among sexually active individuals who tested negative on rapid HIV tests in the Tshwane district of South Africa-the importance of behavioural prevention measures.**
Mayaphi, S. H., Martin, D. J., et al. PLoS One. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29394288

OBJECTIVE: To assess the prevalence of HIV risk behaviour among sexually active HIV sero-negative individuals in the Tshwane district of South Africa (SA).

METHODS: Demographic and HIV risk behaviour data were collected on a questionnaire from participants of a cross-sectional study that screened for early HIV infection using pooled nucleic acid amplification testing (NAAT). The study enrolled individuals who tested negative on rapid HIV tests performed at five HIV counseling and testing (HCT) clinics, which included four antenatal clinics and one general HCT clinic.

RESULTS: The study enrolled 9547 predominantly black participants (96.6%) with a median age of 27 years (interquartile range [IQR]: 23-31). There were 1661 non-pregnant and 7886 pregnant participants largely enrolled from the general and antenatal HCT clinics, respectively. NAAT detected HIV infection in 61 participants (0.6%; 95% confidence interval [CI]: 0.4-0.8) in the whole study. A high proportion of study participants, 62.8% and 63.0%, were unaware of their partner's HIV status; and also had high prevalence, 88.5% and 99.5%, of recent unprotected sex in the general and pregnant population, respectively. Consistent use of condoms was associated with protection against HIV infection in the general population. Trends of higher odds for HIV infection were observed with most demographic and HIV risk factors at univariate analysis, however, multivariate analysis did not show statistical significance for almost all these factors. A significantly lower risk of HIV infection was observed in circumcised men ($p < 0.001$).

CONCLUSIONS: These data show that a large segment of sexually active people in the Tshwane district of SA have high risk exposure to HIV. The detection of newly diagnosed HIV infections in all study clinics reflects a wide distribution of individuals who are capable of sustaining HIV transmission in the setting where HIV risk behaviour is highly prevalent. A questionnaire that captures HIV risk behaviour would be useful during HIV counselling and testing to ensure that there is a systematic way of identifying HIV risk factors and that counselling is optimised for each individual. HIV risk behaviour surveillance could be used to inform relevant HIV prevention interventions that could be implemented at a community or population level.

25. **Perceptions of counsellors and youth-serving professionals about sexual and reproductive health services for adolescents in Soweto, South Africa.**
Mulaudzi, M., Dlamini, B. N., et al. Reprod Health. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29409503

BACKGROUND: Adolescents in South Africa remain vulnerable to HIV. Therefore, it is crucial to provide accessible adolescent-friendly HIV prevention interventions that are sensitive to their needs. This study aimed to investigate the perceptions of HIV counsellors and other youth-serving professionals about the barriers to providing adolescent youth-friendly sexual and reproductive health services to adolescents in Soweto, South Africa. The study also explored how sexual and reproductive health services in South Africa could be improved to become more accessible to adolescents.

METHODS: The research team conducted two focus group discussions with HIV counsellors, and 19 semi-structured interviews with youth-serving professionals from organisations working with adolescents. Audio-recorded data were transcribed verbatim and analysed using thematic analysis.

RESULTS: The results of the study reveal that counsellors were expected to give adolescents HIV counselling and testing (HCT) but felt restricted by what they perceived as inflexible standard operating procedures. Counsellors reported inadequate training to address adolescent psychosocial issues during HCT. Healthcare provider attitudes were perceived as a barrier to adolescents using sexual and reproductive health services. Participants strongly recommended augmenting adolescent sexual and reproductive health services to include counsellors and adolescents in developing age- and context-specific HIV prevention services for adolescents.

CONCLUSION: Continuous upskilling of HIV counsellors is a critical step in providing adolescent-friendly services. Input from all relevant stakeholders, including counsellors and adolescents, is essential in designing adolescent-friendly services.

26. What influences linkage to care after home-based HIV counseling and testing?
Naik, R., Zembe, W., et al. AIDS Behav. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/28643242

To maximize the benefits of test and treat strategies that utilize community-based HIV testing, clients who test positive must link to care in a timely manner. However, linkage rates across the HIV treatment cascade are typically low and little is known about what might facilitate or hinder care-seeking behavior. This qualitative study was conducted within a home-based HIV counseling and testing (HBHCT) intervention in South Africa. In-depth interviews were conducted with 30 HBHCT clients who tested HIV positive to explore what influenced their care-seeking behavior. A set of field notes for 196 additional HBHCT clients who tested HIV positive at home were also reviewed and analyzed. Content analysis showed that linkage to care is influenced by a myriad of factors at the individual, relationship, community, and health system levels. These factors subtly interact and at times reinforce each other. While some factors such as belief in test results, coping ability, social support, and prior experiences with the health system affect clients' desire and motivation to seek care, others such as limited time and

resources affect their agency to do so. To ensure that the benefits of community-based testing models are realized through timely linkage to care, programs and interventions must take into account and address clients' emotions, motivation levels, living situations, relationship dynamics, responsibilities, and personal resources.

27. **"He does not have to wait under a tree": Perceptions of men, women and health care workers on male partner involvement in prevention of mother to child transmission of human immunodeficiency virus services in Malawi.**
Nyondo-Mipando, A. L., Chimwaza, A. F., et al. BMC Health Serv Res. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29554917

BACKGROUND: The perception of male involvement (MI) in maternal child health services is multifaceted and differs among varying programs and populations. In the Prevention of Mother to Child Transmission (PMTCT) context, MI includes men's attendance at antenatal care (ANC) clinics, undertaking an HIV tests within the ANC and financial and psychological support. Contexualising the definition of MI is fundamental in the development of MI in PMTCT policy and interventions. The objective of this study was to explore the perceptions of men, women and health care workers on male partner involvement in PMTCT services in Malawi.

METHODS: A qualitative descriptive study was conducted at South Lunzu Health Centre (SLHC) in Blantyre, Malawi from December 2012 to January 2013. We conducted Key Informant Interviews (KIIs) with 6 health care workers and moderated four Focus Group Discussions (FGDs) among 18 men and 17 pregnant women attending antenatal care at SLHC. We divided FGDs participants according to sex and age. We digitally recorded all FGDs and KIIs and simultaneously transcribed and translated verbatim into English. We employed thematic analysis to identify codes and themes.

RESULTS: Men and women described MI in PMTCT as either a) Positive participation or b) Negative participation. Positive participation included total involvement of the male partner in PMTCT interventions, reminding the spouse of clinic and treatment schedules, and resource provision. Health care workers described MI as either a) Involvement along the pregnancy continuum or b) Passive Involvement. Participants' preferred positive involvement of male partners.

CONCLUSIONS: There are multiple perceptions of MI in PMTCT with participants preferring positive involvement. There is a need to have a uniform description of MI in PMTCT to optimize development of strategies and interventions that accommodate and optimize MI in PMTCT. A uniform description will be useful in assessing a country's progress towards achieving MI in PMTCT goals.

28. **Sexual and reproductive health behavior and unmet needs among a sample of adolescents living with HIV in Zambia: A cross-sectional study.**
Okawa, S., Mwanza-Kabaghe, S., et al. Reprod Health. 2018.

https://www.ncbi.nlm.nih.gov/pubmed/29587791

BACKGROUND: Adolescents living with HIV face challenges, such as disclosure of HIV status, adherence to antiretroviral therapy, mental health, and sexual and reproductive health (SRH). These challenges affect their future quality of life. However, little evidence is available on their sexual behaviors and SRH needs in Zambia. This study aimed at assessing their sexual behaviors and SRH needs and identifying factors associated with marriage concerns and a desire to have children.

METHODS: This cross-sectional study was conducted at the University Teaching Hospital from April to July 2014. We recruited 200 adolescents aged 15-19 years who were aware of their HIV-positive status. We collected data on their first and recent sexual behavior, concerns about marriage, and desire to have children. We used the Generalized Linear Model to identify factors associated with having concerns about marriage and desire to have children. We performed thematic analysis with open-ended data to determine their perceptions about marriage and having children in the future.

RESULTS: Out of 175 studied adolescents, 20.6% had experienced sexual intercourse, and only 44.4% used condoms during the first intercourse. Forty-eight percent had concerns about marriage, and 87.4% desired to have children. Marriage-related concerns were high among those who desired to have children (adjusted relative risk [ARR] = 2.51, 95% CI = 1.02 to 6.14). Adolescents who had completed secondary school were more likely to desire to have children (ARR = 1.35, 95% CI = 1.07 to 1.71). Adolescents who had lost both parents were less likely to want children (ARR = 0.80, 95% CI = 0.68 to 0.95). Thematic analysis identified that major concerns about future marriage were fear of disclosing HIV status to partners and risk of infecting partners and/or children. The reasons for their willingness to have children were the desire to be a parent, having children as family assets, a human right, and a source of love and happiness.

CONCLUSIONS: Zambian adolescents living with HIV are at risk of engaging in risky sexual relationships and have difficulties in meeting needs of SRH. HIV care service must respond to a wide range of needs.

29. **Effect of HIV self-testing on the number of sexual partners among female sex workers in Zambia.**
Oldenburg, C. E., Chanda, M. M., et al. Aids. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29494424

OBJECTIVES: To assess the effect of two health system approaches to distribute HIV self-tests on the number of female sex workers' client and nonclient sexual partners.

DESIGN: Cluster randomized controlled trial.

METHODS: Peer educators recruited 965 participants. Peer educator-participant groups were randomized 1:1:1 to one of three arms: delivery of HIV self-tests directly from a peer educator, free facility-based delivery of HIV self-tests in exchange for coupons, or referral to standard-of-care HIV testing. Participants in all three arms completed four peer educator intervention sessions, which included counseling and condom distribution. Participants were asked the average number of client partners they had per night at baseline, 1 and 4 months, and the number of nonclient partners they had in the past 12 months (at baseline) and in the past month (at 1 month and 4 months).

RESULTS: At 4 months, participants reported significantly fewer clients per night in the direct delivery arm (mean difference -0.78 clients, 95% CI -1.28 to -0.28, P = 0.002) and the coupon arm (-0.71, 95% CI -1.21 to -0.21, P = 0.005) compared with standard of care. Similarly, they reported fewer nonclient partners in the direct delivery arm (-3.19, 95% CI -5.18 to -1.21, P = 0.002) and in the coupon arm (-1.84, 95% CI -3.81 to 0.14, P = 0.07) arm compared with standard of care.

CONCLUSION: Expansion of HIV self-testing may have positive behavioral effects enhancing other HIV prevention efforts among female sex workers in Zambia.

30. **The continuing burden of advanced HIV disease over 10 years of increasing antiretroviral therapy coverage in South Africa.**
Osler, M., Hilderbrand, K., et al. Clin Infect Dis. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29514233

BACKGROUND: Antiretroviral treatment (ART) has been massively scaled up to decrease human immunodeficiency virus (HIV)-related morbidity, mortality, and HIV transmission. However, despite documented increases in ART coverage, morbidity and mortality have remained substantial. This study describes trends in the numbers and characteristics of patients with very advanced HIV disease in the Western Cape, South Africa.

METHODS: Annual cross-sectional snapshots of CD4 distributions were described over 10 years, derived from a province-wide cohort of all HIV patients receiving CD4 cell count testing in the public sector. Patients with a first CD4 count <50 cells/microL in each year were characterized with respect to prior CD4 and viral load testing, ART access, and retention in ART care.

RESULTS: Patients attending HIV care for the first time initially constituted the largest group of those with CD4 count <50 cells/microL, dropping proportionally over the decade from 60.9% to 26.7%. By contrast, the proportion who were ART experienced increased from 14.3% to 56.7%. In patients with CD4 counts <50 cells/microL in 2016, 51.8% were ART experienced, of whom 76% could be confirmed to be off ART or had recent viremia. More than half who were ART experienced with a CD4 count <50 cells/microL in 2016 were men, compared to approximately one-third of all patients on ART in the same year.

CONCLUSIONS: Ongoing HIV-associated morbidity now results largely from treatment-experienced patients not being in continuous care or not being fully virologically suppressed. Innovative interventions to retain ART patients in effective care are an essential priority for the ongoing HIV response.

31. **Geographic variation in sexual behavior can explain geospatial heterogeneity in the severity of the HIV epidemic in Malawi.**
Palk, L. and Blower, S. BMC Med. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29422096

BACKGROUND: In sub-Saharan Africa, where ~ 25 million individuals are infected with HIV and transmission is predominantly heterosexual, there is substantial geographic variation in the severity of epidemics. This variation has yet to be explained. Here, we propose that it is due to geographic variation in the size of the high-risk group (HRG): the group with a high number of sex partners. We test our hypothesis by conducting a geospatial analysis of data from Malawi, where ~ 13% of women and ~ 8% of men are infected with HIV.

METHODS: We used georeferenced HIV testing and behavioral data from ~ 14,000 participants of a nationally representative population-level survey: the 2010 Malawi Demographic and Health Survey (MDHS). We constructed gender-stratified epidemic surface prevalence (ESP) maps by spatially smoothing and interpolating the HIV testing data. We used the behavioral data to construct gender-stratified risk maps that reveal geographic variation in the size of the HRG. We tested our hypothesis by fitting gender-stratified spatial error regression (SER) models to the MDHS data.

