



Quarterly Research Digest on HIV and Key Populations

September 2017

The LINKAGES Project is pleased to provide this quarterly compilation of article abstracts from the peer-reviewed literature related to HIV and key populations in Africa, Asia and Pacific, Eastern Europe, Latin America, the Caribbean, and the Middle East. Abstracts are grouped by key population (people who inject drugs, men who have sex with men, sex workers, and transgender people). For open access articles, we include the link to the full text.

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Key Populations General - 3

1. Gall, J., et al. **"Global Trends of Monitoring and Data Collection on the HIV Response among Key Populations Since the 2001 UN Declaration of Commitment on HIV/AIDS."** *AIDS Behav* 2017 21(Suppl 1): 34-43.

Monitoring and evaluation indicators for HIV programs' response to the epidemic among key populations (sex workers, people who inject drugs, men who have sex with men, transgender people) are critical for reviewing the global response. From the beginning of global reporting, insufficiency of data has been a challenge for monitoring the epidemic response among key populations. However, key populations were only indirectly referenced in the 2001 Declaration of Commitment. By the 2006 Political Declaration on HIV/AIDS, data from key populations were still not required from every country, and were sparsely reported compared to other indicators. The 2011 Political Declaration on HIV/AIDS referenced key populations by name for the first time. In 2006, fewer than twenty countries (10%) reported HIV prevalence among key populations, whereas in 2012 the number of countries surpassed sixty (30%).

2. Laar, A., et al. **"Key populations and human rights in the context of HIV services rendition in Ghana."** *BMC Int Health Hum Rights* 2017 17(1): 20. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5541754/pdf/12914_2017_Article_129.pdf

BACKGROUND: In line with its half century old penal code, Ghana currently criminalizes and penalizes behaviors of some key populations - populations deemed to be at higher risk of acquiring or transmitting Human Immunodeficiency Virus (HIV). Men who have sex with men (MSM), and sex workers (SWs) fit into this categorization. This paper provides an analysis of how enactment and implementation of rights-limiting laws not only limit rights, but also amplify risk and vulnerability to HIV in key and general populations. The paper derives from a project that assessed the ethics sensitivity of key documents guiding Ghana's response to its HIV epidemic. Assessment was guided by leading frameworks from public health ethics, and relevant articles from the international bill of rights.

DISCUSSION: Ghana's response to her HIV epidemic does not adequately address the rights and needs of key populations. Even though the national response has achieved some public health successes, palpable efforts to address rights issues remain nascent. Ghana's guiding documents for HIV response include no advocacy for decriminalization, depenalization or harm reduction approaches for these key populations. The impact of rights-restricting codes on the nation's HIV epidemic is real: criminalization impedes key populations' access to HIV prevention and treatment services. Given that they are bridging populations, whatever affects the Ghanaian key populations directly, affects the general population indirectly. The right to the highest attainable standard of health, without qualification, is generally acknowledged as a fundamental human right. Unfortunately, this right currently eludes the Ghanaian SW and MSM. The paper endorses decriminalization as a means of promoting this right. In the face of opposition to decriminalization, the paper proposes specific harm reduction strategies as approaches to promote health and uplift the diminished rights of key populations. Thus the authors call on Ghana to remove impediments to public health services provision to these populations. Doing so will require political will and sufficient planning toward prioritizing HIV prevention, care and treatment programming for key populations.

3. Maheu-Giroux, M., et al. "Population-level impact of an accelerated HIV response plan to reach the UNAIDS 90-90-90 target in Cote d'Ivoire: Insights from mathematical modeling." *PLoS Med* 2017 14(6): e1002321. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5472267/pdf/pmed.1002321.pdf>

BACKGROUND: National responses will need to be markedly accelerated to achieve the ambitious target of the Joint United Nations Programme on HIV/AIDS (UNAIDS). This target aims for 90% of HIV-positive individuals to be aware of their status, for 90% of those aware to receive antiretroviral therapy (ART), and for 90% of those on treatment to have a suppressed viral load by 2020, with each individual target reaching 95% by 2030. We aimed to estimate the impact of various treatment-as-prevention scenarios in Cote d'Ivoire, one of the countries with the highest HIV incidence in West Africa, with unmet HIV prevention and treatment needs, and where key populations are important to the broader HIV epidemic.

METHODS AND FINDINGS: An age-stratified dynamic model was developed and calibrated to epidemiological and programmatic data using a Bayesian framework. The model represents sexual and vertical HIV transmission in the general population, female sex workers (FSW), and men who have sex with men (MSM). We estimated the impact of scaling up interventions to reach the UNAIDS targets, as well as the impact of 8 other scenarios, on HIV transmission in adults and children, compared to our baseline scenario that maintains 2015 rates of testing, ART initiation, ART discontinuation, treatment failure, and levels of condom use. In 2015, we estimated that 52% (95% credible intervals: 46%-58%) of HIV-positive individuals were aware of their status, 72% (57%-82%) of those aware were on ART, and 77% (74%-79%) of those on ART were virologically suppressed. Reaching the UNAIDS targets on time would avert 50% (42%-60%) of new HIV infections over 2015-2030 compared to 30% (25%-36%) if the 90-90-90 target is reached in 2025. Attaining the UNAIDS targets in FSW, their clients, and MSM (but not in the rest of the population) would avert a similar fraction of new infections (30%; 21%-39%). A 25-percentage-point drop in condom use from the 2015 levels among FSW and MSM would reduce the impact of reaching the UNAIDS targets, with 38% (26%-51%) of infections averted. The study's main limitation is that homogenous spatial coverage of interventions was assumed, and future lines of inquiry should examine how geographical prioritization could affect HIV transmission.

CONCLUSIONS: Maximizing the impact of the UNAIDS targets will require rapid scale-up of interventions, particularly testing, ART initiation, and limiting ART discontinuation. Reaching clients of FSW, as well as key populations, can efficiently reduce transmission. Sustaining the high condom-use levels among key populations should remain an important prevention pillar.

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People Who Inject Drugs - 21

1. Li, L., et al. "**Alcohol Use, HIV Treatment Adherence, and Sexual Risk Among People with a History of Injecting Drug Use in Vietnam.**" *AIDS Behav* 2017.

Alcohol use can limit the effectiveness of antiretroviral therapy (ART) for people living with HIV (PLH) who have a history of injecting drug use. This study described the patterns of alcohol use among PLH with a history of injecting drug use in Vietnam and examined the relationships between alcohol use, adherence to ART, and sexual risks. We utilized cross-sectional data of 109 PLH on ART collected from a randomized controlled intervention trial in Vietnam. Approximately 30 and 46% of the participants were frequent and occasional drinkers, respectively. Frequent drinkers reported the highest number of missed medication days. About 61% of frequent drinkers reported having sex after using alcohol. Additionally, 23, 34, and 24% of nondrinkers, occasional drinkers, and frequent drinkers, respectively, reported inconsistent condom use during sex. Future intervention programs should address the issues of alcohol use and sexual risks to maximize the effectiveness of HIV treatment programs in Vietnam.

2. Ishizaki, A., et al. "**Discrepancies in prevalence trends for HIV, hepatitis B virus, and hepatitis C virus in Haiphong, Vietnam from 2007 to 2012.**" *PLoS One* 2017 12(6): e0179616. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5491323/pdf/pone.0179616.pdf>

We previously reported a significant reduction in the prevalence of human immunodeficiency virus type 1 (HIV) from 2007 to 2012 in people who inject drugs (PWID; 35.9% to 18.5%, $p < 0.001$) and female sex workers (FSW; 23.1% to 9.8%, $p < 0.05$), but not in blood donors (BD) or pregnant women, in Haiphong, Vietnam. Our aim in the present study was to assess trends in the prevalence of infection with hepatitis B and C viruses (HBV and HCV, respectively). We also investigated the coinfection rates of HBV and HCV with HIV in the same groups. Between 2007 and 2012, HBV prevalence was significantly decreased in BD (18.1% vs. 9.0%, $p = 0.007$) and slightly decreased in FSW (11.0% vs. 3.9%, $p = 0.21$), but not in PWID (10.7% vs. 11.1%, $p = 0.84$). HCV prevalence was significantly decreased in PWID (62.1% in 2007 vs. 42.7% in 2008, $p < 0.0001$), but it had rebounded to 58.4% in 2012 (2008 vs. 2012, $p < 0.0001$). HCV prevalence also increased in FSW: 28.6% in 2007 and 2009 vs. 35.3% in 2012; however, this difference was not significant (2007 vs. 2012, $p = 0.41$). Rates of coinfection with HBV and HCV among HIV-infected PWID and FSW did not change significantly during the study period. Our findings suggest that the current harm reduction programs designed to prevent HIV transmission in PWID and FSW may be insufficient to prevent the transmission of hepatitis viruses, particularly HCV, in Haiphong, Vietnam. New approaches, such as the introduction of catch-up HBV vaccination to vulnerable adult populations and the introduction of HCV treatment as prevention, should be considered to reduce morbidity and mortality due to HIV and hepatitis virus coinfection in Vietnam.

3. Balaji, D., et al. "**First Report of Gender Based Violence as a Deterrent to Methadone Access Among Females Who Use Heroin in Dar es Salaam, Tanzania.**" *AIDS Behav* 2017 21(7): 2093-2100.

High prevalence of human immunodeficiency virus (HIV) among females who use drugs in Dar es Salaam, Tanzania, contrasts strikingly with their low enrollment in HIV risk reduction services such as methadone

assisted therapy (MAT). We conducted a case-control study to examine factors associated with non-enrollment in MAT, with a focus on gender-based violence. We interviewed 202 female heroin users not enrolled in MAT as cases and 93 females enrolled in MAT. We fitted logistic regression models with MAT enrollment as the outcome of interest. The likelihood of MAT enrollment decreased upon being in a violent relationship [odds ratio (OR) 0.23; 95 % CI 0.11-0.40], with experience of discrimination by a healthcare provider (OR 0.11; 95 % CI 0.04-0.35), and having a partner who also uses drugs (OR 0.05; 95 % CI 0.01-0.26). The results indicate that violence and discrimination are major impediments to MAT enrollment, necessitating implementation of interventions to address them.

4. Gall, J., et al. **"Global Trends of Monitoring and Data Collection on the HIV Response among Key Populations Since the 2001 UN Declaration of Commitment on HIV/AIDS."** *AIDS Behav* 2017 21(Suppl 1): 34-43.

Monitoring and evaluation indicators for HIV programs' response to the epidemic among key populations (sex workers, people who inject drugs, men who have sex with men, transgender people) are critical for reviewing the global response. From the beginning of global reporting, insufficiency of data has been a challenge for monitoring the epidemic response among key populations. However, key populations were only indirectly referenced in the 2001 Declaration of Commitment. By the 2006 Political Declaration on HIV/AIDS, data from key populations were still not required from every country, and were sparsely reported compared to other indicators. The 2011 Political Declaration on HIV/AIDS referenced key populations by name for the first time. In 2006, fewer than twenty countries (10%) reported HIV prevalence among key populations, whereas in 2012 the number of countries surpassed sixty (30%).

5. Noroozi, M., et al. **"HIV Risk Perception and Risky Behavior Among People Who Inject Drugs in Kermanshah, Western Iran."** *Int J Behav Med* 2017 24(4): 613-618.

PURPOSE: Understanding and increasing awareness on individual risk for HIV infection as well as HIV risk perception's effects on different behavioral outcomes for people who inject drugs (PWID) is important for policymaking and planning purposes. The objectives of the present study were to determine whether HIV risk perception was associated with greater injection and sexual risk-taking behaviors among PWIDs.

METHOD: We surveyed 460 PWID in Kermanshah regarding their demographic characteristics, sexual risk behaviors, HIV risk perception, and drug-related risk behaviors in the month prior to the study. Three classes of HIV risk perception were identified using ordinal regression to determine factors associated with HIV risk perception.

RESULTS: Study participants were categorized as follows: "low" (n = 100, 22%), "moderate" (n = 150, 32%), and "high" (n = 210, 46%) risk perception for becoming infected with HIV. The odds of categorizing as "high" risk for HIV was significantly greater in PWID that reported unprotected sex (adjusted odds ratio (AOR) 2.4, p value 0.02), receptive syringe sharing (AOR 1.8, p value 0.01), and multiple sex partners (AOR 1.4, p value 0.03). PWID who reported unprotected sex had 2.7 times the odds of "high" risk perception when compared to PWID with "low" risk perception.

CONCLUSION: Findings show that PWID could rate their HIV risk with acceptable accuracy. Additionally, perceived HIV risk was associated with many risk factors for transmission of HIV, emphasizing the importance of developing targeted prevention and harm reduction programs for all domains of risk behaviors, both sexual and drug-related use.

6. Bazazi, A. R., et al. **"HIV Testing and awareness of HIV status among people who inject drugs in greater Kuala Lumpur, Malaysia."** *AIDS Care* 2017: 1-6.

HIV testing services are the gateway into HIV treatment and are critical for monitoring the epidemic. HIV testing is recommended at least annually in high-risk populations, including people who inject drugs (PWID). In Malaysia, the HIV epidemic is concentrated among PWID, but their adherence to testing

recommendations and the proportion of HIV-positive PWID who are aware of their status remain unknown. We recruited 460 PWID in Greater Kuala Lumpur using respondent-driven sampling and conducted HIV testing. We examined past testing behaviors, estimating testing frequency, correlates of testing in the past 12 months, and the proportion of those living with HIV who were aware of their status. Results showed that most PWID living with HIV (90.4%, 95% CI: 83.6%-95.9%) were aware of their status. Among those never previously diagnosed with HIV, few had accessed HIV testing in the past 12 months (14.3%, 95% CI: 11.1%-18.0%). Prison (57.0%) and compulsory drug detention centers (36.1%) were the primary locations where PWID reported ever being HIV tested, and the main correlate of recent testing in regression was recent criminal justice involvement. Although awareness of HIV status may be high among PWID living with HIV in Kuala Lumpur, testing occurs primarily in prisons and compulsory drug detention centers, where it is involuntary and linkage to care is limited. A shift in HIV testing policy is needed to align health and human rights objectives, replacing mandatory testing with voluntary testing in settings where individuals can be rapidly linked to HIV care.

7. Winter, J. R., et al. **"Injecting drug use predicts active tuberculosis in a national cohort of people living with HIV from 2000 to 2014."** *Aids* 2017.

OBJECTIVES: Tuberculosis (TB) is common in people living with HIV (PLHIV), leading to worse clinical outcomes including increased mortality. We investigated risk factors for developing TB following HIV diagnosis.

DESIGN: Adults aged ≥ 15 years first presenting to health services for HIV care in England, Wales or Northern Ireland from 2000-2014 were identified from national HIV surveillance data and linked to TB surveillance data.

METHODS: We calculated incidence rates for TB occurring >91 days after HIV diagnosis and investigated risk factors using multivariable Poisson regression.

RESULTS: 95,003 adults diagnosed with HIV were followed for 635,591 person-years (PY); overall incidence of TB was 344/100,000PY (95% confidence interval 330-359). TB incidence was high for people who acquired HIV through injecting drugs (PWID; men 876 [696-1,104], women 605 [528-593]) and black Africans born in high TB incidence countries (644 [612-677]). The adjusted incidence rate ratio (IRR) for TB amongst PWID was 4.79 [3.35-6.85] for men and 6.18 [3.49-10.93] for women, compared to men who have sex with men. The adjusted IRR for TB in black Africans from high-TB countries was 4.27 (3.42-5.33), compared to white UK-born individuals. Lower time-updated CD4 count was associated with increased rates of TB.

CONCLUSIONS: PWID had the greatest risk of TB; incidence rates were comparable to those in black Africans from high TB incidence countries. Most TB cases in PWID were UK-born, and likely acquired TB through transmission within the UK. Earlier HIV diagnosis and quicker initiation of ART should reduce TB incidence in these populations.

8. Simeone, C., et al. **"Integrated HIV care is associated with improved engagement in treatment in an urban methadone clinic."** *Addict Sci Clin Pract* 2017 12(1): 19. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5568716/pdf/13722_2017_Article_84.pdf

BACKGROUND: Persons living with HIV and unhealthy substance use are often less engaged in HIV care, have higher morbidity and mortality and are at increased risk of transmitting HIV to uninfected partners. We developed a quality-improvement tracking system at an urban methadone clinic to monitor patients along the HIV care continuum and identify patients needing intervention.

OBJECTIVE: To evaluate patient outcomes along the HIV Care Continuum at an urban methadone clinic and explore the relationship of HIV primary care site and patient demographic characteristics with retention in HIV treatment and viral suppression.

METHODS: We reviewed electronic medical record data from 2015 for all methadone clinic patients with known HIV disease, including age, gender, race, HIV care sites, HIV care visit dates and HIV viral load. Patients received either HIV primary care at the methadone clinic, an HIV specialty clinic located in the adjacent building, or a community clinic. Retention was defined as an HIV primary care visit in both halves of the year. Viral suppression was defined as an HIV viral load <40 copies/ml at the last lab draw.

RESULTS: The population (n = 65) was 63% male, 82% age 45 or older and 60% non-Caucasian. Of these 65 patients 77% (n = 50) were retained in care and 80% (n = 52) were virologically suppressed. Viral suppression was significantly higher for women (p = .022) and patients 45 years or older (p = .034). There was a trend towards greater retention in care and viral suppression among patients receiving HIV care at the methadone clinic (93, 93%) compared to the HIV clinic (74, 79%) or community clinics (62, 62%).

CONCLUSIONS: Retention in HIV care and viral suppression are high in an urban methadone clinic providing integrated HIV services. This quality improvement analysis supports integrating HIV primary care with methadone treatment services for this at-risk population.

9. Michel, L., et al. "**Intravenous heroin use in Haiphong, Vietnam: Need for comprehensive care including methamphetamine use-related interventions.**" *Drug Alcohol Depend* 2017 179: 198-204.

BACKGROUND: The aim of this study was to describe patterns among people who inject drugs (PWID), risk-related behaviours and access to methadone treatment, in order to design a large-scale intervention aiming to end the HIV epidemic in Haiphong, Vietnam.

METHODS: A respondent-driven sampling (RDS) survey was first conducted to identify profiles of drug use and HIV risk-related behaviour among PWID. A sample of PWID was then included in a one-year cohort study to describe access to methadone treatment and associated factors.

RESULTS: Among the 603 patients enrolled in the RDS survey, 10% were female, all were injecting heroin and 24% were using methamphetamine, including 3 (0.5%) through injection. Different profiles of risk-related behaviours were identified, including one entailing high-risk sexual behaviour (n=37) and another involving drug-related high-risk practices (n=22). High-risk sexual activity was related to binge drinking and methamphetamine use. Among subjects with low sexual risk, sexual intercourse with a main partner with unknown serostatus was often unprotected. Among the 250 PWID included in the cohort, 55.2% initiated methadone treatment during the follow-up (versus 4.4% at RDS); methamphetamine use significantly increased. The factors associated with not being treated with methadone after 52 weeks were fewer injections per month and being a methamphetamine user at RDS.

CONCLUSION: Heroin is still the main drug injected in Haiphong. Methamphetamine use is increasing markedly and is associated with delay in methadone initiation. Drug-related risks are low but sexual risk behaviours are still present. Comprehensive approaches are needed in the short term.

10. Farooq, S. A., et al. "**Opium trade and the spread of HIV in the Golden Crescent.**" *Harm Reduct J* 2017 14(1): 47. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5521118/pdf/12954_2017_Article_170.pdf

The Golden Crescent region of South Asia-comprising Afghanistan, Iran, and Pakistan-is a principal global site for opium production and distribution. Over the past few decades, war, terrorism, and a shifting political landscape have facilitated an active heroin trade throughout the region. Protracted conflict has exacerbated already dire socio-economic conditions and political strife within the region and contributed to a consequent rise in opiate trafficking and addiction among the region's inhabitants. The worsening epidemic of injection drug use has paralleled the rising incidence of HIV and other blood-borne infections in the region and drawn attention to the broader implications of the growing opiate trade in the Golden Crescent. The first step in addressing drug use is to recognize that it is not a character flaw but a form of mental illness, hence warranting humane treatment of drug users. It is also recommended that the governments of the Golden

Crescent countries encourage substitution of opium with licit crops and raise awareness among the general public about the perils of opium use.

11. Marcus, R., et al. "**Patient preferences and extended-release naltrexone: A new opportunity to treat opioid use disorders in Ukraine.**" *Drug Alcohol Depend* 2017 179: 213-219.

BACKGROUND: Scaling up HIV prevention for people who inject drugs (PWID) using opioid agonist therapies (OAT) in Ukraine has been restricted by individual and structural factors. Extended-release naltrexone (XR-NTX), however, provides new opportunities for treating opioid use disorders (OUDs) in this region, where both HIV incidence and mortality continue to increase.

METHODS: Survey results from 1613 randomly selected PWID from 5 regions in Ukraine who were currently, previously or never on OAT were analyzed for their preference of pharmacological therapies for treating OUDs. For those preferring XR-NTX, independent correlates of their willingness to initiate XR-NTX were examined.

RESULTS: Among the 1613 PWID, 449 (27.8%) were interested in initiating XR-NTX. Independent correlates associated with interest in XR-NTX included: being from Mykolaiv (AOR=3.7, 95% CI=2.3-6.1) or Dnipro (AOR=1.8, 95% CI=1.1-2.9); never having been on OAT (AOR=3.4, 95% CI=2.1-5.4); shorter-term injectors (AOR=0.9, 95% CI 0.9-0.98); and inversely for both positive (AOR=0.8, CI=0.8-0.9), and negative attitudes toward OAT (AOR=1.3, CI=1.2-1.4), respectively.

CONCLUSIONS: In the context of Eastern Europe and Central Asia where HIV is concentrated in PWID and where HIV prevention with OAT is under-scaled, new options for treating OUDs are urgently needed.

FINDINGS: here suggest that XR-NTX could become an option for addiction treatment and HIV prevention especially for PWID who have shorter duration of injection and who harbor negative attitudes to OAT. Decision aids that inform patient preferences with accurate information about the various treatment options are likely to guide patients toward better, patient-centered treatments and improve treatment entry and retention.

12. Bazzi, A. R., et al. "**Perspectives on biomedical HIV prevention options among women who inject drugs in Kenya.**" *AIDS Care* 2017: 1-4.

Due to heightened vulnerability to HIV from frequent engagement in sex work and overlapping drug-using and sexual networks, women who inject drugs should be a high priority population for pre-exposure prophylaxis (PrEP) and other biomedical HIV prevention tools. Kenya is one of the first African countries to approve oral PrEP for HIV prevention among "key populations," including people who inject drugs and sex workers. The objective of this study was to explore preferences and perceived challenges to PrEP adoption among women who inject drugs in Kisumu, Kenya. We conducted qualitative interviews with nine HIV-uninfected women who inject drugs to assess their perceptions of biomedical HIV interventions, including oral PrEP, microbicide gels, and intravaginal rings. Despite their high risk and multiple biomedical studies in the region, only two women had ever heard of any of these methods. All women were interested in trying at least one biomedical prevention method, primarily to protect themselves from partners who were believed to have multiple other sexual partners. Although women shared concerns about side effects and product efficacy, they did not perceive drug use as a significant deterrent to adopting or adhering to biomedical prevention methods. Beginning immediately and continuing throughout Kenya's planned PrEP rollout, efforts are urgently needed to include the perspectives of high risk women who use drugs in biomedical HIV prevention research and programming.

13. Tavitian-Exley, I., et al. "**Polydrug Use and Heterogeneity in HIV Risk Among People Who Inject Drugs in Estonia and Russia: A Latent Class Analysis.**" *AIDS Behav* 2017.

Non-medical drug injection is a major risk factor for HIV infection in Russia and Estonia. Multiple drug use

(polydrug) has further been associated with increased harms. We compared HIV, injecting and sexual risk associated with polydrug use among people who injected drugs (PWID) in 2012-2013 in Kohtla-Järve (Estonia, n = 591) and St Petersburg (Russia, n = 811). Using latent class analysis, we identified five (poly)drug classes, the largest consisting of single-drug injectors among whom an opioid was the sole drug injected (56% of PWID). The four remaining polydrug classes included polydrug-polyroute injectors who injected and used opiates and stimulants (9%), opiate-stimulant poly-injectors who injected amphetamine-type-stimulants with a primary opiate (7%) and opiate-opioid poly-injectors who injected opioids and opiates (16%). Non-injection stimulant co-users were injectors who also used non-injection stimulants (12%). In multivariable multinomial regressions, all four polydrug classes were associated with greater injection risks than single-drug injection, while opiate-stimulant and opiate-opioid poly-injection were also associated with having multiple sex partners. Riskier behaviours among polydrug-injectors suggest increased potential for transmission of blood-borne and sexually-transmitted infections. In addition to needles/syringes provision, services tailored to PWID drug and risk profiles, could consider drug-appropriate treatment and sexual risk reduction strategies to curb HIV transmission.

14. Azbel, L., et al. "A qualitative assessment of an abstinence-oriented therapeutic community for prisoners with substance use disorders in Kyrgyzstan." *Harm Reduct J* 2017 14(1): 43. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5504733/pdf/12954_2017_Article_168.pdf

BACKGROUND: Kyrgyzstan, where HIV is concentrated in prisons and driven by injection drug use, provides a prison-based methadone maintenance therapy program as well as abstinence-oriented therapeutic community based on the 12-step model called the "Clean Zone." We aimed to qualitatively assess how prisoners navigate between these treatment options to understand the persistence of the Clean Zone despite a lack of evidence to support its effectiveness in treating opioid use disorders.

METHODS: We conducted an analysis of policy documents and over 60 h of participant observation in February 2016, which included focus groups with a convenience sample of 20 therapeutic community staff members, 110 prisoners across three male and one female prisons, and qualitative interviews with two former Clean Zone participants. Field notes containing verbatim quotes from participants were analyzed through iterative reading and discussion to understand how participants generally perceive the program, barriers to entry and retention, and implications for future treatment within prisons.

