



## Quarterly Research Digest on HIV and Key Populations

March 2018

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 - 2

1. Chang Pico, T. A., et al. **"No More Broken Promises: Challenges and Opportunities for Key Populations in Demanding More Transparency, Accountability, and Participation in the Global Response Against the HIV and AIDS Epidemic."** *Health Hum Rights* 2017 19(2): 197-209. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29302176>

The global fight against HIV/AIDS continues to pose challenges: infection rates are on the rise in many settings, stigma and discrimination remain rampant, and the global response is under increasing financial pressure. There is a high risk of losing what has been achieved so far in the fight against HIV and AIDS, but also the momentum to meet the so-called Fast Track targets for 2030. In light of these trends, it is fundamental to focus on the human rights of key populations (KPs)-especially to health, non-discrimination, access to information, and to equal and meaningful participation in political and public affairs-by placing them at the center of the global HIV response. Such rights, and the demand for more transparency, accountability, and participation (TAP), have been recognized as both a necessary social justice imperative, and as a way to build more responsive, inclusive, and sustainable health systems. This article will argue that embracing TAP as key guiding principles of the global HIV response (especially in low- and middle-income countries) could have the potential to create the conditions for KPs to have their human rights fulfilled, and

to expand their participation in the decision-making processes that guide the efforts against the epidemic. It will then propose a number of avenues for further engagement between different communities of practice in terms of research, agendas, and policy and practices that could be beneficial in maximizing the impact of the global efforts to end HIV/AIDS.

2. Shrestha, R., et al. **"Why don't key populations access HIV testing and counselling centres in Nepal? Findings based on national surveillance survey."** *BMJ Open* 2017 7(12): e017408. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29288177>

**OBJECTIVES:** To assess the demographic, behavioural, psychosocial and structural factors associated with non-utilisation of HIV testing and counselling (HTC) services by female sex workers (FSWs) and men who have sex with men/transgender (MSM/TG).

**METHODS:** This study involved a cross-sectional design. We used the national surveillance survey data of 2012, which included 610 FSWs and 400 MSM/TG recruited randomly from 22 and three districts of Nepal, respectively. Adjusted prevalence ratio (aPR) and 95% confidence interval (CI) using modified Poisson regression was used to assess and infer the association between outcome (non-utilisation of HTC in last year) and independent variables.

**RESULTS:** Non-utilisation of HTC in the last year was 54% for FSWs and 55% for MSM/TG. The significant factors for non-utilisation of HTC among FSWs were depression (aPR=1.4 (95% CI 1.1 to 1.6)), injectable drug abuse (ever) (aPR=1.4 (95% CI 1.1 to 1.8)), participation (ever) in HIV awareness programmes (aPR=1.2 (95% CI 1.0 to 1.4)), experience of forced sex in previous year (aPR=1.1 (95% CI 1.0 to 1.3)) and absence of dependents in the family (aPR=1.1 (95% CI 1.0 to 1.3)). Non-utilisation of HTC among MSM/TG had significant association with age 16-19 years (aPR=1.4 (95% CI 1.1 to 1.7)), non-condom use (aPR=1.2 (95% CI 1.0 to 1.4)), participation (ever) in HIV awareness programmes (aPR=1.6 (95% CI 1.3 to 2.0)), physical assault in previous year (aPR=1.8 (95% CI 1.0 to 3.1)), experience of forced sex in previous year (aPR=0.5 (95% CI 0.3 to 0.9)).

**CONCLUSION:** Although limited by cross-sectional design, we found many programmatically relevant findings. Creative strategies should be envisaged for effective behavioural change communication to improve access to HIV testing. Psychosocial and structural interventions should be integrated with HIV prevention programmes to support key populations in accessing HIV testing.

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## People Who Inject Drugs - 19

1. Cepeda, J. A., et al. **"Assessing police officers' attitudes and legal knowledge on behaviors that impact HIV transmission among people who inject drugs."** *Int J Drug Policy* 2017 50: 56-63. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29028564>

**BACKGROUND:** Policing practices such as syringe confiscation and arrest can act as important social-structural drivers of HIV risk among people who inject drugs (PWID). However, police referral to treatment and other services may improve the health of PWID. Little is known about the role of modifiable attitudinal and knowledge factors in shaping officer behavior. Using baseline findings from a police education program (PEP), we assessed relationships between drug policy knowledge and attitudes towards public health interventions with self-reported syringe confiscation, drug arrest, and service referral among street-level police in Tijuana, Mexico.

**METHODS:** Between February, 2015 and May, 2016 we surveyed 1319 police officers who reported syringe contact. The self-administered survey focused on attitudes, knowledge, and behaviors related to drug policy, public health, and occupational safety. We used ordinal logistic regression to model the odds of syringe confiscation, arrest for heroin possession, and referring PWID to health/social programs.

**RESULTS:** The sample was mostly male (87%) and had at least a high school education (80%). In the last six months, a minority reported always/sometimes confiscating syringes (49%), arresting someone for heroin possession (43%), and referring PWID to health and social programs (37%). Those reporting needlestick injuries (NSI) had 1.38 (95% CI: 1.02-1.87) higher odds of reporting syringe confiscation. Officers who had favorable views on laws that treat addiction as a public health issue had lower odds (aOR=0.78; 95% CI: 0.59-1.03) of arresting PWID. Those agreeing that it was their role to refer PWID to health and social programs had higher odds of reporting such referrals (aOR: 3.32, 95% CI: 2.52-4.37). Legal knowledge was not associated with these practices.

**CONCLUSION:** Changing drug policy and knowledge may be insufficient in shifting police behavior. Modifying officers' occupational risks and attitudes towards harm reduction interventions can facilitate efforts to align police practices with PWID health.

2. Wolff, M. J., et al. "**Evaluating the care cascade after antiretroviral therapy initiation in Latin America.**" *Int J STD AIDS* 2018 29(1): 4-12. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/28618980>

Accelerating antiretroviral therapy (ART) administration, improving retention, and achieving viral suppression in low- and middle-income countries must be prioritized. We evaluated trends and disparities in these milestones in a large Latin American cohort. Adults starting ART (ARTstart) from 2003 to 2014 at Caribbean, Central, and South America network for HIV epidemiology sites were assessed for care cascade outcomes: CD4 cell count >200 cells/mm<sup>3</sup> at ARTstart; retention (>=1 visit at one year after ARTstart); viral suppression (>=1 HIV-1 RNA <200 copies/ml at one year after ARTstart). Modified Poisson regression provided adjusted prevalence ratios by age, gender, and HIV transmission risk, accounting for site and year of ARTstart. Proportions achieving ARTstart and suppression improved over time (p < 0.05). Older age was associated with better retention and viral suppression, but not ARTstart at CD4 cell count >200 cells/mm<sup>3</sup>. Females and men who have sex with men (MSM) were more likely to have CD4 cell count >200 cells/mm<sup>3</sup> at ARTstart. Injection drug users (IDUs) were less likely to be retained while MSM were more likely to achieve viral suppression (all p < 0.05). Despite improvements in these outcomes over the course of a decade in this cohort, significant disparities existed, disadvantaging younger patients, men, and IDUs. These gaps indicate continued progress in providing early diagnosis and ARTstart remain critical.

3. Li, F., et al. "**HIV-1 and hepatitis C virus selection bottleneck in Chinese people who inject drugs.**" *AIDS* 2018 32(3): 309-320. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29194114>

**OBJECTIVES:** For both HIV-1 and hepatitis C virus (HCV), assessing the stringency of the transmission process is a scientific priority. Enumerations of transmitted/founder (TF) viruses have shown a strict transmission bottleneck in sexual transmission of HIV-1 and a wide range in the multiplicity of infection in HCV. Here, we aim to determine the stringency of parenteral transmission for HIV-1 and HCV in people who inject drugs (PWID).

**DESIGN:** We used molecular sequencing and several complementary analyses to enumerate the TF HIV-1 and HCV variants in a well described cohort of PWID in Xinjiang, China.

**METHODS:** We performed single genome sequencing of HIV-1 env and 5' half HCV genomes, then applied phylogenetic analysis and validated models of early virus diversification to enumerate TF viruses in 60 PWID. We used multivariate analysis to determine correlates of multivariant transmission (MVT).

**RESULTS:** We generated 1070 env region sequences from 33 HIV-1 early infected individuals and 773 5' half region sequences from 27 HCV early infected individuals. We found rates of MVT of 39 and 54%,

respectively, for HIV-1 and HCV, with a limited range in the number of TF viruses in both infections. Behavioural characteristics suggested high-risk injection practices and lower risk sexual practices; we did not find an association between any specific behaviours and MVT.

**CONCLUSION:** MVT is frequent in parenteral transmission of both HIV-1 and HCV in Xinjiang PWID, indicating a less stringent transmission process than sexual transmission.

4. Bazazi, A. R., et al. **"HIV Testing and awareness of HIV status among people who inject drugs in greater Kuala Lumpur, Malaysia."** *AIDS Care* 2018 30(1): 59-64. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/28803503>

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.

5. Sun, Y., et al. **"Increased synthetic drug abuse and trends in HIV and syphilis prevalence among female drug users from 2010-2014 from Beijing, China."** *Int J STD AIDS* 2018 29(1): 30-37. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/28697679>

The objective of this study was to monitor the trend of addiction drug use and its relationship with sexually transmitted infections (STIs) among female drug users (FDUs). Serial cross-sectional surveys were conducted during 2010-2014 among FDUs in Beijing to collect information on addiction drug usage, sexual behaviors, and STI prevalence. Characteristics were analyzed and compared between traditional and synthetic drug users among FDUs by logistic regression method. A total of 3859 FDUs were surveyed during 2010-2014, with the median age being 32.7 years old. The proportion of synthetic drug users among FDUs increased from 43.7% in 2010 to 70.7% in 2014. Compared with traditional drug users, synthetic drug users were younger ( $P < 0.001$ ), lacked education ( $P < 0.001$ ), were unmarried ( $P < 0.001$ ), and were non-local residents ( $P < 0.001$ ). No significant difference was found with condom usage during sexual activity between traditional and synthetic drug FDUs. However, the engagement of commercial sexual activities ( $P < 0.001$ ) and syphilis prevalence ( $P < 0.001$ ) among synthetic drug users were significantly higher than traditional drug users. Synthetic drug abuse appears to be correlated with commercial sex behavior and higher syphilis prevalence among FDUs. Tailored strategies on health education to curb the prevalence of synthetic drug abuse are urgently needed in Beijing.

6. Zhong, L., et al. **"Modeling the Intervention of HIV Transmission across Intertwined Key Populations."** *Sci Rep* 2018 8(1): 2432. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29402964>

The HIV transmissions between multiple key populations make interventions difficult, particularly with multiple transmission behaviors. It remains unclear how significant the role of bridge individuals (who connect multiple communities) is in HIV transmission, and how to develop more effective intervention strategies targeting different transmission modes across key populations. In this research, we proposed a 2-

layer social network framework to simulate the HIV transmissions across female sex workers (FSWs) and persons who inject drugs (PWID) through two behaviors: unprotected sex and needle-sharing. We proposed a set of intervention strategies based on the topological properties of individuals in the social network and estimated the efficacy of these strategies. Simulation studies demonstrated that bridge individuals played a significant role in HIV transmissions across the two networks. Prevention on such bridge individuals could help reduce both the scale and speed of HIV transmissions.