RESULTS: The ESP maps show considerable geographic variation in prevalence: 1-29% (women), 1-20% (men). Risk maps reveal substantial geographic variation in the size of the HRG: 0-40% (women), 16-58% (men). Prevalence and the size of the HRG are highest in urban centers. However, the majority of HIV-infected individuals (~75% of women, ~ 80% of men) live in rural areas, as does most of the HRG (~ 80% of women, ~ 85% of men). We identify a significant ($P < 0.001$) geospatial relationship linking the size of the HRG with prevalence: the greater the size, the higher the prevalence. SER models show HIV prevalence in women is expected to exceed the national average in districts where > 20% of women are in the HRG. Most importantly, the SER models show that geographic variation in the size of the HRG can explain a substantial proportion (73% for women, 67% for men) of the geographic variation in epidemic severity.

CONCLUSIONS: Taken together, our results provide substantial support for our hypothesis. They provide a potential mechanistic explanation for the geographic variation in the severity of the HIV epidemic in Malawi and, potentially, in other countries in sub-Saharan Africa.

32. **Fertility intentions of prenatal and postpartum HIV-positive women in primary care in Mpumalanga Province, South Africa: A longitudinal study.**
Peltzer, K., Sifunda, S., et al. HIV AIDS (Auckl). 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29497335

INTRODUCTION: This study aimed to assess fertility intentions (planning to have more children in the future) and associated factors among pregnant and postpartum HIV positive women in rural South Africa.

METHODS: In a longitudinal study, as part of a prevention of mother to child transmission (PMTCT) intervention trial, 699 HIV positive prenatal women, were systematically recruited and followed up at 6 months and 12 months postpartum (retention rate = 59.5%).

RESULTS: At baseline, 32.9% of the women indicated fertility intentions and at 12 months postnatal, 120 (28.0%) reported fertility intentions. In longitudinal analyses, which included time-invariant baseline characteristics predicting fertility intention over time, not having children, having a partner with unknown/HIV-negative status, and having disclosed their HIV status to their partner, were associated with fertility intentions. In a model with time-varying covariates, decreased family planning knowledge, talking to a provider about a future pregnancy, and increased male involvement were associated with fertility intentions.

CONCLUSION: Results support ongoing perinatal family planning and PMTCT education.

33. **Facilitators and barriers for HIV-testing in Zambia: A systematic review of multi-level factors.**
Qiao, S., Zhang, Y., et al. PLoS One. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29415004

It was estimated that 1.2 million people live with HIV/AIDS in Zambia by 2015. Zambia has developed and implemented diverse programs to reduce the prevalence in the country. HIV-testing is a critical step in HIV treatment and prevention, especially among all the key populations. However, there is no systematic review so far to demonstrate the trend of HIV-testing studies in Zambia since 1990s or synthesis the key factors that associated with HIV-testing practices in the country. Therefore, this study conducted a systematic review to search all English literature published prior to November 2016 in six electronic databases and retrieved 32 articles that meet our inclusion criteria. The results indicated that higher education was a common facilitator of HIV testing, while misconception of HIV testing and the fear of negative consequences were the major barriers for using the testing services. Other factors, such as demographic characteristics, marital dynamics, partner relationship, and relationship with the health care services, also greatly affects the participants' decision making. The findings indicated that 1) individualized strategies and comprehensive services are needed for

diverse key population; 2) capacity building for healthcare providers is critical for effectively implementing the task-shifting strategy; 3) HIV testing services need to adapt to the social context of Zambia where HIV-related stigma and discrimination is still persistent and overwhelming; and 4) family-based education and intervention should involving improving gender equity.

34. **Do female sex workers have lower uptake of HIV treatment services than non-sex workers? A cross-sectional study from east Zimbabwe.**
Rhead, R., Elmes, J., et al. BMJ Open. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29490957

OBJECTIVE: Globally, HIV disproportionately affects female sex workers (FSWs) yet HIV treatment coverage is suboptimal. To improve uptake of HIV services by FSWs, it is important to identify potential inequalities in access and use of care and their determinants. Our aim is to investigate HIV treatment cascades for FSWs and non-sex workers (NSWs) in Manicaland province, Zimbabwe, and to examine the socio-demographic characteristics and intermediate determinants that might explain differences in service uptake.

METHODS: Data from a household survey conducted in 2009-2011 and a parallel snowball sample survey of FSWs were matched using probability methods to reduce under-reporting of FSWs. HIV treatment cascades were constructed and compared for FSWs (n=174) and NSWs (n=2555). Determinants of service uptake were identified a priori in a theoretical framework and tested using logistic regression.

RESULTS: HIV prevalence was higher in FSWs than in NSWs (52.6% vs 19.8%; age-adjusted OR (AOR) 4.0; 95% CI 2.9 to 5.5). In HIV-positive women, FSWs were more likely to have been diagnosed (58.2% vs 42.6%; AOR 1.62; 1.02-2.59) and HIV-diagnosed FSWs were more likely to initiate ART (84.9% vs 64.0%; AOR 2.33; 1.03-5.28). No difference was found for antiretroviral treatment (ART) adherence (91.1% vs 90.5%; P=0.9). FSWs' greater uptake of HIV treatment services became non-significant after adjusting for intermediate factors including HIV knowledge and risk perception, travel time to services, physical and mental health, and recent pregnancy.

CONCLUSION: FSWs are more likely to take up testing and treatment services and were closer to achieving optimal outcomes along the cascade compared with NSWs. However, ART coverage was low in all women at the time of the survey. FSWs' need for, knowledge of and proximity to HIV testing and treatment facilities appear to increase uptake.

35. **Completion of isoniazid preventive therapy among human immunodeficiency virus positive adults in urban Malawi.**
Thindwa, D., MacPherson, P., et al. Int J Tuberc Lung Dis. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29471904

SETTING: Despite worldwide scale-up of human immunodeficiency virus (HIV) care services, relatively few countries have implemented isoniazid preventive therapy (IPT). Among other programmatic concerns, IPT completion tends to be low, especially when not fully integrated into HIV care clinics.

OBJECTIVE: To estimate non-completion of 6-month IPT and its predictors among HIV-positive adults aged >/=16 years.

DESIGN: A prospective cohort study nested within a cluster-randomised trial of TB prevention was conducted between February 2012 and June 2014. IPT for 6 months was provided with pyridoxine at study clinics. Non-completion was defined as loss to follow-up (LTFU), death, active/presumptive TB or stopping IPT for any other reason. Random-effects logistic regression was used to determine predictors of non-completion.

RESULTS: Of 1284 HIV-positive adults initiated on IPT, 885/1280 (69.1%) were female; the median CD4 count was 337 cells/mul (IQR 199-511); 320 (24.9%) did not complete IPT. After controlling for antiretroviral treatment status, IPT initiation year, age and sex, non-completion of IPT was associated with World Health Organization stage 3/4 (aOR 1.76, 95%CI 1.22-2.55), CD4 count 100-349 cells/mul (aOR 1.93, 95%CI 1.10-3.38) and any reported side effects (aOR 22.00, 95%CI 9.45-46.71).

CONCLUSION: Completion of IPT was suboptimal. Interventions to further improve retention should target immunosuppressed HIV-positive adults and address side effects.

36. **Contraceptive use and pregnancy rates among women receiving antiretroviral therapy in Malawi: A retrospective cohort study.**
Tweya, H., Feldacker, C., et al. Reprod Health. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29426333

BACKGROUND: In 2011, family planning (FP) services were integrated at Martin Preuss Centre (MPC), in urban Lilongwe, Malawi. To date, no previous study evaluated pregnancy rates among HIV-positive women after the integration of FP services into HIV care at the facility. In this study, we investigated whether integration of FP services into HIV clinical care led to increased use of contraceptives and decreased pregnancy rates.

METHODS: This was a retrospective cohort analysis of HIV-positive women from 15 to 49 years of age who accessed antiretroviral therapy (ART) services at MPC. Ascertainment of FP needs, contraceptive methods and pregnancy status were done at ART initiation, and at each ART follow-up visit. Women were offered a wide range of contraceptive methods. Outcomes of interest were contraceptive use and rate of pregnancy. Incident pregnancy was ascertained through patient self-reports during clinic consultation. Trends of contraceptive use and pregnancy rates were analyzed using chi-square (chi2).

RESULTS: A total of 10,472 women were included in the analysis and contributed 15,700 person-years of observation. Contraceptive use among all women receiving ART increased from 28% in 2012 to 62% in 2016 ($p < 0.001$). A total of 501 pregnancies occurred, including 13 multiple pregnancies, resulting in an overall pregnancy rates of 3.2 per 100 person-years. Rates of pregnancy decreased from 6.8 per 100 person-years in 2012 to 1.3 per 100 person-years in 2016 ($p < 0.001$).

CONCLUSION: Integration of FP services into HIV care resulted in increased contraceptive use and, subsequently, decreased pregnancy rates in women receiving ART. HIV programs should consider offering FP services to women who are receiving ART.

37. **Training social workers to enhance patient-centered care for drug-resistant TB-HIV in South Africa.**
Zelnick, J. R., Seepamore, B., et al. Public Health Action. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29581940

KwaZulu-Natal, South Africa, is the epicenter of an epidemic of drug-resistant tuberculosis (DR-TB) and human immunodeficiency virus (HIV) co-infection, characterized by low rates of medication adherence and retention in care. Social workers may have a unique role to play in improving DR-TB-HIV outcomes. We designed, implemented and evaluated a model-based pilot training course on patient-centered care, treatment literacy in DR-TB and HIV coinfection, patient support group facilitation, and self-care. Ten social workers participated in a 1-day training course. Post-training questionnaire scores showed significant overall gains ($P = 0.003$). A brief training intervention may be a useful and feasible way to engage social workers in patient-centered care for DR-TB and HIV coinfection.

38. **Toward 90-90-90: Identifying those who have never been tested for HIV and differences by sex in Lesotho.**
Carrasco, M. A., Fleming, P., et al. AIDS Care. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/28868903

To reach HIV epidemic control it is important to ensure that those who have never been tested access HIV testing and counseling (HTC) particularly in the context of a generalized HIV epidemic. Using data from the 2014 Lesotho Demographic Health Survey bivariate and multivariate logistic regressions were conducted to determine the associations between never tested for HIV and key socio-cognitive characteristics by sex. Marginal probabilities at the means were calculated for the socio-cognitive variables for men and women to ascertain the magnitude of the differences in the likelihood of never being tested by sex. We stratified by gender and controlled for age, education, religion, marital status, place of residence, and years circumcised (for men only). Results indicate that more men than women have never been tested ($chi(2)= 461.16$, $p < 0.001$); and,

among men, acceptance of gender based violence (Odds ratio [OR]: 1.44, $p < 0.001$), holding discriminatory attitudes (OR: 1.50, $p < 0.001$), and not having basic HIV prevention knowledge (OR: 1.53, $p < 0.001$) were significantly associated with never being tested. The likelihood of never being tested among those who had these three socio-cognitive characteristics was much higher among men (0.56, $p < 0.001$) than women (0.20, $p < 0.001$). Given the strong sex differential, there is an urgent need for strategies specifically targeting men in order to effectively promote HTC uptake among them. Additionally, results suggest that those strategies should integrate strategies to address GBV acceptance, HIV prevention knowledge, and HIV discrimination or link men to programs addressing these.

39. **Gender, sexual self-efficacy and consistent condom use among adolescents living in the HIV hyper-endemic setting of Soweto, South Africa.**
Closson, K., Dietrich, J. J., et al. AIDS Behav. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29090395

Within HIV-endemic settings, few studies have examined gendered associations between sexual self-efficacy (SSE), one's confidence or perceived control over sexual behavior, and uptake of HIV prevention behaviors. Using cross-sectional survey data from 417 sexually-experienced adolescents (aged 14-19, median age = 18, 60% female) in Soweto, South Africa, we measured SSE using a 6-item scale (range:0-6) with 'high-SSE' = score > 3 (study alpha = 0.75). Gender-stratified logistic regression models assessed associations between high-SSE and lifetime consistent condom use. A higher proportion of women reported high-SSE (68.7%) than men (49.5%, $p < 0.001$). We observed no difference in reported consistent condom use by gender (45.5% among women, 45.8% among men; $p = 0.943$). In confounder models, high-SSE was associated with consistent condom use among men (aOR = 3.51, 95%CI = 1.86-6.64), but not women (aOR = 1.43, 95%CI = 0.74-2.77). Findings highlight that individual-level psychosocial factors are insufficient for understanding condom use and must be considered alongside the relational, social, and structural environments within which young women navigate their sexual lives.

40. **Adaptation and delivery of a motivational interviewing-based counseling program for persons acutely infected with HIV in Malawi: Implementation and lessons learned.**
Grodensky, C. A., Golin, C. E., et al. Patient Educ Couns. 2018.

OBJECTIVE: Individuals diagnosed with acute HIV infection (AHI) are highly infectious and require immediate HIV prevention efforts to minimize their likelihood of transmitting HIV to others. We sought to explore the relevance of Motivational Interviewing (MI), an evidence-based counseling method, for Malawians with AHI.