RESULTS: Our analyses discerned three themes: pride in the mission of the Clean Zone, idealism regarding addiction treatment outcomes against all odds, and the demonization of methadone.

CONCLUSION: Despite low enrollment and lack of an evidence base, the therapeutic community is buttressed by the strong support of the prison administration and its clients as an "ordered" alternative to what is seen as chaotic life outside of the Clean Zone. The lack of services for Clean Zone patients after release likely contributes to high rates of relapse to drug use. The Clean Zone would benefit from integration of stabilized methadone patients combined with a post-release program.

15. Dumchev, K., et al. "Retention in medication-assisted treatment programs in Ukraine-Identifying factors contributing to a continuing HIV epidemic." *Int J Drug Policy* 2017 48: 44-53.

BACKGROUND: Opioid agonist treatments (OAT) are widely-used, evidence-based strategies for treating opioid dependence and reducing HIV transmission. The positive benefits of OAT are strongly correlated with time spent in treatment, making retention a key indicator for program quality. This study assessed patient retention and associated factors in Ukraine, where OAT was first introduced in 2004.

METHODS: Data from clinical records of 2916 patients enrolled in OAT at thirteen sites from 2005 to 2012 were entered into an electronic monitoring system. Survival analysis methods were used to determine the probability of retention and its correlates.

RESULTS: Twelve-month retention was 65.8%, improving from 27.7% in 2005, to 70.9% in 2011. In

multivariable analyses, the correlates of retention were receiving medium and high doses of medication (compared to low doses, dropout aHR=0.57 for both medium and high doses), having not been tested for HIV and tuberculosis (compared to not being tested, dropout aHR=4.44 and 3.34, respectively), and among those who were tested—a negative TB test result (compared to receiving a positive test result, dropout aHR=0.67).

CONCLUSION: Retention in Ukrainian OAT programs, especially in recent years, is comparable to other countries. The results confirm the importance of adequate OAT dosing (≥ 60 mg of methadone, ≥ 8 mg of buprenorphine). Higher dosing, however, will require interventions that address negative attitudes toward OAT by patients and providers. Interruption of OAT, in the case developing tuberculosis, should incorporate continuity of OAT for TB patients through integrated care delivery systems.

16. Duong, H. T., et al. "Risk Behaviors for HIV and HCV Infection Among People Who Inject Drugs in Hai Phong, Viet Nam, 2014." *AIDS Behav* 2017.

We examined the potential for HIV and hepatitis C (HCV) transmission across persons who inject drugs (PWID), men-who-have-sex-with-men (MSM) and female commercial sex workers (CSW) PWID and the potential for sexual transmission of HIV from PWID to the general population in Hai Phong, Viet Nam. Using respondent driven and convenience sampling we recruited 603 participants in 2014. All participants used heroin; 24% used non-injected methamphetamine. HIV prevalence was 25%; HCV prevalence was 67%. HIV infection was associated with HCV prevalence and both infections were associated with length of injecting career. Reported injecting risk behaviors were low; unsafe sexual behavior was high among MSM-PWID and CSW-PWID. There is strong possibility of sexual transmission to primary partners facilitated by methamphetamine use. We would suggest future HIV prevention programs utilize multiple interventions including "treatment as prevention" to potential sexual transmission of HIV among MSM and CSW-PWID and from PWID to the general population.

17. Sebastian, M. P., et al. "Service utilization and cost of implementing a comprehensive HIV prevention and care program among people who inject drugs in Delhi, India." *Harm Reduct J* 2017 14(1): 38. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5471911/pdf/12954_2017_Article_165.pdf

BACKGROUND: WHO, UNODC, and UNAIDS recommend a comprehensive package for prevention, treatment, and care of HIV among people who inject drugs (PWID). We describe the uptake of services and the cost of implementing a comprehensive package for HIV prevention, treatment, and care services in Delhi, India.

METHODS: A cohort of 3774 PWID were enrolled for a prospective HIV incidence study and provided the comprehensive package: HIV and hepatitis testing and counseling, hepatitis B (HB) vaccination, syndromic management of sexually transmitted infections, clean needles-syringes, condoms, abscess care, and education. Supplementary services comprising tea and snacks, bathing facilities, and medical consultations were also provided. PWID were referred to government services for antiretroviral therapy (ART), TB care, opioid substitution therapy, and drug dependence treatment/rehabilitation.

RESULTS: The project spent USD 1,067,629.88 over 36 months of project implementation: 1.7% on capital costs, 3.9% on participant recruitment, 26.7% for project management, 49.9% on provision of services, and 17.8% on supplementary services. Provision of HIV prevention and care services cost the project USD 140.41/PWID/year. 95.3% PWID were tested for HIV. Of the HIV-positive clients, only 17.8% registered for ART services after repeated follow-up. Reasons for not seeking ART services included not feeling sick, need for multiple visits to the clinic, and long waiting times. 61.8% of the PWID underwent HB testing. Of the 2106 PWID eligible for HB vaccination, 81% initiated the vaccination schedule, but only 29% completed all three doses, despite intensive follow-up by outreach workers. PWID took an average of 8 clean needles-syringes/PWID/year over the project duration, with a mid-project high of 16 needles-syringes/PWID/year. PWID continued to also procure needles from other sources, such as chemists. One hundred five PWID were referred to OST services and 267 for rehabilitation services.

CONCLUSIONS: A comprehensive HIV prevention, treatment, and care package is challenging to implement. Extensive efforts are needed to ensure the uptake of and retention in services for PWID; peer educators and outreach workers are required on a continuous basis. Services need to be tailored to client needs, considering clinic timing and distance from hotspots. Programs may consider provision of ART services at selected drop-in centers to increase uptake.

18. Boggiano, V. L., et al. "**Sexual behaviors among methadone maintenance patients in a mountainous area in northern Vietnam.**" *Subst Abuse Treat Prev Policy* 2017 12(1): 39. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5574107/pdf/13011_2017_Article_123.pdf

BACKGROUND: Methadone maintenance treatment (MMT) improves patients' ability to access HIV-related services and reduces needle sharing and other risky HIV-related behaviors. However, patients may continue to engage in risky sexual practices. In this study, we evaluate sexual behaviors of MMT patients in a mountainous province in Northern Vietnam.

METHODS: We explored the health status, MMT and substance use history, and sexual practices of 241 male MMT patients in Tuyen Quang province. Health status was investigated using the EuroQOL-5 Dimensions-5 Levels (EQ-5D-5 L). Multivariate logistic regression was employed to assess associated factors.

RESULTS: Most patients (66.4%) reported having at least one sexual partner within the previous twelve months. Most of these partners were spouses or primary partners (72.6%). About 8.3% of patients had casual partners, and 5.8% had visited sex workers; of those who engaged in casual sexual relationships, 90.9% reported using condoms. Current drug use and living in a remote area were associated with an increased odd of having two or more sexual partners, while anxiety or depression was associated with lower odds.

CONCLUSION: This study highlights a low proportion of having sexual risk behaviors among MMT patients in Vietnamese mountainous settings. Integrating education about safe sexual practices into MMT services, along with providing medical care and ensuring methadone treatment adherence, is an important component in HIV risk reduction for these patients who were at risk of unsafe sexual practices.

19. Meylakhs, P., et al. "**Until people start dying in droves, no actions will be taken": perception and experience of HIV-preventive measures among people who inject drugs in northwestern Russia.**" *Harm Reduct J* 2017 14(1): 33. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5460345/pdf/12954_2017_Article_162.pdf

BACKGROUND: The HIV epidemic among people who inject drugs (PWID) in Russia continues to spread. This exploratory study examines how HIV-prevention measures are perceived and experienced by PWID in the northwestern region of Russia.

METHODS: Purposive sampling was used to obtain a variety of cases that could reflect possible differences in perception and experience of HIV-prevention efforts. We conducted 22 semi-structured interviews with PWID residing in the Arkhangelsk and St. Petersburg regions.

RESULTS: The main sources of prevention information on HIV for PWID were media campaigns directed to the general population. These campaigns were effective with regard to communicating general knowledge on HIV but were ineffective in terms of risk behavior change. The subjects generally had trust in medical professionals and their advice but did not follow prevention recommendations. Most informants had no or very little prior contact with harm reduction services. On the level of attitudes towards HIV prevention efforts, we discovered three types of fatalism among PWID: "personal fatalism" - uselessness of HIV prevention efforts, if one uses drugs; "prevention-related fatalism" - prevention programs are low effective, because people do not pay attention to them before they get infected; "state-related fatalism" - the lack of belief that the state is concerned with HIV prevention issues. Despite this fatalism the participants opined that NGOs would do a better job than the state as they are "really working" with risk groups.

CONCLUSIONS: As HIV prevention campaigns targeted at the general population and prevention advice received from medical professionals are not sufficiently effective for PWID in terms of risk behavior change, prevention programs, such as community-based and peer-based interventions specifically tailored to the needs of PWID are needed, which can be achieved by a large expansion of harm reduction services in the region. Personal communication should be a crucial element in such interventions in addition to harm reduction materials provision. Training programs, peer outreach, and culture-change interventions which try to alter widespread fatalistic norms or attitudes towards their health are especially needed, since this study indicates that fatalism is a major barrier for behavior change.

20. Deryabina, A., et al. "**Uptake of needle and syringe program services in the Kyrgyz Republic: Key barriers and facilitators.**" *Drug Alcohol Depend* 2017 179: 180-186.

BACKGROUND: In Kyrgyzstan, injection drug use accounts for the majority of HIV infections. Needle and syringe programs (NSPs) are one of three core HIV interventions for people who inject drugs (PWID). However, in Kyrgyzstan all persons diagnosed with drug dependence are subject to compulsory registration for governmental drug dependence treatment services, which creates barriers for PWID to access any health services, including NSPs.

METHODS: In 2015, we conducted an assessment at 19 NSP sites in six cities to identify barriers and facilitators that affect PWID uptake of NSP services in Kyrgyzstan. The study involved the conduct of 10 focus groups with 99 PWID (62 males/37 females) and individual interviews with 24 full-time NSP staff.

RESULTS: We found that access of PWID to NSPs was limited by stigma and discrimination around drug use, fear of police encounters, inconvenient hours of operation, lack of information and motivation from PWID to use NSP services and a limited menu of available injection supplies. At the same time, availability of outreach services and additional health services were highly valued by PWID.

CONCLUSIONS: Stigma and discrimination, combined with the criminalization of drug use and the requirement for official registration of PWID remain key barriers to effective NSP utilization. Law enforcement and health care providers need to be sensitized about the unique context and needs of PWID.

21. Scheibe, A., et al. "**Using a programmatic mapping approach to plan for HIV prevention and harm reduction interventions for people who inject drugs in three South African cities.**" *Harm Reduct J* 2017 14(1): 35. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5463380/pdf/12954_2017_Article_164.pdf

BACKGROUND: Stigma, criminalisation and a lack of data on drug use contribute to the "invisibility" of people who inject drugs (PWID) and make HIV prevention and treatment service delivery challenging. We aimed to confirm locations where PWID congregate in Cape Town, eThekweni and Tshwane (South Africa) and to estimate PWID population sizes within selected electoral wards in these areas to inform South Africa's first multi-site HIV prevention project for PWID.

METHODS: Field workers (including PWID peers) interviewed community informants to identify suspected injecting locations in selected electoral wards in each city and then visited these locations and interviewed PWID. Interviews were used to gather information about the accessibility of sterile injecting equipment, location coordinates and movement patterns. We used the Delphi method to obtain final population size estimates for the mapped wards based on estimates from wisdom of the crowd methods, the literature and programmatic data.

RESULTS: Between January and April 2015, we mapped 45 wards. Tshwane teams interviewed 39 PWID in 12 wards, resulting in an estimated number of accessible PWID ranging from 568 to 1431. In eThekweni, teams interviewed 40 PWID in 15 wards with an estimated number of accessible PWID ranging from 184 to 350. The Cape Town team interviewed 61 PWID in 18 wards with an estimated number of accessible PWID

ranging between 398 and 503. Sterile needles were only available at one location. Almost all needles were bought from pharmacies. Between 80 and 86% of PWID frequented more than one location per day. PWID who reported movement visited a median of three locations a day.

CONCLUSIONS: Programmatic mapping led by PWID peers can be used effectively to identify and reach PWID and build relationships where access to HIV prevention commodities for PWID is limited. PWID reported limited access to sterile injecting equipment, highlighting an important HIV prevention need. Programmatic mapping data show that outreach programmes should be flexible and account for the mobile nature of PWID populations. The PWID population size estimates can be used to develop service delivery targets and as baseline measures.

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Men who have Sex with Men - 55

1. Kufa, T., et al. "**The accuracy of HIV rapid testing in integrated bio-behavioral surveys of men who have sex with men across 5 Provinces in South Africa.**" *Medicine (Baltimore)* 2017 96(28): e7391. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5515746/pdf/medi-96-e7391.pdf>

We describe the accuracy of serial rapid HIV testing among men who have sex with men (MSM) in South Africa and discuss the implications for HIV testing and prevention. This was a cross-sectional survey conducted at five stand-alone facilities from five provinces. Demographic, behavioral, and clinical data were collected. Dried blood spots were obtained for HIV-related testing. Participants were offered rapid HIV testing using 2 rapid diagnostic tests (RDTs) in series. In the laboratory, reference HIV testing was conducted using a third-generation enzyme immunoassay (EIA) and a fourth-generation EIA as confirmatory. Accuracy, sensitivity, specificity, positive predictive value, negative predictive value, false-positive, and false-negative rates were determined. Between August 2015 and July 2016, 2503 participants were enrolled. Of these, 2343 were tested by RDT on site with a further 2137 (91.2%) having definitive results on both RDT and EIA. Sensitivity, specificity, positive predictive value, negative predictive value, false-positive rates, and false-negative rates were 92.6% [95% confidence interval (95% CI) 89.6-94.8], 99.4% (95% CI 98.9-99.7), 97.4% (95% CI 95.2-98.6), 98.3% (95% CI 97.6-98.8), 0.6% (95% CI 0.3-1.1), and 7.4% (95% CI 5.2-10.4), respectively. False negatives were similar to true positives with respect to virological profiles. Overall accuracy of the RDT algorithm was high, but sensitivity was lower than expected. Post-HIV test counseling should include discussions of possible false-negative results and the need for retesting among HIV negatives.

2. Larsson, M., et al. "**Acting within an increasingly confined space: A qualitative study of sexual behaviours and healthcare needs among men who have sex with men in a provincial Tanzanian city.**" *PLoS One* 2017 12(8): e0183265. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5560662/pdf/pone.0183265.pdf>

OBJECTIVE: To explore risk perceptions, sexual practices and healthcare needs among men who have sex with men in the provincial city of Tanga in northern Tanzania. Previous research suggests that HIV/STIs are increasing problems for this population. Yet, few studies have been conducted outside the urban area of Dar es Salaam, which has limited our knowledge about the HIV/STI risk factors and healthcare needs among men who have sex with men who live outside major metropolitan areas.

METHOD: During three months in 2013, 10 in-depth interviews with men who have sex with men were conducted in Tanga. Data were interpreted through qualitative content analysis.

RESULTS: The theme that emerged was labelled "Acting within an increasingly confined space". The theme reflects the interference of stigma in men's lives, and in the face of potential discrimination, men perceived their sexual and healthcare choices as limited. This created obstacles for forming romantic and sexual relationships, insisting on consistent condom use with sexual partners, maintaining open and conducive relationships with family, and accessing healthcare services when required.

CONCLUSIONS: Sexual stigma is a concern as it contributes to HIV/STI risk-related behaviours among men who have sex with men. Priority should be given to programmes that support same-sex practicing men in their efforts to make informed choices regarding their sexual health. Creating safe cyber networks provides an opportunity to reach this population with targeted sexual health education messages. Such programmes might be even more urgent in smaller towns and rural areas where gay specific initiatives are more limited than in urban areas.

3. Kroon, E., et al. "**Acute HIV infection detection and immediate treatment estimated to reduce transmission by 89% among men who have sex with men in Bangkok.**" *J Int AIDS Soc* 2017 20(1): 1-9. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5515043/pdf/zias-20-1341091.pdf>

INTRODUCTION: Antiretroviral treatment (ART) reduces HIV transmission. Despite increased ART coverage, incidence remains high among men who have sex with men (MSM) in many places. Acute HIV infection (AHI) is characterized by high viral replication and increased infectiousness. We estimated the feasible reduction in transmission by targeting MSM with AHI for early ART.

METHODS: We recruited a cohort of 88 MSM with AHI in Bangkok, Thailand, who initiated ART immediately. A risk calculator based on viral load and reported behaviour, calibrated to Thai epidemiological data, was applied to estimate the number of onwards transmissions. This was compared with the expected number without early interventions.

RESULTS: Forty of the MSM were in 4th-generation AHI stages 1 and 2 (4thG stage 1, HIV nucleic acid testing (NAT)+/4thG immunoassay (IA)-/3rdG IA-; 4thG stage 2, NAT+/4thG IA+/3rdG IA-) while 48 tested positive on third-generation IA but had negative or indeterminate western blot (4thG stage 3). Mean plasma HIV RNA was 5.62 log₁₀ copies/ml. Any condomless sex in the four months preceding the study was reported by 83.7%, but decreased to 21.2% by 24 weeks on ART. After ART, 48/88 (54.6%) attained HIV RNA <50 copies/ml by week 8, increasing to 78/87 (89.7%), and 64/66 (97%) at weeks 24 and 48, respectively. The estimated number of onwards transmissions in the first year of infection would have been 27.3 (95% credible interval: 21.7-35.3) with no intervention, 8.3 (6.4-11.2) with post-diagnosis behaviour change only, 5.9 (4.4-7.9) with viral load reduction only and 3.1 (2.4-4.3) with both. The latter was associated with an 88.7% (83.8-91.1%) reduction in transmission.

CONCLUSIONS: Disproportionate HIV transmission occurs during AHI. Diagnosis of AHI with early ART initiation can substantially reduce onwards transmission.

4. Tan, D., et al. "**Alcohol Use and HIV Risk Within Social Networks of MSM Sex Workers in the Dominican Republic.**" *AIDS Behav* 2017.

To examine how alcohol-related HIV risk behaviors within MSM sex workers' social networks (SN) may be associated with individual risk behaviors, respondent-driven and venue-based sampling were used to collect demographic, behavioral and SN characteristics among MSM sex workers in Santo Domingo and Boca Chica (N = 220). The majority of participants reported problem drinking (71.0%) or alcohol use at their last sexual encounter (71.4%). Self-reported problem drinking was associated with SN characteristics (at least one member who recently got drunk aOR = 7.5, no religious/spiritual adviser aOR = 3.0, non-sexual network density aOR = 0.9), while self-reported alcohol use at last sex was associated with individual (drug use at last sex aOR = 4.4) and SN characteristics (at least one member with previous HIV/STI testing aOR = 4.7). Dominican MSM sex workers reported high alcohol use, which may increase their risk for HIV. A better

understanding of SN factors associated with individual risk behaviors can help guide appropriate intervention development.

5. Yi, S., et al. "**Awareness and willingness to use HIV pre-exposure prophylaxis among men who have sex with men in low- and middle-income countries: a systematic review and meta-analysis.**" *J Int AIDS Soc* 2017 20(1): 1-27. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5515024/pdf/zias-20-1340539.pdf>

INTRODUCTION: To facilitate provision of pre-exposure prophylaxis (PrEP) in low- and middle-income countries (LMIC), a better understanding of potential demand and user preferences is required. This review assessed awareness and willingness to use oral PrEP among men who have sex with men (MSM) in LMIC.

METHODS: Electronic literature search of Cochrane library, Embase, PubMed, PsychINFO, CINAHL, Web of Science, and Google Scholar was conducted between July and September 2016. Reference lists of relevant studies were searched, and three authors contacted for additional data. Non-peer reviewed publications were excluded. Studies were screened for inclusion, and relevant data abstracted, assessed for bias, and synthesized.

RESULTS: In total, 2186 records were identified, of which 23 studies involving 14,040 MSM from LMIC were included. The proportion of MSM who were aware of PrEP was low at 29.7% (95% CI: 16.9-44.3). However, the proportion willing to use PrEP was higher, at 64.4% (95% CI: 53.3-74.8). Proportions of MSM aware of PrEP was <50% in 11 studies and 50-70% in 3 studies, while willingness to use PrEP was <50% in 6 studies, 50-70% in 9 studies, and over 80% in 5 studies. Several factors affected willingness to use PrEP. At the individual domain, poor knowledge of PrEP, doubts about its effectiveness, fear of side effects, low perception of HIV risk, and the need to adhere or take medicines frequently reduced willingness to use PrEP, while PrEP education and motivation to maintain good health were facilitators of potential use. Demographic factors (education, age, and migration) influenced both awareness and willingness to use PrEP, but their effects were not consistent across studies. At the social domain, anticipated stigma from peers, partners, and family members related to sexual orientation, PrEP, or HIV status were barriers to potential use of PrEP, while partner, peer, and family support were facilitators of potential use. At the structural domain, concerns regarding attitudes of healthcare providers, quality assurance, data protection, and cost were determinants of potential use.

CONCLUSIONS: This review found that despite low levels of awareness of PrEP, MSM in LMIC are willing to use it if they are supported appropriately to deal with a range of individual, social, and structural barriers.

6. Bui, H. T. M., et al. "**Barriers to access and uptake of antiretroviral therapy among HIV-positive men who have sex with men in Hanoi, Vietnam: from HIV testing to treatment.**" *Cult Health Sex* 2017 19(8): 859-872.

Little is known about the experiences of Vietnamese men who have sex with men in accessing HIV testing and treatment. We aimed to explore barriers to access and uptake of antiretroviral therapy (ART) among HIV-positive men who have sex with men in Hanoi. During 2015, we conducted qualitative interviews with 35 participants recruited using snowball sampling based on previous research and social networks. Key individual impediments to ART uptake included inadequate preparation for a positive diagnosis and the dual stigmatisation of homosexuality and HIV and its consequences, leading to fear of disclosure of HIV status. Health system barriers included lack of clarity and consistency about how to register for and access ART, failure to protect patient confidentiality and a reticence by providers to discuss sexual identity and same-sex issues. Results suggest fundamental problems in the way HIV testing is currently delivered in Hanoi, including a lack of client-centred counselling, peer support and clear referral pathways. Overcoming these barriers will require educating men who have sex with men about the benefits of routine testing, improving access to quality diagnostic services and building a safe, confidential treatment environment for HIV-positive men to access, receive and remain in care.

7. Wang, Z., et al. **"Behavioral intention to take up different types of HIV testing among men who have sex with men who were never-testers in Hong Kong."** *AIDS Care* 2017: 1-8.

Human immunodeficiency virus (HIV) testing is an important global prevention strategy but underutilized by local men who have sex with men (MSM). This study investigated the prevalence of behavioral intention to take up HIV testing (specific or any type), in the next six months among MSM who had not been tested for HIV in the last three years (never-testers) in Hong Kong. The data was based on 141 never-testers of 430 MSM who completed the anonymous baseline telephone survey of an ongoing randomized controlled trial from January 2015 to August 2015. Only 17.7% of them showed strong intention to take up any type of HIV testing in the next six months. Adjusted analysis showed that perceived benefit of HIV testing (adjusted odds ratio [AOR]: 1.29, 95% confidence interval [CI]: 1.01, 1.66), perceived psychological barriers of HIV testing (AOR: 0.85, 95%CI: 0.73, 1.00), and perceived self-efficacy in taking up HIV testing (AOR: 1.28, 95%CI: 1.07, 1.52) were significantly associated with behavioral intention to take up any HIV testing. Perceived cue to action from non-governmental organization staff was positively associated with a marginal p-value of 0.077 (AOR: 2.37, 95%CI: 0.97, 5.77). It is warranted to strengthen perceived benefit, remove psychological barriers, and increase perceived self-efficacy related to HIV testing. Innovative and effective health promotions are greatly needed to increase HIV testing coverage among never-testers.

8. van Griensven, F., et al. **"Challenges and emerging opportunities for the HIV prevention, treatment and care cascade in men who have sex with men in Asia Pacific."** *Sex Transm Infect* 2017 93(5): 356-362.

In Asia Pacific, most countries have expanded HIV treatment guidelines to include all those with HIV infection and adopted antiretroviral treatment for prevention (TFP) as a blanket strategy for HIV control. Although the overall epidemic development associated with this focus is positive, the HIV epidemic in men who have sex with men (MSM) is continuing unperturbed without any signs of decline or reversal. This raises doubt about whether TFP as a blanket HIV prevention policy is the right approach. This paper reviews currently available biomedical HIV prevention strategies, national HIV prevention policies and guidelines from selected countries and published data on the HIV cascade in MSM. No evidence for efficacy of TFP in protecting MSM from HIV infection was found. The rationale for this approach is based on assumptions about biological plausibility and external validity of latency-based efficacy found in heterosexual couples. This is different from the route and timing of HIV transmission in MSM. New HIV infections in MSM principally occur in chains of acutely HIV-infected highly sexually active young men, in whom acquisition and transmission are correlated in space and time. By the time TFP renders its effects, most new HIV infections in MSM will have already occurred. On a global level, less than 6% of all reports regarding the HIV care cascade from 1990 to 2016 included MSM, and only 2.3% concerned MSM in low/middle-income countries. Only one report originated from Asia Pacific. Generally, HIV cascade data in MSM show a sobering picture of TFP in engaging and retaining MSM along the continuum. Widening the cascade with a preventive extension, including pre-exposure prophylaxis, the first proven efficacious and only biomedical HIV prevention strategy in MSM, will be instrumental in achieving HIV epidemic control in this group.

9. Maina, G., et al. **"Characterizing the Structure and Functions of Social Networks of Men Who Have Sex with Men in Ghana, West Africa: Implications for Peer-Based HIV Prevention."** *J Assoc Nurses AIDS Care* 2017.