7. Elamouri, F. M., et al. **"Now drugs in Libya are much cheaper than food": A qualitative study on substance use among young Libyans in post-revolution Tripoli, Libya.** *Int J Drug Policy* 2017 53: 23-31. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29272852>

**BACKGROUND:** Libya is facing a rapidly growing epidemic of illicit drug use and HIV. This situation is fueled by a complex array of factors, mainly the consequences of the political and military turmoil of the Arab Spring. Although it is extensively documented in other settings that young people are one of the most vulnerable groups to both HIV and illicit drug use, no study has explored this issue among young people in Libya. The current study addresses this research gap.

**METHODS:** This study is a qualitative study using in-depth interviews guided by a semi-structured questionnaire. We used a maximum variation, purposive sampling strategy to recruit male and female participants, aged 14-18 years, from schools, prisons, and community-based informal re-education and rehabilitation centers in Tripoli, Libya.

**RESULTS:** In total, 31 participants were recruited: 6 females and 25 males. Sixteen participants were prisoners and residents of community-based informal re-education and rehabilitation centers, and 15 were recruited in schools. Risk factors for drug use included peer influence, the increased availability and affordability of drugs, disruption of social life and healthy recreational activities, and the distress and casualties of the war. Protective factors were religious beliefs and practices, good parent-child connectedness, and high self-esteem and future aspiration. Risk factors for HIV were insufficient knowledge related to HIV transmission and unsafe injection practices, such as sharing needles and syringes.

**CONCLUSION:** We found individual, interpersonal, family, and structural-level factors that interplayed to shape the vulnerability of young people to drug use and HIV infection in Tripoli, Libya. Structural factors, including the increased availability and affordability of drugs, provided the frame within which other factors, such as peer influence, insufficient knowledge of substance use, and HIV, operated to increase the vulnerability of young people to drugs and HIV, while religious beliefs and parent-child connectedness acted as protective factors. Multisectoral efforts and studies to quantitatively evaluate the magnitude and distribution of these problems are urgently needed.

8. Mburu, G., et al. **"Patterns of HIV testing, drug use, and sexual behaviors in people who use drugs: findings from a community-based outreach program in Phnom Penh, Cambodia."** *Addict Sci Clin Pract* 2017 12(1): 27. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29202872>

**BACKGROUND:** People who use drugs are an important priority for HIV programs. However, data related to their utilization of HIV services are limited. This paper reports patterns of HIV testing, drug use, and risk and service perception among people who use drugs. Study participants were receiving HIV and harm reduction services from a community-based program in Phnom Penh, comprised of itinerant peer-led outreach and static drop-in centers.

**METHODS:** This was a mixed-methods study conducted in 2014, comprising of a quantitative survey using a structured questionnaire, followed by two focus group discussions among a sub-sample of survey participants. Participants were recruited from hotspots in five HIV high-burden communes using a two-stage cluster sampling method. Quantitative descriptive analyses and qualitative thematic analyses were performed.

**RESULTS:** This study included 151 people who use drugs with a mean age of 31.2 (SD = 6.5) years; 77.5% were male and 39.1% were married. The most common drugs used were methamphetamines (72.8%) and heroin (39.7%), and 38.0% injected drugs in the past 3 months. Overall, 83.3% had been tested for HIV in the past 6 months, of whom 62.5% had been tested by peers through community-based outreach. However, there were ongoing HIV risks: 37.3% were engaging in sex on drugs, only 35.6% used a condom at last sexual intercourse, and 10.8% had had a sexually transmitted infection in the last 6 months. Among people who reported injecting drugs in the past 3 months, 27.5% reported re-using needles/syringes. Almost half (46.5%) perceived themselves as being at lower risk of HIV compared to the general population. Qualitative results contextualized the findings of low perception of HIV risks and suggested that although services were often unavailable on weekends, at night, or during national holidays, peer-led community-based outreach was highly accepted.

**CONCLUSIONS:** A peer-led community-based approach was effective in reaching people who use drugs with HIV and harm reduction interventions. To mitigate ongoing HIV risks, expanding access to combination prevention interventions and implementing strategies to enable people who use drugs to objectively assess their HIV risks are required. Additionally, community-based programs should collect data along the care continuum, to enable decentralized tracking of progress towards 90-90-90 goals at local levels.

9. Nghiem, V. T., et al. "**Prevalence and correlates of HIV infection among men who inject drugs in a remote area of Vietnam.**" *Harm Reduct J* 2018 15(1): 8. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29444685>

**BACKGROUND:** Lack of information on the HIV epidemic among men who inject drugs (MWID) in northwestern Vietnam, a remote area, may hamper national efforts to control the disease. We examined HIV prevalence, needle-syringe sharing behaviors, and associated factors among MWID in three areas of northwestern Vietnam.

**METHODS:** We used descriptive analysis to report the characteristics, frequency of risk behaviors, and of access to healthcare services among the MWID. Univariable logistic regression was used to assess the associations between the HIV infection, needle-syringe sharing behaviors, and their independent variables. We further explored these associations in multivariable analyses where we included independent variables based on a priori knowledge and their associations with the dependent variables determined in univariable analyses ( $p < 0.25$ ).

**RESULTS:** The HIV prevalence was 37.9, 16.9, and 18.5% for Tuan Giao, Bat Xat, and Lao Cai City, respectively, and 25.4% overall. MWID of Thai minority ethnicity were more likely to be HIV-positive (adjusted odds ratio (AOR) 3.55; 95% confidence interval (CI) 1.84-6.87). The rate of needle-syringe sharing in the previous 6 months was approximately 9% among the MWID in Tuan Giao and Lao Cai City, and 27.8% in Bat Xat. Two thirds of the participants never underwent HIV testing before this study. Ever having been tested for HIV before this study was not associated with any needle-syringe sharing behaviors. Among the HIV-positive MWID, those who received free clean needles and syringes were less likely to give used needles and syringes to peers (AOR 0.21; 95% CI 0.06-0.79). Going to a "hotspot" in the previous week was associated with increased odds of needle-syringe sharing in multiple subgroups.

**CONCLUSION:** Our findings on HIV prevalence and testing participation among a subset of MWID in the northwestern Vietnam were corroborated with trend analysis results from the most recent HIV/STI Integrated Biological and Behavioral Surveillance report (data last collected in 2013.) We provided important insights into these MWID's risky injection behaviors. We suggest heightened emphasis on HIV testing and needle and syringe provision for this population. Also, policymakers and program implementers should target hotspots as a main venue to tackle HIV epidemics.

10. Levintow, S. N., et al. "**Prevalence and predictors of depressive symptoms among HIV-positive men who inject drugs in Vietnam.**" *PLoS One* 2018 13(1): e0191548. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29364928>

**BACKGROUND:** HIV infection is common among people who inject drugs (PWID), and HIV-positive PWID may be particularly vulnerable to depression. This study measured the prevalence of depressive symptoms and the factors associated with severe symptoms among 455 HIV-positive PWID in Thai Nguyen, Vietnam.

**METHODS:** We used cross-sectional data from PWID in a randomized controlled trial of an intervention to reduce high-risk injecting and sexual behaviors in Thai Nguyen from 2009-2013. Depressive symptoms were measured with the Center for Epidemiologic Studies Depression Scale (CES-D). We used logistic regression to assess demographic, clinical, and psychosocial predictors of severe depressive symptoms (CES-D $\geq$ 23) with prevalence odds ratios (POR) and 95% confidence intervals (CI).

**RESULTS:** The prevalence of severe depressive symptoms (CES-D $\geq$ 23) was 44%. 25% of participants had mild to moderate depressive symptoms (16 $\leq$ CES-D $<$ 23), and 31% experienced no depressive symptoms (CES-D $<$ 16). Not being married, self-rated poor health, greater frequency of injection drug use, history of overdose, no alcohol use, and daily cigarette smoking were positively associated with severe depressive symptoms in unadjusted models and remained predictive in a multivariable model. The strongest predictors of depressive symptoms were self-reported poor health (POR = 2.94, 95% CI: 1.82, 4.76), no current alcohol use (POR = 2.35, 95% CI: 1.47, 3.77), and not currently married or cohabitating (POR = 2.21, 95% CI = 1.40, 3.47).

**CONCLUSION:** Severe depressive symptoms were common among HIV-positive PWID in Thai Nguyen and were strongly associated with demographic, clinical, and psychosocial factors. Interventions that promote social support from family and reduce drug dependence may particularly benefit PWID experiencing severe depressive symptoms. Greater recognition and treatment of depressive symptoms has the potential to enhance quality of life and improve HIV clinical outcomes for PWID.

11. Gilbert, L., et al. "Reducing opioid overdose in Kazakhstan: A randomized controlled trial of a couple-based integrated HIV/HCV and overdose prevention intervention "Renaissance"." *Int J Drug Policy* 2018 54: 105-113. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29414482>

**OBJECTIVES:** To evaluate the efficacy of a couple-based integrated HIV/HCV and overdose prevention intervention on non-fatal and fatal overdose and overdose prevention behaviors among people who use heroin or other opioids in Almaty, Kazakhstan.

**METHODS:** We selected 479 participants who reported lifetime heroin or opioid use from a sample of 600 participants (300 couples) enrolled in a randomized controlled trial (RCT) conducted between May 2009 and February 2013. Participants were randomized to either (1) a 5-session couple-based HIV/HCV and overdose prevention intervention condition or (2) a 5-session Wellness Promotion and overdose prevention comparison condition. We used multilevel mixed-effects model with modified Poisson regression to estimate effects of the intervention as risk ratios (RR) and the corresponding 95% CIs.

**RESULTS:** About one-fifth (21.9%) of the sample reported that they had experienced an opioid overdose in the past 6 months at baseline. At the 12-month follow-up, both the intervention and comparison conditions reported significant reductions in non-fatal overdose and injection heroin/opioid use and significant increases in drug treatment attendance and naloxone use to prevent death from overdose. However, we found no differences between the study arms on any of these outcomes. There were three intervention condition participants (1.3%), compared to seven comparison condition participants (2.9%) who died from opioid overdose during the 12-month follow up period although this difference was not significant.

**DISCUSSION:** There were no significant conditions on any outcomes: both conditions showed promising effects of reducing non-fatal overdose and overdose risks. Integrating overdose prevention into a couple-based HIV/HCV intervention may be an efficient strategy to target the syndemic of opioid overdose, HIV and HCV in Kazakhstan.