METHODS: We designed a MI-based intervention called "Uphungu Wanga" to support risk reduction efforts immediately after AHI diagnosis. It was adapted from Options and SafeTalk interventions, and refined through formative research and input from

Malawian team members and training participants. We conducted qualitative interviews with counselors and participants to explore the relevance of MI in this context.

RESULTS: Intervention adaptation required careful consideration of Malawian cultural context and the needs of people with AHI. Uphungu Wanga's content was relevant and key MI techniques of topic selection and goal setting were viewed positively by counselors and participants. However, rating levels of importance and confidence did not appear to help participants to explore behavior change as intended.

CONCLUSIONS: Uphungu Wanga may have provided some added benefits beyond "brief education" standard of care counseling for Malawians with AHI.

PRACTICE IMPLICATIONS: MI techniques of topic selection and goal setting may enhance prevention education and counseling for Malawians with AHI.

41. **Childhood adversity increases the risk of onward transmission from perinatal HIV-infected adolescents and youth in South Africa.**
Kidman, R., Nachman, S., et al. Child Abuse Negl. 2018.

Repeated exposure to childhood adversity (abuse, neglect and other traumas experienced before age 18) can have lifelong impacts on health. For HIV-infected adolescents and youth, such impacts may include onward transmission of HIV. To evaluate this possibility, the current study measured the burden of childhood adversity and its influence on risky health behaviors among perinatally-infected adolescents and youth. We surveyed 250 perinatally-infected adolescents and youth (13-24 years) receiving care in Soweto, South Africa. Both male and female participants reported on childhood adversity (using the ACE-IQ), sexual behavior, and psychosocial state. Viral load was also abstracted from their charts. We used logistic regressions to test the association between cumulative adversity and behavioral outcomes. Half the sample reported eight or more adversities. Overall, 72% experienced emotional abuse, 59% experienced physical abuse, 34% experienced sexual abuse, 82% witnessed domestic violence, and 91% saw someone being attacked in their community. A clear gradient emerged between cumulative adversities and behavioral risk. Having experienced one additional childhood adversity raised the odds of risky sexual behavior by almost 30% (OR 1.27, 95% CI 1.09-1.48). Viral suppression was poor overall (31% had viral loads >400copies/ml), but was not related to adversity. Adversity showed a robust relationship to depression and substance abuse. Childhood adversity is common, influences the current health of HIV-positive adolescents and youth, and puts their sexual partners at risk for HIV infection. Greater primary prevention of childhood adversity and increased access to support services (e.g., mental health) could reduce risk taking among HIV-positive adolescents and youth.

42. **Factors that motivated otherwise healthy HIV-positive young adults to access HIV testing and treatment in South Africa.**

Lambert, R. F., Orrell, C., et al. AIDS Behav. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/28190116

The World Health Organization recommends early initiation of HIV antiretroviral therapy (ART) for all those infected with the virus at any CD4 count. Successfully reaching individuals with relatively high CD4 counts depends in large part on healthy individuals seeking testing and treatment; however, little is known about factors motivating this decision. We conducted a qualitative study to explore this issue among 25 young HIV-positive adults (age 18-35) with a CD4 count >350 cells/mm(3) who recently started or made the decision to start ART in Gugulethu, South Africa. Using an inductive content analytical approach, we found that most individuals sought testing and treatment early in the disease progression because of a desire to appear healthy thereby avoiding stigma associated with AIDS. Other factors included social support, responsibilities and aspirations, normalcy of having HIV, and accessible services. These findings suggest that maintenance of physical appearance should be included in the development of novel testing and treatment interventions.

43. Exploring the potential of participatory theatre to reduce stigma and promote health equity for lesbian, gay, bisexual, and transgender (LGBT) people in Swaziland and Lesotho.
Logie, C. H., Dias, L. V., et al. Health Educ Behav. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29589481

Stigma and discrimination affecting lesbian, gay, bisexual, and transgender (LGBT) people compromise health and human rights and exacerbate the HIV epidemic. Scant research has explored effective LGBT stigma reduction strategies in low- and middle-income countries. We developed and pilot-tested a participatory theatre intervention (PTI) to reduce LGBT stigma in Swaziland and Lesotho, countries with the world's highest HIV prevalence. We collected preliminary data from in-depth interviews with LGBT people in Lesotho and Swaziland to enhance understanding of LGBT stigma. Local LGBT and theatre groups worked with these data to create a 2-hour PTI composed of three skits on LGBT stigma in health care, family, and community settings in Swaziland (Manzini) and Lesotho (Maseru, Mapoteng). Participants (n = 106; nursing students, health care providers, educators, community members) completed 12 focus groups following the PTI. We conducted thematic analysis to understand reactions to the PTI. Focus groups revealed the PTI increased understanding of LGBT persons and issues, increased empathy, and fostered self-reflection of personal biases. Increased understanding included enhanced awareness of the negative impacts of LGBT stigma, and of LGBT people's lived experiences and issues. Participants discussed changes in attitude and perspective through self-reflection and learning. The format of the theatre performance was described as conducive to learning and preferred over more conventional educational methods. Findings indicate changed attitudes and awareness toward LGBT persons and issues following a PTI in Swaziland and Lesotho. Stigma

reduction interventions may help mitigate barriers to HIV prevention, treatment, and care in these settings with a high burden of HIV.

44. **Engaging HIV-positive clients in care: Acceptability and mechanisms of action of a peer navigation program in South Africa.**
Steward, W. T., Sumitani, J., et al. AIDS Care. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/28814110

Antiretroviral therapy (ART) could curtail the HIV epidemic, but its impact is diminished by low uptake. We developed a peer navigation program to enhance engagement in HIV care, ART adherence, and behavioral prevention. In preparation for a randomized controlled trial, the program was piloted over four months at two primary health clinics in South Africa's North West Province. Newly diagnosed, HIV-positive clients met regularly with navigators to address barriers to care, adherence, and prevention. To assess program acceptability and feasibility and characterize the mechanisms of action, we surveyed 25 clients who completed navigation services and conducted interviews with 10 clients, four navigators, and five clinic providers. Clients expressed near universal approval for the program and were satisfied with the frequency of contact with navigators. HIV stigma emerged as a primary driver of barriers to care. Navigators helped clients overcome feelings of shame through education and by modeling how to live successfully with HIV. They addressed discrimination fears by helping clients disclose to trusted individuals. These actions, in turn, facilitated clients' care engagement, ART adherence, and HIV prevention efforts. The findings suggest peer navigation is a feasible approach with potential to maximize the impact of ART-based HIV treatment and prevention strategies.

Back to top

LAY HEALTH WORKERS (9)

45. **Roles played by community cadres to support retention in PMTCT Option B+ in four African countries: A qualitative rapid appraisal.**
Besada, D., Goga, A., et al. BMJ Open. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29567853

OBJECTIVES: To explore the roles of community cadres in improving access to and retention in care for PMTCT (prevent mother-to-child transmission of HIV) services in the context of PMTCT Option B+ treatment scale-up in high burden low-income and lower-middle income countries.

DESIGN/METHODS: Qualitative rapid appraisal study design using semistructured in-depth interviews and focus group discussions (FGDs) between 8 June and 31 July 2015.

SETTING AND PARTICIPANTS: Interviews were conducted in the offices of Ministry of Health Staff, Implementing partners, district offices and health facility sites across four low-income and lower-middle income countries: Cote D'Ivoire, Democratic Republic of Congo (DRC), Malawi and Uganda. A range of individual interviews and FGDs with key stakeholders including Ministry of Health employees, Implementation partners, district management teams, facility-based health workers and community cadres. A total number of 18, 28, 31 and 83 individual interviews were conducted in Malawi, Cote d'Ivoire, DRC and Uganda, respectively. A total number of 15, 9, 10 and 16 mixed gender FGDs were undertaken in Malawi, Cote d'Ivoire, DRC and Uganda, respectively.

RESULTS: Community cadres either operated solely in the community, worked from health centres or in combination and their mandates were PMTCT-specific or included general HIV support and other health issues. Community cadres included volunteers, those supported by implementing partners or employed directly by the Ministry of Health. Their complimentary roles along the continuum of HIV care and treatment include demand creation, household mapping of pregnant and lactating women, linkage to care, infant follow-up and adherence and retention support.

CONCLUSIONS: Community cadres provide an integral link between communities and health facilities, supporting overstretched health workers in HIV client support and follow-up. However, their role in health systems is neither standardised nor systematic and there is an urgent need to invest in the standardisation of and support to community cadres to maximise potential health impacts.

46. **She knows that she will not come back: Tracing patients and new thresholds of collective surveillance in PMTCT Option B.**
Cataldo, F., Seeley, J., et al. BMC Health Serv Res. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29391055

BACKGROUND: Malawi, Uganda, and Zimbabwe have recently adopted a universal 'test-and-treat' approach to the prevention of mother-to-child transmission of HIV (Option B+). Amongst a largely asymptomatic population of women tested for HIV and immediately started on antiretroviral treatment (ART), a relatively high number are not retained in care; they are labelled 'defaulters' or 'lost-to-follow-up' patients.

METHODS: We draw on data collected as part of a study looking at ART decentralization (Lablite) to reflect on the spaces created through the instrumentalization of community health workers (CHWs) for the purpose of bringing women who default from Option B+ back into care. Data were collected through semi-structured interviews with CHWs who are designated to trace Option B+ patients in Uganda, Malawi and Zimbabwe.

FINDINGS: Lost to follow up women give a range of reasons for not coming back to health facilities and often implicitly choose not to be traced by providing a false address

at enrolment. New strategies have sought to utilize CHWs' liminal positionality - situated between the experience of living with HIV, having established local social ties, and being a caretaker - in order to track 'defaulters'. CHWs are often deployed without adequate guidance or training to protect confidentiality and respect patients' choice.

CONCLUSIONS: CHWs provide essential linkages between health services and patients; they embody the role of 'extension workers', a bridge between a novel health policy and 'non-compliant patients'. Option B+ offers a powerful narrative of the construction of a unilateral 'moral economy', which requires the full compliance of patients newly initiated on treatment

47. **Extending beyond policy: Reaching UNAIDS' three "90"s in Malawi.**
Chirwa, Z., Kayambo, F., et al. Front Public Health. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29600244

Malawi, like other countries with a generalized HIV epidemic, is striving to reach the ambitious targets set by UNAIDS known as the three 90's for testing, provision of antiretroviral therapy and viral suppression. Assisted by Malawi's progressive policies on HIV/AIDS, it appears possible that Malawi will attain these targets, but only by employing innovative program approaches to service delivery which help fill policy gaps. This article describes how a dedicated cadre of layperson testers and HIV-positive peers appears to have helped attain increases in HIV and viral load testing and retention in care in four districts in Malawi, and situates these innovations in a policy framework analysis.

48. **Can lay health workers support the management of hypertension? Findings of a cluster randomised trial in South Africa.**
Goudge, J., Chirwa, T., et al. BMJ Glob Health. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29527345

INTRODUCTION: In low/middle-income countries with substantial HIV and tuberculosis epidemics, health services often neglect other highly prevalent chronic conditions, such as hypertension, which as a result are poorly managed. This paper reports on a study to assess the effect on hypertension management of lay health workers (LHW) working in South African rural primary healthcare clinics to support the provision of integrated chronic care.

METHODS: A pragmatic cluster randomised trial with a process evaluation in eight rural clinics assessed the effect of adding two LHWs supporting nurses in providing chronic disease care in each intervention clinic over 18 months. Control clinics continued with usual care. The main outcome measure was the change in the difference of percentage of clinic users who had elevated cardiovascular risk associated with high blood pressure (BP) before and after the intervention, as measured by two cross-sectional population surveys.

RESULTS: There was no improvement in BP control among users of intervention clinics as compared with control clinics. However, the LHWs improved clinic functioning, including overall attendance, and attendance on the correct day. All clinics faced numerous challenges, including rapidly increasing number of users of chronic care, unreliable BP machines and cuffs, intermittent drug shortages and insufficient space.

CONCLUSION: LHWs improved the process of providing care but improved BP control required improved clinical care by nurses which was compromised by large and increasing numbers of patients, the dominance of the vertically funded HIV programme and the poor standards of equipment in clinics.

49. Burnout and self-reported suboptimal patient care amongst health care workers providing HIV care in Malawi.
Kim, M. H., Mazenga, A. C., et al. PLoS One. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29466443

BACKGROUND: The well-documented shortages of health care workers (HCWs) in sub-Saharan Africa are further intensified by the increased human resource needs of expanding HIV treatment programs. Burnout is a syndrome of emotional exhaustion (EE), depersonalization (DP), and a sense of low personal accomplishment (PA). HCWs' burnout can negatively impact the delivery of health services. Our main objective was to examine the prevalence of burnout amongst HCWs in Malawi and explore its relationship to self-reported suboptimal patient care.

METHODS: A cross-sectional study among HCWs providing HIV care in 89 facilities, across eight districts in Malawi was conducted. Burnout was measured using the Maslach Burnout Inventory defined as scores in the mid-high range on the EE or DP subscales. Nine questions adapted for this study assessed self-reported suboptimal patient care. Surveys were administered anonymously and included socio-demographic and work-related questions. Validated questionnaires assessed depression and at-risk alcohol use. Chi-square test or two-sample t-test was used to explore associations between variables and self-reported suboptimal patient care. Bivariate analyses identified candidate variables ($p < 0.2$). Final regression models included variables with significant main effects.