Men who have sex with men (MSM) in Ghana are at an increased risk of contracting HIV. Understanding the social networks of MSM may support the development of HIV prevention strategies for this unique population. This article explores the structure and function of the social networks of MSM from 22 focus groups drawn from two urban and one rural setting in Ghana. Gaining insights into the characteristics of these networks will allow health care providers to design HIV prevention efforts and increase access to these programs.

10. Li, H., et al. **"Condom use peer norms and self-efficacy as mediators between community engagement and condom use among Chinese men who have sex with men."** *BMC Public Health* 2017 17(1): 641.
Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5545844/pdf/12889_2017_Article_4662.pdf

BACKGROUND: Community engagement strategies are often integrated in public health interventions designed to promote condom use among men who have sex with men (MSM), a key population for HIV prevention. However, the ways in which condom use peer norms and self-efficacy play a role in the association between community engagement and condom use is unclear. This study examines the potential mediating roles of peer norms and self-efficacy in this association.

METHODS: A nationwide cross-sectional online survey was conducted among Chinese MSM in 2015. Recruitment criteria included being born biologically male, being older than 16 years, having had anal sex with a man at least once during their lifetime, and having had condomless anal or vaginal sex in the past three months. Mplus 6.11 was used to conduct confirmatory factor analysis and path modeling analysis to examine the structural relationships between HIV/sexual health community engagement (e.g., joining social media and community events related to HIV and sexual health services), condom use peer norms, condom use self-efficacy, and frequency of condom use.

RESULTS: The study found that HIV/sexual health community engagement, condom use peer norms, condom use self-efficacy, and frequency of condom use were mutually correlated. A good data model was achieved with fit index: CFI = 0.988, TLI = 0.987, RMSEA = 0.032, 90% CI (0.028, 0.036). HIV/sexual health community engagement was associated with frequency of condom use, which was directly mediated by condom use peer norms and indirectly through self-efficacy.

CONCLUSION: The study suggests that condom use peer norms and self-efficacy may be mediators in the pathway between community engagement and condom use, and suggests the importance of peer-based interventions to improve condom use.

11. Fauk, N. K., et al. "**Culture, social networks and HIV vulnerability among men who have sex with men in Indonesia.**" *PLoS One* 2017 12(6): e0178736. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5459452/pdf/pone.0178736.pdf>

The current study aimed to explore cultural and social network influence on HIV vulnerability among Men who have Sex with Men (MSM) population in Yogyakarta, Indonesia. A qualitative inquiry employing in-depth one-on-one interviews was carried out with 24 MSM participants in July 2015. Data were analysed using a framework analysis and guided by the Social Networks Theory (SNT) as a conceptual framework. Findings indicated that prohibitive cultural perspectives and norms against same-sex marriage made them to conceal their sexual orientation and thus secretly engaging in unprotected sex that increased their predisposition to HIV transmission. The prohibitive cultures were also instrumental in the formation of MSM sexual networks that provided supportive environment for HIV-risky sexual practices among network partners. These findings provide information that can be used to improve HIV/AIDS service practices and policies. However, further studies with large numbers of MSM would be needed to improve the understanding of other HIV vulnerability determinants, the unique needs of MSM, and what and how programs could be conducted to reduce HIV vulnerability among MSM population.

12. Knox, J., et al. "**Determinants of hazardous drinking among black South African men who have sex with men.**" *Drug Alcohol Depend* 2017 180: 14-21.

BACKGROUND: There is a known heavy burden of hazardous drinking and its associated health risks among black South African MSM; however, no study to date has identified risk factors for hazardous drinking among this nor any other African MSM population.

METHODS: A cross-sectional survey was conducted among 480 black South African MSM recruited using respondent-driven sampling. All analyses were adjusted using an RDS II estimator. Multivariable logistic regression was used to assess the relationship between demographic characteristics, psychosocial factors, behavioral attributes and hazardous drinking.

RESULTS: More than half of the men (62%, 95%CI=56%-68%) screened positive as hazardous drinkers. In multivariable analyses, living in a township (versus the city of Pretoria) (aOR=1.9, 95%CI=1.2-3.1, p<.01), more gender dysphoria (aOR=1.4, 95%CI=1.0-1.8, p=.03), having ever received money or other incentives in return for sex (aOR=2.4, 95%CI=1.3-4.3, p<.01), having been sexually abused as a child (aOR=2.6, 95%CI=1.1-6.4, p=.03), having anxiety (aOR=5.4, 95%CI=1.2-24.3, p=.03), and social network drinking behavior (aOR=5.4, 95%CI=1.2-24.3, p=.03) were positively associated with hazardous drinking. Being sexually attracted only to men (aOR=0.3, 95%CI=0.1-0.8, p=.01) was negatively associated with hazardous drinking.

DISCUSSION: Hazardous drinking is highly prevalent among black South African MSM. Multiple indicators of social vulnerability were identified as independent determinants of hazardous drinking. These findings are of heightened concern because these health problems often work synergistically to increase risk of HIV infection and should be taken into consideration by efforts aimed at reducing hazardous drinking among this critical population.

13. Dijkstra, M., et al. "**Development and validation of a risk score to assist screening for acute HIV-1 infection among men who have sex with men.**" *BMC Infect Dis* 2017 17(1): 425. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5471739/pdf/12879_2017_Article_2508.pdf

BACKGROUND: Early treatment of acute HIV-1 infection (AHI) is beneficial for patients and could reduce onward transmission. However, guidelines on whom to test for AHI with HIV-1 RNA testing are lacking.

METHODS: A risk score for possible AHI based on literature and expert opinion - including symptoms associated with AHI and early HIV-1 - was evaluated using data from the Amsterdam Cohort Studies among men who have sex with men (MSM). Subsequently, we optimized the risk score by constructing two multivariable logistic regression models: one including only symptoms and one combining symptoms with known risk factors for HIV-1 seroconversion, using generalized estimating equations. Several risk scores were generated from these models and the optimal risk score was validated using data from the Multicenter AIDS Cohort Study.

RESULTS: Using data from 1562 MSM with 175 HIV-1 seroconversion visits and 17,271 seronegative visits in the Amsterdam Cohort Studies, the optimal risk score included four symptoms (oral thrush, fever, lymphadenopathy, weight loss) and three risk factors (self-reported gonorrhea, receptive condomless anal intercourse, more than five sexual partners, all in the preceding six months) and yielded an AUC of 0.82. Sensitivity was 76.3% and specificity 76.3%. Validation in the Multicenter AIDS Cohort Study resulted in an AUC of 0.78, sensitivity of 56.2% and specificity of 88.8%.

CONCLUSIONS: The optimal risk score had good overall performance in the Amsterdam Cohort Studies and performed comparable (but showed lower sensitivity) in the validation study. Screening for AHI with four symptoms and three risk factors would increase the efficiency of AHI testing and potentially enhance early diagnosis and immediate treatment.

14. Shangani, S., et al. "**Effectiveness of peer-led interventions to increase HIV testing among men who have sex with men: a systematic review and meta-analysis.**" *AIDS Care* 2017 29(8): 1003-1013.

HIV testing constitutes a key step along the continuum of HIV care. Men who have sex with men (MSM) have low HIV testing rates and delayed diagnosis, especially in low-resource settings. Peer-led interventions offer a strategy to increase testing rates in this population. This systematic review and meta-analysis summarizes evidence on the effectiveness of peer-led interventions to increase the uptake of HIV testing among MSM. Using a systematic review protocol that was developed a priori, we searched PubMed, PsycINFO and CINAHL for articles reporting original results of randomized or non-randomized controlled trials (RCTs), quasi-experimental interventions, and pre- and post-intervention studies. Studies were eligible if they targeted MSM and utilized peers to increase HIV testing. We included studies published in or after 1996 to focus on HIV testing during the era of combination antiretroviral therapy. Seven studies encompassing a total of 6205

participants met eligibility criteria, including two quasi-experimental studies, four non-randomized pre- and post-intervention studies, and one cluster randomized trial. Four studies were from high-income countries, two were from Asia and only one from sub-Saharan Africa. We assigned four studies a "moderate" methodological rigor rating and three a "strong" rating. Meta-analysis of the seven studies found HIV testing rates were statistically significantly higher in the peer-led intervention groups versus control groups (pooled OR 2.00, 95% CI 1.74-2.31). Among randomized trials, HIV testing rates were significantly higher in the peer-led intervention versus control groups (pooled OR: 2.48, 95% CI 1.99-3.08). Among the non-randomized pre- and post-intervention studies, the overall pooled OR for intervention versus control groups was 1.71 (95% CI 1.42-2.06), with substantial heterogeneity among studies ($I^2 = 70\%$, $p < 0.02$). Overall, peer-led interventions increased HIV testing among MSM but more data from high-quality studies are needed to evaluate effects of peer-led interventions on HIV testing among MSM in low- and middle-income countries.

15. Bayona, E., et al. **"The Experiences of Newly Diagnosed Men Who Have Sex with Men Entering the HIV Care Cascade in Lima, Peru, 2015-2016: A Qualitative Analysis of Counselor-Participant Text Message Exchanges."** *Cyberpsychol Behav Soc Netw* 2017 20(6): 389-396.

Mobile phone technology (mHealth) is a promising tool that has been used to improve HIV care in high-risk populations worldwide. Understanding patient perspectives of newly diagnosed men who have sex with men (MSM) in Lima, Peru during linkage and engagement in the HIV care continuum can help close the gaps in care following initial HIV diagnosis and ensure retention in continuous care. From June 2015 to March 2016, as part of a randomized controlled trial, 40 MSM participants were linked to care with an mHealth intervention within 3 months of HIV diagnosis at Via Libre clinic. For 12 weeks, participants agreed to receive weekly predetermined, standardized short message service (SMS), WhatsApp(c), and/or Facebook(c) messages from an assigned HIV counselor. Text messaging was bi-directional, meaning participants could also send messages to their counselor at any time. In this qualitative study, we coded and thematically analyzed 947 SMS, 918 WhatsApp, and 2,694 Facebook bi-directional messages. Mean age of participants was 29.8 years (20-50); with 70 percent reporting some post-high school education and 73 percent self-identifying as homosexual. We identified six recurring themes that emerged from the data: (a) mental health symptoms; (b) coping behaviors; (c) interpersonal support; (d) physical symptoms; (e) HIV knowledge; and (f) care coordination. Participants sent text messages describing depressive symptoms and seeking mental health services during this initial stage of HIV care. For newly diagnosed MSM entering the HIV care continuum, a bi-directional mHealth intervention provided support to facilitate care while eliciting deeply personal mental and emotional states. Future interventions could benefit from using mHealth interventions as ancillary support for clinicians.

16. Closson, E. F., et al. **"Exploring strategies for PrEP adherence and dosing preferences in the context of sexualized recreational drug use among MSM: a qualitative study."** *AIDS Care* 2017: 1-8.

The use of recreational drugs while having sex is associated with increased HIV incidence among men who have sex with men (MSM). Taking a daily antiretroviral pill, or pre-exposure prophylaxis (PrEP) is a biomedical intervention to prevent HIV. However, the efficacy of PrEP is closely tied with high levels of adherence. While PrEP has the potential to reduce HIV acquisition, the use of recreational drugs may impede adherence. We explored perceptions of PrEP utilization and regimen preferences among 40 HIV-negative, MSM who reported concurrent recreational drug use and condomless anal sex with a man. Semi-structured qualitative interviews were conducted and the data were analyzed using a qualitative descriptive approach. Participants perceived that it would be challenging to take PrEP while high on crystal meth, crack, powder cocaine, ecstasy and/or GHB. However, men identified strategies for using PrEP when they were not high on these drugs, including taking the pill when they started their day and integrating PrEP into an established routine, such as when taking other medications or preparing for sex. PrEP regimen preferences seemed to be shaped by the frequency in which participants used drugs and their ability to plan for sex. Taking PrEP everyday was appealing for those who regularly engaged in sexualized recreational drug use. Accounts depict these sexual interactions as frequent but unpredictable. A daily regimen would allow them to be prepared for sex without having to plan. An event-driven regimen was acceptable to men who occasionally used recreational drugs in the context of sex. For this group, sex usually occurred was generally prearranged. Patterns of sex and

recreational drug use figured largely into participants' framings of how they would use PrEP. These behaviors will likely play a role in the uptake of and adherence to PrEP among this population.

17. Yang, H. J., et al. "**Factors associated with intention to be tested for HIV among men who have sex with men in a country with a very low HIV prevalence.**" *AIDS Care* 2017: 1-7.

This study examined factors associated with the intention to take an HIV test among men who have sex with men (MSM) in South Korea. An internet website-based survey was conducted among users of the only and largest online MSM website between 20 July 2016, and 20 August 2016. A total of 2915 participants completed the survey and answered questions related to sociodemographic information, health behaviors, sexual behaviors, and HIV testing history. Of these, 2587 (88.7%) participants responded as having an intention to take an HIV test. A multivariable logistic regression analysis revealed the following as having reduced the intention to undergo HIV testing: very good subjective health status and no sexual interactions during the last 6 months (Adjusted odds ratios [AOR] 0.45 and 0.54, respectively). In contrast, increased intention to take an HIV test was associated with being 20-29 years old, 30-39 years old, not paying or receiving money for sex, having a history of HIV testing, and taking an HIV test once per 12 months (AOR 2.64, 2.13, 1.54, 1.81, and 2.17, respectively). In conclusion, HIV testing among MSM in this study was associated with age, subjective health status, sex(es) of one's sexual partner(s) during the last 6 months, sexual risk behaviors, HIV testing history, and undergoing regular HIV testing.

18. Chomchey, N., et al. "**Factors associated with intention to take non-occupational HIV post-exposure prophylaxis among Thai men who have sex with men.**" *J Virus Erad* 2017 3(3): 128-139. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5518241/pdf/jve-3-128.pdf>

BACKGROUND: Men who have sex with men (MSM) are disproportionately infected with HIV in Thailand. Factors affecting their intention to take non-occupational HIV post-exposure prophylaxis (nPEP) are not well understood. This study sought to determine factors associated with an intention to take nPEP in this population.

METHOD: This is a two-phase mixed-method study. Phase I was a cross-sectional survey of intention to take nPEP in 450 MSM attending for HIV testing, using a self-administered questionnaire. Phase II was a prospective descriptive study, using an in-depth interview among 40 MSM who had been exposed to HIV in the past 72 hours. Multiple logistic regression was used to evaluate factors relating to the intention to use nPEP.

RESULTS: Among 450 MSM seeking HIV testing in Bangkok, 7% had ever taken nPEP. Only 40% expressed an intention to take it to prevent HIV acquisition, despite the fact that they were at high risk as evidenced by an 18.9% prevalence of HIV-positive status. Factors associated with an intention to take nPEP were awareness about nPEP, HIV knowledge, mode of sexual intercourse and circumcision. Among 40 MSM who were eligible for and offered nPEP, 39 agreed to take it, and all but one completed the 4-week course. Condom use increased and all 32 individuals who could be contacted tested HIV negative after nPEP.

CONCLUSION: A high HIV prevalence was found in MSM testing for HIV in this study. However, fewer than half of the participants expressed the intention to take nPEP if they were at risk for HIV infection. Efforts to create nPEP awareness and improve HIV knowledge in MSM are crucial to the successful implementation of nPEP as part of a combination package for HIV prevention in this high-risk population.

19. Kunzweiler, C. P., et al. "**Factors associated with prevalent HIV infection among Kenyan MSM: The Anza Mapema Study.**" *J Acquir Immune Defic Syndr* 2017.

BACKGROUND: In order to inform future HIV treatment and care programs for men who have sex with men (MSM), we assessed the prevalence of and factors associated with previously diagnosed out-of-care (PDOC) or newly diagnosed out-of-care (NDOC) HIV infection among MSM enrolled in the prospective Anza Mapema cohort study.

METHODS: Participants were aged > 18, reported oral or anal sex with a man in the past 6 months, and were not already in HIV care or taking antiretroviral therapy in the past 3 months. At enrollment, men were tested for HIV infection and completed questionnaires via audio computer-assisted self-interview. Multinomial logistic regression was used to identify associations with PDOC or NDOC HIV infection, relative to HIV-negative status.

RESULTS: Among 711 enrolled men, 75 (10.5%) were seropositive including 21 PDOC and 54 NDOC men. In multivariable modeling, PDOC status was more likely than HIV-negative status among men who had experienced upsetting sexual experiences during childhood, had recently experienced MSM trauma, and did not report harmful alcohol use. NDOC infection status was more common among men ≥ 30 years and who had completed <8 years of education, relative to HIV-negative status.

CONCLUSIONS: Most HIV-positive men were unaware of their infection, indicating that HIV testing and counseling services tailored to this population are needed. In order to improve linkage to and retention in care, HIV testing and care services for MSM should screen and provide support for those with hazardous alcohol use and those who have experienced childhood sexual abuse or MSM trauma.

20. Krishnan, A., et al. "**Finding Sex Partners Through Social Media Among Men Who Have Sex with Men in Hanoi, Vietnam.**" *J Community Health* 2017.

Many men who have sex with men (MSM) in low and middle income countries search for male sexual partners via social media in part due to societal stigma and discrimination, yet little is known about the sexual risk profiles of MSM social media users. This cross-sectional study investigates the prevalence of social media use to find male sex partners in Hanoi, Vietnam and examines associations between social media use and sociodemographic and behavioral characteristics, including levels of internalized, perceived and enacted stigma, high-risk sexual behaviors, and HIV testing. 205 MSM were recruited from public venues where MSM congregate as well as through snowball sampling and completed an anonymous survey. MSM who found their male sexual partners using social media in the last year were more likely to have completed a university or higher degree (aOR 2.6; 95% CI 1.2-5.7), experience high levels of MSM-related perceived stigma (aOR 3.0; 95% CI 1.1-8.0), and have more than ten lifetime male sexual partners (aOR 3.2; 95% CI 1.3-7.6) compared to those who did not use social media. A niche for social media-based interventions integrating health and stigma-reduction strategies exists in HIV prevention programs for MSM.

21. Wirtz, A. L., et al. "**Geographical disparities in HIV prevalence and care among men who have sex with men in Malawi: results from a multisite cross-sectional survey.**" *Lancet HIV* 2017 4(6): e260-e269.

BACKGROUND: Epidemiological assessment of geographical heterogeneity of HIV among men who have sex with men (MSM) is necessary to inform HIV prevention and care strategies in the more generalised HIV epidemics across sub-Saharan Africa, including Malawi. We aimed to measure the HIV prevalence, risks, and access to HIV care among MSM across multiple localities to better inform HIV programming for MSM in Malawi.

METHODS: Between Aug 1, 2011, and Sept 13, 2014, we recruited MSM into cross-sectional research via respondent-driven sampling (RDS) in seven districts of Malawi. RDS and site weights were used to estimate national HIV prevalence and engagement in care and in multilevel regression models to identify correlates of prevalent HIV infection. The comparative prevalence ratio of HIV among MSM relative to adult men was calculated by use of direct age-stratification.

FINDINGS: 2453 MSM were enrolled with a population HIV prevalence of 18.2% (95% CI 15.5-21.2), as low as 4.1% (2.2-7.6) in Mzuzu and as high as 24.5% (19.5-30.3) in Mulanje. The comparative HIV prevalence ratio was 2.52 when comparing MSM with the adult male population. Age-stratified HIV prevalence showed early onset of infection with 11.8% (95% CI 7.3-18.4) of MSM aged 18-19 years HIV infected. Factors positively associated with HIV infection included being aged 21-30 years and reporting female or transgender identity.

Among HIV infected MSM, less than 1% reported ever being diagnosed with HIV infection (0.9%, 95% CI 0.4-2.5) and initiated antiretroviral treatment (0.2%, 0.2-0.3).

INTERPRETATION: HIV disproportionately affects MSM in Malawi with disparities sustained across the HIV care continuum. These issues are geographically heterogeneous and begin among young MSM, supporting geographically focused and age-specific approaches to confidential HIV testing with linkage to HIV services.

FUNDING: Malawi Department of Nutrition, HIV and AIDS (DNHA), UNDP, UNFPA, UNAIDS, and UNICEF.

22. Gall, J., et al. "**Global Trends of Monitoring and Data Collection on the HIV Response among Key Populations Since the 2001 UN Declaration of Commitment on HIV/AIDS.**" *AIDS Behav* 2017 21(Suppl 1): 34-43.

Monitoring and evaluation indicators for HIV programs' response to the epidemic among key populations (sex workers, people who inject drugs, men who have sex with men, transgender people) are critical for reviewing the global response. From the beginning of global reporting, insufficiency of data has been a challenge for monitoring the epidemic response among key populations. However, key populations were only indirectly referenced in the 2001 Declaration of Commitment. By the 2006 Political Declaration on HIV/AIDS, data from key populations were still not required from every country, and were sparsely reported compared to other indicators. The 2011 Political Declaration on HIV/AIDS referenced key populations by name for the first time. In 2006, fewer than twenty countries (10%) reported HIV prevalence among key populations, whereas in 2012 the number of countries surpassed sixty (30%).

23. Pando, M. A., et al. "**High acceptability of rapid HIV self-testing among a diverse sample of MSM from Buenos Aires, Argentina.**" *PLoS One* 2017 12(7): e0180361. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5495397/pdf/pone.0180361.pdf>

INTRODUCTION: The objective of this study was to explore the acceptability of rapid HIV self-testing (RHST) among men who have sex with men (MSM).

METHODS: During 2006-2009, a sample of 500 MSM was recruited through Respondent Driven Sampling for an HIV prevalence/incidence study. Attitude toward RHST was explored among HIV negative MSM. Data were weighted prior to analyses.

RESULTS: Participants reported they were likely to buy RHST (74%), test themselves more frequently than they currently do (77%), and that the procedure would simplify testing (70%). Furthermore, 71% reported they would probably use it alone, 66% would use it with a steady partner, and 56% with a friend/partner. While a majority acknowledged that RHST use would deprive them of receiving counseling (61%), 74% declared they would go for help if they tested positive; 57% would use an RHST in order to avoid condoms. Probability of use surpassed 70% among gay and non-gay identified MSM as well as those with and without a previous HIV test. Those likely to buy RHST were older ($p = 0.025$) and more likely to identify as gay ($p = 0.036$). A total of 17% said they would think about killing themselves and 9% would attempt suicide if they tested positive. These MSM were more likely to be younger ($p < 0.001$), with lower mood level ($p < 0.001$) and greater feelings of loneliness ($p = 0.026$).

CONCLUSIONS: The high acceptability of RHST found among MSM should encourage the authorities to consider the possibility of offering it for self-testing, as it can improve early diagnosis and prevention of future transmissions. However, further research is needed to understand how to best disseminate RHST among MSM who wish to use it and to offer support and linkage to care for those who test HIV-positive.

24. Torres, R. M. C., et al. "**High HIV infection prevalence in a group of men who have sex with men.**" *Braz J Infect Dis* 2017. Online at: <http://www.sciencedirect.com/science/article/pii/S1413867017300910/pdf?md5=8afa966cfd735650561c8c96dd386c4c&pid=1-s2.0-S1413867017300910-main.pdf>

Brazil is characterized by a concentrated AIDS epidemic, it has a prevalence of less than 1% in the general population. However, there are higher rates in specific populations, especially in men who have sex with men. The study's aim was to analyze the association between sociodemographic characteristics, sexual practices, sexual behaviors and the HIV infection in a group of men who have sex with men. Secondary data was collected between June 2014 and September 2015 in a research of cross-sectional design in the city of Rio de Janeiro, Brazil. Volunteers answered an online computerized questionnaire and took HIV test. Chi-squared distribution and multiple logistic regression was used. There were 341 participants. Most of them were racially mixed, single, average age of 30.6 years and with a higher education level. The HIV prevalence was 13.9%. Two logistic models were fit (insertive or receptive anal intercourse). Both models showed an association with HIV among those who had a HIV positive sexual partner (Odds Ratio approximately 2.5) and a high self-perception of acquiring HIV (Model 1: Odds Ratio approximately 7/Model 2: Odds Ratio approximately 10). Low condom usage in receptive anal intercourse with casual partners had a direct association with HIV seropositivity, whereas insertive anal intercourse with casual partners with or without condoms were inversely related. The study identified a high prevalence of HIV infections among a group of men who sex with men with a high self-perception risk of acquiring HIV. The findings also showed a relation with sociodemographic and sexual behavior variables.

25. Carballo-Diequez, A., et al. "**High levels of adherence to a rectal microbicide gel and to oral Pre-Exposure Prophylaxis (PrEP) achieved in MTN-017 among men who have sex with men (MSM) and transgender women.**" *PLoS One* 2017 12(7): e0181607. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5531503/pdf/pone.0181607.pdf>

Trials to assess microbicide safety require strict adherence to prescribed regimens. If adherence is suboptimal, safety cannot be adequately assessed. MTN-017 was a phase 2, randomized sequence, open-label, expanded safety and acceptability crossover study comparing 1) daily oral emtricitabine/tenofovir disoproxil fumarate (FTC/TDF), 2) daily use of reduced-glycerin 1% tenofovir (RG-TFV) gel applied rectally, and 3) RG-TFV gel applied before and after receptive anal intercourse (RAI)-if participants had no RAI in a week, they were asked to use two doses of gel within 24 hours. Product use was assessed by mixed methods including unused product return count, text messaging reports, and qualitative plasma TFV pharmacokinetic (PK) results. Convergence interviews engaged participants in determining the most accurate number of doses used based on product count and text messaging reports. Client-centered adherence counseling was also used. Participants (N = 187) were men who have sex with men and transgender women enrolled in the United States (42%), Thailand (29%), Peru (19%) and South Africa (10%). Mean age was 31.4 years (range 18-64 years). Based on convergence interviews, over an 8-week period, 94% of participants had $\geq 80\%$ adherence to daily tablet, 41% having perfect adherence; 83% had $\geq 80\%$ adherence to daily gel, 29% having perfect adherence; and 93% had $\geq 80\%$ adherence to twice-weekly use during the RAI-associated gel regimen, 75% having perfect adherence and 77% having $\geq 80\%$ adherence to gel use before and after RAI. Only 4.4% of all daily product PK results were undetectable and unexpected (TFV concentrations < 0.31 ng/mL) given self-reported product use near sampling date. The mixed methods adherence measurement indicated high adherence to product use in all three regimens. Adherence to RAI-associated rectal gel use was as high as adherence to daily oral PrEP. A rectal microbicide gel, if efficacious, could be an alternative for individuals uninterested in daily oral PrEP.