12. Parry, C. D. H., et al. "Reducing substance use and risky sexual behaviour among drug users in Durban, South Africa: Assessing the impact of community-level risk-reduction interventions." *SAHARA J* 2017 14(1): 110-117. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/28969490>

Alcohol and other drug (AOD) use is increasingly recognised as having a direct and indirect effect on the transmission of human immunodeficiency virus (HIV). However, there is evidence to suggest that drug- and sex-related HIV risk-reduction interventions targeted at drug users within drug treatment centres or via community outreach efforts can lead to positive health outcomes. This study aimed to test whether a community-level intervention aimed at AOD users has an impact on risky AOD use and sexual risk behaviour. In 2007, in collaboration with a local non-governmental organisation (NGO) in Durban, an initiative was begun to implement a number of harm reduction strategies for injection and non-injection drug users. The NGO recruited peer outreach workers who received intensive initial training, which was followed by six-monthly monitoring and evaluation of their performance. Participants had to be 16 years of age or older, and self-reported alcohol and/or drug users. Peer outreach workers completed a face-to-face baseline questionnaire with participants which recorded risk behaviours and a risk-reduction plan was developed with participants which consisted of reducing injection (if applicable) and non-injection drug use and sex-related risks. Other components of the intervention included distribution of condoms, risk-reduction counselling, expanded access to HIV Testing Services, HIV/sexually transmitted infection care and treatment, and referrals to substance abuse treatment and social services. At follow-up, the baseline questionnaire was completed again and participants were also asked the frequency of reducing identified risk behaviours. Baseline information was collected from 138 drug users recruited into the study through community-based outreach, and who were subsequently followed up between 2010 and 2012. No injection drug users were reached. The data presented here are for first contact (baseline) and the final follow-up contact with the participants. There were no decreases in drug use practices such as use of cannabis, heroin, cocaine and Ecstasy after the intervention with drug users; however, there was a significant reduction in alcohol use following the intervention. While there was a substantial increase in the proportion of participants using drugs daily as opposed to more often, the reduction in the frequency of drug use was not statistically significant. Following the intervention, drug users had significantly fewer sexual partners, but there were no significant differences following the intervention with regard to frequency of sex or use of condoms. Substance use in general and during sex was, however, decreased. While the findings were mixed, the study shows that it is possible to provide HIV risk-reduction services to a population of substance users who are less likely to receive services through community outreach, and provide risk-reduction information, condoms and condom demonstration and other services. More intensive interventions might be needed to have a substantial impact on substance use and substance use-related HIV risk behaviours.

13. Smyrnov, P., et al. "Risk network approaches to locating undiagnosed HIV cases in Odessa, Ukraine." *J Int AIDS Soc* 2018 21(1). Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29356365>

**INTRODUCTION:** Providing HIV healthcare and Treatment as Prevention both depend on diagnosing HIV cases, preferably soon after initial infection. We hypothesized that tracing risk networks recruits higher proportions of undiagnosed positives than outreach-based testing or respondent-driven sampling (RDS) in Odessa, Ukraine.

**METHODS:** The Transmission Reduction Intervention Project (TRIP) used risk network tracing to recruit sexual and injection networks of recently-infected and longer-term infected (LTs) seeds (2013 to 2016). Integrated Biobehavioural Surveillance (IBBS) (2013) used RDS to recruit people who inject drugs (PWID). Outreach Testing tested PWID for HIV at community outreach sites (2013 to 2016). Proportions of undiagnosed positives among those tested were compared TRIP versus IBBS; TRIP versus Outreach Testing and between TRIP arms. Costs were compared across the projects.

**RESULTS:** TRIP tested 1252 people (21% women) in seeds' risk networks; IBBS tested 400 (18% women); Outreach Testing 13,936 (31% women). TRIP networks included a higher proportion of undiagnosed positives (14.6%) than IBBS (5.0%) or Outreach Testing (2.4%); odds ratio (OR) 3.25 (95% CI 2.07, 5.12) versus IBBS and 7.03 (CI 5.95, 8.31) versus Outreach Testing respectively. Findings remained significant in analyses



stratified by sex and when PWID in TRIP networks were compared with Outreach Testing and IBBS. Within TRIP, recently-infected participants' networks contained higher proportions of undiagnosed positives (16.3%) than LTs' networks (12.2%); OR 1.41 (CI 1.01, 1.95). TRIP located undiagnosed positives less expensively than did RDS or Outreach Testing.

**CONCLUSIONS:** TRIP's recruiting techniques, including prioritizing networks of the recently infected, find undiagnosed HIV-positive people efficiently. They should be integrated with standard practice to improve case-finding. Research should test these techniques in other socio-epidemiologic contexts. CLINICAL TRIAL REGISTRY: Registered ClinicalTrials.gov: NCT01827228.

14. Vinh, D. T., et al. "**Sexual violence and the risk of HIV transmission in sexual partners of male injecting drug users in Tien Du district, Bac Ninh province of Vietnam.**" *Health Care Women Int* 2018; 0. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29313763>

We conducted a cross-sectional study among 148 women who were regular sexual partners of male injecting drug users in Tien Du, Bac Ninh province, Vietnam to identify the rate of HIV infection and factors associated with HIV transmission among them. HIV infection rate among sexual partners was high, 11.5%. Sexual violence was prevalent, 63.5% among sexual partners; 94.1% (16/17) among those with HIV. We discovered an association between sexual violence and HIV infection. Sexual partners suffering from sexual violence caused by their regular sexual partners faced 9.24 times higher HIV risk than those who did not have sexual violence.

15. Budambula, V., et al. "**Socio-demographic and sexual practices associated with HIV infection in Kenyan injection and non-injection drug users.**" *BMC Public Health* 2018 18(1): 193. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29378631>

**BACKGROUND:** Substance use is increasingly becoming prevalent on the African continent, fueling the spread of HIV infection. Although socio-demographic factors influence substance consumption and risk of HIV infection, the association of these factors with HIV infection is poorly understood among substance users on the African continent. The objective of the study was to assess socio-demographic and sexual practices that are associated with HIV infection among injection drug users (IDUs), non-IDUs, and non-drug users (DUs) at an urban setting of coastal Kenya.

**METHODS:** A cross-sectional descriptive study was conducted among 451 adults comprising HIV-infected and -uninfected IDUs (n = 157 and 39); non-IDUs (n = 17 and 48); and non-DUs (n = 55 and 135); respectively at coastal, Kenya. Respondent driven sampling, snowball and makeshift methods were used to enroll IDUs and non-IDUs. Convenience and purposive sampling were used to enroll non-DUs from the hospital's voluntary HIV testing unit. Participant assisted questionnaire was used in collecting socio-demographic data and sexual practices.

**RESULTS:** Binary logistic regression analysis indicated that higher likelihood of HIV infection was associated with sex for police protection (OR, 9.526; 95% CI, 1.156-78.528; P = 0.036) and history of sexually transmitted infection (OR, 5.117; 95% CI, 1.924-13.485; P = 0.001) in IDUs; divorced, separated or widowed marital status (OR, 6.315; 95% CI, 1.334-29.898; P = 0.020) in non-IDUs; and unemployment (OR, 2.724; 95% CI, 1.049-7.070; P = 0.040) in non-drug users. However, never married (single) marital status (OR, 0.140; 95% CI, 0.030-0.649; P = 0.012) was associated with lower odds for HIV infection in non-drug users.

**CONCLUSION:** Altogether, these results suggest that socio-demographic and sexual risk factors for HIV transmission differ with drug use status, suggesting targeted preventive measures for drug users.

16. Stengel, C. M., et al. ""**They accept me, because I was one of them**": formative qualitative research supporting the feasibility of peer-led outreach for people who use drugs in Dakar, Senegal." *Harm Reduct J* 2018 15(1): 9. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29486774>

**BACKGROUND:** Peer outreach harm reduction initiatives are being developed with and for people who use drugs in Dakar, Senegal. This is in response to growing injecting drug use across the West Africa region and linked emerging epidemics of HIV and hepatitis C. We undertook formative qualitative research to explore the feasibility and potential of peer outreach in this context and in particular how outreach could be linked to fostering community-level processes of change.

**METHODS:** We undertook a total of 44 semi-structured qualitative interviews. Thirty-four interviews were with people who used drugs (comprised of 25 participants who had injected at least once in their life) and included 11 peer educators who delivered "awareness-raising" harm reduction activities. We also interviewed 10 service providers involved in the planning and monitoring of peer outreach initiatives. We used thematic analysis to identify key characteristics of how peer-led outreach is being delivered, beneficiary need, and the nature of the social networks in which the awareness-raising activities operate.

**RESULTS:** Through interviews with peer educators, people who use drugs, and service providers, four main overlapping themes are identified as follows: peer educators as a bridge to responsabilization through awareness-raising activities, awareness-raising activities as an enactment of recovery, awareness raising through social network diffusion, and the contexts and constraints of peer outreach engagement through awareness-raising activities.

**CONCLUSIONS:** The study results suggest that peer education is on a trajectory to develop into a central role for harm reduction interventions in Dakar, Senegal. This research shows how peer education is bound in processes of responsabilization and self-change, which link to varying possibilities for risk reduction or recovery. For peer education to achieve a range of significant goals, broader structural and system changes should be implemented in the region. We caution that without such changes, awareness-raising activities and the role of peer educators may instead become part of state- and agency-sponsored processes of seeking to responsabilize individuals for health and harm reduction.

17. Eaton, E. F., et al. "**Trends in antiretroviral therapy prescription, durability and modification: new drugs, more changes, but less failure.**" *Aids* 2018 32(3): 347-355. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29194118>

**OBJECTIVE:** To evaluate the real world durability of contemporary ART for treatment-naive people living with HIV (PLWH). **DESIGN:** A retrospective follow-up study in a multisite cohort.

**METHODS:** This study of the CNICS (CFAR Network of Integrated Clinical Systems) cohort integrates data from eight Center for AIDS Research (CFARs). PLWH initiating ART between 2007 and 2014 were included. Durability was defined as time from the initiation until discontinuation/modification using Kaplan-Meier survival curves. Cox Proportional Hazards measured associations with various sociodemographic and clinical characteristics.

**RESULTS:** Among 5373 PLWH, the initial regimen was modified in 2285 (43%) patients. Efavirenz/emtricitabine/tenofovir (n = 2173, 40%) was the most commonly prescribed initial ART regimen; elvitegravir/cobicistat/emtricitabine/tenofovir became more common after 2012. Median durability for all regimens was 48.6 months. There were statistically significant differences in median durability for NNRTI, InSTI, and protease inhibitor-based regimens, which lasted 61, 44, and 32 months, respectively. Female sex (aHR = 1.4; 95% CI 1.2-1.6), intravenous drug use (aHR = 1.6; 95% CI 1.3-1.9), and CD4 cell count less than 200 cells/mul (aHR = 1.2; 95% CI 1.1-1.3) were significantly associated with regimen modification. Compared with InSTI, those receiving an InSTI/protease inhibitor (aHR = 2.7; 95% CI 2.0-3.7) or protease inhibitor-based ART (aHR = 1.9; 95% CI 1.6-2.2) were significantly more likely to be modified; but those receiving NNRTI (aHR = 1.1; 95% CI 0.9-1.3) were not.

**CONCLUSION:** In treatment-naive PLWH, NNRTI and InSTI-based ART were most durable, relative to protease inhibitor and InSTI/protease inhibitor-based ART, and were least likely to be modified/discontinued.

A greater understanding of reasons for regimen modification/discontinuation is needed to analyze contemporary regimen durability.