RESULTS: Of 520 HCWs, 62% met criteria for burnout. In the three dimensions of burnout, 55% reported moderate-high EE, 31% moderate-high DP, and 46% low-moderate PA. The majority (89%) reported engaging in suboptimal patient care/attitudes including making mistakes in treatment not due to lack of knowledge/experience (52%), shouting at patients (45%), and not performing diagnostic tests due to a desire to finish quickly (35%). In multivariate analysis, only burnout remained associated with self-reported suboptimal patient care (OR 3.22, [CI 2.11 to 4.90]; $p<0.0001$).

CONCLUSION: Burnout was common among HCWs providing HIV care and was associated with self-reported suboptimal patient care practices/attitudes. Research is needed to understand factors that contribute to and protect against burnout and that inform the development of strategies to reduce burnout.

50. **Associations between healthcare worker participation in workplace wellness activities and job satisfaction, occupational stress and burnout: A cross-sectional study in Botswana.**
Ledikwe, J. H., Kleinman, N. J., et al. BMJ Open. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29549200

OBJECTIVES: Healthcare workers (HWs) are prone to high levels of stress and burnout, particularly when caring for people with HIV/AIDS. This study assessed whether participation in Botswana's Workplace Wellness Programme (WWP) for HWs was associated with job satisfaction, occupational stress, well-being and burnout.

METHODS: Using multistage sampling, a paper-based questionnaire was distributed to 1856 randomly selected HWs at 135 public facilities across Botswana. Well-validated scales assessed key outcomes. Analysis of covariance models were built for psychosocial factors associated with WWP participation, controlling for associated demographics.

RESULTS: Response rate was 73% (n=1348). The majority of respondents were female (62%), not married (65%) and had children (84%). Mean age was 40.0 years (SD+/-9.9). Respondents were roughly split between participation in no WWP activities (29.4%), 1-6 WWP activities (38.9%) and seven or more WWP activities (31.7%) in the past year. High participation was associated with older age, being a doctor or other professional, working at hospitals or District Health Management Teams, working longer in health services or working longer at a facility. In unadjusted analyses, high participation was significantly associated ($P<0.05$) with higher satisfaction with overall job, work, supervision, promotion, pay and professional efficacy and lower stress, exhaustion and cynicism. All associations remained significant in controlled analyses except cynicism.

CONCLUSIONS: Results from this study suggest that participation in workplace wellness activities is associated with higher satisfaction with multiple job facets and lower stress, exhaustion and cynicism. Introduction of these activities may help ameliorate high occupational stress levels among HWs.

51. **Health without care? Vulnerability, medical brain drain, and health worker responsibilities in underserved contexts.**
Yuksekdag, Y. Health Care Anal. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/28224293

There is a consensus that the effects of medical brain drain, especially in the Sub-Saharan African countries, ought to be perceived as more than a simple misfortune. Temporary restrictions on the emigration of health workers from the region is one of the already existing policy measures to tackle the issue-while such a restrictive measure brings about the need for quite a justificatory work. A recent normative contribution to the debate by Gillian Brock provides a fruitful starting point. In the first step of her defence of emigration restrictions, Brock provides three reasons why skilled workers themselves would hold responsibilities to assist with respect to vital needs of their compatriots. These are fair reciprocity, duty to support vital institutions, and attending to the unintended harmful consequences of one's actions. While the first two are explained and also largely discussed in the literature, the third requires an explication on how and on which basis skilled workers would have a responsibility as such. In this article, I offer a vulnerability approach with its dependency aspect that may account for why the health workers in underserved contexts would have a responsibility to attend to the unintended side effects of their actions that may lead to a vital risk of harm for the population. I discuss HIV/AIDS care in Zimbabwe as a case in point in order to show that local health workers may have responsibilities to assist the population who are vulnerable to their mobility.

52. **"It is not possible to go inside and have a discussion": How fear of stigma affects delivery of community-based support for children's HIV care.**
Busza, J., Simms, V., et al. AIDS Care. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29494218

Caregivers mediate children's access to HIV care and their adherence to treatment. Support for caregivers may improve health outcomes in children, but fear of HIV stigma and discrimination can affect both uptake and delivery of support services. Within a trial evaluating community-based support for caregivers of newly HIV diagnosed children in Harare, Zimbabwe, we conducted a longitudinal qualitative study to explore how stigma affected delivery and acceptance of the intervention. We conducted semi-structured interviews with 36 caregivers, 15 children, and 20 community health workers (CHWs). Children and caregivers described experiencing or witnessing stigma and discrimination, causing some to resist home visits by CHWs. Anxiety around stigma made it difficult for CHWs to promote key messages. In response, CHWs adapted the intervention by meeting caregivers outside the home, pretending to be friends or relatives, and proactively counteracting stigmatising beliefs. As members of local communities, some CHWs shared concerns about discrimination. HIV stigma can hinder "getting a foot over the threshold" in community-based programmes, particularly for households most affected by discrimination and thus least likely to engage with services. For community support programmes to be effective, stigma-related resistance should be addressed from the outset, including CHWs' own concerns regarding HIV stigma.

53. **Community health workers' experiences of using video teaching tools during home visits-a pilot study.**

Coetzee, B., Kohrman, H., et al. Health Soc Care Community. 2018.

Innovations in health, such as the use of tablet computers, show promise in broadening the scope of work of community health workers (CHWs), and play an important role in keeping CHWs and their clients up to date with advancements in health. While the use of mobile phones and tablets is innovative, the applicability of these technologies in different contexts remains poorly understood. Furthermore, little is known about the acceptability and feasibility of the use of video teaching tools on such devices across diverse contexts. In this study, we aimed to explore the acceptability and feasibility of using tablets with teaching videos (about HIV, alcohol, nutrition and breastfeeding) to support the health promotion efforts of 24 CHWs who work with pregnant mothers and mothers of young children in an urban township in South Africa. Between November 2015 and May 2016, we conducted focus groups and identified four key themes (with several sub-themes) that demonstrated factors related to the acceptability and feasibility of these devices and their content. Focus group transcripts were analysed thematically using qualitative data analysis software. The findings indicated that while the devices contained several supportive features (such as lightening the workload, and stimulating interest in their work), they also contained several restrictive features (safety and confidentiality). CHWs considered the video content an important tool to engage not only their clients but also family members and the community at large. Issues surrounding safety, privacy and confidentiality of using these devices require careful consideration prior to implementation in large-scale studies. Furthermore, stigma associated with household visits by CHWs and the nature of their work also need to be addressed by researchers and programme implementers. Overall, CHWs deemed the devices and the video content an acceptable and feasible means with which to provide health promotion and education among their clients.

Back to top

POLICYMAKERS/GOVERNMENT OFFICIALS (10)

54. **Leveraging tuberculosis case relative locations to enhance case detection and linkage to care in Swaziland.**
Brunetti, M., Rajasekharan, S., et al. Glob Health Res Policy. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29445773

BACKGROUND: In Swaziland, as in many high HIV/TB burden settings, there is not information available regarding the household location of TB cases for identifying areas of increased TB incidence, limiting the development of targeted interventions. Data from "Butimba", a TB REACH active case finding project, was re-analyzed to provide insight into the location of TB cases surrounding Mbabane, Swaziland.

OBJECTIVE: The project aimed to identify geographical areas with high TB burdens to inform active case finding efforts.

METHODS: Butimba implemented household contact tracing; obtaining landmark based, informal directions, to index case homes, defined here as relative locations. The relative locations were matched to census enumeration areas (known location reference areas) using the Microsoft Excel Fuzzy Lookup function. Of 403 relative locations, an enumeration area reference was detected in 388 (96%). TB cases in each census enumeration area and the active case finders in each Tinkhundla, a local governmental region, were mapped using the geographic information system, QGIS 2.16.

RESULTS: Urban Tinkhundla predictably accounted for most cases; however, after adjusting for population, the highest density of cases was found in rural Tinkhundla. There was no correlation between the number of active case finders currently assigned to the 7 Tinkhundla surrounding Mbabane and the total number of TB cases (Spearman rho = -0.57, p = 0.17) or the population adjusted TB cases (Spearman rho = 0.14, p = 0.75) per Tinkhundla.

DISCUSSION: Reducing TB incidence in high-burden settings demands novel analytic approaches to study TB case locations. We demonstrated the feasibility of linking relative locations to more precise geographical areas, enabling data-driven guidance for National Tuberculosis Programs' resource allocation. In collaboration with the Swazi National Tuberculosis Control Program, this analysis highlighted opportunities to better align the active case finding national strategy with the TB disease burden.

55. **Piloting very early infant diagnosis of HIV in Lesotho: Acceptability and feasibility among mothers, health workers and laboratory personnel.**
Gill, M. M., Mofenson, L. M., et al. PLoS One. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29415011

INTRODUCTION: Mortality associated with in-utero HIV infection rises rapidly within weeks after birth. Very early infant diagnosis of HIV (VEID)-testing within 2 weeks of birth-followed by immediate initiation of antiretroviral therapy has potential to avert mortality associated with in-utero transmission. However, our understanding of acceptability and feasibility of VEID is limited.

METHODS: VEID was piloted in an observational prospective cohort of HIV-positive pregnant women and their infants in 13 Lesotho health facilities. Between March-July 2016, semi-structured interviews were conducted with HIV-positive women attending 6-week or 14-week postnatal visits and health workers (HWs) in 8 study facilities in 3 districts as well as with district and central laboratory staff. Interview themes included

acceptability of birth and subsequent HIV testing and early treatment, perceived VEID challenges, and HIV birth testing procedures and how well they were performed.

RESULTS: Interviews were conducted with 20 women, 18 HWs and 9 district/central laboratory staff. Nearly all mothers perceived knowing their child's HIV status at birth positively. Mothers and HWs did not indicate that birth testing affected subsequent acceptance of infant HIV testing or clinic attendance. HWs and laboratory staff reported weak follow-up systems for mothers with home deliveries, and concern regarding the increased workload associated with additional testing requirements. All groups reported turnaround time delays for EID, and that sometimes results were never received.

CONCLUSIONS: Women, HWs, and laboratory staff found VEID acceptable and were supportive of national implementation of birth testing. However, they identified challenges within the EID system that could be exacerbated by adding a test to the diagnostic algorithm, such as delays in receiving test results, suggesting VEID may not be feasible in certain settings. Policymakers will need to consider whether adding birth testing or strengthening the current clinic and laboratory system is the most appropriate course of action.

56. HIV testing in a South African emergency department: A missed opportunity.
Hansoti, B., Stead, D., et al. PLoS One. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29534077

BACKGROUND: South Africa has the largest HIV epidemic in the world, with 19% of the global number of people living with HIV, 15% of new infections and 11% of AIDS-related deaths. Even though HIV testing is mandated in all hospital-based facilities in South Africa (SA), it is rarely implemented in the Emergency Department (ED). The ED provides episodic care to large volumes of undifferentiated who present with unplanned injury or illness. Thus, the ED may provide an opportunity to capture patients with undiagnosed HIV infection missed by clinic-based screening programs.

METHODS AND FINDINGS: In this prospective exploratory study, we implemented the National South African HIV testing guidelines (counselor initiated non-targeted universal screening with rapid point of care testing) for 24-hours a day at Frere Hospital in the Eastern Cape from September 1st to November 30th, 2016. The purpose of our study was to quantify the burden of undiagnosed HIV infection in a South African ED setting, Furthermore, we sought to evaluate the effectiveness of the nationally recommended HIV testing strategy in the ED. All patients who presented for care in the ED during the study period, and who were clinically stable and fully conscious, were eligible to be approached by HIV counseling and testing (HCT) staff to receive a rapid point-of-care HIV test. A total of 2355 of the 9583 (24.6%) patients who presented to the ED for care during the study period were approached by the HCT staff, of whom 1714 (72.8%) accepted HIV testing. There was a high uptake of HIV testing (78.6%) among a

predominantly male (58%) patient group who mostly presented with traumatic injuries (70.8%). Four hundred (21.6%) patients were HIV positive, including 115 (6.2%) with newly diagnosed HIV infection. The overall prevalence of HIV infection was twice as high in females (29.8%) compared to males (15.4%). Both sexes had a similar prevalence of newly diagnosed HIV infection (6.0% for all females and 6.4% for all males) in the ED.

CONCLUSIONS: Overall there was high HIV testing acceptance by ED patients. A non-targeted testing approached revealed a high HIV prevalence with a significant burden of undiagnosed HIV infection in the ED. Unfortunately, a counselor-driven HIV testing approach fell short of meeting the testing needs in this setting, with over 75% of ED patients not approached by HCT staff.