26. Mmbaga, E. J., et al. "**HIV and STI s among men who have sex with men in Dodoma municipality, Tanzania: a cross-sectional study.**" *Sex Transm Infect* 2017 93(5): 314-319.

OBJECTIVES: To determine the seroprevalence of HIV, STI and related risks among men who have sex with men (MSM) in Dodoma municipality, Tanzania.

METHODS: A cross-sectional study using respondent-driven sampling was employed to recruit study participants aged 18 years and above. Data on sociodemographics, HIV/STI knowledge and sexual practices were collected. Blood samples were tested for HIV and selected STIs.

RESULTS: A total of 409 participants aged from 18 to 60 years took part in this study. The median age at first anal intercourse was 15 years. At last anal intercourse, 37.5% practiced receptive, 47.5% insertive and 15.0% both insertive and receptive anal intercourse. The seroprevalence of HIV, herpes simplex virus 2 (HSV-2), syphilis, hepatitis B virus and hepatitis C virus were 17.4%, 38.5%, 0.2%, 5.4% and 3.4%, respectively. A third of MSM perceived their risk for HIV to be low and this was associated with unprotected sex (adjusted OR (AOR), 4.8, 95% CI 1.8 to 10.2). HIV seropositivity was also associated with HSV-2 (AOR, 5.0, 95% CI 3.01 to 11.21); having lived outside Dodoma (AOR 1.7, 95% CI 1.1 to 6.7); age above 25 years; (AOR 2.1, 95% CI 1.7 to 3.7); sexual relationship with a woman (AOR 5.6, 95% CI 3.9 to 12.8); assuming a receptive (AOR 7.1, 95% CI 4.8 to 17.4) or receptive and insertive (AOR 4.5, 95% CI 1.9 to 11.4) position during last anal intercourse; engaging in group sex (AOR 3.1, 95% CI 1.2 to 6.1) and the use of alcohol (AOR 3.9, 95% CI 1.1 to 9.2).

CONCLUSIONS: HIV prevalence among MSM is five times higher compared with men in the general population in Dodoma. Perceived risk for HIV infection was generally low and low risk perception was associated with unprotected sex. STI, bisexuality and other behavioural risk factors played an important part in HIV transmission. The findings underscore the need for intensified HIV prevention programming addressing and involving key populations in Tanzania.

27. Wong, N. S., et al. "HIV Linkage to Care and Retention in Care Rate Among MSM in Guangzhou, China." *AIDS Behav* 2017.

Quantifying HIV service provision along the HIV care continuum is increasingly important for monitoring and evaluating HIV interventions. We examined factors associated with linkage and retention in care longitudinally among MSM (n = 1974, 4933 person-years) diagnosed and living in Guangzhou, China, in 2008-2014. We measured longitudinal change of retention in care (≥ 2 CD4 tests per year) from linkage and antiretroviral therapy initiation (ART). We examined factors associated with linkage using logistic regression and with retention using generalized estimating equations. The rate of linkage to care was 89% in 2014. ART retention rate dropped from 71% (year 1) to 46% (year 2), suggesting that first-year retention measures likely overestimate retention over longer periods. Lower CD4 levels and older age predicted retention in ART care. These data can inform interventions to improve retention about some subgroups.

28. Blaser, N., et al. "Impact of screening and antiretroviral therapy on anal cancer incidence in HIV-positive MSM." *Aids* 2017 31(13): 1859-1866.

BACKGROUND: The incidence of anal cancer is high in HIV-positive MSM. We modeled the impact of screening strategies and combination antiretroviral therapy (cART) coverage on anal cancer incidence in Switzerland.

METHODS: Individual-based, dynamic simulation model parameterized with Swiss HIV Cohort Study and literature data. We assumed all men to be human papillomavirus infected. CD4 cell count trajectories were the main predictors of anal cancer. From 2016 we modeled cART coverage either as below 100% (corresponding to 2010-2015) or as 100%, and the following four screening strategies: no screening, yearly anal cytology (Papanicolaou smears), yearly anoscopy and targeted anoscopy 5 years after CD4 count dropped below 200 cells/mul.

RESULTS: Median nadir CD4 cell count of 6411 MSM increased from 229 cells/mul during 1980-1989 to 394 cells/mul during 2010-2015; cART coverage increased from 0 to 83.4%. Modeled anal cancer incidence peaked at 81.7/100 000 in 2009, plateaued 2010-2015 and will decrease to 58.7 by 2030 with stable cART coverage, and to 52.0 with 100% cART coverage. With yearly cytology, incidence declined to 38.2/100 000 by 2030, with yearly anoscopy to 32.8 and with CD4 cell count guided anoscopy to 51.3. The numbers needed to screen over 15 years to prevent one anal cancer case were 384 for yearly cytology, 313 for yearly anoscopy and 242 for CD4 cell count-dependent screening.

CONCLUSION: Yearly screening of HIV-positive MSM may reduce anal cancer incidence substantially, with a number needed to screen that is comparable with other screening interventions to prevent cancer.

29. Couderc, C., et al. **"Is PrEP Needed for MSM in West Africa? HIV Incidence in a Prospective Multicountry Cohort."** *J Acquir Immune Defic Syndr* 2017 75(3): e80-e82.
30. Laar, A., et al. **"Key populations and human rights in the context of HIV services rendition in Ghana."** *BMC Int Health Hum Rights* 2017 17(1): 20. Online at:
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5541754/pdf/12914_2017_Article_129.pdf

BACKGROUND: In line with its half century old penal code, Ghana currently criminalizes and penalizes behaviors of some key populations - populations deemed to be at higher risk of acquiring or transmitting Human Immunodeficiency Virus (HIV). Men who have sex with men (MSM), and sex workers (SWs) fit into this categorization. This paper provides an analysis of how enactment and implementation of rights-limiting laws not only limit rights, but also amplify risk and vulnerability to HIV in key and general populations. The paper derives from a project that assessed the ethics sensitivity of key documents guiding Ghana's response to its HIV epidemic. Assessment was guided by leading frameworks from public health ethics, and relevant articles from the international bill of rights.

DISCUSSION: Ghana's response to her HIV epidemic does not adequately address the rights and needs of key populations. Even though the national response has achieved some public health successes, palpable efforts to address rights issues remain nascent. Ghana's guiding documents for HIV response include no advocacy for decriminalization, depenalization or harm reduction approaches for these key populations. The impact of rights-restricting codes on the nation's HIV epidemic is real: criminalization impedes key populations' access to HIV prevention and treatment services. Given that they are bridging populations, whatever affects the Ghanaian key populations directly, affects the general population indirectly. The right to the highest attainable standard of health, without qualification, is generally acknowledged as a fundamental human right. Unfortunately, this right currently eludes the Ghanaian SW and MSM. The paper endorses decriminalization as a means of promoting this right. In the face of opposition to decriminalization, the paper proposes specific harm reduction strategies as approaches to promote health and uplift the diminished rights of key populations. Thus the authors call on Ghana to remove impediments to public health services provision to these populations. Doing so will require political will and sufficient planning toward prioritizing HIV prevention, care and treatment programming for key populations.

31. Chakrapani, V., et al. **"Like Holding an Umbrella Before It Rains": Acceptability of Future Rectal Microbicides Among Men Who Have Sex With Men in India-A Modified Technology Acceptance Model."** *Qual Health Res* 2017 27(8): 1236-1248.

Topical rectal microbicides (RMs) are a new prevention technology in development that aims to reduce the risk of HIV acquisition from anal sex. We examined RM acceptability among men who have sex with men (MSM) in India. We conducted a qualitative exploratory study guided by a modified Technology Acceptance Model, with 10 focus groups (n = 61) of MSM and 10 key informant interviews. Data were explored using framework analysis. RM acceptability was influenced by technological contexts: perceived usefulness of RMs, perceived ease of use of RM and applicator, and habits around condom and lubricant use; individual and interpersonal contexts: perceived relevance and preferences for product formulation and dosing frequency; and MSM community/social contexts: perceived social approval, RM-related stigma, social support. Implementation of RMs for MSM in India may be supported by multi-level interventions that engage community-based organizations in destigmatizing and distributing RMs, ideally gel-based products that enable on-demand use before sex.

32. Silva, A. P., et al. **"Loss to follow-up in a cohort of HIV-negative men who have sex with men: Project Horizonte."** *Rev Saude Publica* 2017 51: 60. Online at:
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5477724/pdf/0034-8910-rsp-S1518-51-87872017051006681.pdf>

OBJECTIVE: The objective of this study is to estimate the attrition rates and evaluate factors associated with

loss to follow-up between 1994 and 2011 in an open cohort of HIV-negative men who have sex with men.

METHODS: The Project Horizonte is an open cohort study that aimed to assess the incidence of HIV infection, evaluate the impact of educational interventions, and identify potential volunteers for HIV vaccine trials. The rates of losses to follow-up were estimated for three periods (1994-1999, 2000-2005, and 2006-2011). The variables analyzed were collected in a psychosocial questionnaire. Volunteers who dropped out were compared with the ones who remained in the study using a Cox regression model.

RESULTS: A total of 1,197 volunteers were recruited. The median follow-up time in the study (n = 626) was 4.2 years. The median follow-up time for the volunteers who dropped out of the study (n = 571) was 1.46 years. The overall rate of loss to follow-up was 11.6/100 person-years. Attrition rates by period were: 12.60 (1994-1999), 11.80 (2000-2005), and 9.00 (2006-2011) per 100 person-years. Factors associated with losses to follow-up were: age group of 21-30 years old, monthly per capita income of more than six or less than one Brazilian minimum wage, having more than two dependents, report of bisexual practice, and inconsistent use of condoms for receptive anal sex.

CONCLUSIONS: A slight decrease of the loss to follow-up was observed over time. Higher attrition rates happened in the first three years of follow-up. It is possible that the link of the volunteers were not yet well established. Those who reported inconsistent condom use in receptive anal sex were more likely to leave the study, suggesting an underestimation of the incidence of HIV infection in a cohort population. For greater effectiveness, retention strategies must be reassessed considering the connection between the characteristics of homosexual and bisexual behavior and the motivations to engage in health research.

33. Barber, T. J., et al. "**Low levels of neurocognitive impairment detected in screening HIV-infected men who have sex with men: The MSM Neurocog Study.**" *Int J STD AIDS* 2017 28(7): 715-722.

This study aimed to determine the prevalence of HIV neurocognitive impairment in HIV-infected men who have sex with men aged 18-50 years, using a simple battery of screening tests in routine clinical appointments. Those with suspected abnormalities were referred on for further assessment. The cohort was also followed up over time to look at evolving changes. HIV-infected participants were recruited at three clinical sites in London during from routine clinical visits. They could be clinician or self-referred and did not need to be symptomatic. They completed questionnaires on anxiety, depression, and memory. They were then screened using the Brief Neurocognitive Screen (BNCS) and International HIV Dementia Scale (IHDS). Two hundred and five HIV-infected subjects were recruited. Of these, 59 patients were excluded as having a mood disorder and two patients were excluded due to insufficient data, leaving 144 patients for analysis. One hundred and twenty-four (86.1%) had a normal composite z score (within 1 SD of mean) calculated for their scores on the three component tests of the BNCS. Twenty (13.9%) had an abnormal z score, of which seven (35%) were symptomatic and 13 (65%) asymptomatic. Current employment and previous educational level were significantly associated with BNCS scores. Of those referred onwards for diagnostic testing, only one participant was found to have impairment likely related to HIV infection. We were able to easily screen for mood disorders and cognitive impairment in routine clinical practice. We identified a high level of depression and anxiety in our cohort. Using simple screening tests in clinic and an onward referral process for further testing, we were not able to identify neurocognitive impairment in this cohort at levels consistent with published data.

34. Wong, N. S., et al. "**MSM HIV testing following an online testing intervention in China.**" *BMC Infect Dis* 2017 17(1): 437. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5477382/pdf/12879_2017_Article_2546.pdf

BACKGROUND: Scaling up HIV testing is the first step in the HIV treatment continuum which is important for controlling the HIV epidemic among men who have sex with men (MSM). Following an online HIV testing intervention among MSM, we aim to examine sociodemographic and spatial factors associated with HIV testing.

METHODS: We conducted a secondary analysis on data from an online HIV testing intervention among MSM who had never-tested for HIV. The survey was distributed through online networks connected to all provinces and regions of China. Univariate and multivariable analyses were performed to examine factors associated with testing three weeks post-intervention.

RESULTS: At three weeks after the intervention, 36% of 624 followed-up MSM underwent HIV testing, 69 men reported positive HIV test results. Having money for sex, ever tested for sexually transmitted infections and intimate partner violence experience were significant factors of post-intervention HIV testing. Students were less likely to undergo HIV testing at follow-up compared to others (adjusted odds ratio=0.69, 95% C.I.=0.47-0.99), adjusted by age and type of intervention. Moderate provincial spatial variation of testing was observed. **CONCLUSIONS:** While high risk men generally had higher HIV testing rates, some MSM like students had lower testing rates, suggesting the need for further ways to enhance HIV testing in specific MSM communities.

35. Zea, M. C., et al. "**MSM in Bogota are living with HIV for extended periods without diagnosis or treatment.**" *Int J STD AIDS* 2017 28(9): 920-924.

We examined recency of infection in serum samples obtained from 69 newly identified HIV-positive cases in a sample of 1000 men who have sex with men (MSM) in Bogota. HIV antibody avidity assays were performed using the Architect HIV Ag/AB combo. Avidity indices ranged from 0.62 to 1.22, with a cut-off score below 0.80 indicative of recent infection. Two samples were classified as recent, six fell within the gray zone (0.75 to 0.85), and the remaining 61 were considered established infections. Results provided evidence of widespread, long-term, undiagnosed HIV infection, as well as an estimate of one-year incidence at .25 in the population of MSM in Bogota. This incidence rate is approximately 8.5 times the rate estimated for the general adult population in Colombia. The large proportion of newly diagnosed cases found among individuals with established infections indicates that many MSM in Bogota are living with HIV for extended periods without being diagnosed and treated. Greater efforts to detect and treat undiagnosed infections are crucial to decrease HIV incidence and increase maximum effectiveness of medical intervention. Given the over-representation of MSM and transgender women in the HIV epidemic in Colombia, such efforts should specifically target this population.

36. McKenney, J., et al. "**Optimal costs of HIV pre-exposure prophylaxis for men who have sex with men.**" *PLoS One* 2017 12(6): e0178170. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5453430/pdf/pone.0178170.pdf>

INTRODUCTION: Men who have sex with men (MSM) are disproportionately affected by HIV due to their increased risk of infection. Oral pre-exposure prophylaxis (PrEP) is a highly effective HIV-prevention strategy for MSM. Despite evidence of its effectiveness, PrEP uptake in the United States has been slow, in part due to its cost. As jurisdictions and health organizations begin to think about PrEP scale-up, the high cost to society needs to be understood.

METHODS: We modified a previously-described decision-analysis model to estimate the cost per quality-adjusted life-year (QALY) gained, over a 1-year duration of PrEP intervention and lifetime time horizon. Using updated parameter estimates, we calculated: 1) the cost per QALY gained, stratified over 4 strata of PrEP cost (a function of both drug cost and provider costs); and 2) PrEP drug cost per year required to fall at or under 4 cost per QALY gained thresholds.

RESULTS: When PrEP drug costs were reduced by 60% (with no sexual disinhibition) to 80% (assuming 25% sexual disinhibition), PrEP was cost-effective (at <\$100,000 per QALY averted) in all scenarios of base-case or better adherence, as long as the background HIV prevalence was greater than 10%. For PrEP to be cost saving at base-case adherence/efficacy levels and at a background prevalence of 20%, drug cost would need to be reduced to \$8,021 per year with no disinhibition, and to \$2,548 with disinhibition.

CONCLUSION: Results from our analysis suggest that PrEP drug costs need to be reduced in order to be

cost-effective across a range of background HIV prevalence. Moreover, our results provide guidance on the pricing of generic emtricitabine/tenofovir disoproxil fumarate, in order to provide those at high risk for HIV an affordable prevention option without financial burden on individuals or jurisdictions scaling-up coverage.

37. Chard, A. N., et al. "Perceptions of HIV Seriousness, Risk, and Threat Among Online Samples of HIV-Negative Men Who Have Sex With Men in Seven Countries." *JMIR Public Health Surveill* 2017 3(2): e37. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5497068/pdf/publichealth_v3i2e37.pdf

BACKGROUND: Rates of new HIV infections continue to increase worldwide among men who have sex with men (MSM). Despite effective prevention strategies such as condoms and pre-exposure prophylaxis (PrEP), low usage of both methods in many parts of the world hinder prevention efforts. An individual's perceptions of the risk of acquiring HIV and the seriousness they afford to seroconversion are important drivers of behavioral risk-taking. Understanding the behavioral factors suppressing the uptake of HIV prevention services is a critical step in informing strategies to improve interventions to combat the ongoing HIV pandemic among MSM.

OBJECTIVE: The study aimed to examine cross-national perceptions of HIV/AIDS seriousness, risk, and threat and the association between these perceptions and sociodemographic characteristics, relationships, and high-risk sexual behaviors among MSM.

METHODS: Participants in Australia, Brazil, Canada, Thailand, South Africa, the United Kingdom, and the United States were recruited for a self-administered survey via Facebook (N=1908). Respondents were asked to rate their perceived seriousness from 1 (not at all serious) to 5 (very serious) of contracting HIV, their perceived risk from 1 (no risk) to 10 (very high risk) of contracting HIV based on their current behavior, and their perception of the threat of HIV-measured as their confidence in being able to stay HIV-negative throughout their lifetimes-on a scale from 1 (will not have HIV by the end of his lifetime) to 5 (will have HIV by the end of his lifetime). Covariates included sociodemographic factors, sexual behavior, HIV testing, drug use, and relationship status. Three ordered logistic regression models, one for each outcome variable, were fit for each country.

RESULTS: Contracting HIV was perceived as serious (mean=4.1-4.6), but perceptions of HIV risk (mean=2.7-3.8) and threat of HIV (mean=1.7-2.2) were relatively low across countries. Older age was associated with significantly lower perceived seriousness of acquiring HIV in five countries (Australia: odds ratio, OR 0.97, 95% CI 0.94-0.99; Brazil: OR 0.95, 95% CI 0.91-0.98; Canada: OR 0.96, 95% CI 0.93-0.98; South Africa: OR 0.96, 95% CI 0.94-0.98; United Kingdom: OR 0.95, 95% CI 0.92-0.98). Being in a male-male sexual relationship was associated with significantly lower perceived risk of HIV in four countries (Australia: OR 0.47, 95% CI 0.30-0.75; Canada: OR: 0.54, 95% CI 0.35-0.86; United Kingdom: OR 0.38, 95% CI 0.24-0.60; United States: OR 0.5, 95% CI 0.31-0.82). Drug use in the previous year was associated with greater threat of contracting HIV in two countries (Canada: OR 1.81, 95% CI 1.13-2.91; United Kingdom: OR 1.7, 95% CI 1.06-2.74).

CONCLUSIONS: Few measures of behavioral or sexual risk-taking were significantly associated with perceived HIV seriousness, risk, or threat across countries. Overall, low levels of reported risk were identified, and results illustrate important gaps in the understanding of risk among MSM across societies that could be addressed through culturally-tailored prevention messaging.

38. Mimiaga, M. J., et al. "A Pilot Randomized Controlled Trial of an Integrated In-person and Mobile Phone Delivered Counseling and Text Messaging Intervention to Reduce HIV Transmission Risk among Male Sex Workers in Chennai, India." *AIDS Behav* 2017.

Men who have sex with men (MSM) are at increased risk for HIV infection in India, particularly those who engage in transactional sex with other men (i.e., male sex workers; MSW). Despite the need, HIV prevention efforts for Indian MSW are lacking. As in other settings, MSW in India increasingly rely on the use of mobile phones for sex work solicitation. Integrating mobile phone technology into an HIV prevention intervention for Indian MSW may mitigate some of the challenges associated with face-to face approaches, such as

implementation, lack of anonymity, and time consumption, while at the same time proving to be both feasible and useful. This is a pilot randomized controlled trial to examine participant acceptability, feasibility of study procedures, and preliminary efficacy for reducing sexual risk for HIV. MSW (N = 100) were equally randomized to: (1) a behavioral HIV prevention intervention integrating in-person and mobile phone delivered HIV risk reduction counseling, and daily, personalized text or voice messages as motivating "cognitive restructuring" cues for reducing condomless anal sex (CAS); or (2) a standard of care (SOC) comparison condition. Both groups received HIV counseling and testing at baseline and 6-months, and completed ACASI-based, behavioral and psychosocial assessments at baseline, 3, and 6 months. Mixed-effects regression procedures specifying a Poisson distribution and log link with a random intercept and slope for month of follow-up was estimated to assess the intervention effect on the primary outcomes: (1) CAS acts with male clients who paid them for sex, and (2) CAS acts with male non-paying sexual partners—both outcomes assessed over the past month. The intervention was both feasible (98% retention at 6-months) and acceptable (>96% of all intervention sessions attended); all intervention participants rated the intervention as "acceptable" or "very acceptable." A reduction in the reported number of CAS acts with male clients who paid them for sex in the past month was seen in both study conditions. MSW in the intervention condition reported a faster rate of decline in the number of CAS acts with male clients in the past month from the baseline to both the 3-month (B = -1.20; 95% CI -1.68, -0.73; p < 0.0001) and 6-month (B = -2.44; 95% CI -3.35, -1.53; p < 0.00001) assessment visits compared to the SOC condition. Post-hoc contrasts indicated that, at 3 months, participants in the intervention condition reported 1.43 (SD = 0.29) CAS acts with male clients in the past month compared to 4.85 (SD = 0.87) in the control condition (p = 0.0003). Furthermore, at 6 months, the intervention condition participants reported 0.24 (SD = 0.09) CAS acts with male clients in the past month compared to 2.79 (SD = 0.79) in the control condition (p < 0.0001). Findings are encouraging and provide evidence of feasibility and acceptability, and demonstrate initial efficacy (for reducing sexual risk for HIV) of a behavioral HIV prevention intervention for Indian MSW that combines daily, personalized text or voice messages with mobile phone-delivered sexual risk reduction counseling and skills building. Future testing of the intervention in a fully powered randomized controlled efficacy trial is warranted.

39. Weiss, K. M., et al. **"Playing and Never Testing: Human Immunodeficiency Virus and Sexually Transmitted Infection Testing Among App-Using MSM in Southeast Asia."** *Sex Transm Dis* 2017 44(7): 406-411.

Little is known about mobile application (app)-based behavior of men who have sex with men (MSM) in Thailand. A cross-sectional online assessment of app users in Bangkok found that more than a quarter have never tested for human immunodeficiency virus (HIV) and 1 in 3 never tested for sexually transmitted infections (STI). STI testing patterns and HIV testing frequency were highly associated with each other in multinomial logistic regression. In the midst of an escalating epidemic where HIV incidence among MSM is highest in Asia, apps can serve to engage those least likely to be reached by traditional methods of recruitment and outreach in Thailand.

40. Safarnejad, A., et al. **"Population Size Estimation of Men Who Have Sex with Men in Ho Chi Minh City and Nghe An Using Social App Multiplier Method."** *J Urban Health* 2017 94(3): 339-349.

This study aims to estimate the number of men who have sex with men (MSM) in Ho Chi Minh City (HCMC) and Nghe An province, Viet Nam, using a novel method of population size estimation, and to assess the feasibility of the method in implementation. An innovative approach to population size estimation grounded on the principles of the multiplier method, and using social app technology and internet-based surveys was undertaken among MSM in two regions of Viet Nam in 2015. Enumeration of active users of popular social apps for MSM in Viet Nam was conducted over 4 weeks. Subsequently, an independent online survey was done using respondent driven sampling. We also conducted interviews with key informants in Nghe An and HCMC on their experience and perceptions of this method and other methods of size estimation. The population of MSM in Nghe An province was estimated to be 1765 [90% CI 1251-3150]. The population of MSM in HCMC was estimated to be 37,238 [90% CI 24,146-81,422]. These estimates correspond to 0.17% of the adult male population in Nghe An province [90% CI 0.12-0.30], and 1.35% of the adult male population

in HCMC [90% CI 0.87-2.95]. Our size estimates of the MSM population (1.35% [90% CI 0.87%-2.95%] of the adult male population in HCMC) fall within current standard practice of estimating 1-3% of adult male population in big cities. Our size estimates of the MSM population (0.17% [90% CI 0.12-0.30] of the adult male population in Nghe An province) are lower than the current standard practice of estimating 0.5-1.5% of adult male population in rural provinces. These estimates can provide valuable information for sub-national level HIV prevention program planning and evaluation. Furthermore, we believe that our results help to improve application of this population size estimation method in other regions of Viet Nam.

41. Maheu-Giroux, M., et al. **"Population-level impact of an accelerated HIV response plan to reach the UNAIDS 90-90-90 target in Cote d'Ivoire: Insights from mathematical modeling."** *PLoS Med* 2017 14(6): e1002321. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5472267/pdf/pmed.1002321.pdf>

BACKGROUND: National responses will need to be markedly accelerated to achieve the ambitious target of the Joint United Nations Programme on HIV/AIDS (UNAIDS). This target aims for 90% of HIV-positive individuals to be aware of their status, for 90% of those aware to receive antiretroviral therapy (ART), and for 90% of those on treatment to have a suppressed viral load by 2020, with each individual target reaching 95% by 2030. We aimed to estimate the impact of various treatment-as-prevention scenarios in Cote d'Ivoire, one of the countries with the highest HIV incidence in West Africa, with unmet HIV prevention and treatment needs, and where key populations are important to the broader HIV epidemic.