18. Smith, M. K., et al. **"Using Contact Patterns to Inform HIV Interventions in Persons Who Inject Drugs in Northern Vietnam."** *J Acquir Immune Defic Syndr* 2018. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29389769>

**OBJECTIVES:** Population mixing patterns can greatly inform allocation of HIV prevention interventions such as treatment as prevention (TasP) or preexposure prophylaxis (PrEP). Characterizing contact patterns among subgroups can help identify the specific combinations of contact expected to result in the greatest number of new infections.

**SETTING:** Baseline data from an intervention to reduce HIV related risk behaviors in male PWID the northern Vietnamese province of Thai Nguyen was used for the analysis.

**METHODS:** Egocentric network data was provided by PWID who reported any drug injection equipment sharing in the previous 3 months. Age-dependent mixing was assessed to explore its epidemiological implications on risk of HIV transmission risk (among those HIV infected) and HIV acquisition risk (among those not infected) in PWID.

**RESULTS:** A total of 1,139 PWID collectively reported 2,070 equipment sharing partnerships in the previous 3 months. Mixing by age identified the 30-34 and 35-39 year age groups as the group from whom the largest number of new infections were transmitted, making them primary targets for TasP. Among the uninfected, 25-29, 30-35, and 35-39 year age groups had the highest HIV acquisition rate, making them the primary targets for PrEP.

**CONCLUSIONS:** Collection and analysis of contact patterns in PWID is feasible and can greatly inform infectious disease dynamics and targeting of appropriate interventions. Results presented also provide much needed empirical data on mixing to improve mathematical models of diseases transmission in this population.

19. Des Jarlais, D., et al. **"Using dual capture/recapture studies to estimate the population size of persons who inject drugs (PWID) in the city of Hai Phong, Vietnam."** *Drug Alcohol Depend* 2018 185: 106-111. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29432973>

**BACKGROUND:** Good estimates of key population sizes are critical for appropriating resources to prevent HIV infection. We conducted two capture/recapture studies to estimate the number of PWID currently in Hai Phong, Vietnam.

**METHODS:** A 2014 respondent-driven sampling (RDS) survey served as one capture, and distribution of cigarette lighters at drug use "hotspots" in 2016 served as another "capture." A 2016 survey using RDS, conducted 1 week after lighter distribution, served as "recapture" for both captures. Recaptured participants in the two surveys were identified with a computerized fingerprint reader. Recaptured participants from the lighter distribution were asked to show their lighters.

**RESULTS:** 1385 participants were included in the "recapture" survey. They were 94% male and had a median age of 39. All (100%) injected heroin, and HIV prevalence was 30%. 144 of the 603 participants in the 2014 survey and 152 of the 600 PWID who had received lighters were "recaptured" in the 2016 survey. After adjusting for police suppression of drug use hotspots and conducting sensitivity analyses, our best estimate of the population size from the lighter recapture was 4617 (95% CI: 4090-5143), and our best estimate from the 2014 survey recapture was 5220 (95% CI: 4568-5872). A combined best estimate of the PWID population in Hai Phong is 5000, range 4000-6000.

**CONCLUSIONS:** The capture/recapture studies produced consistent estimates. Adding a lighter/token

distribution to planned RDS surveys may provide an inexpensive method for estimating PWID population size. Analyses of the estimates should include contextual information about the local drug scene.

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## Men who have Sex with Men - 65

1. Veronese, V., et al. **"Acceptability of Peer-Delivered HIV Testing and Counselling Among Men Who Have Sex with Men (MSM) and Transgender Women (TW) in Myanmar."** *AIDS Behav* 2018. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29427231>

Men who have sex with men (MSM) and transgender women (TW) are a priority population for HIV prevention in Myanmar but report sub-optimal HIV testing frequency. Previous studies have shown that peer involvement in HIV testing can normalize stigmatized sexualities and reduce barriers to testing. We explored the acceptability of peer-delivered HIV testing among 425 undiagnosed MSM and TW in Yangon and Mandalay. An overwhelming majority of participants (86%) reported being 'comfortable/very comfortable' with peer-delivered HIV testing. Logistic regression identified reporting sexual identity as Apone [adjusted odds ratio (aOR) 3.8; 95% CI 1.2-11.7], recent HIV testing (aOR 3.1; 95% CI 1.4-6.5), reporting a high likelihood of HIV acquisition (aOR 3.6; 95% CI 1.7-7.6), and reporting  $\geq 5$  casual partners in the past 3 months (aOR 0.2; 95% CI 0.1-0.6) as associated with peer-delivered HIV testing acceptability. Given ongoing HIV vulnerability among MSM and TW in Myanmar, peer-delivered testing may offer prevention benefits by increasing testing rates and identifying undiagnosed infection earlier.

2. Garcia, J., et al. **"And Then Break the Cliche": Understanding and Addressing HIV Vulnerability Through Development of an HIV Prevention Telenovela with Men Who Have Sex with Men and Transwomen in Lima, Peru."** *Arch Sex Behav* 2018. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29464455>

HIV and other sexually transmitted infections (STIs) continue to affect men who have sex with men (MSM) and transgender women (TW) in Peru at disproportionately high rates. The ineffectiveness of traditional prevention strategies may be due to the disconnect between health promotion messages and community-level understandings of sexual cultures. We conducted 15 workshops with MSM and TW to develop a community-based sexual health intervention. Intervention development consisted of focus groups and scenic improvisation to identify sexual scripts for an HIV prevention telenovela, or Spanish soap opera. Workshops were stratified by self-reported socioeconomic status, sexual orientation, and gender identity: (1) low-income MSM (n = 9); (2) middle/high-income MSM (n = 6); and (3) TW (n = 8). Employing a conceptual model based on sexual scripts and critical consciousness theories, this paper reports on three themes identified during the telenovela-development process as participants sought to "rescript" social and sexual stereotypes associated with HIV-related vulnerability: (1) management of MSM and TW social identities at the intersection of socioeconomic status, sexuality, and gender performance; (2) social constructions of gender and/or sexual role and perceived and actual HIV/STI risk(s) within sexual partnership interactions; and (3) idealized and actual sexual scripts in the negotiation of safer sex practices between MSM/TW and their partners. These findings are key to reframing existing prevention strategies that fail to effectively engage poorly defined "high-risk populations." Leveraging community-based expertise, the results provide an alternative to the static transfer of information through expert-patient interactions in didactic sessions commonly used in HIV prevention interventions among MSM and TW.

3. Logie, C. H., et al. **"Associations between Police Harassment and HIV Vulnerabilities among Men Who Have Sex with Men and Transgender Women in Jamaica."** *Health Hum Rights* 2017 19(2): 147-154. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29302172>

4. Beck, E. J., et al. **"Attitudes towards homosexuals in seven Caribbean countries: implications for an effective HIV response."** *AIDS Care* 2017 29(12): 1557-1566. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/28438027>

Between 2000 and 2015, the number of people newly infected with HIV in the Caribbean decreased by 76% and HIV-related deaths by 42%. The number of people living with HIV (PLHIV) on anti-retroviral therapy (ART) increased from near zero to 50% (44% to 57%) in 2015. In many Caribbean countries communities of men-who-have-sex-with-other-men (MSM) have higher incidence and prevalence of HIV. They are often stigmatized and subjected to both social and institutional discrimination. This study compared attitudes of the general public obtained through public opinion polls 2013-2014 towards homosexuals and willingness to socialize with them in seven Caribbean countries. Informants were asked if they "hate, tolerate or accept" homosexuals and if they would socialize with them. In St. Vincent 53% indicated they "hate" homosexuals, compared with 12% in Suriname; the converse was observed for those who "accept" homosexuals; 63% of St. Vincent informants would not socialize with homosexuals, compared with 25% in Suriname. Findings for the other 5 countries fell within these ranges. Women were more likely to accept and socialize with homosexuals, as were informants with a tertiary education and "passive" religious believers. These groups are less likely to adhere to a culture of "compulsory heterosexuality" or "hyper-masculinity" dominant among Caribbean men. The homophobic views expressed by these cultures result in stigma and discrimination by members of the "general" public towards MSM. This negatively affects the involvement of MSM in successful national HIV responses. Public messaging, communications campaigns and educational measures need to be employed to change the culture of "compulsory heterosexuality" or "hyper-masculinity" that result in stigma and discrimination of homosexuals to improve early access to services by MSM. Repeat use of well performed opinion polls is one method that can be employed to monitor progress over time in "key" and "general" populations.

5. Cherenack, E. M., et al. **"Avoidant Coping Mediates the Relationship Between Self-Efficacy for HIV Disclosure and Depression Symptoms Among Men Who Have Sex with Men Newly Diagnosed with HIV."** *AIDS Behav* 2018. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29372454>

HIV diagnosis presents a critical opportunity to reduce secondary transmission, improve engagement in care, and enhance overall well-being. To develop relevant interventions, research is needed on the psychosocial experiences of newly diagnosed individuals. This study examined avoidant coping, self-efficacy for HIV disclosure decisions, and depression among 92 newly diagnosed men who have sex with men who reported recent sexual risk behavior. It was hypothesized that avoidant coping would mediate the relationship between self-efficacy and depression. Cross-sectional surveys were collected from participants 3 months after HIV diagnosis. To test for mediation, multiple linear regressions were conducted while controlling for HIV disclosure to sexual partners. Self-efficacy for HIV disclosure decisions showed a negative linear relationship to depression symptoms, and 99% of this relationship was mediated by avoidant coping. The index of mediation of self-efficacy on depression indicated a small-to-medium effect. Higher self-efficacy was related to less avoidant coping, and less avoidant coping was related to decreased depression symptoms, all else held constant. These findings highlight the role of avoidant coping in explaining the relationship between self-efficacy for HIV disclosure decisions and depression.

6. Torres, T. S., et al. **"Awareness of Prevention Strategies and Willingness to Use Preexposure Prophylaxis in Brazilian Men Who Have Sex With Men Using Apps for Sexual Encounters: Online Cross-Sectional Study."** *JMIR Public Health Surveill* 2018 4(1): e11. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29358160>

**BACKGROUND:** Geosocial networking (GSN) smartphone apps are becoming the main venue for sexual encounters among Brazilian men who have sex with men (MSM). To address the increased HIV incidence in this population, preexposure prophylaxis (PrEP) was recently implemented in the Brazilian public health system in the context of combined HIV prevention.

**OBJECTIVE:** This study aimed to describe the characteristics of MSM using GSN apps for sexual encounters, their awareness of prevention strategies, and willingness to use PrEP.

**METHODS:** This study was an online cross-sectional study conducted in 10 Brazilian state capitals from July 1 to July 31, 2016. The questionnaire was programmed on SurveyGizmo and advertised in two GSN apps used by MSM to find sexual partners (Hornet and Grindr). Inclusion criteria were >18 years of age, cisgender men, with an HIV-negative status. Eligible individuals answered questions on: demographics; behavior; and knowledge, preferences, and willingness to use PrEP, nonoccupational postexposure prophylaxis (nPEP), HIV self-testing (HIVST), and condoms. Logistic regression modeling was performed to assess the factors associated with daily oral PrEP willingness.