57. **Progress towards the UNAIDS 90-90-90 goals by age and gender in a rural area of Kwazulu-Natal, South Africa: A household-based community cross-sectional survey.** Huerga, H., Van Cutsem, G., et al. BMC Public Health. 2018. https://www.ncbi.nlm.nih.gov/pubmed/29499668

BACKGROUND: The Joint United Nations Programme on HIV/AIDS (UNAIDS) has developed an ambitious strategy to end the AIDS epidemic. After eight years of antiretroviral therapy (ART) program we assessed progress towards the UNAIDS 90-90-90 targets in Mbongolwane and Eshowe, KwaZulu-Natal, South Africa.

METHODS: We conducted a cross-sectional household-based community survey using a two-stage stratified cluster probability sampling strategy. Persons aged 15-59 years were eligible. We used face-to-face interviewer-administered questionnaires to collect information on history of HIV testing and care. Rapid HIV testing was performed on site and venous blood specimens collected from HIV-positive participants for antiretroviral drug presence test, CD4 count and viral load. At the time of the survey the CD4 threshold for ART initiation was 350 cells/muL. We calculated progression towards the 90-90-90 UNAIDS targets by estimating three proportions: HIV positive individuals who knew their status (first 90), those diagnosed who were on ART (second 90), and those on ART who were virally suppressed (third 90).

RESULTS: We included 5649/6688 (84.5%) individuals. Median age was 26 years (IQR: 19-40), 62.3% were women. HIV prevalence was 25.2% (95% CI: 23.6-26.9): 30.9% (95% CI: 29.0-32.9) in women; 15.9% (95% CI: 14.0-18.0) in men. Overall progress towards the 90-90-90 targets was as follows: 76.4% (95% CI: 74.1-78.6) knew their status, 69.9% (95% CI: 67.0-72.7) of those who knew their status were on ART and 93.1% (95% CI: 91.0-94.8) of those on ART were virally suppressed. By sex, progress towards the 90-90-90 targets was: 79%-71%-93% among women; and 68%-68%-92% among men (p-values of women and men comparisons were < 0.001, 0.443 and 0.584 respectively). By age, progress was: 83%-75%-95% among individuals aged 30-59 years and 64%-58%-89% among those aged 15-29 years (p-values of age groups comparisons were < 0.001, < 0.001 and 0.011 respectively).

CONCLUSIONS: In this context of high HIV prevalence, significant progress has been achieved with regards to reaching the UNAIDS 90-90-90 targets. The third 90, viral suppression in people on ART, was achieved among women and men. However, gaps persist in HIV diagnosis and ART coverage particularly in men and individuals younger than 30 years. Achieving 90-90-90 is feasible but requires additional investment to reach youth and men.

58. **Economic costs and health-related quality of life outcomes of hospitalised patients with high HIV prevalence: A prospective hospital cohort study in Malawi.**
Maheswaran, H., Petrou, S., et al. PLoS One. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29543818

INTRODUCTION: Although HIV infection and its associated co-morbidities remain the commonest reason for hospitalisation in Africa, their impact on economic costs and health-related quality of life (HRQoL) are not well understood. This information is essential for decision-makers to make informed choices about how to best scale-up anti-retroviral treatment (ART) programmes. This study aimed to quantify the impact of HIV infection and ART on economic outcomes in a prospective cohort of hospitalised patients with high HIV prevalence.

METHODS: Sequential medical admissions to Queen Elizabeth Central Hospital, Malawi, between June-December 2014 were followed until discharge, with standardised classification of medical diagnosis and estimation of healthcare resources used. Primary costing studies estimated total health provider cost by medical diagnosis. Participants were interviewed to establish direct non-medical and indirect costs. Costs were adjusted to 2014 US$ and INT$. HRQoL was measured using the EuroQol EQ-5D. Multivariable analyses estimated predictors of economic outcomes.

RESULTS: Of 892 eligible participants, 80.4% (647/892) were recruited and medical notes found. In total, 447/647 (69.1%) participants were HIV-positive, 339/447 (75.8%) were on ART prior to admission, and 134/647 (20.7%) died in hospital. Mean duration of admission for HIV-positive participants not on ART and HIV-positive participants on ART was 15.0 days (95%CI: 12.0-18.0) and 12.2 days (95%CI: 10.8-13.7) respectively, compared to 10.8 days (95%CI: 8.8-12.8) for HIV-negative participants. Mean total provider cost per hospital admission was US$74.78 (bootstrap 95%CI: US$25.41-US$124.15) higher for HIV-positive than HIV-negative participants. Amongst HIV-positive participants, the mean total provider cost was US$106.87 (bootstrap 95%CI: US$25.09-US$106.87) lower for those on ART than for those not on ART. The mean total direct non-medical and indirect cost per hospital admission was US$87.84. EQ-5D utility scores were lower amongst HIV-positive participants, but not significantly different between those on and not on ART.

CONCLUSIONS: HIV-related hospital care poses substantial financial burdens on health systems and patients; however, per-admission costs are substantially lower for those already initiated onto ART prior to admission. These potential cost savings could offset some of the additional resources needed to provide universal access to ART.

59. A tale of two countries: Progress towards UNAIDS 90-90-90 targets in Botswana and Australia.
Marukutira, T., Stoove, M., et al. J Int AIDS Soc. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29508945

UNAIDS 90-90-90 targets and Fast-Track commitments are presented as precursors to ending the AIDS epidemic by 2030, through effecting a 90% reduction in new HIV infections and AIDS-related deaths from 2010 levels (HIV epidemic control). Botswana, a low to middle-income country with the third-highest HIV prevalence, and Australia, a low-prevalence high-income country with an epidemic concentrated among men who have sex with men (MSM), have made significant strides towards achieving the UNAIDS 90-90-90 targets. These two countries provide lessons for different epidemic settings. This paper discusses the lessons that can be drawn from Botswana and Australia with respect to their success in HIV testing, treatment, viral suppression and other HIV prevention strategies for HIV epidemic control. Botswana and Australia are on target to achieving the 90-90-90 targets for HIV epidemic control, made possible by comprehensive HIV testing and treatment programmes in the two countries. As of 2015, 70% of all people assumed to be living with HIV had viral suppression in Botswana and Australia. However, HIV incidence remains above one per cent in the general population in Botswana and in MSM in Australia. The two countries have demonstrated that rapid HIV testing that is accessible and targeted at key and vulnerable populations is required in order to continue identifying new HIV infections. All citizens living with HIV in both countries are eligible for antiretroviral therapy (ART) and viral load monitoring through government-funded programmes. Notwithstanding their success in reducing HIV transmission to date, programmes in both countries must continue to be supported at current levels to maintain epidemic suppression. Scaled HIV testing, linkage to care, universal ART, monitoring patients on treatment over and above strengthened HIV prevention strategies (e.g. male circumcision and pre-exposure prophylaxis) will all continue to require funding. The progress that Botswana and Australia have made towards meeting the 90-90-90 targets is commendable. However, in order to reduce HIV incidence significantly towards 2030, there is a need for sustained HIV testing, linkage to care and high treatment coverage. Botswana and Australia provide useful lessons for developing countries with generalized epidemics and high-income countries with concentrated epidemics.

60. Community mobilization and maternal care of women living with HIV in poor settings: The case of Mfuwe, Zambia.
Muzyamba, C., Groot, W., et al. BMC Health Serv Res. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29499703

BACKGROUND: Research has shown that community mobilization is a useful strategy in promoting maternal care of HIV negative women in resource poor settings; however, similar evidence for women living with HIV is missing. Therefore, in this study we provide this evidence by exploring the relevance of community mobilization in the promotion of maternal health care among women living with HIV in resource-poor settings by using Mfuwe, a rural district in Zambia as a case study.

METHODS: By relying on Focus Group Discussions (FGDs), qualitative data were collected from Mfuwe, Zambia. The data were digitally recorded, transcribed and later translated from CheChewa (local language) to English. We relied on Thematic analysis to analyze the data.

RESULTS: By focusing on community mobilization, our results showed that within their social fabrics, resource-poor communities often contain unrecognized and sometimes ignored strategies which are contextually-feasible and have been used for generations to promote maternal care for HIV positive women. Further, it was evident that although the three forms of community mobilization were largely and uniquely useful in promoting maternal health care of women living with HIV, they also presented unique and various shortcomings.

CONCLUSION: We demonstrated that community mobilization was largely and often characterized as a force for good (e.g. providing support, improving access to maternal care etc.) and sometimes for bad (e.g. reinforced harmful misconceptions, superstition and stigma). Thus we recommend that community mobilization needs to be factored into maternal health care policies for HIV positive women in resource poor settings either to optimize their potential benefits or to minimize their potential harm.

61. **HIV treatment eligibility expansion and timely antiretroviral treatment initiation following enrollment in HIV care: A meta-regression analysis of programmatic data from 22 countries.**
Tymejczyk, O., Brazier, E., et al. PLoS Med. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29570723

BACKGROUND: The effect of antiretroviral treatment (ART) eligibility expansions on patient outcomes, including rates of timely ART initiation among those enrolling in care, has not been assessed on a large scale. In addition, it is not known whether ART eligibility expansions may lead to "crowding out" of sicker patients.

METHODS AND FINDINGS: We examined changes in timely ART initiation (within 6 months) at the original site of HIV care enrollment after ART eligibility expansions among 284,740 adult ART-naive patients at 171 International Epidemiology Databases to Evaluate AIDS (IeDEA) network sites in 22 countries where national policies expanding ART eligibility were introduced between 2007 and 2015. Half of the sites

included in this analysis were from Southern Africa, one-third were from East Africa, and the remainder were from the Asia-Pacific, Central Africa, North America, and South and Central America regions. The median age of patients enrolling in care at contributing sites was 33.5 years, and the median percentage of female patients at these clinics was 62.5%. We assessed the 6-month cumulative incidence of timely ART initiation (CI-ART) before and after major expansions of ART eligibility (i.e., expansion to treat persons with CD4 </= 350 cells/muL [145 sites in 22 countries] and CD4 </= 500 cells/muL [152 sites in 15 countries]). Random effects metaregression models were used to estimate absolute changes in CI-ART at each site before and after guideline expansion. The crude pooled estimate of change in CI-ART was 4.3 percentage points (95% confidence interval [CI] 2.6 to 6.1) after ART eligibility expansion to CD4 </= 350, from a baseline median CI-ART of 53%; and 15.9 percentage points (pp) (95% CI 14.3 to 17.4) after ART eligibility expansion to CD4 </= 500, from a baseline median CI-ART of 57%. The largest increases in CI-ART were observed among those newly eligible for treatment (18.2 pp after expansion to CD4 </= 350 and 47.4 pp after expansion to CD4 </= 500), with no change or small increases among those eligible under prior guidelines (CD4 </= 350: -0.6 pp, 95% CI -2.0 to 0.7 pp; CD4 </= 500: 4.9 pp, 95% CI 3.3 to 6.5 pp). For ART eligibility expansion to CD4 </= 500, changes in CI-ART were largest among younger patients (16-24 years: 21.5 pp, 95% CI 18.9 to 24.2 pp). Key limitations include the lack of a counterfactual and difficulty accounting for secular outcome trends, due to universal exposure to guideline changes in each country.

CONCLUSIONS: These findings underscore the potential of ART eligibility expansion to improve the timeliness of ART initiation globally, particularly for young adults.

62. Multi-type violence exposures and adolescent antiretroviral non-adherence in South Africa.
Cluver, L., Meinck, F., et al. Aids. 2018.

OBJECTIVE(S): HIV-positive adolescents have low ART-adherence, with consequent increased risks of mortality, morbidity and viral resistance. Despite high rates of violence against children in the Africa region, no known studies have tested impacts on HIV-positive adolescents. We examine associations of ART-adherence with adolescent violence victimisation by caregivers, teachers, peers, community members, and healthcare providers**.**

DESIGN AND METHODS: HIV-positive adolescents were interviewed (n = 1060), and clinic biomarker data collected. We sampled all 10-19 year olds ever ART-initiated within 53 clinics in 180 South African communities (90.1% reached). Analyses examined associations between non-adherence and 9 violence types using sequential multivariate logistic regressions. Interactive and additive effects were tested with regression and marginal effects.

RESULTS: Past-week self-reported ART non-adherence was 36%. Non-adherence correlated strongly with virologic failure (OR 2.3, CI 1.4-3.8) and symptomatic pulmonary tuberculosis (OR 1.49, CI 1.18.2.05). Four violence types were independently associated with non-adherence: physical abuse by caregivers (OR 1.5, CI 1.1-2.1); witnessing domestic violence (OR 1.8, CI 1.22-2.66); teacher violence (OR 1.51, CI 1.16-1.96,) and verbal victimisation by healthcare staff (OR 2.15, CI 1.59-2.93). Past-week non-adherence rose from 25% with no violence, to 73.5% with four types of violence exposure.

CONCLUSIONS: Violence exposures at home, school and clinic are major and cumulating risks for adolescent antiretroviral non-adherence. Prevention, mitigation, and protection services may be essential for the health and survival of HIV-positive adolescents.

63. **Adolescent lives matter: Preventing HIV in adolescents.**
Pettifor, A., Stoner, M., et al. Curr Opin HIV AIDS. 2018.

PURPOSE OF REVIEW: Many of the almost 2 million HIV infections that occurred globally in the last year occurred among adolescents and young people, particularly those from East and Southern Africa and within key populations. Global HIV epidemic control will require that new infections among these youth populations be curtailed. This review examines the most effective prevention approaches to reach these adolescent populations in the next 5 years.