METHODS AND FINDINGS: An age-stratified dynamic model was developed and calibrated to epidemiological and programmatic data using a Bayesian framework. The model represents sexual and vertical HIV transmission in the general population, female sex workers (FSW), and men who have sex with men (MSM). We estimated the impact of scaling up interventions to reach the UNAIDS targets, as well as the impact of 8 other scenarios, on HIV transmission in adults and children, compared to our baseline scenario that maintains 2015 rates of testing, ART initiation, ART discontinuation, treatment failure, and levels of condom use. In 2015, we estimated that 52% (95% credible intervals: 46%-58%) of HIV-positive individuals were aware of their status, 72% (57%-82%) of those aware were on ART, and 77% (74%-79%) of those on ART were virologically suppressed. Reaching the UNAIDS targets on time would avert 50% (42%-60%) of new HIV infections over 2015-2030 compared to 30% (25%-36%) if the 90-90-90 target is reached in 2025. Attaining the UNAIDS targets in FSW, their clients, and MSM (but not in the rest of the population) would avert a similar fraction of new infections (30%; 21%-39%). A 25-percentage-point drop in condom use from the 2015 levels among FSW and MSM would reduce the impact of reaching the UNAIDS targets, with 38% (26%-51%) of infections averted. The study's main limitation is that homogenous spatial coverage of interventions was assumed, and future lines of inquiry should examine how geographical prioritization could affect HIV transmission.

CONCLUSIONS: Maximizing the impact of the UNAIDS targets will require rapid scale-up of interventions, particularly testing, ART initiation, and limiting ART discontinuation. Reaching clients of FSW, as well as key populations, can efficiently reduce transmission. Sustaining the high condom-use levels among key populations should remain an important prevention pillar.

42. Vagenas, P., et al. **"A Qualitative Assessment of Alcohol Consumption and Sexual Risk Behaviors Among Men Who Have Sex With Men and Transgender Women in Peru."** *Subst Use Misuse* 2017 52(7): 831-839.

BACKGROUND: Peruvian men who have sex with men (MSM) and transgender women (TGW) experience the double burden of a highly concentrated HIV epidemic with a high prevalence of alcohol use disorders (AUDs). Recent research has associated both with risky sexual behaviors, including unprotected sex, having multiple sexual partners, engaging in sex work, having recent sexually transmitted infections, and having HIV-infected partners. AUDs have also been associated in MSM/TGW with being unaware of HIV+ status.

OBJECTIVES: This study aims to further examine issues associated with alcohol consumption, HIV infection, and risk behaviors in a qualitative analysis of focus groups conducted with MSM/TGW in Peru.

METHODS: A total of 26 MSM/TGW participants with AUDs participated in three semi-structured focus groups in Lima, Peru. Content analysis was facilitated by software, and specific themes were elucidated.

RESULTS: Participants described their drinking patterns, including the types of alcoholic drinks they consumed. They depicted drinking frequently and over multiple-day sessions. Problematic drinking behaviors were described, as well as the perceived characteristics of alcohol dependence. Interestingly, HIV-infected participants who were prescribed antiretroviral therapy did not believe that their drinking affected their medication adherence. These insights can aid in the design of future interventions aiming to reduce problematic drinking as well as HIV-related risk behaviors and, subsequently, HIV incidence.

CONCLUSIONS: Peruvian MSM/TGW exhibit problematic drinking, which may be associated with risky sexual behaviors and HIV transmission. Interest in reducing alcohol consumption was high, suggesting the need for targeted behavioral and pharmacological interventions.

43. Zou, H., et al. "**A randomised controlled trial to evaluate the impact of sexual health clinic based automated text message reminders on testing of HIV and other sexually transmitted infections in men who have sex with men in China: protocol for the T2T Study.**" *BMJ Open* 2017 7(7): e015787. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5541733/pdf/bmjopen-2016-015787.pdf>

INTRODUCTION: The frequency of screening for HIV and other sexually transmitted infections (STIs) among men who have sex with men (MSM) is still low in China.

METHODS AND ANALYSIS: A sexual health clinic based randomised controlled trial will be conducted in Guangzhou, Wuxi and Shenzhen, China, enrolling 600 MSM. Eligibility will be judged by the pre-programmed iPad based questionnaire: (1) age ≥ 18 years and (2) have had two or more male anal sex partners, or condomless anal sex with a casual male sex partner, or an STI history, in the past 6 months, and (3) provides a valid mobile phone number. Eligible men will be randomly allocated 1:1 to the intervention arm (with monthly text messages reminding them to test for HIV/STIs) or to the control arm (with no reminders). Men in both arms will complete a questionnaire onsite at enrolment and after 12 months, and another questionnaire online at 6 months. Men in both arms will be tested for HIV, syphilis, anal gonorrhoea/chlamydia and penile gonorrhoea/chlamydia at enrolment and at 12 months. The primary outcome is the rate and frequency of HIV testing within the 12 months after enrolment. The secondary outcome is the rate of unprotected anal intercourse. An assessment of the cost effectiveness of this intervention is also planned.

ETHICS AND DISSEMINATION: The study has been approved by the ethical review committees of the University of New South Wales, Australia (HC16803), the Guangdong Provincial Centre for Skin Disease and STI Control (GDDHLS-20160926) and the Wuxi Centre for Disease Control and Prevention (WXCDC2016009), China. Study findings will be submitted to academic journals and disseminated to local health authorities.

TRIAL REGISTRATION NUMBER: Chinese Clinical Trial Registry at: <http://www.chictr.org.cn/showprojen.aspx?proj=15752> and WHO International Clinical Trials Registry Platform at: <http://apps.who.int/trialsearch/Trial2.aspx?TrialID=ChiCTR-IOR-16009304>.

44. Khatib, A., et al. "**Reproducibility of Respondent-Driven Sampling (RDS) in Repeat Surveys of Men Who have Sex with Men, Unguja, Zanzibar.**" *AIDS Behav* 2017 21(7): 2180-2187.

To assess the reproducibility of respondent-driven sampling (RDS) in obtaining comparable samples across two survey rounds, we conducted integrated bio-behavioral surveillance surveys (IBBSS) using RDS in 2007 and 2011 among men who have sex with men (MSM) on Unguja island in Zanzibar. Differences in the two rounds were assessed by comparing RDS-adjusted population estimates, stratified estimates, and bottleneck plots. Participants in the 2011 survey round were younger (31.4 vs. 9.9% under 19 years old, $p < 0.001$), more likely to have tested for HIV in the last year (53.7 vs. 10.6%, $p < 0.001$), and less likely to have injected drugs

in the last 3 months (1.0 vs. 23.2%, $p < 0.001$) compared to participants in the 2007 round. HIV prevalence was 12.3% in 2007 compared to 2.6% in 2011 ($p < 0.001$). The difference in HIV prevalence persisted after stratifying and adjusting for known differences in the two surveys rounds. Bottleneck plots suggest that recruitment chains were "trapped" in the social networks of MSM who injected drugs to a greater extent in 2007 than in 2011. We conclude that the two rounds of RDS sampled different subsets of the MSM population on Uguja, particularly with respect to inclusion of MSM within the social networks of people who inject drugs. Findings underscore the need to evaluate the reproducibility of RDS in repeated rounds of IBBSS and to develop new sampling methods for key populations at high risk for HIV in order to track the epidemic, develop evidence-based prevention and care programs, and assess their impact.

45. Ekstrand, M. L., et al. **"Sexual identity and behavior in an online sample of Indian men who have sex with men."** *AIDS Care* 2017 29(7): 905-913.

Indian men who have sex with men are disproportionately impacted by HIV. While prevention efforts to date have focused on men who visit drop-in centers or physical cruising sites, little is known about men who are meeting sexual partners on virtual platforms. This paper explores issues related to sexual identity and sexual behaviors in an online sample of men who identified as gay ($n = 279$) or bisexual ($n = 123$). There were significant differences in outedness between the two groups, with 48% of bisexually identified men reporting that they were out to "no one" and 82% stating that they present themselves as heterosexual to family and friends. Corresponding rates for gay-identified men were 15% and 41%, respectively (both $p < .001$). Twenty-nine percent of bisexually identified men reported being married, compared to only 3% of the gay-identified men ($p < .001$). Bisexually identified men were also more likely to report having exclusively insertive anal sex (49% vs 30% $p < .001$), while gay-identified men were more likely to report exclusively receptive anal sex (41% vs 13% $p < .0001$). Rates of unprotected anal sex (UAS) in the two groups were similar; however, married men were significantly more likely to report unprotected vaginal sex (76% vs 35%, $p < .012$). Positive attitudes toward UAS and lower self-efficacy were associated with sexual risk in both groups; however, substance use was associated with sexual risk only among bisexually identified men. These findings show that a large proportion of Indian bisexually identified men lead closeted lives, especially in their interactions with friends and family, with the vast majority presenting as heterosexual. The lower condom use with wives may be due to societal pressures to have children. The results suggest that bisexually identified men may benefit from targeted programs and non-directive, non-judgmental individual or couples counseling which emphasizes condom use with both male and female partners.

46. Knox, J., et al. **"Substance Use and Sexual Risk Behavior Among Black South African Men Who Have Sex With Men: The Moderating Effects of Reasons for Drinking and Safer Sex Intentions."** *AIDS Behav* 2017 21(7): 2023-2032.

Research studies suggest an association between substance use and sexual risk behavior, but are not completely consistent. The moderating effects of other psychosocial factors might help explain these inconsistencies. The current study therefore assessed whether substance use is associated with sexual risk behavior, and whether this relationship is modified by expectancies about the effects of alcohol, reasons for consuming alcohol, or intentions to engage in safe sex. A cross-sectional survey was conducted among 480 black South African men who have sex with men recruited using respondent-driven sampling. In multivariable analyses, the effect of alcohol use on unprotected receptive anal intercourse (URAI) was modified by drinking to enhance social interaction (R^2 change = 0.03, $p < 0.01$). The effect of drug use on URAI was modified by safe sex intentions (R^2 change = 0.03, $p < 0.001$). Alcohol use was positively associated with URAI only among those who drink to enhance social interaction ($\beta = 0.08$, $p < 0.05$). Drug use was positively associated with URAI only among those with high safe sex intentions ($\beta = 0.30$, $p < 0.001$). Our findings suggest that efforts to minimize the impact of substance use on HIV risk behavior should target men who drink to enhance social interaction and men who intend to engage in safer sex. Efforts made to increase safer sex intentions as a way to reduce HIV risk behavior should additionally consider the effects of substance use.

47. Hernandez, I., et al. "**Syphilis and HIV/Syphilis Co-infection Among Men Who Have Sex With Men (MSM) in Ecuador.**" *Am J Mens Health* 2017 11(4): 823-833.

There is a reemergence of syphilis in the Latin American and Caribbean region. There is also very little information about HIV/Syphilis co-infection and its determinants. The aim of this study is to investigate knowledge, attitudes, and practices regarding sexually transmitted infections (STIs), in particular syphilis infection and HIV/Syphilis co-infection, as well as to estimate the prevalence of syphilis among men who have sex with men (MSM) in a city with one of the highest HIV prevalence rates in Ecuador. In this study, questionnaires were administered to 291 adult MSM. Questions included knowledge about STIs and their sexual practices. Blood samples were taken from participants to estimate the prevalence of syphilis and HIV/syphilis co-infection. In this population, the prevalence of HIV/syphilis co-infection was 4.8%, while the prevalence of syphilis as mono-infection was 6.5%. Participants who had syphilis mono-infection and HIV/syphilis co-infection were older. Men who had multiple partners and those who were forced to have sex had increased odds of syphilis and HIV/syphilis co-infection. A high prevalence of syphilis and self-reported STI was observed, which warrants targeted behavioral interventions. Co-infections are a cause for concern when treating a secondary infection in a person who is immunocompromised. These data suggest that specific knowledge, attitudes, and behaviors among MSM are associated with increased odds of STIs (including HIV/syphilis co-infections) in this region of Ecuador.

48. Klingenschmidt, J., et al. "**Transactional sex among men who have sex with men in the French Antilles and French Guiana: frequency and associated factors.**" *AIDS Care* 2017 29(6): 689-695.

The French Antilles (Martinique, Saint Martin and Guadeloupe) and French Guiana are the French territories most affected by the HIV epidemic. Some population groups such as men who have sex with men (MSM), especially those involved in transactional sex, are thought to be particularly vulnerable to HIV but few data exist to help characterize their health-related needs and thus implement relevant prevention interventions. To fill this knowledge gap, we used data collected from an HIV/AIDS Knowledge, Attitudes, Behaviours and Practices survey conducted in 2012 among MSM living in the French Antilles and French Guiana and recruited through snowball sampling. Our objectives were to compare social and demographic characteristics and sexual behaviours between MSM engaging in transactional sex and MSM not engaging in transactional sex and to identify factors associated with transactional sex involvement using a logistic regression model. A total of 733 MSM were interviewed, 21% of whom reported to undergo transactional sex. Their behaviour and social and demographic characteristics were different from other MSMs' and they were more exposed to factors that are recognized to potentiate HIV vulnerability, at the individual, community, network and structural levels. The variables positively associated with sex trade involvement were having ever consumed drug (OR = 2.84 [1.23-6.52]; p = .002), having a greater number of sex partners than the median (OR = 8.31 [4.84-14.30]; p < .001), having experienced intimate partner violence (OR = 1.72 [0.99-3.00]; p = .053) and having undergone physical aggression because of sexual orientation (OR = 2.84 [1.23-6.52]; p = .014). Variables negatively associated with sex trade involvement were being older (OR = 0.93 [0.90-0.97] per year; p = .001), having a stable administrative situation (OR = 0.10 [0.06-0.19]; p < .001), having a stable housing (OR = 0.29 [0.15-0.55]; p < .001) and being employed full-time (OR = 0.29 [1.23-6.52]; p = .002).

49. Bamgboye, E. A., et al. "**Transactional Sex between Men and Its Implications on HIV and Sexually Transmitted Infections in Nigeria.**" *J Sex Transm Dis* 2017 2017: 1810346. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5563421/pdf/JSTD2017-1810346.pdf>

INTRODUCTION: Men who have transactional sex with men (MTSM) are known to be at higher risk for HIV and sexually transmitted infections (STIs). This study explored the risk factors associated with STI symptoms and HIV prevalence among men who have transactional sex with men in Nigeria.

METHODS: In 2014, a cross-sectional study, using respondent driven sampling technique, was carried out to recruit 3,172 MSM across eight states in Nigeria. Relevant information on sociodemographic characteristics, sexual behaviors, and self-reported symptoms of STI was obtained. Bivariate and multivariate analysis was

performed to identify risk factors for STI symptoms and HIV.

RESULTS: 38.2% of the MSM were involved in transactional sex. Prevalence of self-reported STI symptoms was higher among MTSM than other MSM, while HIV prevalence was higher among other MSM than MTSM. Identified factors associated with STI symptoms and HIV among MSTM were being single, alcohol consumption, oral sex, and history of rape by a male partner.

CONCLUSION: Sexually transmitted infections are a significant challenge to men who have transactional sex with men. Adolescents and single men are more at risk of these infections. Youth empowerment needs to be invested on to avoid increased risk among these groups of people.

50. Ren, X. L., et al. **"Uptake of HIV Self-testing among Men Who have Sex with Men in Beijing, China: a Cross-sectional Study."** *Biomed Environ Sci* 2017 30(6): 407-417.

OBJECTIVE: To examine HIV self-testing uptake and its determinates among men who have sex with men (MSM) in Beijing, China. **METHODS:** A cross-sectional online survey was conducted in Beijing, China in 2016. Participants were users of a popular Chinese gay networking application and had an unknown or negative HIV status. Univariate and multivariate logistic regression analyses were conducted to examine factors associated with HIV self-testing based on adjusted odds ratio (AOR) and 95% confidence interval (CI).

RESULTS: Among the 5,996 MSM included in the study, 2,383 (39.7%) reported to have used HIV self-testing kits. Willingness to use an HIV self-test kit in the future was expressed by 92% of the participants. High monthly income (AOR = 1.49; CI = 1.10-2.02; P = 0.010), large number of male sex partners (≥ 2 : AOR = 1.24; CI = 1.09-1.43; P = 0.002), sexual activity with commercial male sex partners (≥ 2 : AOR = 1.94; CI = 1.34 -2.82; P = 0.001), long-term drug use (AOR = 1.42; CI = 1.23-1.62; P < 0.001), and long-term HIV voluntary counseling and testing (VCT) attendance (AOR = 3.62; CI = 3.11-4.22; P < 0.001) were all associated with increased odds of HIV self-testing uptake.

CONCLUSION: The nearly 40% rate of HIV self-testing uptake among MSM in our sample was high. In addition, an over 90% willingness to use kits in the future was encouraging. HIV self-testing could be an important solution to help China achieve the global target of having 90% of all people living with HIV diagnosed by 2020.

51. Bissio, E., et al. **"Very high incidence of syphilis in HIV-infected men who have sex with men in Buenos Aires city: a retrospective cohort study."** *Sex Transm Infect* 2017 93(5): 323-326.

BACKGROUND: The incidence of sexually transmitted infections (STIs), particularly syphilis, is high and continues to rise among some populations, especially among men who have sex with men (MSM). Furthermore, a higher incidence of STIs has been reported in HIV-positive than in HIV-negative MSM.

OBJECTIVE: To determine the incidence of syphilis in a cohort of men with HIV in Buenos Aires city.

METHODS: Retrospective cohort study. We examined the records and visits made by men with HIV aged > 18 years in our institution during a 1-year period. Venereal Disease Reference Laboratory (VDRL) results for all the men in our cohort during the study period were analysed. We considered a case of syphilis as incident if a person had a VDRL result of ≥ 16 DILS, provided that this was increased at least fourfold compared with a previous determination. All VDRL results ≤ 8 were investigated, and analysed together with the medical records, to determine if they were new cases.

RESULTS: We analysed the VDRL results and the clinical records of 1150 men followed up in our centre during the study period. Mean age was 40.9 years. According to the definition used, we registered 171 new cases of syphilis-that is, an incidence of 14.9/100 patients/year (95% CI 12.9 to 17.0). No significant differences in incidence according to age group were found, but there was a trend towards a lower incidence in older men. Ten men had two new episodes during the study.

CONCLUSIONS: The incidence of syphilis in this cohort of men with HIV (predominantly MSM) was very high. In addition to maintaining high surveillance for early diagnosis and treatment, it is necessary to implement newer and more effective measures to prevent syphilis and other STIs in this population.

52. Mgopa, L. R., et al. "**Violence and depression among men who have sex with men in Tanzania.**" *BMC Psychiatry* 2017 17(1): 296. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5558659/pdf/12888_2017_Article_1456.pdf

BACKGROUND: Men who have sex with men (MSM) continue to be at an increased risk of Violence, HIV transmission and Mental Disorders such as depression on top of many other bio-psycho-socio challenges they face as a result of their sexual orientation.

METHODS: We recruited 345 MSM using a respondent driven sampling technique. Revised Conflict Tactic Scale, PHQ-9 and questions adapted from the TDHS 2010 were used to assess for violence, depression and HIV-risk behaviors respectively. Continuous and categorical variables were analyzed with student's t-test and chi-square test respectively. Logistic regression analyses were performed to assess for predictors of depression and HIV-risk behaviors. All tests were two sided and $p < 0.05$ was taken as significance level.

RESULTS: Overall, 325 (94.2%) of participants experienced any form of violence, with emotional violence constituting the majority (90.1%), while physical and sexual violence were reported by 254 (73.6%) and 250 (72.5%) of participants respectively. Depressive symptoms were present in 245 (70.0%) and participants who experienced violence had a 3 times increased risk of depressive symptoms compared to their violence-free counterparts, $p < 0.001$. On the other hand, participants who experienced any form of violence displayed an over 11 times increased rate of depressive symptoms compared to their counterparts who were violence free, $p < 0.001$. Violence experience was found to be the strongest associated factor for depressive symptoms.

CONCLUSIONS: The rates of violence, depressive symptoms and HIV risk behaviors amongst MSM are astoundingly high thus necessitating extensive interventions. In view of this, deliberate measures to deal with the reported high rates necessitate joint intervention efforts from the policy makers, health providers and community at large.

53. Menacho, L. "**What Men Who Have Sex with Men in Peru Want in Internet-based Sexual Health Information.**" *J Homosex* 2017.

Objectives We aimed to gather information among gay men regarding their preferences for online sexual health information. **Methods** 1,160 Peruvian MSM, 18 years or older, completed an online survey hosted on www.tunexo.org. **Results** The mean age was 26.8 years. Around 90% had post-high school education. The self-reported HIV prevalence was 12.3%. The acceptability of sexual health content was greater in the most highly educated group. The highest rated topics and services of interest were those related to improving sexual and mental health. The least educated group was significantly more interested in "getting prevention messages on mobiles" compared to men with the highest level of education (71% vs. 52%; $p < 0.001$). Men's sexual health was of more interest to the 30-39 year-old group compared to the 18-24 year-old one (97% vs. 87%; $p = 0.005$). **Conclusions** Future web-based interventions related to sexual health among targeted groups of MSM in Peru can be tailored to meet their preferences.

54. Draper, B. L., et al. "**Willingness to use HIV pre-exposure prophylaxis among gay men, other men who have sex with men and transgender women in Myanmar.**" *J Int AIDS Soc* 2017 20(1): 1-10. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5577714/pdf/zias-20-1355618.pdf>

INTRODUCTION: HIV pre-exposure prophylaxis (PrEP) has emerged as a key component of contemporary HIV combination prevention strategies. To explore the local suitability of PrEP, country-specific acceptability studies are needed to inform potential PrEP implementation. In the context of Myanmar, in addition to

resource constraints, HIV service access by gay men, other men who have sex with men, and transgender women (GMT) continues to be constrained by legislative and community stigma and marginalization. We aimed to determine PrEP acceptability among GMT in Myanmar and explore the factors associated with willingness to use PrEP.

METHODS: GMT were recruited in Yangon and Mandalay through local HIV prevention outreach programmes in November and December 2014. Quantitative surveys were administered by trained peer educators and collected data on demographics, sexual risk, testing history and PrEP acceptability. A modified six-item PrEP acceptability scale classified self-reported HIV undiagnosed GMT as willing to use PrEP. Multivariable logistic regression identified factors associated with willingness to use PrEP.

RESULTS: Among 434 HIV undiagnosed GMT, PrEP awareness was low (5%). PrEP acceptability was high, with 270 (62%) GMT classified as willing to use PrEP. GMT recruited in Mandalay (adjusted odds ratio (aOR) = 1.79; 95%CI = 1.05-3.03), who perceived themselves as likely to become HIV positive (aOR = 1.82; 95%CI = 1.10-3.02), who had more than one recent regular partner (aOR = 2.94; 95%CI = 1.41-6.14), no regular partners (aOR = 2.05; 95%CI = 1.10-3.67), more than five casual partners (aOR = 2.05; 95%CI = 1.06-3.99) or no casual partners (aOR = 2.25; 95%CI = 1.23-4.11) were more likely to be willing to use PrEP. The association between never or only occasionally using condoms with casual partners and willingness to use PrEP was marginally significant (aOR = 2.02; 95%CI = 1.00-4.10). GMT who reported concern about side effects and long-term use of PrEP were less likely (aOR = 0.35; 95%CI = 0.21-0.59) to be willing to use PrEP.

CONCLUSIONS: This is the first study to assess PrEP acceptability in Myanmar. Findings suggest PrEP is an acceptable prevention option among GMT in Myanmar, providing they are not required to pay for it. Implementation/demonstration projects are needed to explore the feasibility and cost-effectiveness of PrEP as a prevention option for GMT in Myanmar.

55. Bourne, A., et al. "Willingness to use pre-exposure prophylaxis (PrEP) for HIV prevention among men who have sex with men (MSM) in Malaysia: findings from a qualitative study." *J Int AIDS Soc* 2017 20(1): 1-7. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5577697/pdf/zias-20-1355619.pdf>

BACKGROUND: Men who have sex with men (MSM) continue to be disproportionately affected by HIV in Malaysia. Recent success has been observed within demonstration projects examining the efficacy of HIV pre-exposure prophylaxis (PrEP), an antiretroviral -based medication taken by HIV-negative men to prevent sero-conversion. In order for such promising findings to be translated in real-world settings, it is important to understand the acceptability of PrEP, including perceived barriers to access or uptake.

METHODS: As part of a larger mixed-methods study exploring acceptability and willingness to use PrEP among MSM in Malaysia, 19 men took part in audio-recorded focus group discussions hosted by a community-based HIV organization and facilitated by a trained researcher. Discussions focussed on awareness and potential information management, general perceptions of PrEP and potential motivations or barriers to the use of PrEP, including those at the personal, social, health system or structural level. Data were transcribed verbatim and underwent a detailed thematic analysis.

RESULTS: Rather than perceiving PrEP as a replacement for condoms in terms of having safer sex, many participants viewed it as an additional layer protection, serving as a crucial barrier to infection on occasions where condom use was intended, but did not occur. It was also perceived as more valuable to "at-risk" men, such as those in HIV sero-discordant relationships or those with a higher number of sexual partners. Elements of discussion tended to suggest that some men taking PrEP may be subject to stigma from others, on the assumption they may be promiscuous or engage in high-risk sexual behaviours.

CONCLUSIONS: This qualitative study indicates that, broadly speaking, PrEP may be acceptable to MSM in Malaysia. However, in order for its potential to be realized, and uptake achieved, educative interventions are required to inform the target population as to the efficacy and potential, positive impact of PrEP. Given concerns for how those taking it may be stigmatized, it is crucial that the use of PrEP is presented as a

responsible course of action, and one of a range of strategies that men can use to keep themselves safe from HIV.