**RESULTS:** During the study period, 8885 individuals provided consent and started the questionnaire. Of these, 23.05% (2048/8885) were ineligible, 6837 (6837/8885, 76.94%) initiated, and 5065 (5065/8885, 57.00%) completed the entire questionnaire and were included in the present analysis. Median age was 30 years (interquartile range: 25-36), most self-declared as MSM (4991/5065, 98.54%), white (3194/5065, 63.06%), middle income (2148/5065, 42.41%), and had 12 or more years of schooling (3106/5062, 61.36%). The majority of MSM (3363/5064, 66.41%) scored >10 points (high risk) on The HIV Incidence Risk for MSM Scale, but only 21.39% (1083/5064) had a low perceived likelihood of getting HIV in the next year. Daily use of apps for sex was reported by 35.58% (1798/5054). Most MSM (4327/5065, 85.43%) reported testing for HIV at least once in their lifetime and 9.16% (464/5065) used nPEP in the previous year. PrEP, nPEP, and HIVST awareness was reported by 57.89% (2932/5065), 57.39% (2907/5065), and 26.57% (1346/5065) of participants, respectively. Half of all respondents (2653/5065, 52.38%) were willing to use daily oral PrEP, and this finding was associated with higher numbers of male sexual partners (adjusted odds ratio [AOR] 1.26, 95% CI 1.09-1.47), condomless receptive anal intercourse (AOR 1.27, 95% CI 1.12-1.44), sex with HIV-positive partner versus no HIV-positive partner (one HIV-positive partner: AOR 1.36, 95% CI 1.11-1.67), daily use of apps for sexual encounters (AOR 1.48, 95% CI 1.17-1.87), high and unknown perceived likelihood of getting HIV in the next year (AOR 1.72, 95% CI 1.47-2.02 and AOR 1.39, 95% CI 1.13-1.70), sexually transmitted infection diagnosis (AOR 1.25, 95% CI 1.03-1.51), stimulant use (AOR 1.24, 95% CI 1.07-1.43), PrEP awareness (AOR 1.48, 95% CI 1.30-1.70), and unwillingness to use condoms (AOR 1.16, 95% CI 1.00-1.33).

**CONCLUSIONS:** Our results evidenced high-risk scores in the studied population, suggesting the importance of PrEP use. Those individuals presenting risky sexual behaviors were more willing to use PrEP. Nonetheless, only 58% (2932/5065) of individuals had heard about this prevention strategy. Efforts to increase awareness of new prevention strategies are needed, and mobile health tools are a promising strategy to reach MSM.

7. 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* 2018 29(1): 70-82. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/28784585>

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.

8. Zhou, N., et al. **"Condomless Anal Intercourse by Partner Type Among Chinese Men Who Have Sex With Men in Tianjin."** *AIDS Educ Prev* 2018 30(1): 63-71. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29481303>

HIV prevalence and incidence is high among men who have sex with men (MSM) in China, underscoring the need to support and optimize HIV risk reduction strategies for this population. We sought to estimate the prevalence of condomless anal sex among MSM living in Tianjin, China. We recruited 595 HIV-negative MSM living in Tianjin to participate in a HIV study between 2013 and 2014. Data were collected after a voluntary counseling and testing session through a face-to-face survey. We used multivariable logistic regressions to examine the association between sociodemographic characteristics and HIV risk correlates and MSM's likelihood of engaging in condomless anal intercourse with main and casual partners in the prior 6 months. Results are presented. HIV risk reduction efforts should be developed to be sensitive and responsive to the unique experiences of Chinese MSM. We discuss opportunities for future work, including the development HIV risk reduction interventions.

9. Atujuna, M., et al. **"Contexts of vulnerability and the acceptability of new biomedical HIV prevention technologies among key populations in South Africa: A qualitative study."** *PLoS One* 2018 13(2): e0191251. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29420549>

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

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

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

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

10. Iakunchykova, O., et al. **"Correlates of Serosorting and Knowledge of Sexual Partner's HIV Status Among Men Who have Sex with Men in Ukraine."** *AIDS Behav* 2017. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29218602>

Ukraine has among the highest rates of newly diagnosed HIV infections in the WHO European region. Men who have sex with men (MSM) is the least studied group in the context of the HIV epidemics in Ukraine. The

present paper aims to estimate the prevalence and correlates of knowledge of sexual partner's HIV status and potentially discordant anal intercourse (failure to serosort) among MSM. Data of the cross-sectional study among 8100 MSM in Ukraine in 2013 were used for this analysis. Less than half of the participants (42.5%) reported that they knew the HIV serostatus of their most recent male sexual partner, and about 13% of participants reported failure to serosort during their most recent anal sexual intercourse with a male partner. Targeted interventions can be implemented to increase knowledge about sexual partner's HIV status, both among HIV-negative and HIV-positive MSM, to reduce the risk of HIV acquisition and transmission.

11. Nugroho, A., et al. **"Driving factors of retention in care among HIV-positive MSM and transwomen in Indonesia: A cross-sectional study."** *PLoS One* 2018 13(1): e0191255. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29342172>

Little is known about the prevalence of and factors that influence retention in HIV-related care among Indonesian men who have sex with men (MSM) and transgender women (transwomen, or waria in Indonesian term). Therefore, we explored the driving factors of retention in care among HIV-positive MSM and waria in Indonesia. This cross-sectional study involved 298 self-reported HIV-positive MSM (n = 165) and waria (n = 133). Participants were recruited using targeted sampling and interviewed using a structured questionnaire. We applied a four-step model building process using multivariable logistic regression to examine how sociodemographic, predisposing, enabling, and reinforcing factors were associated with retention in care. Overall, 78.5% of participants were linked to HIV care within 3 months after diagnosis or earlier, and 66.4% were adequately retained in care (at least one health care visit every three months once a person is diagnosed with HIV). Being on antiretroviral therapy (adjusted odds ratio [AOR] = 6.00; 95% confidence interval [CI]: 2.93-12.3), using the Internet to find HIV-related information (AOR = 2.15; 95% CI: 1.00-4.59), and having medical insurance (AOR = 2.84; 95% CI: 1.27-6.34) were associated with adequate retention in care. Involvement with an HIV-related organization was associated negatively with retention in care (AOR = 0.47; 95% CI: 0.24-0.95). Future interventions should increase health insurance coverage and utilize the Internet to help MSM and waria to remain in HIV-related care, thereby assisting them in achieving viral suppression.

12. Looker, K. J., et al. **"Effect of HSV-2 infection on subsequent HIV acquisition: an updated systematic review and meta-analysis."** *Lancet Infect Dis* 2017 17(12): 1303-1316. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/28843576>

**BACKGROUND:** HIV and herpes simplex virus type 2 (HSV-2) infections cause a substantial global disease burden and are epidemiologically correlated. Two previous systematic reviews of the association between HSV-2 and HIV found evidence that HSV-2 infection increases the risk of HIV acquisition, but these reviews are now more than a decade old.

**METHODS:** For this systematic review and meta-analysis, we searched PubMed, MEDLINE, and Embase (from Jan 1, 2003, to May 25, 2017) to identify studies investigating the risk of HIV acquisition after exposure to HSV-2 infection, either at baseline (prevalent HSV-2 infection) or during follow-up (incident HSV-2 infection). Studies were included if they were a cohort study, controlled trial, or case-control study (including case-control studies nested within a cohort study or clinical trial); if they assessed the effect of pre-existing HSV-2 infection on HIV acquisition; and if they determined the HSV-2 infection status of study participants with a type-specific assay. We calculated pooled random-effect estimates of the association between prevalent or incident HSV-2 infection and HIV seroconversion. We also extended previous investigations through detailed meta-regression and subgroup analyses. In particular, we investigated the effect of sex and risk group (general population vs higher-risk populations) on the relative risk (RR) of HIV acquisition after prevalent or incident HSV-2 infection. Higher-risk populations included female sex workers and their clients, men who have sex with men, serodiscordant couples, and attendees of sexually transmitted infection clinics.

**FINDINGS:** We identified 57 longitudinal studies exploring the association between HSV-2 and HIV. HIV acquisition was almost tripled in the presence of prevalent HSV-2 infection among general populations



(adjusted RR 2.7, 95% CI 2.2-3.4; number of estimates [Ne]=22) and was roughly doubled among higher-risk populations (1.7, 1.4-2.1; Ne=25). Incident HSV-2 infection in general populations was associated with the highest risk of acquisition of HIV (4.7, 2.2-10.1; Ne=6). Adjustment for confounders at the study level was often incomplete but did not significantly affect the results. We found moderate heterogeneity across study estimates, which was explained by risk group, world region, and HSV-2 exposure type (prevalent vs incident).

**INTERPRETATION:** We found evidence that HSV-2 infection increases the risk of HIV acquisition. This finding has important implications for management of individuals diagnosed with HSV-2 infection, particularly for those who are newly infected. Interventions targeting HSV-2, such as new HSV vaccines, have the potential for additional benefit against HIV, which could be particularly powerful in regions with a high incidence of co-infection. **FUNDING:** World Health Organization.

13. Han, M., et al. "**Estimating HIV Incidence Rates among MSM in an Urban Area of Chongqing Using Three Approaches.**" *Biomed Environ Sci* 2017 30(12): 913-916. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29335061>

To evaluate the HIV pandemic in Chongqing, the pooled PCR, IgG-capture BED enzyme immunoassay (BED-CEIA), and cohort observations were used to estimate the HIV incidences among men who have sex with men (MSM). 617 MSM subjects completed the survey at a voluntary counseling and testing (VCT) site. The observed HIV incidence was 12.5 per 100 P-Ys (95% CI = 9.1-15.7). The annual acute HIV infection (AHI) incidence estimated by pooled PCR was 14.0% (95% CI = 10.9-17.1). The HIV-1 annual incidence estimated based on the BED-CEIA was 12.0% (95% CI = 7.5-16.5). The HIV incidences estimated by these three approaches were consistent and complementary. The HIV incidence rates were alarmingly high with an uptrend among the urban MSM of Chongqing.

14. Pan, S. W., et al. "**Ethnicity and HIV vulnerabilities among men who have sex with men in China.**" *AIDS Care* 2018: 1-6. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29382213>

Ethnic affiliation can define sociocultural boundaries and contribute to the HIV vulnerabilities faced by men who have sex with men (MSM). This study investigated the influence of ethnic affiliation on HIV vulnerabilities among MSM in North China. Our study analyzed a cross-sectional survey of MSM (n = 398) in two major North China cities. We examined associations between ethnic affiliation and (a) HIV status, (b) sexual behaviors and experiences, and (c) substance use. Compared to ethnic majority Han MSM: MSM belonging to ethnic minority groups of South China had significantly greater odds of HIV infection (AOR: 7.40; 95% CI: 2.33-23.47) and experience of forced sex (AOR: 3.27; 95% CI: 1.12-9.52). Compared to ethnic majority Han MSM, Ethnic Hui MSM had significantly lower odds of condomless anal sex (AOR: 0.41; 95% CI: 0.21-0.82) and significantly greater odds of circumcision (AOR: 2.62; 95% CI: 1.24-5.51). HIV prevalence and riskier sexual behaviors among MSM in China appear to vary significantly by ethnic affiliation. Current epidemiological practices of aggregating all ethnic minority groups in China into a single category may be masking important interethnic differences in HIV risk, and precluding opportunities for more culturally appropriate interventions.