RECENT FINDINGS: Adolescents are in transition and are developmentally unique. They have specific needs and challenges, which if not addressed will result in less than successful interventions. Tailored, layered, combination prevention packages that take into account specific adolescent needs and involve biomedical, behavioural and structural components are recommended. These packages should be designed for and with the meaningful input of adolescents, and involve their peers in their implementation and execution. Where possible, age-appropriate health and social interventions that go beyond HIV should be bundled and offered in a variety of community-based venues that are already acceptable to and frequented by adolescents.

SUMMARY: It is urgent that we reach adolescents globally with the most effective HIV prevention approaches. HIV prevention investment in this population has immediate and longer-term benefits.

Back to top

RESEARCHERS (21)

64. **Contexts of vulnerability and the acceptability of new biomedical HIV prevention technologies among key populations in South Africa: A qualitative study.**

Atujuna, M., Newman, P. A., et al. PLoS One. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29420549

BACKGROUND: New biomedical prevention technologies (NPTs) may contribute to substantially reducing incident HIV infections globally. We explored acceptability and preferences for NPTs among key and other vulnerable populations in two South African townships.

METHODS: We conducted six focus groups and 12 in-depth interviews with adolescents, and adult heterosexual men, women, and men who have sex with men (MSM) (n = 48), and eight in-depth interviews with key informant healthcare workers. The interview guide described pre-exposure prophylaxis (PrEP), vaginal rings, rectal microbicides and HIV vaccines, and explored acceptability and product preferences. Focus groups and in-depth interviews (45-80 minutes) were conducted in Xhosa, audiotaped, and transcribed and translated into English. Data were coded and reviewed using framework analysis with NVivo software.

RESULTS: Overall, initial enthusiasm and willingness to use NPTs evolved into concerns about how particular NPTs might affect or require alterations in one's everyday lifestyle and practices. Different product preferences and motivations emerged by population based on similarity to existing practices and contexts of vulnerability. Adult women and female adolescents preferred a vaginal ring and HIV vaccine, motivated by longer duration of protection to mitigate feared repercussions from male partners, including threats to their marriage and safety, and a context of ubiquitous rape. Male adolescents preferred an HIV vaccine, seen as protection in serodiscordant relationships and convenient in obviating the HIV stigma and cost involved in buying condoms. Adult men preferred PrEP, given familiarity with oral medications and mistrust of injections, seen as enabling serodiscordant couples to have a child. MSM preferred a rectal microbicide given familiarity with gel-based lubricants, with concerns about duration of protection in the context of unplanned consensual sex and rape.

CONCLUSIONS: Biomedical interventions to prevent HIV transmission, rather than obviating social-structural factors that produce vulnerability, may be limited by these same factors. Implementation of NPTs should engage local communities to understand real-world constraints and strategize to deliver effective, multi-level combination prevention.

65. **Mobility and increased risk of HIV acquisition in South Africa: A mixed-method systematic review protocol.**
Dzomba, A., Govender, K., et al. Syst Rev. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29486798

BACKGROUND: In South Africa (home of the largest HIV epidemic globally), there are high levels of mobility. While studies produced in the recent past provide useful

perspectives to the mobility-HIV risk linkage, systematic analyses are needed for in-depth understanding of the complex dynamics between mobility and HIV risk. We plan to undertake an evidence-based review of existing literature connecting mobility and increased risky sexual behavior as well as risk of HIV acquisition in South Africa.

METHODS/DESIGN: We will conduct a mixed-method systematic review of peer-reviewed studies published between 2000 and 2015. In particular, we will search for relevant South African studies from the following databases: MEDLINE, EMBASE, Web of Science, and J-STOR databases. Studies explicitly examining HIV and labor migration will be eligible for inclusion, while non-empirical work and other studies on key vulnerable populations such as commercial sex workers (CSW) and men who have sex with men (MSM) will be excluded.

DISCUSSION: The proposed mixed-method systematic review will employ a three-phase sequential approach [i.e., (i) identifying relevant studies through data extraction (validated by use of Distiller-SR data management software), (ii) qualitative synthesis, and (iii) quantitative synthesis including meta-analysis data]. Recurrent ideas and conclusions from syntheses will be compiled into key themes and further processed into categories and sub-themes constituting the primary and secondary outcomes of this study. Synthesis of main findings from different studies examining the subject issue here may uncover important research gaps in this literature, laying a strong foundation for research and development of sustainable localized migrant-specific HIV prevention strategies in South Africa.

66. **Collaborative care for the detection and management of depression among adults receiving antiretroviral therapy in South Africa: Study protocol for the CobALT randomised controlled trial.**
Fairall, L., Petersen, I., et al. Trials. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29566739

BACKGROUND: The scale-up of antiretroviral treatment (ART) programmes has seen HIV/AIDS transition to a chronic condition characterised by high rates of comorbidity with tuberculosis, non-communicable diseases (NCDs) and mental health disorders. Depression is one such disorder that is associated with higher rates of non-adherence, progression to AIDS and greater mortality. Detection and treatment of comorbid depression is critical to achieve viral load suppression in more than 90% of those on ART and is in line with the recent 90-90-90 Joint United Nations Programme on HIV/AIDS (UNAIDS) targets. The CobALT trial aims to provide evidence on the effectiveness and cost-effectiveness of scalable interventions to reduce the treatment gap posed by the growing burden of depression among adults on lifelong ART.

METHODS: The study design is a pragmatic, parallel group, stratified, cluster randomised trial in 40 clinics across two rural districts of the North West Province of

South Africa. The unit of randomisation is the clinic, with outcomes measured among 2000 patients on ART who screen positive for depression using the Patient Health Questionnaire (PHQ-9). Control group clinics are implementing the South African Department of Health's Integrated Clinical Services Management model, which aims to reduce fragmentation of care in the context of rising multimorbidity, and which includes training in the Primary Care 101 (PC101) guide covering communicable diseases, NCDs, women's health and mental disorders. In intervention clinics, we supplemented this with training specifically in the mental health components of PC101 and clinical communications skills training to support nurse-led chronic care. We strengthened the referral pathways through the introduction of a clinic-based behavioural health counsellor equipped to provide manualised depression counselling (eight sessions, individual or group), as well as adherence counselling sessions (one session, individual). The co-primary patient outcomes are a reduction in PHQ-9 scores of at least 50% from baseline and viral load suppression rates measured at 6 and 12 months, respectively.

DISCUSSION: The trial will provide real-world effectiveness of case detection and collaborative care for depression including facility-based counselling on the mental and physical outcomes for people on lifelong ART in resource-constrained settings**.**

67. The Montreal Cognitive Assessment-Basic (MoCA-B) is not a reliable screening tool for cognitive decline in HIV patients receiving combination antiretroviral therapy in rural South Africa.

Hakkers, C. S., Beunders, A. J. M., et al. Int J Infect Dis. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29183843

BACKGROUND: HIV-associated neurocognitive disorders (HAND) are frequently occurring comorbidities in HIV-positive patients, diagnosed by means of a neuropsychological assessment (NPA). Due to the magnitude of the HIV-positive population in Sub-Saharan Africa, easy-to-use cognitive screening tools are essential.

METHODS: This was a cross-sectional clinical trial involving 44 HIV-positive patients (on stable cART) and 73 HIV-negative controls completing an NPA, the International HIV Dementia Scale (IHDS), and a culturally appropriate cognitive screening tool, the Montreal Cognitive Assessment-Basic (MoCA-B). HAND were diagnosed by calculating Z-scores using internationally published normative data on NPA, as well as by using data from the HIV-negative group to validate the MoCA-B.

RESULTS: One hundred and seventeen patients were included (25% male, median age 35 years, median 11 years of education). A moderate correlation was found between the MoCA-B and NPA total Z-score (Pearson's r=0.36, p=0.02). Area under the curve (AUC) values for MoCA-B and IHDS were 0.59 and 0.70, respectively. The prevalence of HAND in HIV-positive patients was 66% when calculating Z-scores using published normative data versus 48% when using the data from the present HIV-negative cohort.

CONCLUSION: The MoCA-B appeared not to be a valid screening tool for HAND in this setting. The prevalence of HAND in this setting is high, but appeared overestimated when using published norms.

68. **Impact of the dapivirine vaginal ring on sexual experiences and intimate partnerships of women in an HIV prevention clinical trial: Managing ring detection and hot sex.**
Laborde, N. D., Pleasants, E., et al. AIDS Behav. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29151197

Vaginally-inserted HIV prevention methods have been reported to impact the sexual experience for women and their partners, and hence impacts acceptability of and adherence to the method. We analyzed in-depth interviews and focus group discussions about participants' sexual experiences while wearing the ring, collected during the MTN-020/ASPIRE phase 3 safety and effectiveness trial of a dapivirine vaginal ring for HIV prevention in Malawi, South Africa, Uganda, and Zimbabwe. Most women reported that partners did not feel the ring during sex, however, women felt they had to manage their partners' interaction with or reaction to the ring. In maintaining positive relationships, women were concerned about partners' discovering ring use and about ensuring that partners had a good sexual experience with them. Finally women were concerned about how they themselves experienced sex with the ring. Some found that the ring made the vaginal environment more desirable for their partners and themselves.

69. **Tuberculosis control interventions targeted to previously treated people in a high-incidence setting: A modelling study.**
Marx, F. M., Yaesoubi, R., et al. Lancet Glob Health. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29472018

BACKGROUND: In high-incidence settings, recurrent disease among previously treated individuals contributes substantially to the burden of incident and prevalent tuberculosis. The extent to which interventions targeted to this high-risk group can improve tuberculosis control has not been established. We aimed to project the population-level effect of control interventions targeted to individuals with a history of previous tuberculosis treatment in a high-incidence setting.

METHODS: We developed a transmission-dynamic model of tuberculosis and HIV in a high-incidence setting with a population of roughly 40 000 people in suburban Cape Town, South Africa. The model was calibrated to data describing local demography, TB and HIV prevalence, TB case notifications and treatment outcomes using a Bayesian calibration approach. We projected the effect of annual targeted active case finding in all individuals who had previously completed tuberculosis treatment and targeted active case finding combined with lifelong secondary isoniazid preventive therapy. We estimated the effect of these targeted interventions on local tuberculosis incidence, prevalence, and mortality over a 10-year period (2016-25).

FINDINGS: We projected that, under current control efforts in this setting, the tuberculosis epidemic will remain in slow decline for at least the next decade. Additional interventions targeted to previously treated people could greatly accelerate these declines. We projected that annual targeted active case finding combined with secondary isoniazid preventive therapy in those who previously completed tuberculosis treatment would avert 40% (95% uncertainty interval [UI] 21-56) of incident tuberculosis cases and 41% (16-55) of tuberculosis deaths occurring between 2016 and 2025.

INTERPRETATION: In this high-incidence setting, the use of targeted active case finding in combination with secondary isoniazid preventive therapy in previously treated individuals could accelerate decreases in tuberculosis morbidity and mortality. Studies to measure cost and resource implications are needed to establish the feasibility of this type of targeted approach for improving tuberculosis control in settings with high tuberculosis and HIV prevalence.

70. **Inpatient mortality rates during an era of increased access to HIV testing and ART: A prospective observational study in Lilongwe, Malawi.**
Matoga, M. M., Rosenberg, N. E., et al. PLoS One. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29415015

BACKGROUND: In the era of increased access to HIV testing and antiretroviral treatment (ART), the impact of HIV and ART status on inpatient mortality in Malawi is unknown.

METHODS: We prospectively followed adult inpatients at Kamuzu Central Hospital medical wards in Lilongwe, Malawi, between 2011 and 2012, to evaluate causes of mortality, and the impact of HIV and ART status on mortality. We divided the study population into five categories: HIV-negative, new HIV-positive, ART-naive patients, new ART-initiators, and ART-experienced. We used multivariate binomial regression models to compare risk of death between categories.

RESULTS: Among 2911 admitted patients the mean age was 38.5 years, and 50% were women. Eighty-one percent (81%) of patients had a known HIV status at the time of discharge or death. Mortality was 19.4% and varied between 13.9% (HIV-negative patients) and 32.9% (HIV-positive patients on ART </=1 year). In multivariable analyses adjusted for age, sex and leading causes of mortality, being new HIV-positive (RR = 1.64 95% CI: 1.16-2.32), ART-naive (RR = 2.28 95% CI: 1.66-2.32) or being a new ART-initiator (RR = 2.41 95% CI: 1.85-3.14) were associated with elevated risk of mortality compared to HIV-negative patients. ART-experienced patients had comparable mortality (RR = 1.33 95% CI: 0.94-1.88) to HIV-negative patients.

CONCLUSION: HIV related mortality remains high among medical inpatients, especially among HIV-positive patients who recently initiated ART or have not started ART yet.