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Sex Workers - 35

1. Lall, P., et al. "**Acceptability of a microfinance-based empowerment intervention for transgender and cisgender women sex workers in Greater Kuala Lumpur, Malaysia.**" *J Int AIDS Soc* 2017 20(1): 1-10. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5577685/pdf/zias-20-1355617.pdf>

INTRODUCTION: Cisgender and transgender woman sex workers (CWSWs and TWSWs, respectively) are key populations in Malaysia with higher HIV-prevalence than that of the general population. Given the impact economic instability can have on HIV transmission in these populations, novel HIV prevention interventions that reduce poverty may reduce HIV incidence and improve linkage and retention to care for those already living with HIV. We examine the feasibility of a microfinance-based HIV prevention intervention among CWSW and TWSWs in Greater Kuala Lumpur, Malaysia.

METHODS: We conducted 35 in-depth interviews to examine the acceptability of a microfinance-based HIV prevention intervention, focusing on: (1) participants' readiness to engage in other occupations and the types of jobs in which they were interested in; (2) their level of interest in the components of the potential intervention, including training on financial literacy and vocational education; and (3) possible barriers and facilitators to the successful completion of the intervention. Using grounded theory as a framework of analysis, transcripts were analysed through Nvivo 11.

RESULTS: Participants were on average 41 years old, slightly less than half (48%) were married, and more than half (52%) identified as Muslim. Participants express high motivation to seek employment in other professions as they perceived sex work as not a "proper job" with opportunities for career growth but rather as a short-term option offering an unstable form of income. Participants wanted to develop their own small enterprise. Most participants expressed a high level of interest in microfinance intervention and training to enable them to enter a new profession. Possible barriers to intervention participation included time, stigma, and a lack of resources.

CONCLUSION: Findings indicate that a microfinance intervention is acceptable and desirable for CWSWs and TWSWs in urban Malaysian contexts as participants reported that they were ready to engage in alternative forms of income generation.

2. Fielding-Miller, R., et al. "**Agency as a mediator in the pathway from transactional sex to HIV among pregnant women in Swaziland: a multigroup path analysis.**" *J Int AIDS Soc* 2017 20(1): 1-11. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5577635/pdf/zias-20-1340551.pdf>

INTRODUCTION: Transactional sex is a structural driver of HIV for women and girls in sub-Saharan Africa. In transactional relationships, sexual and economic obligations intertwine and may have positive and negative effects on women's financial standing and social status. We conducted a clinic-based survey with pregnant women in Swaziland using a locally validated transactional sex scale to measure the association between subjective social status, transactional sex, and HIV status, and to assess whether this association differed according to a woman's agency within her relationship.

METHODS: We recruited a convenience sample of 406 pregnant women at one rural and one urban public antenatal clinic in Swaziland and administered a behavioural survey that was linked to participant HIV status

using clinic records. We then conducted a multigroup path analysis to test three hypotheses: (1) that more engagement in transactional sex is associated with decreased condom use and increased subjective social status; (2) that subjective social status mediates the relationship between transactional sex and HIV status; and (3) that these relationships are different across groups according to whether or not a woman reported any indicator of constrained agency within her relationship.

RESULTS: The amount and value of material goods received from a sexual partner was significantly and positively associated with higher subjective social status among all participants. As the amount of material goods received from a partner increased, women who reported no indicators of constrained agency were less likely to use condoms. Conversely, there was no relationship between transactional sex and condom use among women who reported any indicator of constrained relationship agency. Among women who reported any indicator of constrained agency, HIV was significantly associated with lower subjective social status.

CONCLUSIONS: Relationship agency likely plays a key role in determining which mechanisms create HIV risk for women in transactional relationships. Interventions to mitigate these risks must address social forces that penalize women who engage in sexual relationships as well as structural drivers of gendered economic disparity that reduce women's agency within their sexual and romantic relationships.

3. Tan, D., et al. "**Alcohol Use and HIV Risk Within Social Networks of MSM Sex Workers in the Dominican Republic.**" *AIDS Behav* 2017.

To examine how alcohol-related HIV risk behaviors within MSM sex workers' social networks (SN) may be associated with individual risk behaviors, respondent-driven and venue-based sampling were used to collect demographic, behavioral and SN characteristics among MSM sex workers in Santo Domingo and Boca Chica (N = 220). The majority of participants reported problem drinking (71.0%) or alcohol use at their last sexual encounter (71.4%). Self-reported problem drinking was associated with SN characteristics (at least one member who recently got drunk aOR = 7.5, no religious/spiritual adviser aOR = 3.0, non-sexual network density aOR = 0.9), while self-reported alcohol use at last sex was associated with individual (drug use at last sex aOR = 4.4) and SN characteristics (at least one member with previous HIV/STI testing aOR = 4.7). Dominican MSM sex workers reported high alcohol use, which may increase their risk for HIV. A better understanding of SN factors associated with individual risk behaviors can help guide appropriate intervention development.

4. Maheu-Giroux, M., et al. "**Anal Intercourse Among Female Sex Workers in Cote d'Ivoire: Prevalence, Determinants, and Model-Based Estimates of the Population-Level Impact on HIV Transmission.**" *Am J Epidemiol* 2017.

Current evidence suggests that anal intercourse (AI) during sex work is common in sub-Saharan Africa, but few studies investigated the contribution of heterosexual AI to HIV epidemics. Using a respondent-driven sampling survey of female sex workers (FSW) in Abidjan (2014), we estimated AI prevalence and frequency. Poisson regressions were used to identify AI determinants. About 20% of FSW (N = 466) engaged in AI during a normal week (95% confidence intervals: 15-26%). Women who performed AI were generally younger, had been selling sex for longer, were born in Cote d'Ivoire, reported higher sex-work income, more frequent sex in public places, and violence from clients than women not reporting AI. Condom use was lower, condom breakage/slippage more frequent, and use of water-based lubricants was less frequently reported for AI than for vaginal intercourse. Using a dynamic transmission model, we estimated that 22% (95% credible intervals: 11-37%) of new HIV infections could have been averted among FSW during 2000-2015 if AI had been substituted for vaginal intercourse acts. Despite representing a small fraction of all sex acts, AI is an underestimated source of HIV transmission. Increasing availability/uptake of condoms, lubricants, and pre-exposure prophylaxis for women engaging in AI could help mitigate HIV risk.

5. Johnston, L. G., et al. "**Associations of HIV Testing, Sexual Risk and Access to Prevention Among Female Sex Workers in the Dominican Republic.**" *AIDS Behav* 2017 21(8): 2362-2371.

The Caribbean region has one of the highest proportions of HIV in the general female population attributable to sex work. In 2008 (n = 1256) and 2012 (n = 1525) in the Dominican Republic, HIV biological and behavioral surveys were conducted among female sex workers (FSW) in four provinces using respondent driven sampling. Participants were ≥ 15 years who engaged in intercourse in exchange for money in the past 6 months and living/working in the study province. There were no statistically significant changes in HIV and other infections prevalence from 2008 to 2012, despite ongoing risky sexual practices. HIV testing and receiving results was low in all provinces. FSW in 2012 were more likely to receive HIV testing and results if they participated in HIV related information and education and had regular checkups at health centers. Further investigation is needed to understand barriers to HIV testing and access to prevention services.

6. Chanda, M. M., et al. **"Barriers and Facilitators to HIV Testing Among Zambian Female Sex Workers in Three Transit Hubs."** *AIDS Patient Care STDS* 2017 31(7): 290-296.

Zambia has a generalized HIV epidemic, and HIV is concentrated along transit routes. Female sex workers (FSWs) are disproportionately affected by the epidemic. HIV testing is the crucial first step for engagement in HIV care and HIV prevention activities. However, to date little work has been done with FSWs in Zambia, and little is known about barriers and facilitators to HIV testing in this population. FSW peer educators were recruited through existing sex worker organizations for participation in a trial related to HIV testing among FSWs. We conducted five focus groups with FSW peer educators (N = 40) in three transit towns in Zambia (Livingstone, Chirundu, and Kapiri Mposhi) to elicit community norms related to HIV testing. Emerging themes demonstrated barriers and facilitators to HIV testing occurring at multiple levels, including individual, social network, and structural. Stigma and discrimination, including healthcare provider stigma, were a particularly salient barrier. Improving knowledge, social support, and acknowledgment of FSWs and women's role in society emerged as facilitators to testing. Interventions to improve HIV testing among FSWs in Zambia will need to address barriers and facilitators at multiple levels to be maximally effective.

7. Wahed, T., et al. **"Barriers to sexual and reproductive healthcare services as experienced by female sex workers and service providers in Dhaka city, Bangladesh."** *PLoS One* 2017 12(7): e0182249. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5536311/pdf/pone.0182249.pdf>

OBJECTIVES: This study aimed to identify the barriers female sex workers (FSWs) in Bangladesh face with regard to accessing sexual and reproductive health (SRH) care, and assess the satisfaction with the healthcare received.

METHODS: Data were collected from coverage areas of four community-based drop-in-centers (DICs) in Dhaka where sexually transmitted infection (STI) and human immunovirus (HIV) prevention interventions have been implemented for FSWs. A total of 731 FSWs aged 15-49 years were surveyed. In addition, in-depth interviews (IDIs) were conducted with 14 FSWs and 9 service providers. Respondent satisfaction was measured based on recorded scores on dignity, privacy, autonomy, confidentiality, prompt attention, access to social support networks during care, basic amenities, and choice of institution/care provider.

RESULTS: Of 731 FSWs, 353 (51%) reported facing barriers when seeking sexual and reproductive healthcare. Financial problems (72%), shame about receiving care (52.3%), unwillingness of service providers to provide care (39.9%), unfriendly behavior of the provider (24.4%), and distance to care (16.9%) were mentioned as barriers. Only one-third of the respondents reported an overall satisfaction score of more than fifty percent (a score of between 9 and 16) with formal healthcare. Inadequacy or lack of SRH services and referral problems (e.g., financial charge at referral centers, unsustainable referral provision, or unknown location of referral) were reported by the qualitative FSWs as the major barriers to accessing and utilizing SRH care.

CONCLUSIONS: These findings are useful for program implementers and policy makers to take the necessary steps to reduce or remove the barriers in the health system that are preventing FSWs from accessing SRH care, and ultimately meet the unmet healthcare needs of FSWs.

8. Hladik, W., et al. **"Burden and characteristics of HIV infection among female sex workers in Kampala, Uganda - a respondent-driven sampling survey."** *BMC Public Health* 2017 17(1): 565. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5466716/pdf/12889_2017_Article_4428.pdf

BACKGROUND: Sex workers in Uganda are at significant risk for HIV infection. We characterized the HIV epidemic among Kampala female sex workers (FSW).

METHODS: We used respondent-driven sampling to sample FSW aged 15+ years who reported having sold sex to men in the preceding 30 days; collected data through audio-computer assisted self-interviews, and tested blood, vaginal and rectal swabs for HIV, syphilis, neisseria gonorrhoea, chlamydia trachomatis, and trichomonas vaginalis.

RESULTS: A total of 942 FSW were enrolled from June 2008 through April 2009. The overall estimated HIV prevalence was 33% (95% confidence intervals [CI] 30%-37%) and among FSW 25 years or older was 44%. HIV infection is associated with low levels of schooling, having no other work, never having tested for HIV, self-reported genital ulcers or sores, and testing positive for neisseria gonorrhoea or any sexually transmitted infections (STI). Two thirds (65%) of commercial sex acts reportedly were protected by condoms; one in five (19%) FSW reported having had anal sex. Gender-based violence was frequent; 34% reported having been raped and 24% reported having been beaten by clients in the preceding 30 days.

CONCLUSIONS: One in three FSW in Kampala is HIV-infected, suggesting a severe HIV epidemic in this population. Intensified interventions are warranted to increase condom use, HIV testing, STI screening, as well as antiretroviral treatment and pre-exposure prophylaxis along with measures to overcome gender-based violence.

9. Sharma, V., et al. **"Correlates of health care utilization under targeted interventions: The case of female sex workers in Andhra Pradesh, India."** *Health Care Women Int* 2017: 0.

Accessibility and frequency of use of health care services among female sex workers (FSWs) are constrained by various factors. In this analysis, we examined the correlates of frequency of using health care services under targeted interventions among FSWs. A sample of FSWs [N = 1,973] was obtained from a second round [2012] of Behavioural Tracking Survey [BTS], conducted in 5 districts of Andhra Pradesh, a high HIV prevalence state in southern India. We used negative binomial regression models to analyse frequency of utilisation of healthcare services among FSWs. Based on our analysis we suggest that various predisposing and enabling factors were found to be significantly associated with the visit to NGO clinics for treatment of any health problem, any STI symptom and the number of condoms received from the peer-worker or condom depot. We suggest the need for further research with respect to various correlates of frequency of using health care among FSWs to develop effective intervention strategies in countries that have high HIV prevalence among FSWs and targeted interventions need more diligent implementation to reach the unreached.

10. Iakunchykova, O. P., et al. **"Correlates of HIV and Inconsistent Condom Use Among Female Sex Workers in Ukraine."** *AIDS Behav* 2017 21(8): 2306-2315.

While female sex workers (FSWs) carry one of the highest risks of HIV transmission, little is known about predictors of HIV and risky behavior of FSWs in Ukraine. In this study of 4806 Ukrainian FSWs, the prevalence of HIV was 5.6 %. FSWs had higher odds to be HIV infected if they had lower income, were older, injected drugs, experienced violence, and solicited clients on highways. Inconsistent condom use with clients was reported by 34.5 % of FSWs. FSWs who solicited clients at railway stations, via media, through previous clients and other FSWs, and on highways reported lower consistency of condom use. Furthermore, inconsistent condom use was related to younger age, alcohol use, having fewer clients, not being covered with HIV prevention, and experiences of violence. The present study expands on the rather limited knowledge of correlates of the HIV and inconsistent condom use among FSWs in Ukraine.

11. Ishizaki, A., et al. "**Discrepancies in prevalence trends for HIV, hepatitis B virus, and hepatitis C virus in Haiphong, Vietnam from 2007 to 2012.**" *PLoS One* 2017 12(6): e0179616. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5491323/pdf/pone.0179616.pdf>

We previously reported a significant reduction in the prevalence of human immunodeficiency virus type 1 (HIV) from 2007 to 2012 in people who inject drugs (PWID; 35.9% to 18.5%, $p < 0.001$) and female sex workers (FSW; 23.1% to 9.8%, $p < 0.05$), but not in blood donors (BD) or pregnant women, in Haiphong, Vietnam. Our aim in the present study was to assess trends in the prevalence of infection with hepatitis B and C viruses (HBV and HCV, respectively). We also investigated the coinfection rates of HBV and HCV with HIV in the same groups. Between 2007 and 2012, HBV prevalence was significantly decreased in BD (18.1% vs. 9.0%, $p = 0.007$) and slightly decreased in FSW (11.0% vs. 3.9%, $p = 0.21$), but not in PWID (10.7% vs. 11.1%, $p = 0.84$). HCV prevalence was significantly decreased in PWID (62.1% in 2007 vs. 42.7% in 2008, $p < 0.0001$), but it had rebounded to 58.4% in 2012 (2008 vs. 2012, $p < 0.0001$). HCV prevalence also increased in FSW: 28.6% in 2007 and 2009 vs. 35.3% in 2012; however, this difference was not significant (2007 vs. 2012, $p = 0.41$). Rates of coinfection with HBV and HCV among HIV-infected PWID and FSW did not change significantly during the study period. Our findings suggest that the current harm reduction programs designed to prevent HIV transmission in PWID and FSW may be insufficient to prevent the transmission of hepatitis viruses, particularly HCV, in Haiphong, Vietnam. New approaches, such as the introduction of catch-up HBV vaccination to vulnerable adult populations and the introduction of HCV treatment as prevention, should be considered to reduce morbidity and mortality due to HIV and hepatitis virus coinfection in Vietnam.

12. Schwartz, S., et al. "**Engagement in the HIV care cascade and barriers to antiretroviral therapy uptake among female sex workers in Port Elizabeth, South Africa: findings from a respondent-driven sampling study.**" *Sex Transm Infect* 2017 93(4): 290-296.

BACKGROUND: Female sex workers (FSWs) are disproportionately affected by HIV, even in the context of broadly generalised HIV epidemics such as South Africa. This has been observed in spite of the individual and population-level benefits of HIV treatment. We characterise the HIV care cascade among FSWs and relationships with antiretroviral therapy (ART) use.

METHODS: FSWs ≥ 18 years were recruited through respondent-driven sampling into a cross-sectional study in Port Elizabeth, South Africa. Participants completed questionnaires and received HIV and syphilis testing; CD4 counts were assessed among women living with HIV. Engagement in the HIV care cascade is described, and correlates of self-reported ART use among treatment-eligible previously diagnosed FSWs were estimated using robust Poisson regression.

RESULTS: Between October 2014 and April 2015, 410 FSWs participated in study activities. Overall, 261/410 were living with HIV (respondent-driven sampling-weighted prevalence 61.5% (95% bootstrapped CI 54.1% to 68.0%)). Prior diagnosis of HIV was relatively high (214/261, 82%); however, ART coverage among FSWs living with HIV was 39% (102/261). In multivariate analyses, FSWs were less likely to be on ART if they had not disclosed their HIV status to non-paying partners (adjusted prevalence ratio (aPR) 0.43, 95% CI 0.22 to 0.86, where the reference is FSWs without non-paying partners), and also if they engaged in mobile healthcare services (aPR 0.71, 95% CI 0.57 to 0.89).

CONCLUSIONS: HIV testing and awareness of HIV status were high, but substantial losses in the cascade occur at treatment initiation. Given that FSWs engaged in mobile HIV testing and peer education programmes have unmet HIV treatment needs, models of decentralised treatment provision such as mobile-based ART care should be evaluated.

13. Gall, J., et al. "**Global Trends of Monitoring and Data Collection on the HIV Response among Key Populations Since the 2001 UN Declaration of Commitment on HIV/AIDS.**" *AIDS Behav* 2017 21(Suppl 1): 34-43.

Monitoring and evaluation indicators for HIV programs' response to the epidemic among key populations (sex workers, people who inject drugs, men who have sex with men, transgender people) are critical for reviewing the global response. From the beginning of global reporting, insufficiency of data has been a challenge for monitoring the epidemic response among key populations. However, key populations were only indirectly referenced in the 2001 Declaration of Commitment. By the 2006 Political Declaration on HIV/AIDS, data from key populations were still not required from every country, and were sparsely reported compared to other indicators. The 2011 Political Declaration on HIV/AIDS referenced key populations by name for the first time. In 2006, fewer than twenty countries (10%) reported HIV prevalence among key populations, whereas in 2012 the number of countries surpassed sixty (30%).

14. Teclessou, J. N., et al. "**HIV prevalence and behavioral studies among female sex workers in Togo in 2015**." *Bull Soc Pathol Exot* 2017.

The purpose of this study is to determine the seroprevalence of HIV among female sex workers (FSWs) and to document the behavior in this target population four years after the last study and possibly readjust these interventions. We conducted from March 27 to April 4, 2015 a cross-sectional study of 1197 FSWs. Behavior data were collected by interviewer-administered questionnaires. The FSWs were then subjected to blood tests to measure the prevalence of HIV. The average age of respondents FSWs was 28 years and 20% had their first sexual intercourse before 15 years old. Overall, 48% of the FSWs received between 1 and 7 customers per working day. The majority of FSWs (90%) had consistently used condoms during their last week of work. HIV seroprevalence was 11.7% for FSWs. HIV prevalence was higher in FSWs living in Lome, the capital city, (13.4%) than those living in the Kara region, in the North of the country (2%), $P < 0.0001$. The results of this study show the positive behavioral change in FSWs with a stabilization of HIV prevalence in this group after four years.

15. Okafor, U. O., et al. "**HIV prevalence and high-risk behaviour of young brothel and non-brothel based female sex workers in Nigeria**." *BMC Res Notes* 2017 10(1): 380. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5553858/pdf/13104_2017_Article_2712.pdf

BACKGROUND: Female sex workers (FSWs) have been identified as a core group in the transmission of HIV and other sexually transmitted infections (STIs). Young FSWs are particularly more vulnerable to HIV due to the combination of vulnerabilities associated with their youth and the sex work they engage in. This study aims to give more insight into HIV prevalence and sexual risk behaviour of young FSWs in Nigeria, by focusing on the differences between BB and NBB young FSWs.

METHODS: Data was obtained from the Nigeria Integrated Biological and Behavioural Surveillance Survey (IBBSS) for high-risk groups conducted in 2010. IBBSS is a quantitative survey conducted amongst identified high-risk sub populations within Nigeria. HIV prevalence and risk behaviour data for young BB and NBB FSWs aged 15-24 years for nine states was extracted and analysed.

RESULTS: A total of 1796 FSWs aged 15-24 years were interviewed during the survey, 746 (41.5%) were BB while 1050 (58.5%) were NBB. The HIV prevalence was higher among BB FSWs compared to the NBB FSWs (21.0% vs. 15.5%). BB FSWs reported less condom use with boyfriends and casual partners than NBB FSWs (26.3% vs. 45.5%) and (55.1% vs. 61.1%) respectively while risk of HIV infection due to injecting drug use was higher in NBB compared to BB FSWs (6.6% vs. 1.2%).

CONCLUSION: Existing and future interventions on HIV prevention should focus on empowering young FSWs with innovative and sustainable approaches aimed at improving their health and wellbeing.

16. Bozicevic, I., et al. "**HIV prevalence and related risk behaviours in female seasonal farm workers in Souss Massa Draa, Morocco: results from a cross-sectional survey using cluster-based sampling**." *Sex Transm Infect* 2017.

OBJECTIVES: To determine prevalence of HIV and HIV-related behaviours in female seasonal farm workers (FSFWs) in two provinces of Souss Massa Draa (SMD) region in Morocco. SMD has a higher burden of HIV compared with other parts of Morocco and is characterised by a substantial aggregation of FSFW.

METHODS: We carried out a cross-sectional HIV biobehavioural survey using cluster-based sampling of farms in the provinces Chtouka Ait Baha and Taroudant Ouled Teima in 2014. HIV testing was done using the Determine HIV-1/2 rapid test and reactive specimens were tested using ELISA and western blot. Collected data were post hoc weighted for region-based stratification and adjusted for clustering effects using complex survey functions of SPSS (V.21).

RESULTS: Among those eligible to participate, the response rate was 92.8%. HIV prevalence was 0.9% (95% CI 0.4% to 2.4%) among 520 recruited participants. A high proportion of respondents (67.7%) had no education. Ever having sex was reported by 79.8% and among these, 12.7% ever exchanged sex for money or goods. Sixty-one per cent reported condom use at most recent commercial vaginal sex in the past 12 months. STI symptom recognition was found to be low because 62.4% and 46.8% of FSFW could not report any STI symptoms in men and women, respectively. Twenty-seven per cent of respondents had an HIV test in the past 12 months. In multivariable analysis, those with primary or higher education (adjusted OR (aOR)=2.38, 95% CI 1.33 to 4.27) and those who participated in an HIV educational session at their workplace (aOR=11.00, 95% CI 3.99 to 30.31) had higher odds of ever been tested for HIV.

CONCLUSIONS: Although we found a relatively low HIV prevalence among FSFW in SMD, HIV interventions should be intensified, in particular, in a subgroup of women who are involved in sex work.

17. Burke, V. M., et al. "**HIV self-testing values and preferences among sex workers, fishermen, and mainland community members in Rakai, Uganda: A qualitative study.**" *PLoS One* 2017 12(8): e0183280. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5558930/pdf/pone.0183280.pdf>

HIV self-testing may encourage greater uptake of testing, particularly among key populations and other high-risk groups, but local community perceptions will influence test uptake and use. We conducted 33 in-depth interviews and 6 focus group discussions with healthcare providers and community members in high-risk fishing communities (including sex workers and fishermen) and lower-risk mainland communities in rural Uganda to evaluate values and preferences around HIV self-testing. While most participants were unfamiliar with HIV self-testing, they cited a range of potential benefits, including privacy, convenience, and ability to test before sex. Concerns focused on the absence of a health professional, risks of careless kit disposal and limited linkage to care. Participants also discussed issues of kit distribution strategies and cost, among others. Ultimately, most participants concluded that benefits outweighed risks. Our findings suggest a potential role for HIV self-testing across populations in these settings, particularly among these key populations. Program implementers will need to consider how to balance HIV self-testing accessibility with necessary professional support.

18. Laar, A., et al. "**Key populations and human rights in the context of HIV services rendition in Ghana.**" *BMC Int Health Hum Rights* 2017 17(1): 20. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5541754/pdf/12914_2017_Article_129.pdf

BACKGROUND: In line with its half century old penal code, Ghana currently criminalizes and penalizes behaviors of some key populations - populations deemed to be at higher risk of acquiring or transmitting Human Immunodeficiency Virus (HIV). Men who have sex with men (MSM), and sex workers (SWs) fit into this categorization. This paper provides an analysis of how enactment and implementation of rights-limiting laws not only limit rights, but also amplify risk and vulnerability to HIV in key and general populations. The paper derives from a project that assessed the ethics sensitivity of key documents guiding Ghana's response to its HIV epidemic. Assessment was guided by leading frameworks from public health ethics, and relevant articles from the international bill of rights.

DISCUSSION: Ghana's response to her HIV epidemic does not adequately address the rights and needs of key populations. Even though the national response has achieved some public health successes, palpable efforts to address rights issues remain nascent. Ghana's guiding documents for HIV response include no advocacy for decriminalization, depenalization or harm reduction approaches for these key populations. The impact of rights-restricting codes on the nation's HIV epidemic is real: criminalization impedes key populations' access to HIV prevention and treatment services. Given that they are bridging populations, whatever affects the Ghanaian key populations directly, affects the general population indirectly. The right to the highest attainable standard of health, without qualification, is generally acknowledged as a fundamental human right. Unfortunately, this right currently eludes the Ghanaian SW and MSM. The paper endorses decriminalization as a means of promoting this right. In the face of opposition to decriminalization, the paper proposes specific harm reduction strategies as approaches to promote health and uplift the diminished rights of key populations. Thus the authors call on Ghana to remove impediments to public health services provision to these populations. Doing so will require political will and sufficient planning toward prioritizing HIV prevention, care and treatment programming for key populations.