15. Wolff, M. J., et al. "**Evaluating the care cascade after antiretroviral therapy initiation in Latin America.**" *Int J STD AIDS* 2018 29(1): 4-12. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/28618980>

Accelerating antiretroviral therapy (ART) administration, improving retention, and achieving viral suppression in low- and middle-income countries must be prioritized. We evaluated trends and disparities in these milestones in a large Latin American cohort. Adults starting ART (ARTstart) from 2003 to 2014 at Caribbean, Central, and South America network for HIV epidemiology sites were assessed for care cascade outcomes: CD4 cell count >200 cells/mm<sup>3</sup> at ARTstart; retention (>=1 visit at one year after ARTstart); viral suppression (>=1 HIV-1 RNA <200 copies/ml at one year after ARTstart). Modified Poisson regression provided adjusted prevalence ratios by age, gender, and HIV transmission risk, accounting for site and year of ARTstart. Proportions achieving ARTstart and suppression improved over time (p < 0.05). Older age was associated with better retention and viral suppression, but not ARTstart at CD4 cell count >200 cells/mm<sup>3</sup>.

Females and men who have sex with men (MSM) were more likely to have CD4 cell count >200 cells/mm<sup>3</sup> at ARTstart. Injection drug users (IDUs) were less likely to be retained while MSM were more likely to achieve viral suppression (all  $p < 0.05$ ). Despite improvements in these outcomes over the course of a decade in this cohort, significant disparities existed, disadvantaging younger patients, men, and IDUs. These gaps indicate continued progress in providing early diagnosis and ARTstart remain critical.

16. Daniels, J., et al. **"Exploring dual disclosures for men who have sex with men in Mpumalanga, South Africa: a report from the field."** *Afr J AIDS Res* 2018; 1-4. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29471726>

We explored to whom rural men who have sex with men (MSM) disclose their sexual identity and HIV status in Mpumalanga, South Africa. Participants were recruited using a modified snowball sampling method in order to complete a questionnaire. Descriptive and logistic regression analyses were conducted. There were 47 participants of whom 22 self-reported as HIV-positive. Most participants disclosed their sexuality and HIV status to immediate family members and gay-identified friends. We found that the longer someone had identified as MSM, the more likely they were to be HIV-positive and not go to clinic. Education and employment modified these findings. This study presents a broader picture of MSM in this rural African setting; that they do disclose their sexuality and HIV status to others in their community. However, more research is needed to develop these measures. We need to assess how long participants identify as MSM, how long they have been HIV-positive, and to whom they have disclosed these aspects of their lives to inform HIV prevention and treatment interventions for MSM in rural settings.

17. 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* 2018 30(2): 191-198. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/28830220>

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.

18. Krishnan, A., et al. **"Finding Sex Partners Through Social Media Among Men Who Have Sex with Men in Hanoi, Vietnam."** *J Community Health* 2018 43(1): 146-156. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/28677027>

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.

19. Sun, X., et al. "**Frequent implementation of interventions may increase HIV infections among MSM in China.**" *Sci Rep* 2018 8(1): 451. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29323225>

Intervention measures among men who have sex with men (MSM) are usually designed to reduce the frequency of high risk behaviors (within-community level), but unfortunately may change the contact network and consequently increase the opportunity for them to have sex with new partners (between-community level). A multi-community periodic model on complex network is proposed to study the two-side effects of interventions on HIV transmission among MSM in China, in which the waning process of the impacts of interventions are modelled. The basic reproduction number for the multi-community periodic system is defined and calculated numerically. Based on the number of annual reported HIV/AIDS cases among MSM in China, the unknown parameters are estimated by using MCMC method and the basic reproduction number is estimated as 3.56 (95%CI [3.556, 3.568]). Our results show that strong randomness of the community-connection networks leads to more new infections and more HIV/AIDS cases. Moreover, main conclusion indicates that implementation of interventions may induce more new infections, depending on relative level of between- and within-community impacts, and the frequency of implementation of interventions. The findings can help to guide the policy maker to choose the appropriate intervention measures, and to implement the interventions with proper frequency.

20. Cevallos, C. G., et al. "**Genomic characterization and molecular evolution analysis of subtype B and BF recombinant HIV-1 strains among Argentinean men who have sex with men reveal a complex scenario.**" *PLoS One* 2017 12(12): e0189705. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29244833>

Currently, data on HIV-1 circulating strains among men who have sex with men (MSM) in Argentina is scarce. In South America, the distribution and the prevalence of BF recombinants are dissimilar and exhibit an underappreciated heterogeneity of recombinant structures. Here, we studied for the first time the genetic diversity of HIV-1 BF recombinants and their evolution over time through in-depth phylogenetic analysis and multiple recombination detection methods involving 337 HIV-1 nucleotide sequences (25 near full-length (NFL) and 312 partial pol gene) obtained from Argentinean MSM. The recombination profiles were studied using multiple in silico tools to characterize the genetic mosaicism, and phylogenetic approaches to infer their relationships. The evolutionary history of BF recombinants and subtype B sequences was reconstructed by a Bayesian coalescent-based method. By phylogenetic inference, 81/312 pol sequences clustered within BF clade. Of them, 46 sequences showed a genetic mosaic with CRF12\_BF-like patterns, including plausible second-generation recombinants. Other CRFs\_BF like (CRF17, 28, 29, 39, 42, 44, 47) and probable URFs\_BF were less frequently found. Phylogenetic and recombination analyses on NFL sequences allowed a meticulous definition of new BF mosaics of genomic patterns. The Bayesian analyses pointed out quite consistent onset dates for the CRFs\_BF clade based on B and F gene datasets (~1986 and ~1991 respectively). These results indicate that the CRFs\_BF variants have been circulating among Argentinean MSM for about 30 years. This study reveals, through growing evidence showing the importance of MSM in the dynamics of the HIV-1 epidemic in Argentina, the coexistence of CRF12\_BF-like and high diversity of strains exhibiting several BF mosaic patterns, including non-reported URFs that may reflect active clusters as potential intervention targets to hinder HIV-1 transmission.

21. Charre, C., et al. "**Hepatitis C virus spread from HIV-positive to HIV-negative men who have sex with men.**" *PLoS One* 2018 13(1): e0190340. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29293630>

The aim of this study was to evaluate the potential transmission of HCV strains between HIV-positive men who have sex with men (MSM) and HIV-negative MSM. Since 2000, an ongoing epidemic of HCV infections is observed among HIV-positive MSM in high-income countries. However, HCV infections in HIV-negative MSM are investigated to a lesser extent due to the lack of follow-up in this population and only limited information is available on the risk of HCV transmission between HIV-positive MSM and HIV-negative MSM. We enrolled 49 MSM of which 43 were HIV-positive and 6 HIV-negative, including 4 being enrolled or waiting for enrolment in a preexposure prophylaxis (PrEP) program. All patients were diagnosed with acute HCV infection at the Infectious Disease Unit at the Hospices Civils de Lyon from 2014 to 2016. Risk factors for HCV infection were similar in both groups and included IV or nasal drug use, and rough sex practices. Typing and phylogenetic cluster analysis of HCV variants were performed by NS5B sequencing. Several clusters of infections were identified (genotype 1a: 3 clusters and 1 pair; genotype 4d: 1 cluster and 2 pairs), suggesting that several transmission events occurred within the study population. Every HCV strain identified in HIV-negative MSM was included in a cluster with HIV-positive MSM. Chronological analysis of contagiousness suggested the transmission of HCV from HIV-positive to HIV-negative patients. We conclude that recommendations for HCV surveillance should not be confined to HIV-positive MSM but should be extended to HIV-negative MSM with similar risk factors.

22. Yu, Y. Q., et al. "**High-risk behaviour and HIV infection risk among non-local men who have sex with men with less than a single year's residence in urban centres: a multicentre cross-sectional study from China.**" *Sex Transm Infect* 2018 94(1): 51-54. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29348258>

**OBJECTIVES:** Traditionally, subjects' migration status has usually been defined on the basis of their registered residency status. We attempted to redefine migration based on the duration of residency in their cities of migration and to explore more precisely the impact of migration on HIV infection risk in men who have sex with men (MSM).

**METHODS:** A multisite cross-sectional study was conducted during 2012-2013 in seven Chinese cities. Questionnaire surveys were conducted and blood was drawn to test for antibodies to HIV, syphilis and herpes simplex virus-2 (HSV-2). MSM who were unregistered local residents and had resided in their cities of migration for  $\leq 1$  or  $> 1$  year were defined as migrant MSM, or transitional MSM, respectively.

**RESULTS:** Compared with transitional MSM and local MSM, migrant MSM had poorer HIV knowledge and higher rates of high-risk behaviour, including earlier sexual debut, multiple sexual partners, participation in commercial sex and recreational drug use. Multivariate logistic regression analysis showed that HIV prevalence among migrant MSM was higher than local MSM ( $p < 0.05$ ). This relationship, however, did not hold for transitional MSM and local MSM ( $p > 0.05$ ). Male sex work, recreational drug use, syphilis infection and HSV-2 infection were independently associated with HIV infection among migrant MSM.

**CONCLUSIONS:** Non-local MSM with shorter residence were at greater risk of HIV acquisition. More focus should be placed on HIV behavioural interventions targeting non-local MSM with temporary residence.

23. Ning, Z., et al. "**HIV and syphilis epidemic among MSM and non-MSM aged 50 and above in Shanghai, China: A yearly cross-sectional study, 2008-2014.**" *Glob Public Health* 2018: 1-9. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29419357>

The magnitude of the HIV and syphilis epidemic among Chinese men ages 50 and older is unclear. In this study, we aimed to characterise and compare the prevalence of HIV and syphilis infections; linkage to care among those infected with HIV; and the geographic distribution of the two epidemics among elderly men who have sex with men (MSM) and non-MSM in Shanghai, China. This cross-sectional study involved 12,910 men ages 50 and above who participated in the HIV voluntary and counselling testing programme each year from 2008 to 2014. HIV prevalence among MSM in our sample ranged between 4.9% and 15.4%, while syphilis frequency among non-MSM decreased from 26.0% to 18.7%. Further, in 2014, MSM participants had a higher HIV prevalence than non-MSM (4.9% vs 1.8%), whereas syphilis was higher in older non-MSM compared to MSM (18.7% vs 12.4%). Among those infected with HIV, 121/211 (53.75%) of participants were

linked to HIV treatment, where the linkage rate was comparable to that in Kunming [Zhao, S., Zhao, G., Zhang, W., Liao, B., Chu C., Wang J., & Li, L. (2015). Compare the difference of efficiency between voluntary counseling testing and provider-initiated testing counseling for identifying HIV/AIDS in Kunming. *Chinese Journal of AIDS & STD*, 21(7), 623-625]. The high burden of HIV and syphilis among men ages 50 and older in Shanghai, China highlights the need to target older Chinese men, both MSM and non-MSM, with prevention efforts.