71. **Readiness for antiretroviral therapy: Implications for linking HIV-infected individuals to care and treatment.**
Maughan-Brown, B., Smith, P., et al. AIDS Behav. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/28752353

Using survey data collected immediately after referral for ART (N = 87), this study examined ART-readiness among individuals (18 years and older) attending a mobile health clinic in South Africa. Most participants reported being very ready (84%) and motivated (85%) to start ART, but only 72% were assessed as ready for ART on all measures. Treatment readiness was lower among individuals who did not think they would test HIV-positive (aOR 0.26, $p < 0.05$) and among individuals who reported being in good health (aOR 0.44, $p < 0.1$). In contrast, higher readiness was associated with better ART knowledge (aOR 4.31, $p < 0.05$) and knowing someone who had experienced positive health effects from ART (aOR 2.65, $p < 0.05$). Results indicate that post-test counselling will need to be designed to deal with surprise at HIV diagnosis, and that health messaging needs to be carefully crafted to support uptake of ART among HIV-positive but healthy individuals. Further research is needed on effective post-test counselling approaches and effective framing of health messaging to increase awareness of the multiple positive benefits of early ART initiation and corresponding readiness to engage in treatment.

72. **Comparing dedicated and designated models of integrating mental health into chronic disease care: Study protocol for a cluster randomized controlled trial.**
Myers, B., Lund, C., et al. Trials. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29548302

BACKGROUND: In low- and middle-income countries (LMIC), it is uncertain whether a "dedicated" approach to integrating mental health care (wherein a community health worker (CHW) has the sole responsibility of delivering mental health care) or a "designated" approach (wherein a CHW provides this service in addition to usual responsibilities) is most effective and cost-effective. This study aims to compare the effectiveness and cost-effectiveness of these two models of service integration relative to treatment as usual (TAU) for improving mental health and chronic disease outcomes among patients with HIV or diabetes.

METHODS/DESIGN: This is a cluster randomised trial. We will randomise 24 primary health care facilities in the Western Cape Province of South Africa to one of three study arms. Within each cluster, we will recruit 25 patients from HIV and 25 from diabetes services for a total sample of 1200 participants. Eligible patients will be aged 18 years or older, take medication for HIV or diabetes, and screen positive on the Alcohol Use Disorder Identification Test for hazardous/harmful alcohol use or depression on the Centre for Epidemiology Scale on Depression. Participants recruited in clinics assigned to the designated or dedicated approach will receive three sessions of motivational interviewing and problem-solving therapy, while those recruited at TAU-assigned clinics

will be referred for further assessment. Participants will complete an interviewer-administered questionnaire at baseline, and at 6 and 12 months post-enrolment to assess change in self-reported outcomes. At these end points, we will test HIV RNA viral load for participants with HIV and HbA1c levels for participants with diabetes. Primary outcomes are reductions in self-reported hazardous/harmful alcohol use and risk of depression. Secondary outcomes are improvements in adherence to chronic disease treatment, biomarkers of chronic disease outcomes, and health-related quality of life. Mixed-effect linear regression models will model the effect of the interventions on primary and secondary outcomes. The cost-effectiveness of each approach will be assessed using incremental cost-effectiveness ratios.

DISCUSSION: Study findings will guide decision-making around how best to integrate mental health counselling into chronic disease care in a LMIC setting.

73. **Household point of care CD4 testing and isoniazid preventive therapy initiation in a household TB contact tracing programme in two districts of South Africa.**
Page-Shipp, L., Lewis, J. J., et al. PLoS One. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29499060

BACKGROUND: In South Africa, TB household contact tracing provides an opportunity for increased TB and HIV case finding. We aimed to determine the effect of two new potential interventions for TB contact tracing programmes: Point of Care CD4 (PoC CD4) on HIV linkage to care and household Isoniazid Preventive Therapy (IPT) provision on uptake and retention of IPT.

METHODS: A pragmatic, three-arm, cluster-randomized trial was undertaken. TB Household contacts were randomised to 3 arms: 1) Standard of Care TB and HIV testing (SOC); 2) SOC with POC CD4 for those testing HIV positive; 3) SOC with POC CD4 and IPT for eligible household members. Linkage to care within 90 days was assessed either through patient visits (at 10 weeks and 6 months) or via telephonic contact.

RESULTS: 2,243 index TB patients and 3,012 contacts (64,3% female, median age 30 years) were enrolled. On self-report, 26(1.2%) were currently receiving TB treatment and 1816 (60.3%) reported a prior HIV test. HIV testing uptake was 34.7% in the SoC arm, 40.2% in the PoC CD4 arm (RR1.16, CI 0.99-1.36, p-value = 0.060) and 39.9% in the PoC CD4 + HH-IPT arm (RR = 1.15, CI 0.99-1.35, p-value = 0.075). Linkage to care within 3 months was 30.8% in the SoC arm and 42.1% in the POC CD4 arms (RR 1.37; CI: 0.68-2.76, p-value = 0.382). 20/21 contacts (95.2%) initiated IPT in the PoC CD4 + HH-IPT arm, compared to 3/20 (15.0%) in the PoC CD4 arm (p = 0.004; p-value from Fisher's exact test < 0.001). Among 3,008 contacts screened for tuberculosis, 15 (3.4%) had bacteriologically confirmed TB with an overall yield of TB of 0.5% (95% CI: 0.3%, 0.8%).

CONCLUSIONS: Household PoC CD4 testing and IPT initiation is feasible. There was only weak evidence that PoCCD4 led to a small increase in HCT uptake and no evidence for

an increase in linkage-to-care. IPT initiation and completion was increased by the household intervention. Although feasible, these interventions had low impact due to the low uptake of HIV testing in households.

74. **Age-related differences in socio-demographic and behavioral determinants of HIV testing and counseling in HPTN 043/NIMH Project Accept.**
Salazar-Austin, N., Kulich, M., et al. AIDS Behav. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/28589504

Youth represent a large proportion of new HIV infections worldwide, yet their utilization of HIV testing and counseling (HTC) remains low. Using the post-intervention, cross-sectional, population-based household survey done in 2011 as part of HPTN 043/NIMH Project Accept, a cluster-randomized trial of community mobilization and mobile HTC in South Africa (Soweto and KwaZulu Natal), Zimbabwe, Tanzania and Thailand, we evaluated age-related differences among socio-demographic and behavioral determinants of HTC in study participants by study arm, site, and gender. A multivariate logistic regression model was developed using complete individual data from 13,755 participants with recent HIV testing (prior 12 months) as the outcome. Youth (18-24 years) was not predictive of recent HTC, except for high-risk youth with multiple concurrent partners, who were less likely (aOR 0.75; 95% CI 0.61-0.92) to have recently been tested than youth reporting a single partner. Importantly, the intervention was successful in reaching men with site specific success ranging from aOR 1.27 (95% CI 1.05-1.53) in South Africa to aOR 2.30 in Thailand (95% CI 1.85-2.84). Finally, across a diverse range of settings, higher education (aOR 1.67; 95% CI 1.42, 1.96), higher socio-economic status (aOR 1.21; 95% CI 1.08-1.36), and marriage (aOR 1.55; 95% CI 1.37-1.75) were all predictive of recent HTC, which did not significantly vary across study arm, site, gender or age category (18-24 vs. 25-32 years).

75. **Late presentation with HIV in Africa: Phenotypes, risk, and risk stratification in the reality trial.**
Siika, A., McCabe, L., et al. Clin Infect Dis. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29514235

BACKGROUND: Severely immunocompromised human immunodeficiency virus (HIV)-infected individuals have high mortality shortly after starting antiretroviral therapy (ART). We investigated predictors of early mortality and "late presenter" phenotypes.

METHODS: The Reduction of EArly MortaLITY (REALITY) trial enrolled ART-naive adults and children >/=5 years of age with CD4 counts <100 cells/microL initiating ART in Uganda, Zimbabwe, Malawi, and Kenya. Baseline predictors of mortality through 48 weeks were identified using Cox regression with backwards elimination (exit P > .1).

RESULTS: Among 1711 included participants, 203 (12%) died. Mortality was independently higher with older age; lower CD4 count, albumin, hemoglobin, and grip

strength; presence of World Health Organization stage 3/4 weight loss, fever, or vomiting; and problems with mobility or self-care at baseline (all P < .04). Receiving enhanced antimicrobial prophylaxis independently reduced mortality (P = .02). Of five late-presenter phenotypes, Group 1 (n = 355) had highest mortality (25%; median CD4 count, 28 cells/microL), with high symptom burden, weight loss, poor mobility, and low albumin and hemoglobin. Group 2 (n = 394; 11% mortality; 43 cells/microL) also had weight loss, with high white cell, platelet, and neutrophil counts suggesting underlying inflammation/infection. Group 3 (n = 218; 10% mortality) had low CD4 counts (27 cells/microL), but low symptom burden and maintained fat mass. The remaining groups had 4%-6% mortality.

CONCLUSIONS: Clinical and laboratory features identified groups with highest mortality following ART initiation. A screening tool could identify patients with low CD4 counts for prioritizing same-day ART initiation, enhanced prophylaxis, and intensive follow-up.

76. Prevalence of sexually transmitted infections and bacterial vaginosis among women in sub-Saharan Africa: An individual participant data meta-analysis of 18 HIV prevention studies.

Torrone, E. A., Morrison, C. S., et al. PLoS Med. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29485986

BACKGROUND: Estimates of sexually transmitted infection (STI) prevalence are essential for efforts to prevent and control STIs. Few large STI prevalence studies exist, especially for low- and middle-income countries (LMICs). Our primary objective was to estimate the prevalence of chlamydia, gonorrhea, trichomoniasis, syphilis, herpes simplex virus type 2 (HSV-2), and bacterial vaginosis (BV) among women in sub-Saharan Africa by age, region, and population type.

METHODS AND FINDINGS: We analyzed individual-level data from 18 HIV prevention studies (cohort studies and randomized controlled trials; conducted during 1993-2011), representing >37,000 women, that tested participants for >/=1 selected STIs or BV at baseline. We used a 2-stage meta-analysis to combine data. After calculating the proportion of participants with each infection and standard error by study, we used a random-effects model to obtain a summary mean prevalence of each infection and 95% confidence interval (CI) across ages, regions, and population types. Despite substantial study heterogeneity for some STIs/populations, several patterns emerged. Across the three primary region/population groups (South Africa community-based, Southern/Eastern Africa community-based, and Eastern Africa higher-risk), prevalence was higher among 15-24-year-old than 25-49-year-old women for all STIs except HSV-2. In general, higher-risk populations had greater prevalence of gonorrhea and syphilis than clinic/community-based populations. For chlamydia, prevalence among 15-24-year-olds was 10.3% (95% CI: 7.4%, 14.1%; I2 = 75.7%) among women specifically recruited from higher-risk settings for HIV in Eastern Africa and was 15.1% (95% CI: 12.7%, 17.8%; I2 = 82.3%) in South African clinic/community-based populations. Among

clinic/community-based populations, prevalence was generally greater in South Africa than in Southern/Eastern Africa for most STIs; for gonorrhea, prevalence among 15-24-year-olds was 4.6% (95% CI: 3.3%, 6.4%; I2 = 82.8%) in South Africa and was 1.7% (95% CI: 1.2%, 2.6%; I2 = 55.2%) in Southern/Eastern Africa. Across the three primary region/population groups, HSV-2 and BV prevalence was high among 25-49-year-olds (ranging from 70% to 83% and 33% to 44%, respectively). The main study limitation is that the data are not from random samples of the target populations.

CONCLUSIONS: Combining data from 18 HIV prevention studies, our findings highlight important features of STI/BV epidemiology among sub-Saharan African women. This methodology can be used where routine STI surveillance is limited and offers a new approach to obtaining critical information on STI and BV prevalence in LMICs.

77. **'Taking care' in the age of AIDS: Older rural South Africans' strategies for surviving the HIV epidemic.**
Angotti, N., Mojola, S. A., et al. Cult Health Sex. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/28741983

Older adults have been largely overlooked in community studies of HIV in highly endemic African countries. In our rural study site in Mpumalanga Province, South Africa, HIV prevalence among those aged 50 and older is 16.5%, suggesting that older adults are at risk of both acquiring and transmitting HIV. This paper utilises community-based focus-group interviews with older rural South African men and women to better understand the normative environment in which they come to understand and make decisions about their health as they age in an HIV endemic setting. We analyse the dimensions of an inductively emerging theme: ku ti hlayisa (to take care of yourself). For older adults, 'taking care' in an age of AIDS represented: (1) an individualised pathway to achieving old-age respectability through the taking up of responsibilities and behaviours that characterise being an older person, (2) a set of gendered norms and strategies for reducing one's HIV risk, and (3) a shared responsibility for attenuating the impact of the HIV epidemic in the local community. Findings reflect the individual, interdependent and communal ways in which older rural South Africans understand HIV risk and prevention, ways that also map onto current epidemiological thinking for improving HIV-related outcomes in high-prevalence settings.

78. **Daily and non-daily pre-exposure prophylaxis in African women (HPTN 067/ADAPT Cape Town Trial): a randomised, open-label, phase 2 trial.**
Bekker, L. G., Roux, S., et al. Lancet HIV. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/28986029

BACKGROUND: The relative feasibility and acceptability of daily versus non-daily dosing of oral HIV pre-exposure prophylaxis (PrEP) among women are unknown. We aimed to investigate the feasibility of non-daily PrEP regimens in adult women.