19. King, E. J., et al. **"Motivators and barriers to HIV testing among street-based female sex workers in St. Petersburg, Russia."** *Glob Public Health* 2017 12(7): 876-891.

Female sex workers are particularly susceptible to HIV-infection in Russia. However, a dearth of information exists on their utilisation of HIV services. A mixed-methods, cross-sectional study was conducted to examine motivators and barriers to HIV testing among street-based sex workers in St. Petersburg, Russia. The health belief model was the theoretical framework for the study. Twenty-nine sex workers participated in in-depth interviews, and 139 sex workers completed interviewer-administered surveys between February and September 2009. Barriers to getting an HIV test were fear of learning the results, worrying that other people would think they were sick, and the distance needed to travel to obtain services. Motivators for getting tested were protecting others from infection, wanting to know one's status and getting treatment if diagnosed. Logistic regression analysis demonstrated that knowing people living with HIV [aOR = 6.75, 95% CI (1.11, 41.10)] and length of time since start of injection drug use [aOR = 0.30, 95% CI (0.09, 0.97)] were significantly associated with recently getting tested. These results are important to consider when developing public health interventions to help female sex workers in Russia learn their HIV status and get linked to care and treatment services if needed.

20. Zulliger, R., et al. **"A multi-level examination of the experiences of female sex workers living with HIV along the continuum of care in the Dominican Republic."** *Glob Public Health* 2017: 1-15.

Female sex workers (FSWs) are disproportionately affected by HIV, but there is limited research on their HIV care experiences. This study explored the experiences of 44 FSWs living with HIV in Santo Domingo, Dominican Republic along the HIV care continuum using in-depth interviews and focus groups. Data were analysed through narrative and thematic analysis. Individual-level factors that facilitated engagement in HIV care were physical and mental health. At the interpersonal level, disclosure of HIV or sex work status and receipt of emotional and economic support were important influences on engagement. Yet, negative reactions to or lack of disclosure of these statuses compromised engagement, further highlighting the role of stigma and discrimination. At the environmental level, FSWs described considerable challenges with the health system including long waits and treatment stock-outs at their clinics, but were generally satisfied with HIV clinic staff. At the structural level, lack of economic resources complicated care and treatment adherence. Findings underscore the need for psychosocial and economic support tailored to the unique needs of FSWs to maximise the individual and public health benefits of HIV care.

21. Hargreaves, J. R., et al. **"Overlapping HIV and sex-work stigma among female sex workers recruited to 14 respondent-driven sampling surveys across Zimbabwe, 2013."** *AIDS Care* 2017 29(6): 675-685.

HIV stigma can inhibit uptake of HIV testing and antiretroviral therapy as well as negatively affect mental health. Efforts to reduce discrimination against people living with HIV (LWH) have contributed to greater acceptance of the infection. Female sex workers (FSW) LWH may experience overlapping stigma due to both

their work and HIV status, although this is poorly understood. We examined HIV and sex-work stigma experienced by FSW LWH in Zimbabwe. Using the SAPPH-IRe cluster-randomised trial baseline survey, we analysed the data from 1039 FSW self-reporting HIV. The women were recruited in 14 sites using respondent-driven sampling. We asked five questions to assess internalised and experienced stigma related to working as a sex worker, and the same questions were asked in reference to HIV. Among all FSW, 91% reported some form of sex-work stigma. This was not associated with sociodemographic or sex-work characteristics. Rates of sex-work stigma were higher than those of HIV-related stigma. For example, 38% reported being "talked badly about" for LWH compared with 77% for their involvement in sex work. Those who reported any sex-work stigma also reported experiencing more HIV stigma compared to those who did not report sex-work stigma, suggesting a layering effect. FSW in Zimbabwe experience stigma for their role as "immoral" women and this appears more prevalent than HIV stigma. As HIV stigma attenuates, other forms of social stigma associated with the disease may persist and continue to pose barriers to effective care.

22. Offringa, R., et al. "**Personal and Financial Risk Typologies Among Women Who Engage in Sex Work in Mongolia: A Latent Class Analysis.**" *Arch Sex Behav* 2017 46(6): 1857-1866.

Women engaged in sex work bear a disproportionate burden of HIV infection worldwide, particularly in low- to middle-income countries. Stakeholders interested in promoting prevention and treatment programs are challenged to efficiently and effectively target heterogeneous groups of women. This problem is particularly difficult because it is nearly impossible to know how those groups are composed a priori. Although grouping based on individual variables (e.g., age or place of solicitation) can describe a sample of women engaged in sex work, selecting these variables requires a strong intuitive understanding of the population. Furthermore, this approach is difficult to quantify and has the potential to reinforce preconceived notions, rather than generate new information. We aimed to investigate groupings of women engaged in sex work. The data were collected from a sample of 204 women who were referred to an HIV prevention intervention in Ulaanbaatar, Mongolia. Latent class analysis was used to create subgroups of women engaged in sex work, based on personal and financial risk factors. This analysis found three latent classes, representing unique response pattern profiles of personal and financial risk. The current study approached typology research in a novel, more empirical way and provided a description of different subgroups, which may respond differently to HIV risk interventions.

23. Sharifi, H., et al. "**Population size estimation of female sex workers in Iran: Synthesis of methods and results.**" *PLoS One* 2017 12(8): e0182755. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5552099/pdf/pone.0182755.pdf>

INTRODUCTION: Estimating the number of key populations at risk of HIV is essential for planning, monitoring, and evaluating prevention, care, and treatment programmes. We conducted this study to estimate the number of female sex workers (FSW) in major cities of Iran.

METHODS: We used three population size estimation methods (i.e., wisdom of the crowds, multiplier method, and network scale-up) to calculate the number of FSW in 13 cities in Iran. The wisdom of the crowds and multiplier methods were integrated into a nationwide bio-behavioural surveillance survey in 2015, and the network scale-up method was included in a national survey of the general population in 2014. The median of the three methods was used to calculate the proportion of the adult female population who practice sex work in the 13 cities. These figures were then extrapolated to provide a national population size estimation of FSW across urban areas.

RESULTS: The population size of FSW was 91,500 (95% Uncertainty Intervals [UIs] 61,400-117,700), corresponding to 1.43% (95% UIs 0.96-1.84) of the adult (i.e., 15-49 year-old) female population living in these 13 cities. The projected numbers of FSW for all 31 provincial capital cities were 130,800 (95% UIs 87,800-168,200) and 228,700 (95% UIs 153,500-294,300) for all urban settings in Iran.

CONCLUSIONS: Using methods of comparable rigor, our study provided a data-driven national estimate of the population size of FSW in urban areas of Iran. Our findings provide vital information for enhancing HIV

programme planning and lay a foundation for assessing the impact of harm reduction efforts within this marginalized population.

24. Maheu-Giroux, M., et al. **"Population-level impact of an accelerated HIV response plan to reach the UNAIDS 90-90-90 target in Cote d'Ivoire: Insights from mathematical modeling."** *PLoS Med* 2017 14(6): e1002321. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5472267/pdf/pmed.1002321.pdf>

BACKGROUND: National responses will need to be markedly accelerated to achieve the ambitious target of the Joint United Nations Programme on HIV/AIDS (UNAIDS). This target aims for 90% of HIV-positive individuals to be aware of their status, for 90% of those aware to receive antiretroviral therapy (ART), and for 90% of those on treatment to have a suppressed viral load by 2020, with each individual target reaching 95% by 2030. We aimed to estimate the impact of various treatment-as-prevention scenarios in Cote d'Ivoire, one of the countries with the highest HIV incidence in West Africa, with unmet HIV prevention and treatment needs, and where key populations are important to the broader HIV epidemic.

METHODS AND FINDINGS: An age-stratified dynamic model was developed and calibrated to epidemiological and programmatic data using a Bayesian framework. The model represents sexual and vertical HIV transmission in the general population, female sex workers (FSW), and men who have sex with men (MSM). We estimated the impact of scaling up interventions to reach the UNAIDS targets, as well as the impact of 8 other scenarios, on HIV transmission in adults and children, compared to our baseline scenario that maintains 2015 rates of testing, ART initiation, ART discontinuation, treatment failure, and levels of condom use. In 2015, we estimated that 52% (95% credible intervals: 46%-58%) of HIV-positive individuals were aware of their status, 72% (57%-82%) of those aware were on ART, and 77% (74%-79%) of those on ART were virologically suppressed. Reaching the UNAIDS targets on time would avert 50% (42%-60%) of new HIV infections over 2015-2030 compared to 30% (25%-36%) if the 90-90-90 target is reached in 2025. Attaining the UNAIDS targets in FSW, their clients, and MSM (but not in the rest of the population) would avert a similar fraction of new infections (30%; 21%-39%). A 25-percentage-point drop in condom use from the 2015 levels among FSW and MSM would reduce the impact of reaching the UNAIDS targets, with 38% (26%-51%) of infections averted. The study's main limitation is that homogenous spatial coverage of interventions was assumed, and future lines of inquiry should examine how geographical prioritization could affect HIV transmission.

CONCLUSIONS: Maximizing the impact of the UNAIDS targets will require rapid scale-up of interventions, particularly testing, ART initiation, and limiting ART discontinuation. Reaching clients of FSW, as well as key populations, can efficiently reduce transmission. Sustaining the high condom-use levels among key populations should remain an important prevention pillar.

25. Nguyen, T., et al. **"Prevalence of HIV Infection and Risk Factors Among Female Sex Workers in a Southeast Province of Vietnam."** *AIDS Behav* 2017 21(8): 2332-2340.

Female sex workers (FSWs) are at heightened risk of HIV infection. This research aims to determine the prevalence of HIV and relevant risk factors and related behavior among FSWs in Ba Ria - Vung Tau, a southeast province of Vietnam. 420 FSWs were interviewed using a structured questionnaire and biological samples tested for HIV. 2.6 % were found to be HIV positive. HIV infection was significantly higher in FSWs who had low income (\leq AUD 200 per month), have had anal sex, have had sex with injecting drug users, and had a low level of HIV/AIDS-related knowledge. Improved employment opportunities and income are important to reduce the pressure for young women to engage in sex work for income purposes, but in public health terms, existing HIV treatment, prevention and intervention programs needs better targeting and improvements to reduce the risk of HIV infection.

26. Wickersham, J. A., et al. **"Prevalence of Human Immunodeficiency Virus and Sexually Transmitted Infections Among Cisgender and Transgender Women Sex Workers in Greater Kuala Lumpur, Malaysia: Results From a Respondent-Driven Sampling Study."** *Sex Transm Dis* 2017.

BACKGROUND: Sex workers face a disproportionate burden of human immunodeficiency virus (HIV) and sexually transmitted infections (STI) worldwide. For cisgender women sex workers (CWSW), global HIV prevalence is over 10%, whereas transgender women sex workers (TWSW) face an HIV burden of 19% to 27%.

METHODS: We used respondent-driven sampling to recruit 492 sex workers, including CWSW (n = 299) and TWSW (n = 193) in Greater Kuala Lumpur, Malaysia. Participants completed an in-depth survey and were screened for HIV, syphilis, Chlamydia trachomatis, and Neisseria gonorrhoeae. Sample characteristics stratified by gender identity and interview site are presented. Bivariate analyses comparing CWSW and TWSW were conducted using independent samples t tests for continuous variables and chi tests for categorical variables.

RESULTS: Pooled HIV prevalence was high (11.7%; 95% confidence interval [CI], 8.8-14.5), and was similar for CWSW (11.1%) and TWSW (12.4%). Rates of syphilis 25.5% (95% CI, 21.6-29.5), C. trachomatis (14.8%; 95% CI, 11.6-18.0) and N. gonorrhoeae (5.8%; 95% CI, 3.7-7.9) were also concerning. Both groups reported lifetime HIV testing (62.4%), but CWSW were less likely to have ever been HIV tested (54.5%) than TWSW (74.6%). Median time since last HIV test was 24 months. Previous screening for STI was low. Inconsistent condom use and drug use during sex work were not uncommon.

CONCLUSIONS: High HIV and STI prevalence, coupled with infrequent HIV and STI screening, inconsistent condom use, and occupational drug use, underscore the need for expanded HIV and STI prevention, screening, and treatment efforts among CWSW and TWSW in Malaysia.

27. Basu, A. "**Reba and Her Insurgent Prose: Sex Work, HIV/AIDS, and Subaltern Narratives.**" *Qual Health Res* 2017 27(10): 1507-1517.

Narratives of cultural stakeholders in marginalized sex worker spaces often do not find the traction to influence mainstream health discourse. Furthermore, such narratives are framed against the grain of the dominant cultural narrative; they are resistive texts, and they depict enactments of resistance to the normal order. This article, based on 12 weeks of field study in a sex worker community in India, foregrounds how sex workers communicatively frame and enact resistance, and hence formulate insurgent texts, along a continuum—from overt violence to covert negotiation on issues such as condom and alcohol use. Making note of these insurgent texts is crucial to understanding how meanings of health are locally made in a sex worker community as it is often that members of such marginalized communities take recourse to covert and ritualistic forms of resistance to work, to survive, and to stay free of HIV infection.

28. Shokoohi, M., et al. "**Remaining Gap in HIV Testing Uptake Among Female Sex Workers in Iran.**" *AIDS Behav* 2017 21(8): 2401-2411.

We estimated the prevalence of recent HIV testing (i.e., having an HIV test during the last 12 months and knew the results) among 1295 HIV-negative Iranian female sex workers (FSW) in 2015. Overall, 70.4% (95% confidence intervals: 59.6, 79.3) of the participants reported a recent HIV testing. Concerns about their HIV status (83.2%) was reported as the most common reason for HIV testing. Incarceration history, having >5 paying partners, having >1 non-paying partner, receiving harm reduction services, utilizing healthcare services, and knowing an HIV testing site were significantly associated with recent HIV testing. In contrast, outreach participants, having one non-paying sexual partner, and self-reported inconsistent condom use reduced the likelihood of recent HIV testing. HIV testing uptake showed a ~2.5 times increase among FSW since 2010. While these findings are promising and show improvement over a short period, HIV testing programs should be expanded particularly through mobile and outreach efforts.

29. Slabbert, M., et al. "**Sexual and reproductive health outcomes among female sex workers in Johannesburg and Pretoria, South Africa: Recommendations for public health programmes.**" *BMC Public Health* 2017 17(Suppl 3): 442. Online at:

<https://bmcpublihealth.biomedcentral.com/track/pdf/10.1186/s12889-017-4346-0?site=bmcpublihealth.biomedcentral.com>

BACKGROUND: The sexual and reproductive health (SRH) status of female sex workers is influenced by a wide range of demographic, behavioural and structural factors. These factors vary considerably across and even within settings. Adopting an overly standardised approach to sex worker programmes may compromise its impact on some sub-groups in local areas.

METHODS: Records of female sex workers attending clinic-, community-, or hotel-based health services in Johannesburg (n = 1422 women) and Pretoria (n = 408 women), South Africa were analysed. We describe the population's characteristics and identified factors associated with sexual and reproductive health outcomes, namely HIV status; previous symptomatic sexually transmitted infection (STI); modern contraceptive use and number of child dependents.

RESULTS: The women in Johannesburg were less likely than those in Pretoria to have HIV (42.2% vs 52.9%), or previous symptomatic STIs (44.3% vs. 8.3%), and were 1.4 fold less likely to have child dependents (20.1% vs. 15.3%). About 43% of women in Johannesburg were Zimbabwean and 40% in Pretoria. Of concern, only about 15% of women in both sites were using modern contraceptives. Johannesburg women were also more likely to access health services at a hotel (85.0% vs. 80.6%) or clinic (5.7% vs. 0.5%), to have completed secondary education (57.1% vs. 36.0%), and moved house more than twice during the past year (19.6 vs. 2.0%). In both cities, risk of HIV rose rapidly with age (23.8%-58.2% vs. 22.0%-64.8%). Of interest, HIV prevalence was considerably higher in those with consistent condom use with one's main partner than inconsistent users.

CONCLUSIONS: Sex worker populations are heterogeneous. Local health programmes must prioritise services that reflect the variety and complexity of sex worker needs and behaviours, and should be designed in consultation with sex workers. Segmenting sex worker populations according to age, country of origin and place of service delivery, and training healthcare providers accordingly, could help prevent new HIV infections, improve adherence to antiretroviral treatment and increase uptake of SRH services.

30. Ganju, D., et al. **"Stigma, violence and HIV vulnerability among transgender persons in sex work in Maharashtra, India."** *Cult Health Sex* 2017 19(8): 903-917.

Among marginalised groups in India, HIV prevalence is highest among transgender persons; however, little is known about their HIV vulnerability. This study describes transgender sex workers' experiences of stigma and violence, a key driver of the HIV epidemic, and explores their coping responses. In-depth interviews were conducted with 68 respondents in Maharashtra state, India. Findings show that respondents face pervasive stigma and violence due to multiple marginalised social identities (transgender status, sex work, gender non-conformity), which reinforce and intersect with social inequities (economic and housing insecurity, employment discrimination, poverty), fuelling HIV vulnerability at the micro, meso and macro levels. Several factors, such as felt and internalised stigma associated with psycho-social distress and low self-efficacy to challenge abuse and negotiate condom use; clients' power in sexual transactions; establishing trust in regular partnerships through condomless sex; norms condoning violence against gender non-conforming persons; lack of community support; police harassment; health provider discrimination and the sex work environment create a context for HIV vulnerability. In the face of such adversity, respondents adopt coping strategies to shift power relations and mobilise against abuse. Community mobilisation interventions, as discussed in the paper, offer a promising vulnerability reduction strategy to safeguard transgender sex workers' rights and reduce HIV vulnerability.

31. Mutagoma, M., et al. **"Syphilis and HIV prevalence and associated factors to their co-infection, hepatitis B and hepatitis C viruses prevalence among female sex workers in Rwanda."** *BMC Infect Dis* 2017 17(1): 525. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5534065/pdf/12879_2017_Article_2625.pdf

BACKGROUND: Human Immunodeficiency Virus (HIV), syphilis, Hepatitis B Virus (HBV) and Hepatitis C Virus

(HCV) are sexually transmitted infections (STIs) and share modes of transmission. These infections are generally more prevalent among female sex workers (FSWs).

METHODS: This is a cross-sectional study conducted among female sex workers (FSWs) in Rwanda in 2015. Venue-Day-Time (VDT) sampling method was used in recruiting participants. HIV, syphilis, HBV, and HCV testing were performed. Descriptive analyses and logistic regression models were computed.

RESULTS: In total, 1978 FSWs were recruited. The majority (58.5%) was aged between 20 and 29 years old. Up to 63.9% of FSWs were single, 62.3% attained primary school, and 68.0% had no additional occupation beside sex work. Almost all FSWs (81.2%) had children. The majority of FSWs (68.4%) were venue-based, and most (53.5%) had spent less than five years in sex work. The overall prevalence of syphilis was 51.1%; it was 2.5% for HBV, 1.4% for HCV, 42.9% for HIV and 27.4% for syphilis/HIV co-infection. The prevalence of syphilis, HIV, and syphilis + HIV co-infection was increasing with age and decreasing with the level of education. A positive association with syphilis/HIV co-infection was found in: 25 years and older (aOR = 1.82 [95% CI:1.33-2.50]), having had a genital sore in the last 12 months (aOR = 1.34 [95% CI:1.05-1.71]), and having HBsAg-positive test (aOR = 2.09 [1.08-4.08]).

CONCLUSION: The prevalence of HIV and syphilis infections and HIV/syphilis co-infection are very high among FSWs in Rwanda. A strong, specific prevention program for FSWs and to avert HIV infection and other STIs transmission to their clients is needed.

32. Klingelschmidt, J., et al. "**Transactional sex among men who have sex with men in the French Antilles and French Guiana: frequency and associated factors.**" *AIDS Care* 2017 29(6): 689-695.

The French Antilles (Martinique, Saint Martin and Guadeloupe) and French Guiana are the French territories most affected by the HIV epidemic. Some population groups such as men who have sex with men (MSM), especially those involved in transactional sex, are thought to be particularly vulnerable to HIV but few data exist to help characterize their health-related needs and thus implement relevant prevention interventions. To fill this knowledge gap, we used data collected from an HIV/AIDS Knowledge, Attitudes, Behaviours and Practices survey conducted in 2012 among MSM living in the French Antilles and French Guiana and recruited through snowball sampling. Our objectives were to compare social and demographic characteristics and sexual behaviours between MSM engaging in transactional sex and MSM not engaging in transactional sex and to identify factors associated with transactional sex involvement using a logistic regression model. A total of 733 MSM were interviewed, 21% of whom reported to undergo transactional sex. Their behaviour and social and demographic characteristics were different from other MSMs' and they were more exposed to factors that are recognized to potentiate HIV vulnerability, at the individual, community, network and structural levels. The variables positively associated with sex trade involvement were having ever consumed drug (OR = 2.84 [1.23-6.52]; $p = .002$), having a greater number of sex partners than the median (OR = 8.31 [4.84-14.30]; $p < .001$), having experienced intimate partner violence (OR = 1.72 [0.99-3.00]; $p = .053$) and having undergone physical aggression because of sexual orientation (OR = 2.84 [1.23-6.52]; $p = .014$). Variables negatively associated with sex trade involvement were being older (OR = 0.93 [0.90-0.97] per year; $p = .001$), having a stable administrative situation (OR = 0.10 [0.06-0.19]; $p < .001$), having a stable housing (OR = 0.29 [0.15-0.55]; $p < .001$) and being employed full-time (OR = 0.29 [1.23-6.52]; $p = .002$).

33. Bamgboye, E. A., et al. "**Transactional Sex between Men and Its Implications on HIV and Sexually Transmitted Infections in Nigeria.**" *J Sex Transm Dis* 2017 2017: 1810346. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5563421/pdf/JSTD2017-1810346.pdf>

INTRODUCTION: Men who have transactional sex with men (MTSM) are known to be at higher risk for HIV and sexually transmitted infections (STIs). This study explored the risk factors associated with STI symptoms and HIV prevalence among men who have transactional sex with men in Nigeria.

METHODS: In 2014, a cross-sectional study, using respondent driven sampling technique, was carried out to

recruit 3,172 MSM across eight states in Nigeria. Relevant information on sociodemographic characteristics, sexual behaviors, and self-reported symptoms of STI was obtained. Bivariate and multivariate analysis was performed to identify risk factors for STI symptoms and HIV.

RESULTS: 38.2% of the MSM were involved in transactional sex. Prevalence of self-reported STI symptoms was higher among MTSM than other MSM, while HIV prevalence was higher among other MSM than MTSM. Identified factors associated with STI symptoms and HIV among MSTM were being single, alcohol consumption, oral sex, and history of rape by a male partner.

CONCLUSION: Sexually transmitted infections are a significant challenge to men who have transactional sex with men. Adolescents and single men are more at risk of these infections. Youth empowerment needs to be invested on to avoid increased risk among these groups of people.

34. Ampt, F. H., et al. "**WHISPER or SHOUT study: protocol of a cluster-randomised controlled trial assessing mHealth sexual reproductive health and nutrition interventions among female sex workers in Mombasa, Kenya.**" *BMJ Open* 2017 7(8): e017388. Online at: <http://bmjopen.bmj.com/content/bmjopen/7/8/e017388.full.pdf>

INTRODUCTION: New interventions are required to reduce unintended pregnancies among female sex workers (FSWs) in low- and middle-income countries and to improve their nutritional health. Given sex workers' high mobile phone usage, repeated exposure to short messaging service (SMS) messages could address individual and interpersonal barriers to contraceptive uptake and better nutrition.

METHODS: In this two-arm cluster randomised trial, each arm constitutes an equal-attention control group for the other. SMS messages were developed systematically, participatory and theory-driven and cover either sexual and reproductive health (WHISPER) or nutrition (SHOUT). Messages are sent to participants 2-3 times/week for 12 months and include fact-based and motivational content as well as role model stories. Participants can send reply texts to obtain additional information. Sex work venues (clusters) in Mombasa, Kenya, were randomly sampled with a probability proportionate to venue size. Up to 10 women were recruited from each venue to enrol 860 women. FSWs aged 16-35 years, who owned a mobile phone and were not pregnant at enrolment were eligible. Structured questionnaires, pregnancy tests, HIV and syphilis rapid tests and full blood counts were performed at enrolment, with subsequent visits at 6 and 12 months.

ANALYSIS: The primary outcomes of WHISPER and SHOUT are unintended pregnancy incidence and prevalence of anaemia at 12 months, respectively. Each will be compared between study groups using discrete-time survival analysis.

POTENTIAL LIMITATIONS: Contamination may occur if participants discuss their intervention with those in the other trial arm. This is mitigated by cluster recruitment and only sampling a small proportion of sex work venues from the sampling frame.

CONCLUSIONS: The design allows for the simultaneous testing of two independent mHealth interventions for which messaging frequency and study procedures are identical. This trial may guide future mHealth initiatives and provide methodological insights into use of reciprocal control groups. TRIAL REGISTRATION NUMBER: ACTRN12616000852459; Pre-results.

35. Reed, E., et al. "**Why female sex workers participate in HIV research: the illusion of voluntariness.**" *AIDS Care* 2017 29(7): 914-918.

The purpose of this study was to examine factors influencing the motivation for and perceived voluntariness of participation in non-intervention HIV research among female sex workers (FSW) in India. FSW (n = 30) who participated in non-intervention HIV studies in the previous three years were recruited from a local community-based organization. Semi-structured qualitative interviews focused on women's personal and economic motivations for participation and their perceptions of the informed consent process. Interviews

were audio-recorded, translated, transcribed, and reviewed for common themes. Content analysis indicated that while many women reported willing participation, reports of obligatory participation were also a common theme. Obligations included money-related pressures and coercion by other FSW, social pressures, not wanting to disappoint the researchers, and perceiving that they had a contractual agreement to complete participation as a result of signing the consent form. Findings suggest a need for additional efforts during and following informed consent to prevent obligatory participation in HIV research studies among FSW. Findings emphasize the importance of integrating ongoing participant feedback into research ethics practices to identify issues not well addressed via standard ethics protocols when conducting HIV research among vulnerable populations.