24. Barrington, C., et al. **"HIV and work don't go together': Employment as a social determinant of HIV outcomes among men who have sex with men and transgender women in the Dominican Republic."** *Glob Public Health* 2017 12(12): 1506-1521. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/26999251>

Men who have sex with men (MSM) and transgender women are disproportionately affected by HIV in the Dominican Republic. Little is known about their experiences living with HIV as a chronic condition. We explored employment as a social determinant of well-being with HIV. We conducted 42 qualitative in-depth interviews with MSM (n = 16) and transgender women (n = 5) living with HIV; each participant completed 2 interviews to facilitate depth and iterative analysis. We used narrative analysis and systematic coding to identify salient themes related to employment and the HIV experience and developed a conceptual model of the pathways between HIV stigma, unemployment, and HIV outcomes. Early life experiences, including rejection from families and school, resulted in limited work opportunities, especially among transgender women. Following HIV diagnosis, participants across all socio-economic levels lost jobs and/or were unable to get jobs due to illegal HIV testing and HIV stigma and discrimination. Not being able to work impacted mental health, engagement in HIV care, and overall well-being. We conclude that lack of employment is a salient concern among MSM and transgender women living with HIV. Holistic, multi-level programmes that address illegal HIV testing and discriminatory hiring practices are urgently needed to facilitate engagement in care and long-term well-being.

25. Yang, S., et al. **"HIV epidemics in Shenzhen and Chongqing, China."** *PLoS One* 2018 13(2): e0192849. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29447229>

**OBJECTIVE:** Men who have sex with men (MSM) and heterosexuals are the populations with the fastest growing HIV infection rates in China. We characterize the epidemic growth and age patterns between these two routes from 2004 to 2015 in Chongqing and Shenzhen, China.

**DESIGN AND METHODS:** Data were downloaded from the National HIV/ AIDS Comprehensive Response Information Management System. For the new HIV diagnoses of heterosexuals and MSM in both cities, we estimated the growth rates by fitting different sub-exponential models. Heat maps are used to show their age patterns. We used histograms to compare these patterns by birth cohort.

**RESULTS:** The MSM epidemics grew significantly in both cities. Chongqing experienced quadratic growth in HIV reported cases with an estimated growth rate of 0.086 per week and a "deceleration rate" of 0.673. HIV reported cases of MSM in Shenzhen grew even more drastically with a growth rate of 0.033 per week and "deceleration rate" of 0.794. The new infections are mainly affecting the ages of 18 to 30 in Chongqing and ages of 20 to 35 in Shenzhen. They peaked in early 1990's and mid-1990's birth cohorts in Chongqing and Shenzhen respectively. The HIV epidemic among heterosexuals grew rapidly in both cities. The growth rates were estimated as 0.02 and 0.028 in Chongqing and Shenzhen respectively whereas the "deceleration rates" were 0.878 and 0.790 in these two places. It affected mostly aged 18 to 75 in males and 18 to 65 in females in Chongqing and aged 18 to 45 in males and 18 to 50 in females in Shenzhen in 2015. In Chongqing, the heterosexual female epidemics display two peaks in HIV diagnoses in the birth cohorts of early 1950's and early 1980's, with heterosexual male epidemics peaked in early 1940's and early 1960's. The heterosexual male and female epidemics display higher rates in the birth cohort 1940-1960, than the birth cohort 1960-1990. It peaked in birth cohorts of 1950's and 1980's in Shenzhen.

**CONCLUSIONS:** We revealed striking differences in epidemic growth and age patterns of the HIV epidemics

in these two cities. Our results may be used to inform age-targeted public health policies to curb their epidemic growth.

26. Sithole, B. "**HIV prevention needs for men who have sex with men in Swaziland.**" *Afr J AIDS Res* 2017 16(4): 315-320. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29132291>

Men who have sex with men (MSM) have a high HIV burden and also often face multiple other challenges accessing HIV services, including legal and social issues. Although Swaziland recently started responding with interventions for MSM, significant gaps still exist both in information and programming. This study aimed to explore the HIV prevention needs of MSM in Swaziland, including factors elevating their risks and vulnerabilities to HIV infection; to find out what HIV prevention strategies exist; and to determine how best to meet the prevention needs of MSM. A total of 50 men who reported anal sex with other men in the past 12 months were recruited through simple respondent driven sampling. They completed either a structured quantitative survey (n = 35) or participated in a semi-structured qualitative interview (n = 15). Both quantitative and qualitative findings indicated perceived and experienced stigma among MSM. This predominantly manifested as internalised stigma, which may lead to alcohol abuse and sexual risky behaviours. At least 83% (29/35) of the quantitative sample had been labelled with derogatory terms because of their sexual orientation, while 66% (23/35) had experienced being avoided. There was limited knowledge of risk practices: When asked, 54% (19/35) of quantitative respondents reported that vaginal and anal sex carry an equal risk of HIV infection. Participants also had little knowledge on new HIV prevention methods such as pre-exposure prophylaxis (PrEP) and rectal microbicides. MSM needs included safe spaces in form of drop-in centres and non-hostile HIV services. Although Swaziland recently started interventions for key populations, including MSM, there is still a general lack on information to inform managers and implementers on the HIV prevention needs of MSM in Swaziland. Such information is crucial for designers of official and HIV programmes. Research is needed to increase knowledge on the HIV prevention needs for key populations, including MSM.

27. Wu, X., et al. "**How newly diagnosed HIV-positive men who have sex with men look at HIV/AIDS - validation of the Chinese version of the revised illness perception questionnaire.**" *BMC Infect Dis* 2018 18(1): 2. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29291733>

**BACKGROUND:** Newly diagnosed HIV-positive men who have sex with men (MSM) are an important subgroup in HIV intervention. How newly diagnosed HIV-positive MSM look at HIV/AIDS is consequential and is potentially associated with their risk behaviors and mental health problems. Illness representation has been used to define patients' beliefs and expectations on an illness, and the revised Illness Perception Questionnaire (IPQ-R) has been developed to measure illness representations. This study aims to examine the psychometric properties of the IPQ-R among newly diagnosed HIV-positive MSM and to investigate their views towards HIV/AIDS.

**METHOD:** A total of 225 newly diagnosed HIV-positive MSM completed the Chinese version of IPQ-R. Both confirmatory factor analysis (CFA) and exploratory factor analysis (EFA) were applied to examine the factor structure of IPQ-R.

**RESULTS:** CFA showed a poor goodness of fit to the original factor structure of IPQ-R. EFA of the IPQ-R revealed 7 factors, including Emotional Response, Treatment Control, Timeline-acute/chronic, Illness Coherence, Consequence, Personal Control and Helplessness. Cronbach's alpha showed acceptable internal consistency for the derived factors, except the Personal Control (0.61) and Helplessness (0.55). Person correlation coefficients demonstrated that the derived factors of IPQ-R had significant associations with the outcome variables (depression and posttraumatic growth). The scores of the Emotional Response, Consequence, Treatment Control, Personal Control, Timeline-acute/chronic and Illness Coherence were above the midpoint, and the score of the Helplessness was below the midpoint.

**CONCLUSION:** Both similarities and differences were found when the IPQ-R is applied to newly diagnosed HIV-positive MSM. The IPQ-R can be used with some refinements in future studies. Newly diagnosed HIV-

positive MSM have a relatively high level of negative perceptions towards HIV/AIDS in both cognitive and emotional aspects.

28. Zhang, M., et al. "**Identification of a Novel HIV-1 Recombinant Form (B/C) in Men Who Have Sex with Men in Shaanxi, China.**" *AIDS Res Hum Retroviruses* 2018. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29439583>

Many new circulating recombinant forms (CRFs) and unique recombinant forms (URFs) of HIV-1 have been found in men who have sex with men (MSM) in recent years, in China. In this study, a unique HIV-1 recombinant genome (SN153) was characterized from an HIV-positive male infected through homosexual behavior in Shaanxi, China. The mosaic pattern had a complex intersubtype recombinant structure with six breakpoints, with three subtype C segments inserted into subtype B backbone. And three similar breakpoints with CRF07\_BC were observed in the pol gene. The identification of the new URF suggested the genetic complexity of the HIV epidemic among MSM in Shaanxi province and the urgent need for epidemiological surveillance and their origin of the new recombination forms.

29. Kong, D., et al. "**Identification of a Novel HIV-1 Unique Recombinant Form Between B, CRF01\_AE and CRF07\_BC in Men Who Have Sex with Men in Guangxi, China.**" *AIDS Res Hum Retroviruses* 2018. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29226692>

B, CRF01\_AE and CRF07\_BC are three major HIV-1 subtypes circulating in China. Here we detected a novel CCR5-tropic HIV-1 recombinant virus (GX2016EU23), which was isolated from an HIV-1-infected man who had sex with men (MSM) in Guangxi, China. Phylogenetic analysis of the near full-length genome showed that GX2016EU23 consisted of at least seven segments, that is two B, two CRF01\_AE, and three CRF07\_BC segments. Recombinant breakpoints of GX2016EU23 were observed in the gag, pol, rev, and env regions. This is the first detection of a novel HIV-1 recombinant (B/CRF01\_AE/CRF07\_BC) in MSM in Guangxi. The emergence of this novel recombinant suggests the increasing genetic diversity of the HIV-1 epidemic among the MSM group in China.

30. Plotzker, R., et al. "**Importance of Risk Perception: Predictors of PrEP Acceptance Among Thai MSM and TG Women at a Community-Based Health Service.**" *J Acquir Immune Defic Syndr* 2017 76(5): 473-481. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/28902071>

**BACKGROUND:** HIV prevalence among Thai men who have sex with men (MSM) and transgender women (TG) are 9.15% and 11.8%, respectively, compared with 1.1% in the general population. To better understand early adopters of pre-exposure prophylaxis (PrEP) in Thailand, we analyzed biobehavioral and sociodemographic characteristics of PrEP-eligible MSM and TG.

**SETTING:** Four Thai urban community clinics between October 2015 and February 2016. **METHODS:** Sociodemographics, HIV risk characteristics, and PrEP knowledge and attitudes were analyzed in association with PrEP initiation among eligible Thai MSM and TG. Adjusted analysis explored factors associated with PrEP acceptance. We then analyzed HIV risk perception, which was strongly associated with PrEP initiation.

**RESULTS:** Of 297 participants, 55% accepted PrEP (48% of MSM, 54% of TG). Perceived HIV risk levels were associated with PrEP acceptance [odds ratio (OR): 4.3; 95% confidence interval (95% CI): 1.5 to 12.2. OR: 6.3; 95% CI: 2.1 to 19.0. OR: 14.7; 95% CI: 3.9 to 55.1; for minimal, moderate, and high perceived risks, respectively]. HIV risk perception was associated with previous HIV testing (OR: 2.2; 95% CI: 1.4 to 3.5); inconsistent condom use (OR: 1.8; 95% CI: 1.1 to 2.9); amphetamine use in the past 6 months (OR: 3.1; 95% CI: 1.1 to 8.6); and uncertainty in the sexually transmitted infection history (OR: 2.3; 95% CI: 1.4 to 3.7). Approximately half of those who reported either inconsistent condom use (46%), multiple partners (50%), group sex (48%), or had baseline bacterial sexually transmitted infection (48%) perceived themselves as having no or mild HIV risk.

**CONCLUSIONS:** HIV risk perception plays an important role in PrEP acceptance. Perception does not

consistently reflect actual risk. It is therefore critical to assess a client's risk perception and provide education about HIV risk factors that will improve the accuracy of perceived HIV risk.