METHODS: We did a randomised, open-label, phase 2 clinical trial (HPTN 067/ADAPT) of oral PrEP with emtricitabine plus tenofovir disoproxil fumarate at a research centre in Cape Town, South Africa. Participants were adult women (age >/=18 years) who received directly observed dosing once a week for 5 weeks followed by random assignment (1:1:1) at week 6 to one of three unblinded PrEP regimens for self-administered dosing over 24 weeks: daily; time-driven (twice a week plus a post-sex dose); or event-driven (one tablet both before and after sex). Primary outcomes were PrEP coverage (at least one dose within the 4 days before sex and one dose within 24 h after sex), pills needed or used to achieve regimen-specific adherence and coverage, and symptoms and side-effects. All analyses were by intention to treat. This trial is registered with ClinicalTrials.gov, number NCT01327651; the trial is completed and this report presents the final analysis.

FINDINGS: Between Sept 12, 2011, and Oct 3, 2012, 191 women were enrolled to the trial. 178 (93%) completed directly observed dosing and were randomly assigned one of the three PrEP regimens for the self-administered phase: 59 were allocated the daily regimen, 59 the time-driven regimen, and 60 the event-driven regimen. Median age of women was 26 years (IQR 21-37; range 18-52). In women allocated the daily regimen, 1459 (75%) of 1952 sex events were covered by PrEP, compared with 599 (56%) of 1074 sex events among those assigned the time-driven regimen (odds ratio [OR] 2.35, 95% CI 1.43-3.83; p=0.0007) and 798 (52%) of 1542 sex events among those allotted the event-driven regimen (2.76, 1.68-4.53; p<0.0001). Fewer pills were needed for complete adherence in women allocated non-daily regimens (vs daily regimen, relative mean 2.53 [95% CI 2.39-2.69] for the time-driven regimen and 4.16 [3.59-4.82] for the event-driven regimen; p<0.0001). Side-effects were uncommon. Eight HIV seroconversions occurred overall, with four documented during the self-administered phase (two with the time-driven regimen and two with the event-driven regimen). Adherence to the assigned regimen was 75% (7283 of 9652 doses taken) for women allocated the daily regimen compared with 65% for those assigned the time-driven regimen (2367 of 3616 doses taken; p=0.0028) and 53% for those allotted the event-driven regimen (1161 of 2203 doses taken; p<0.0001). When sex was reported in the previous week, PrEP drugs were detected (above the lower limits of quantification) more frequently in women assigned the daily regimen (73 [68%] of 107 samples) than in those allocated the time-driven regimen (42 [58%] of 72 samples) and the event-driven regimen (41 [41%] of 99 samples).

INTERPRETATION: Daily PrEP dosing resulted in higher coverage of sex events, increased adherence to the regimen, and augmented drug concentrations than did either time-driven or event-driven dosing. These findings support recommendations for daily use of PrEP with oral emtricitabine plus tenofovir disoproxil fumarate in women.

79. A social network analysis of HIV treatment partners and patient viral suppression in Botswana.
Bogart, L. M., Mosepele, M., et al. J Acquir Immune Defic Syndr. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29465627

OBJECTIVE: Many national HIV guidelines recommend that healthcare providers encourage patients to identify a treatment partner from their social network to support antiretroviral therapy adherence. The present study examined associations of patient and treatment partner characteristics with patient viral suppression in Botswana. DESIGN: 131 patients [67 (51.1%) virally suppressed, 64 (48.9%) not suppressed] and their treatment partners were recruited for cross-sectional interviews from one HIV clinic.

METHODS: Participants completed surveys assessing social network, socio-demographic, and psychosocial characteristics. Open-ended questions explored treatment partner relationship quality.

RESULTS: Multivariate logistic regressions indicated a higher likelihood of viral suppression among patients who reported greater average emotional closeness to their network members [OR (95% CI)=3.8(1.3-11.5), p=.02], and whose treatment partners were spouses/partners [OR (95% CI)=2.6 (1.0-6.7), p=.04]. Qualitative analyses indicated that treatment partners of suppressed patients provided both medical and non-medical support, whereas treatment partners of unsuppressed patients focused mainly on adherence reminders and appointment accompaniment. Treatment partners, especially of unsuppressed patients, requested ongoing training and counseling skills.

CONCLUSIONS: Additional research is needed to further explore effective characteristics of treatment partners, in order to inform HIV treatment guidelines. Standard training for treatment partners could include medical-related information as well as counseling education.

80. HIV risks and needs related to the Sustainable Development Goals among female sex workers who were commercially sexually exploited as children in Lesotho.
Grosso, A., Busch, S., et al. J Int AIDS Soc. 2018.

INTRODUCTION: Sustainable Development Goals (SDGs) about gender equality; decent work; and peace, justice, and strong institutions include a focus on eradicating trafficking and sexual exploitation of and violence against women and children. In Lesotho, 86% of women have experienced gender-based violence. In addition, overall HIV prevalence is among the highest globally, and higher among adolescent girls than boys. Moreover, nearly three quarters of female sex workers (FSW) are estimated to be living with HIV in Lesotho. In this context, sexually exploited children may be particularly vulnerable to violence and HIV acquisition risks. This study's objective is to examine the

prevalence and correlates of experiencing sexual exploitation as a child among FSW in Lesotho.

METHODS: FSW (>/=18 years) recruited through respondent-driven sampling in Maseru and Maputsoe from February to September 2014 completed HIV and syphilis testing and an interviewer-administered survey, including a question about the age at which they started providing sex for money. This study examined correlates of experiencing sexual exploitation as a child (<18 years) through multivariable logistic regression analyses for each city, controlling for current age.

RESULTS: Across both cities, 20.0% (142/710) of participants were sexually exploited as children. Among them, 65.5% (93/142) tested positive for HIV and 31.0% (44/142) for syphilis, which was similar to those who started selling sex as adults, after adjusting for current age. Participants who experienced child sexual exploitation were more likely to have been forced to have sex before age 18 than those who started selling sex as adults (Maseru-adjusted odds ratio (aOR): 3.52, 95% Confidence Interval (CI): 1.61 to 7.66, p = 0.002; Maputsoe-aOR: 4.39, 95% CI: 1.22 to 15.75, p = 0.023). In Maseru, participants who were sexually exploited as children were more likely to avoid carrying condoms to prevent trouble with police (aOR: 3.18, 95% CI: 1.50 to 6.75, p = 0.003).

CONCLUSIONS: Risk determinants for HIV and violence among sexually exploited children can be studied retrospectively through research with adult FSW. Further research working directly with sexually exploited children will improve understanding of their needs. Preventing commercial sexual exploitation of children and addressing the social and healthcare needs of those who are exploited are necessary to fully achieve SDGs 5, 8 and 16 and an AIDS-Free Generation.

81. Retention and mortality on antiretroviral therapy in Sub-Saharan Africa: Collaborative analyses of HIV treatment programmes.
Haas, A. D., Zaniewski, E., et al. J Int AIDS Soc. 2018.

INTRODUCTION: By 2020, 90% of all people diagnosed with HIV should receive long-term combination antiretroviral therapy (ART). In sub-Saharan Africa, this target is threatened by loss to follow-up in ART programmes. The proportion of people retained on ART long-term cannot be easily determined, because individuals classified as lost to follow-up, may have self-transferred to another HIV treatment programme, or may have died. We describe retention on ART in sub-Saharan Africa, first based on observed data as recorded in the clinic databases, and second adjusted for undocumented deaths and self-transfers.

METHODS: We analysed data from HIV-infected adults and children initiating ART between 2009 and 2014 at a sub-Saharan African HIV treatment programme participating in the International epidemiology Databases to Evaluate AIDS (IeDEA). We used the Kaplan-Meier to calculate the cumulative incidence of retention on ART and

the Aalen-Johansen to calculate the cumulative incidences of death, loss to follow-up, and stopping ART. We used inverse probability weighting to adjust clinic data for undocumented mortality and self-transfer, based on estimates from a recent systematic review and meta-analysis.

RESULTS: We included 505,634 patients: 12,848 (2.5%) from Central Africa, 109,233 (21.6%) from East Africa, 347,343 (68.7%) from Southern Africa and 36,210 (7.2%) from West Africa. In crude analyses of observed clinic data, 52.1% of patients were retained on ART, 41.8% were lost to follow-up and 6.0% had died 5 years after ART initiation. After accounting for undocumented deaths and self-transfers, we estimated that 66.6% of patients were retained on ART, 18.8% had stopped ART and 14.7% had died at 5 years.

CONCLUSIONS: Improving long-term retention on ART will be crucial to attaining the 90% on ART target. Naive analyses of HIV cohort studies, which do not account for undocumented mortality and self-transfer of patients, may severely underestimate both mortality and retention on ART.

82. **Discordance, disclosure and normative gender roles: Barriers to couple testing within a community-level HIV self-testing intervention in urban Blantyre, Malawi.**
Kumwenda, M. K., Corbett, E. L., et al. AIDS Behav. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/29411227

A community-based HIV self-testing study in Blantyre, Malawi demonstrated that not all individuals living in couples tested with their partner. We describe factors dissuading individuals in couples from self-testing with their partner. Data were drawn from qualitative study exploring consequences of HIV self-testing within couples. In-depth interviews were conducted with 33 individuals living in couples who tested alone. Participants expressed fear of dealing with HIV-discordant relationships. Failure to self-test with a partner was correlated with gender, with more men than women overtly declining or unconsciously unable to have joint HIV self-test. Men feared exposure of infidelity and were often not available at home for economic reasons. Barriers to uptake of couple HIV self-testing seemed to be shaped by gendered dichotomies of social-relationships. To help achieve the first 90% of the UNAIDS 90:90:90 goals, it is important to overcome structural barriers to realise the full potential of HIV self-testing.

83. **A conditional economic incentive fails to improve linkage to care and antiretroviral therapy initiation among HIV-positive adults in Cape Town, South Africa.**
Maughan-Brown, B., Smith, P., et al. AIDS Patient Care STDs. 2018.

Interventions to improve antiretroviral therapy (ART) access are urgently needed to maximize the multiple benefits from ART. This pilot study examined the effect of a conditional economic incentive on linkage to care and uptake of treatment following ART referral by a mobile health clinic. Between April 2015 and May 2016, 86 individuals

(>/=18 years old) referred for ART in a resource-limited setting were randomized (1:1) to a control group or to an incentive: R300 cash (approximately $23, or 3.5 days minimum wage in the domestic worker sector), conditional upon starting ART within 3 months. Outcome data were obtained from clinic records. The incentive effects on linkage to care (first clinic visit within 3 months) and ART initiation (treatment uptake within 3 months) were assessed using logistic regression. Overall, 67% linked to care and 42% initiated ART within 3 months after referral. No significant differences were found between the incentive and non-incentive group in terms of linkage to care [adjusted odds ratio (aOR): 0.70, 95% confidence interval (CI): 0.26-1.91] and initiation of ART (aOR: 0.67, 95% CI: 0.26-1.78). Ordinary least-squares regression analysis showed that incentivized individuals linked to care in fewer days (-7.9, 95% CI: -18.09 to 2.26) and started treatment in fewer days (-7.3, 95% CI: -27.01 to 12.38), but neither result was statistically significant. Our findings demonstrate poor treatment uptake by both the intervention and control participants and further highlight the challenge in achieving universal early treatment access. Further research is required to understand how economic incentives, which have been shown to have many benefits, can be applied to improve linkage to HIV care and treatment.

84. Distinctive barriers to antiretroviral therapy adherence among non-adherent adolescents living with HIV in Botswana.
Yang, E., Mphele, S., et al. AIDS Care. 2018.
https://www.ncbi.nlm.nih.gov/pubmed/28643572

Levels of adherence to HIV treatment are lower among adolescents compared with older and younger individuals receiving similar therapies. We purposely sampled the most and least adherent adolescents from a 300-adolescent longitudinal HIV treatment adherence study in Gaborone, Botswana. Multiple objective and subjective measures of adherence were available and study participants were selected based on sustained patterns of either excellent or poor adherence over a one-year period. Focus group discussions (FGD) and in-depth interviews (IDI) were conducted with the adolescents and a subset of their caregivers with the goal of revealing barriers and facilitators of adherence. Focus groups were segregated by adherence classification of the participants. Following coding of transcripts, matrices were developed based on participants' adherence classifications in order to clarify differences in themes generated by individuals with different adherence characteristics. 47 adolescents and 25 adults were included. The non-adherent adolescents were older than the adherent adolescents (median age 18 years (IQR 16-19) vs. 14 years (IQR 12-15 years)), with median time on treatment near 10 years in both groups. Interference with daily activities, concerns about stigma and discrimination, side effects, denial of HIV status, and food insecurity arose as challenges to adherence among both those who were consistently adherent and those who were poorly-adherent to their medications. Low outcome expectancy, treatment fatigue, mental health and substance use problems, and mismatches between desired and received social support were discussed only among poorly adherent adolescents and their caregivers. Challenges raised only among

adolescents and caregivers in the non-adherent groups are hypothesis-generating, identifying areas that may have a greater contribution to poor outcomes than challenges faced by both adherent and non-adherent adolescents. The contribution of these factors to poor outcomes should be explored in future studies.

Back to top