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Transgender People - 11

1. Lall, P., et al. "**Acceptability of a microfinance-based empowerment intervention for transgender and cisgender women sex workers in Greater Kuala Lumpur, Malaysia.**" *J Int AIDS Soc* 2017 20(1): 1-10. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5577685/pdf/zias-20-1355617.pdf>

INTRODUCTION: Cisgender and transgender woman sex workers (CWSWs and TWSWs, respectively) are key populations in Malaysia with higher HIV-prevalence than that of the general population. Given the impact economic instability can have on HIV transmission in these populations, novel HIV prevention interventions that reduce poverty may reduce HIV incidence and improve linkage and retention to care for those already living with HIV. We examine the feasibility of a microfinance-based HIV prevention intervention among CWSW and TWSWs in Greater Kuala Lumpur, Malaysia.

METHODS: We conducted 35 in-depth interviews to examine the acceptability of a microfinance-based HIV prevention intervention, focusing on: (1) participants' readiness to engage in other occupations and the types of jobs in which they were interested in; (2) their level of interest in the components of the potential intervention, including training on financial literacy and vocational education; and (3) possible barriers and facilitators to the successful completion of the intervention. Using grounded theory as a framework of analysis, transcripts were analysed through Nvivo 11.

RESULTS: Participants were on average 41 years old, slightly less than half (48%) were married, and more than half (52%) identified as Muslim. Participants express high motivation to seek employment in other professions as they perceived sex work as not a "proper job" with opportunities for career growth but rather as a short-term option offering an unstable form of income. Participants wanted to develop their own small enterprise. Most participants expressed a high level of interest in microfinance intervention and training to enable them to enter a new profession. Possible barriers to intervention participation included time, stigma, and a lack of resources.

CONCLUSION: Findings indicate that a microfinance intervention is acceptable and desirable for CWSWs and TWSWs in urban Malaysian contexts as participants reported that they were ready to engage in alternative forms of income generation.

2. Rowniak, S., et al. "**Attitudes, Beliefs, and Barriers to PrEP Among Trans Men.**" *AIDS Educ Prev* 2017 29(4): 302-314.

The study examined the attitudes and knowledge of transgender men (trans men) regarding pre-exposure prophylaxis (PrEP) for HIV. Three focus groups of trans men were conducted with a trans male facilitator for a

total of 21 participants. Six themes were identified; the range of information about PrEP and possible side effects, the economic realities for trans men, finding a trans-competent provider, trans male sexuality, the importance of contraception, and condom use. Despite identified risk and some information that has been disseminated, many trans men still lack adequate information regarding PrEP. There exist significant barriers to PrEP access for trans men. Participants commented that many providers avoid important discussions regarding sexuality and contraception. The education of health care professionals must include competency in working with transgender populations. More research is needed with regard to interactions between PrEP, testosterone, and hormonal contraception.

3. Ayala, D. V., et al. "**Barriers to Engaging Transgender Women in HIV Observational Research.**" *Am J Public Health* 2017 107(6): e9.
4. Gall, J., et al. "**Global Trends of Monitoring and Data Collection on the HIV Response among Key Populations Since the 2001 UN Declaration of Commitment on HIV/AIDS.**" *AIDS Behav* 2017 21(Suppl 1): 34-43.

Monitoring and evaluation indicators for HIV programs' response to the epidemic among key populations (sex workers, people who inject drugs, men who have sex with men, transgender people) are critical for reviewing the global response. From the beginning of global reporting, insufficiency of data has been a challenge for monitoring the epidemic response among key populations. However, key populations were only indirectly referenced in the 2001 Declaration of Commitment. By the 2006 Political Declaration on HIV/AIDS, data from key populations were still not required from every country, and were sparsely reported compared to other indicators. The 2011 Political Declaration on HIV/AIDS referenced key populations by name for the first time. In 2006, fewer than twenty countries (10%) reported HIV prevalence among key populations, whereas in 2012 the number of countries surpassed sixty (30%).

5. Carballo-Diequez, A., et al. "**High levels of adherence to a rectal microbicide gel and to oral Pre-Exposure Prophylaxis (PrEP) achieved in MTN-017 among men who have sex with men (MSM) and transgender women.**" *PLoS One* 2017 12(7): e0181607. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5531503/pdf/pone.0181607.pdf>

Trials to assess microbicide safety require strict adherence to prescribed regimens. If adherence is suboptimal, safety cannot be adequately assessed. MTN-017 was a phase 2, randomized sequence, open-label, expanded safety and acceptability crossover study comparing 1) daily oral emtricitabine/tenofovir disoproxil fumarate (FTC/TDF), 2) daily use of reduced-glycerin 1% tenofovir (RG-TFV) gel applied rectally, and 3) RG-TFV gel applied before and after receptive anal intercourse (RAI)-if participants had no RAI in a week, they were asked to use two doses of gel within 24 hours. Product use was assessed by mixed methods including unused product return count, text messaging reports, and qualitative plasma TFV pharmacokinetic (PK) results. Convergence interviews engaged participants in determining the most accurate number of doses used based on product count and text messaging reports. Client-centered adherence counseling was also used. Participants (N = 187) were men who have sex with men and transgender women enrolled in the United States (42%), Thailand (29%), Peru (19%) and South Africa (10%). Mean age was 31.4 years (range 18-64 years). Based on convergence interviews, over an 8-week period, 94% of participants had $\geq 80\%$ adherence to daily tablet, 41% having perfect adherence; 83% had $\geq 80\%$ adherence to daily gel, 29% having perfect adherence; and 93% had $\geq 80\%$ adherence to twice-weekly use during the RAI-associated gel regimen, 75% having perfect adherence and 77% having $\geq 80\%$ adherence to gel use before and after RAI. Only 4.4% of all daily product PK results were undetectable and unexpected (TFV concentrations < 0.31 ng/mL) given self-reported product use near sampling date. The mixed methods adherence measurement indicated high adherence to product use in all three regimens. Adherence to RAI-associated rectal gel use was as high as adherence to daily oral PrEP. A rectal microbicide gel, if efficacious, could be an alternative for individuals uninterested in daily oral PrEP.

6. Chhim, S., et al. "HIV prevalence and factors associated with HIV infection among transgender women in Cambodia: results from a national Integrated Biological and Behavioral Survey." *BMJ Open* 2017 7(8): e015390. Online at: <http://bmjopen.bmj.com/content/bmjopen/7/8/e015390.full.pdf>

OBJECTIVE: To examine factors associated with HIV infection among transgender women in Cambodia.

DESIGN: Cross-sectional study.

SETTINGS: HIV high-burden sites including the capital city and 12 provinces. **PARTICIPANTS:** This study included 1375 sexually active transgender women with a mean age of 25.9 years (SD 7.1), recruited by using respondent-driven sampling for structured questionnaire interviews and rapid finger-prick HIV testing.

PRIMARY OUTCOME MEASURE: HIV infection detected by using Determine antibody test.

RESULTS: HIV prevalence among this population was 5.9%. After adjustment for other covariates, participants living in urban areas were twice as likely to be HIV infected as those living in rural areas. Participants with primary education were 1.7 times as likely to be infected compared with those with high school education. HIV infection increased with age; compared with those aged 18-24 years, the odds of being HIV infected were twice as high among transgender women aged 25-34 years and 2.8 times higher among those aged ≥ 35 years. Self-injection of gender affirming hormones was associated with a fourfold increase in the odds of HIV infection. A history of genital sores over the previous 12 months increased the odds of HIV infection by threefold. Transgender women with stronger feminine identity, dressing as a woman all the time, were twice as likely to be HIV infected compared with those who did not dress as a woman all the time. Having never used online services developed for transgender women in the past six months was also associated with higher odds of being HIV infected.

CONCLUSIONS: Transgender women in Cambodia are at high risk of HIV. To achieve the goal of eliminating HIV in Cambodia, effective combination prevention strategies addressing the above risk factors among transgender women should be strengthened.

7. Satcher, M. F., et al. "Partner-Level Factors Associated with Insertive and Receptive Condomless Anal Intercourse Among Transgender Women in Lima, Peru." *AIDS Behav* 2017 21(8): 2439-2451.

Condomless anal intercourse among transgender women (TW) in Peru has been shown to vary by the type of partner involved (e.g. primary vs. casual vs. transactional sex partner), but no previous studies have explored variations in partner-level patterns of condom use according to type of anal intercourse. We evaluated the relationship between partnership characteristics and condom use during insertive (IAI) versus receptive anal intercourse (RAI) among TW with recent, non-female partners. Condomless IAI was more common with transactional and casual sex partners and by TW who self-reported HIV-uninfected serostatus ($p < 0.05$), alcohol use disorders, or substance use before sex. Condomless RAI was more common with primary partners and by TW who described their HIV serostatus as unknown ($p < 0.05$). Examining partner-level differences between condomless IAI and RAI reveals distinct patterns of HIV/STI risk among TW, suggesting a need for HIV prevention strategies tailored to the specific contexts of partners, practices, and networks.

8. Wickersham, J. A., et al. "Prevalence of Human Immunodeficiency Virus and Sexually Transmitted Infections Among Cisgender and Transgender Women Sex Workers in Greater Kuala Lumpur, Malaysia: Results From a Respondent-Driven Sampling Study." *Sex Transm Dis* 2017.

BACKGROUND: Sex workers face a disproportionate burden of human immunodeficiency virus (HIV) and sexually transmitted infections (STI) worldwide. For cisgender women sex workers (CWSW), global HIV prevalence is over 10%, whereas transgender women sex workers (TWSW) face an HIV burden of 19% to 27%.

METHODS: We used respondent-driven sampling to recruit 492 sex workers, including CWSW (n = 299) and TWSW (n = 193) in Greater Kuala Lumpur, Malaysia. Participants completed an in-depth survey and were screened for HIV, syphilis, Chlamydia trachomatis, and Neisseria gonorrhoeae. Sample characteristics stratified by gender identity and interview site are presented. Bivariate analyses comparing CWSW and TWSW were conducted using independent samples t tests for continuous variables and chi tests for categorical variables.

RESULTS: Pooled HIV prevalence was high (11.7%; 95% confidence interval [CI], 8.8-14.5), and was similar for CWSW (11.1%) and TWSW (12.4%). Rates of syphilis 25.5% (95% CI, 21.6-29.5), C. trachomatis (14.8%; 95% CI, 11.6-18.0) and N. gonorrhoeae (5.8%; 95% CI, 3.7-7.9) were also concerning. Both groups reported lifetime HIV testing (62.4%), but CWSW were less likely to have ever been HIV tested (54.5%) than TWSW (74.6%). Median time since last HIV test was 24 months. Previous screening for STI was low. Inconsistent condom use and drug use during sex work were not uncommon.

CONCLUSIONS: High HIV and STI prevalence, coupled with infrequent HIV and STI screening, inconsistent condom use, and occupational drug use, underscore the need for expanded HIV and STI prevention, screening, and treatment efforts among CWSW and TWSW in Malaysia.

9. Vagenas, P., et al. "A Qualitative Assessment of Alcohol Consumption and Sexual Risk Behaviors Among Men Who Have Sex With Men and Transgender Women in Peru." *Subst Use Misuse* 2017 52(7): 831-839.

BACKGROUND: Peruvian men who have sex with men (MSM) and transgender women (TGW) experience the double burden of a highly concentrated HIV epidemic with a high prevalence of alcohol use disorders (AUDs). Recent research has associated both with risky sexual behaviors, including unprotected sex, having multiple sexual partners, engaging in sex work, having recent sexually transmitted infections, and having HIV-infected partners. AUDs have also been associated in MSM/TGW with being unaware of HIV+ status.

OBJECTIVES: This study aims to further examine issues associated with alcohol consumption, HIV infection, and risk behaviors in a qualitative analysis of focus groups conducted with MSM/TGW in Peru.

METHODS: A total of 26 MSM/TGW participants with AUDs participated in three semi-structured focus groups in Lima, Peru. Content analysis was facilitated by software, and specific themes were elucidated.

RESULTS: Participants described their drinking patterns, including the types of alcoholic drinks they consumed. They depicted drinking frequently and over multiple-day sessions. Problematic drinking behaviors were described, as well as the perceived characteristics of alcohol dependence. Interestingly, HIV-infected participants who were prescribed antiretroviral therapy did not believe that their drinking affected their medication adherence. These insights can aid in the design of future interventions aiming to reduce problematic drinking as well as HIV-related risk behaviors and, subsequently, HIV incidence.

CONCLUSIONS: Peruvian MSM/TGW exhibit problematic drinking, which may be associated with risky sexual behaviors and HIV transmission. Interest in reducing alcohol consumption was high, suggesting the need for targeted behavioral and pharmacological interventions.

10. Ganju, D., et al. "Stigma, violence and HIV vulnerability among transgender persons in sex work in Maharashtra, India." *Cult Health Sex* 2017 19(8): 903-917.

Among marginalised groups in India, HIV prevalence is highest among transgender persons; however, little is known about their HIV vulnerability. This study describes transgender sex workers' experiences of stigma and violence, a key driver of the HIV epidemic, and explores their coping responses. In-depth interviews were conducted with 68 respondents in Maharashtra state, India. Findings show that respondents face pervasive stigma and violence due to multiple marginalised social identities (transgender status, sex work, gender non-conformity), which reinforce and intersect with social inequities (economic and housing insecurity,

employment discrimination, poverty), fuelling HIV vulnerability at the micro, meso and macro levels. Several factors, such as felt and internalised stigma associated with psycho-social distress and low self-efficacy to challenge abuse and negotiate condom use; clients' power in sexual transactions; establishing trust in regular partnerships through condomless sex; norms condoning violence against gender non-conforming persons; lack of community support; police harassment; health provider discrimination and the sex work environment create a context for HIV vulnerability. In the face of such adversity, respondents adopt coping strategies to shift power relations and mobilise against abuse. Community mobilisation interventions, as discussed in the paper, offer a promising vulnerability reduction strategy to safeguard transgender sex workers' rights and reduce HIV vulnerability.

11. Draper, B. L., et al. "Willingness to use HIV pre-exposure prophylaxis among gay men, other men who have sex with men and transgender women in Myanmar." *J Int AIDS Soc* 2017 20(1): 1-10. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5577714/pdf/zias-20-1355618.pdf>

INTRODUCTION: HIV pre-exposure prophylaxis (PrEP) has emerged as a key component of contemporary HIV combination prevention strategies. To explore the local suitability of PrEP, country-specific acceptability studies are needed to inform potential PrEP implementation. In the context of Myanmar, in addition to resource constraints, HIV service access by gay men, other men who have sex with men, and transgender women (GMT) continues to be constrained by legislative and community stigma and marginalization. We aimed to determine PrEP acceptability among GMT in Myanmar and explore the factors associated with willingness to use PrEP.

METHODS: GMT were recruited in Yangon and Mandalay through local HIV prevention outreach programmes in November and December 2014. Quantitative surveys were administered by trained peer educators and collected data on demographics, sexual risk, testing history and PrEP acceptability. A modified six-item PrEP acceptability scale classified self-reported HIV undiagnosed GMT as willing to use PrEP. Multivariable logistic regression identified factors associated with willingness to use PrEP.

RESULTS: Among 434 HIV undiagnosed GMT, PrEP awareness was low (5%). PrEP acceptability was high, with 270 (62%) GMT classified as willing to use PrEP. GMT recruited in Mandalay (adjusted odds ratio (aOR) = 1.79; 95%CI = 1.05-3.03), who perceived themselves as likely to become HIV positive (aOR = 1.82; 95%CI = 1.10-3.02), who had more than one recent regular partner (aOR = 2.94; 95%CI = 1.41-6.14), no regular partners (aOR = 2.05; 95%CI = 1.10-3.67), more than five casual partners (aOR = 2.05; 95%CI = 1.06-3.99) or no casual partners (aOR = 2.25; 95%CI = 1.23-4.11) were more likely to be willing to use PrEP. The association between never or only occasionally using condoms with casual partners and willingness to use PrEP was marginally significant (aOR = 2.02; 95%CI = 1.00-4.10). GMT who reported concern about side effects and long-term use of PrEP were less likely (aOR = 0.35; 95%CI = 0.21-0.59) to be willing to use PrEP.

CONCLUSIONS: This is the first study to assess PrEP acceptability in Myanmar. Findings suggest PrEP is an acceptable prevention option among GMT in Myanmar, providing they are not required to pay for it. Implementation/demonstration projects are needed to explore the feasibility and cost-effectiveness of PrEP as a prevention option for GMT in Myanmar.

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1. Johnston, L. G., et al. **"Ensuring Inclusion of Adolescent Key Populations at Higher Risk of HIV Exposure: Recommendations for Conducting Biological Behavioral Surveillance Surveys."** *JMIR Public Health Surveill* 2017 3(2): e40. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5497069/pdf/publichealth_v3i2e40.pdf

Ending acquired immune deficiency syndrome (AIDS) depends on greater efforts to reduce new human immunodeficiency virus (HIV) infections and prevent AIDS-related deaths among key populations at highest HIV risk, including males who have sex with males, sex workers, and people who inject drugs. Although adolescent key populations (AKP) are disproportionately affected by HIV, they have been largely ignored in HIV biological behavioral surveillance survey (BBSS) activities to date. This paper reviews current ethical and sampling challenges and provides suggestions to ensure AKP are included in surveillance activities, with the aim being to enhance evidence-informed, strategic, and targeted funding allocations and programs toward ending AIDS among AKP. HIV BBSS, conducted every few years worldwide among adult key populations, provide information on HIV and other infections' prevalence, HIV testing, risk behaviors, program coverage, and when at least three of these surveys are conducted, trend data with which to evaluate progress. We provide suggestions and recommendations on how to make the case to ethical review boards to involve AKP in surveillance while assuring that AKP are properly protected. We also describe two widely used probability sampling methods, time location sampling and respondent driven sampling, and offer considerations of feature modifications when sampling AKP. Effectively responding to AKP's HIV and sexual risks requires the inclusion of AKP in HIV BBSS activities. The implementation of strategies to overcome barriers to including AKP in HIV BBSS will result in more effective and targeted prevention and intervention programs directly suited to the needs of AKP.

2. Deuba, K., et al. **"HIV decline associated with changes in risk behaviours among young key populations in Nepal: analysis of population-based HIV prevalence surveys between 2001 and 2012."** *Int J STD AIDS* 2017 28(9): 864-875.

We assessed changes in HIV prevalence and risk behaviours among young key populations in Nepal. A total of 7505 participants (aged 16-24 years) from key populations who were at increased risk of HIV infection (2767 people who inject drugs (PWID); 852 men who have sex with men/transgender (MSM/TG); 2851 female sex workers (FSW) and 1035 male labour migrants) were recruited randomly over a 12-year period, 2001-2012. Local epidemic zones of Nepal (Kathmandu valley, Pokhara valley, Terai Highway and West to Far West hills) were analysed separately. We found a very strong and consistent decline in HIV prevalence over the past decade in different epidemic zones among PWID and MSM/TG in Kathmandu, the capital city, most likely due to a parallel increase in safe needle and syringe use and increased condom use. A decrease in HIV prevalence in 22 Terai highway districts, sharing an open border with India, was also consistent with increased condom use among FSW. Among male labour migrants, HIV prevalence was low throughout the period in the West to Far West hilly regions. Condom use by migrant workers involved with FSW abroad increased while their condom use with Nepalese FSW declined. Other risk determinants such as mean age at starting first injection, injection frequency, place of commercial sex solicitation, their mean age when leaving to work abroad did not change consistently across epidemic zones among the young key populations under study. In Nepal, the decline in HIV prevalence over the past decade was remarkably significant and consistent with an increase in condom use and safer use of clean needles and syringes. However, diverging trends in risk behaviours across local epidemic zones of Nepal suggest a varying degree of implementation of national HIV prevention policies. This calls for continued preventive efforts as well as surveillance to sustain the observed downward trend.

3. Dayton, R., et al. **"How can we better serve adolescent key populations? Strategies to encourage and inform future data collection, analysis, and use."** *Glob Public Health* 2017 12(8): 941-953.

Young key populations (ages 10-24) (YKPs) are uniquely vulnerable to HIV infection. Yet they are often underserved, due in part to a limited understanding of their needs. Many successful approaches to understanding YKPs exist but are not widely used. To identify the most useful approaches and encourage their uptake, we reviewed strategic information on YKPs and experiences collecting, analysing, and utilising it

from countries in Africa, Asia, and Central and Eastern Europe. As a result, we recommend one central guiding principle - any effort to understand and serve YKPs should include a specific focus on adolescent key populations (AKPs) (ages 10-19) - and three strategies to inform data collection, analysis, and use: tailor recruitment practices to ensure young people's representation, select indicators and research methods based on their ability to inform responsive programming for and give a voice to YKPs, and thoroughly disaggregate data. We demonstrate the utility of each strategy in YKP research and programmes, and in doing so note the particular importance for AKPs. We hope that this paper encourages additional research on YKPs and helps bridge the gap between research and effective programmes to serve the youngest and most vulnerable members of key populations.

4. Halkitis, P. N., et al. "**Latent Growth Curve Modeling of Non-Injection Drug Use and Condomless Sexual Behavior from Ages 18 to 21 in Gay, Bisexual, and Other YMSM: The P18 Cohort Study.**" *Subst Use Misuse* 2017: 1-13.

BACKGROUND: HIV/AIDS continues to be a health disparity faced by sexual minority men, and is exacerbated by non-injection drug use.

OBJECTIVES: We sought to delineate growth in non-injection drug use and condomless sex in a sample of racially and economically diverse of gay, bisexual, and other young men who have sex with men (YMSM) as they emerged into adulthood between the ages of 18 and 21 and who came of age in the post-HAART era.

METHODS: Behavioral data on drug use and condomless sex, collected via a calendar based technique over 7 waves of a cohort study of 600 YMSM, were analyzed using latent growth curve modeling to document patterns of growth in these behaviors, their associations, and the extent to which patterns and associations are moderated by race/ethnicity and socioeconomic status.

RESULTS: Significant growth was noted in the frequencies of condomless oral and anal intercourse, alcohol to intoxication, marijuana use, and inhalant nitrate use. High levels of association were noted between all behaviors across time but associations did not differ by either race/ethnicity or socioeconomic status. The link between drug use and risky sexual behavior continue to be evident in YMSM with significant increases in these behaviors demonstrated as YMSM transition between adolescence and young adulthood.

Conclusions/Importance: Healthcare for a new generation of sexual minority males must address the synergy of these behaviors and also nest HIV prevention and care within a larger context of sexual minority health that acknowledges the advances made in the last three decades.

5. Anand, T., et al. "**A qualitative study of Thai HIV-positive young men who have sex with men and transgender women demonstrates the need for eHealth interventions to optimize the HIV care continuum.**" *AIDS Care* 2017 29(7): 870-875.

In Thailand, young men who have sex with men (YMSM) and transgender women (TG) are disproportionately affected by HIV and have suboptimal care continuum outcomes. Although Thai YMSM and young TG are early adopters of emerging technologies and have high Internet and technology access and utilization, the potential of technology has not been harnessed to optimize the HIV treatment cascade. We interviewed 18 behaviorally HIV-infected YMSM and young TG regarding care challenges, identified how eHealth could address care needs, and elicited preferences for eHealth interventions. Participants reported struggling with individual and societal-level stigma which negatively impacted linkage to and retention in care, and antiretroviral therapy adherence. YMSM and young TG described inadequate in-person support services and heavily relied on random online resources to fill information and support gaps, but sometimes viewed them as untrustworthy or inconsistent. Participants universally endorsed the development of eHealth resources and proposed how they could ameliorate individual-level fears over stigma and improve public perceptions about HIV. Personalized and integrated eHealth interventions with interactive, user-driven structures, credible content, rewards for engagement, real-time counseling and reminder support could help overcome

barriers YMSM and young TG face in traditional HIV healthcare systems and have the potential to improve care outcomes.

6. Ranganathan, M., et al. "**Young women's perceptions of transactional sex and sexual agency: a qualitative study in the context of rural South Africa.**" *BMC Public Health* 2017 17(1): 666. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5568133/pdf/12889_2017_Article_4636.pdf

BACKGROUND: Evidence shows that HIV prevalence among young women in sub-Saharan Africa increases almost five-fold between ages 15 and 24, with almost a quarter of young women infected by their early-to mid-20s. Transactional sex or material exchange for sex is a relationship dynamic that has been shown to have an association with HIV infection.

METHODS: Using five focus group discussions and 19 in-depth interviews with young women enrolled in the HPTN 068 conditional cash transfer trial (2011-2015), this qualitative study explores young women's perceptions of transactional sex within the structural and cultural context of rural South Africa. The analysis also considers the degree to which young women perceive themselves as active agents in such relationships and whether they recognise a link between transactional sex and HIV risk.

RESULTS: Young women believe that securing their own financial resources will ultimately improve their bargaining position in their sexual relationships, and open doors to a more financially independent future. Findings suggest there is a nuanced relationship between sex, love and gifts: money has symbolic meaning, and money transfers, when framed as gifts, indicates a young woman's value and commitment from the man. This illustrates the complexity of transactional sex; the way it is positioned in the HIV literature ignores that "exchanges" serve as fulcrums around which romantic relationships are organised. Finally, young women express agency in their choice of partner, but their agency weakens once they are in a relationship characterised by exchange, which may undermine their ability to translate perceived agency into STI and HIV risk reduction efforts.

CONCLUSIONS: This research underscores the need to recognise that transactional sex is embedded in adolescent romantic relationships, but that certain aspects make young women particularly vulnerable to HIV. This is especially true in situations of restricted choice and circumscribed employment opportunities. HIV prevention educational programmes could be coupled with income generation trainings, in order to leverage youth resilience and protective skills within the confines of difficult economic and social circumstances. This would provide young women with the knowledge and means to more successfully navigate safer sexual relationships.

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