31. Mitchell, K. M., et al. **"In what circumstances could nondaily preexposure prophylaxis for HIV substantially reduce program costs?"** *AIDS* 2018. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29424774>

**OBJECTIVES:** To review the main factors influencing the costs of nondaily oral preexposure prophylaxis (PrEP) with tenofovir (+/-emtricitabine). To estimate the cost reductions possible with nondaily PrEP compared with daily PrEP for different populations (MSM and heterosexual populations).

**DESIGN:** Systematic review and data triangulation.

**METHODS:** We estimated the required number of tablets/person/week for dosing regimens used in the HPTN 067/ADAPT (daily/time-driven/event-driven) and IPERGAY (on-demand) trials for different patterns of sexual intercourse. Using trial data, and behavioural and cost data obtained through systematic literature reviews, we estimated cost savings because of tablet reductions for nondaily versus daily oral PrEP, assuming 100% adherence.

**RESULTS:** Among different populations being prioritized for PrEP, the median reported number of days of sexual activity varied between 0 and 2 days/week (0-1.5 days/week for MSM, 1-2 days/week for heterosexual populations). With 100% adherence and two or less sex-days/week, HPTN 067/ADAPT nondaily regimens reduced the number of tablets/week by more than 40% compared with daily PrEP. PrEP program costs were reduced the most in settings with high-drug costs, for example, by 66-69% with event-driven PrEP for French/US populations reporting on average one sex-day/week.

**CONCLUSION:** Nondaily oral PrEP could lower costs substantially (>50%) compared with daily PrEP, particularly in high-income countries. Adherence and efficacy data are needed to determine cost-effectiveness.

32. Wang, H. Y., et al. **"Intimate Partner Violence Correlates With A Higher HIV Incidence Among MSM: A 12-Month Prospective Cohort Study in Shenyang, China."** *Sci Rep* 2018 8(1): 2879. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29440761>

Intimate partner violence (IPV) and HIV are highly prevalent worldwide among MSM. However, the association between IPV and HIV seroconversion is virtually unknown. This 12-month prospective cohort study was conducted among MSM in Shenyang, China to explore the causality between IPV and the incidence of HIV. Adjusted Hazard Ratios (aHRs) of HIV acquisition were derived from a multivariate time-dependent Cox model and applied to calculate population attributable fractions (PAFs). Among 476 HIV-negative MSM subjects, 89(18.7%) reported being victims of IPV in the past 3 months (P3M). IPV was significantly correlated with lower education, having more condomless anal intercourse (CAI) and being depressed (each  $P < 0.05$ ). The incidence of HIV among IPV victims was 11.3/100 PY compared to 3.8/100 PY in non-IPV-victims. Furthermore, IPV victimization was independently associated with HIV seroconversion (aHR = 4.1, PAF = 37.9%). Other predictors for seroconversion included non-local residence in Liaoning province (aHR = 3.9, PAF = 45.2%), engaging in condomless receptive anal intercourse (CRAI)(aHR = 3.1, PAF = 24.2%) or CAI with casual male partners (aHR = 3.8, PAF = 26.3%) in the P3M and syphilis infection (aHR = 4.7, PAF = 33.7%) (each  $P < 0.05$ ). IPV increased the HIV seroconversion risk of MSM, with a high PAF. HIV prevention programs should integrate IPV screening and intervention, and MSM affected by IPV need to be preferentially enrolled in pre-exposure prophylaxis.

33. Allende, R., et al. **"Is pre-exposure prophylaxis effective for preventing HIV infection in men who have sex with men?"** *Medwave* 2017 17(9): e7117. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29286354>



**INTRODUCTION:** Increasing rates of HIV infection remain of concern, especially for high-risk groups such as men who have sex with men. Oral pre-exposure prophylaxis has emerged as an alternative to prevention. However, doubts persist in patients and physicians about its effectiveness.

**METHODS:** To answer this question we used Epistemonikos, the largest database of systematic reviews in health, which is maintained by screening multiple information sources, including MEDLINE, EMBASE, Cochrane, among others. We extracted data from the systematic reviews, reanalyzed data of primary studies, conducted a meta-analysis and generated a summary of findings table using the GRADE approach.

**RESULTS AND CONCLUSIONS:** We identified six systematic reviews including twelve studies overall, of which six were randomized trials. We concluded the use of oral pre-exposure prophylaxis reduces the probability of HIV infection in men who have sex with men, has few or no adverse effects, and is a measure with a good balance between benefits, risks and costs.

34. Zou, H., et al. "**Learning about HIV the hard way: HIV among Chinese MSM attending university.**" *Lancet Infect Dis* 2018 18(1): 16-18. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29303730>

35. Lau, J. T. F., et al. "**Low sustainability, poor governance, and other challenges encountered by grassroots non-governmental organizations targeting HIV prevention for men who have sex with men in China - a nation-wide study.**" *AIDS Care* 2017 29(12): 1480-1490. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/28271717>

Grassroots non-governmental organizations (NGOs) played pivotal roles in HIV prevention among men who have sex with men (MSM) in China. Their governance and sustainability issues were under-studied. This nation-wide study surveyed leaders of 202 of the HIV related NGOs in China. 58.4% of the leaders believed that their NGO would last for  $\leq 5$  years; which was negatively associated with perceived good relationship with CDC. 65.3% mentioned  $\geq 3$  non-sustainability issues; associated factors included perceived inadequacies in prevention skills, management skills, policy support, technical support, operational support, and CDC's support; a reverse association was found for frequent collaboration with organizations in China. 30.6% of the leaders mentioned  $\geq 7$  governance issues; a stepwise model found a positive association with having no office and negative associations with number of full-time staff and core volunteers. These problems would severely limit the effectiveness of HIV prevention among MSM. Related improvements and support are warranted.

36. Carrasco, M. A., et al. "**Low Uptake of Voluntary Medical Male Circumcision Among High Risk Men in Malawi.**" *AIDS Behav* 2018 22(2): 447-453. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/27943000>

Malawi is one of 14 priority countries for voluntary medical male circumcision (VMMC) initiatives with the lowest VMMC uptake. Using data from a study of 269 men accessing VMMC in southern Malawi and latent class analysis, men were classified based on four risk factors: ever tested for HIV, condom use at last sex, having casual/concurrent sexual partners, and using alcohol before sex. Two distinct classes were identified: 8% of men were classified as high risk, while 92% were classified as low/medium risk. Poisson regression modeling indicated that men who had lower education (risk ratio [RR] 1.07,  $p < 0.05$ ) and were ages 19-26 (RR 1.07,  $p < 0.05$ ) were more likely to be in the high risk group. The low numbers of men in the high risk category seeking services suggests the need to implement targeted strategies to increase VMMC uptake among such high risk men.

37. Ong, J. J., et al. "**Missed opportunities for HIV and syphilis testing among men who have sex with men in China: a cross-sectional study.**" *Sex Transm Dis* 2017. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29465672>

**BACKGROUND:** Men who have sex with men (MSM) are at high risk of HIV/syphilis. To inform strategies for dual testing, we describe patterns of HIV/syphilis testing, and examine factors associated with never testing

for HIV/syphilis in China.

**METHODS:** An online survey(2016) was completed by MSM from eight cities: men born biologically male, age >16 years, and had sex with another man at least once during their lifetime. Demographic, sexual behavioural and HIV/syphilis testing data were collected. Multivariable multinomial logistic regression identified characteristics associated with men who never tested for HIV/syphilis, compared to men who ever tested for both infections.

**RESULTS:** Overall, 2,105 men participated. Among them, 35.1%(738/2105) never tested for HIV/syphilis, and in those ever tested for HIV, only half (54.0%,709/1312) had tested for syphilis. Relative to men who had ever tested for both infections, those with increased probability of never testing for HIV/syphilis include non-gay sexual identity (prevalence odds ratio(POR) 1.86, 95%CI[1.45-2.37]), not disclosed their sexuality/sexual history with men other than their regular partner (POR 2.22, [1.75-2.78]) or with health professionals (POR 11.11, [7.69-14.29]), no condomless sex with casual partners in the last three months (POR 1.89, [1.37-2.56]), no community engagement in sexual health (POR 15.16, [9.40-24.45]), and mainly met partners offline (POR 1.49, [1.16-1.92]).

**CONCLUSION:** There are significant gaps in lifetime testing for HIV/syphilis amongst Chinese MSM. Strategies to target never testers and integrate syphilis testing within HIV testing services are urgently needed. Future opportunities include point-of-care dual test kits, and testing in China's expanding primary healthcare system.

38. Davis, D. A., et al. **"Oh, I'm Not Alone": Experiences of HIV-Positive Men Who Have Sex With Men in a Health Navigation Program to Promote Timely Linkage to Care in Guatemala City.** *AIDS Educ Prev* 2017 29(6): 554-566. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29283272>

Men who have sex with men (MSM) are disproportionately affected by HIV in Guatemala and may benefit from health navigation programs designed to support timely linkage to HIV care. We conducted qualitative in-depth interviews with MSM (n = 19) linked to care within days of their diagnosis with the support of a health navigator. We used narrative analysis and systematic coding to identify themes related to HIV diagnosis and experiences with navigators. Participants experienced strong feelings of fear upon receiving a positive HIV test result. This fear led to social isolation and limited reliance on family and friend networks for support. Health navigators developed strong relationships with participants by providing the emotional support they were lacking and supporting them to overcome their fear and other structural barriers to HIV care, including stigma. Findings support the important role of navigation for MSM in Guatemala and could be transferable to other settings in Latin America.

39. Watson, J., et al. **"Out of the Closet, Into the Clinic: Opportunities for Expanding MSM-Competent Services in China."** *Sex Transm Dis* 2018. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29465638>

**BACKGROUND:** Despite the high HIV burden among men who have sex with men (MSM), there is little research on health services provided to MSM in China and other low- and middle-income countries. Discrimination and inadequate services may discourage MSM from seeking healthcare services. This study examined essential services provided to MSM and healthcare discrimination among MSM in China.

**METHODS:** A nationwide cross-sectional online survey was conducted among MSM who saw a physician in the last 24 months in China. The survey included items on sociodemographic information, HIV testing, experiences from the last physician encounter, and history of perceived healthcare discrimination. We defined MSM-competent physicians as physicians who asked their patient about having sex with other men, asked about anal sex, and either asked about or recommended HIV testing at the most recent visit.

**RESULTS:** Among the 503 participants, 35.0% (176/503) saw an MSM-competent physician. In multivariate analyses, respondents who saw an MSM-competent physician were more likely to be younger (AOR, 0.87; CI, 0.81-0.94), have a primary care physician (AOR, 3.24; CI, 1.85-5.67), and be living with HIV (AOR, 2.01; CI,

1.13-3.56). 61.2% (308/503) of MSM had ever experienced healthcare discrimination.

**CONCLUSIONS:** Our data suggest that there is variability in the extent to which physicians are meeting the needs of MSM in China. There is an urgent need to evaluate and expand MSM-competent services in China.

40. Liu, Y., et al. "**Peer counselling versus standard-of-care on reducing high-risk behaviours among newly diagnosed HIV-positive men who have sex with men in Beijing, China: a randomized intervention study.**" *J Int AIDS Soc* 2018 21(2). Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29430845>

**INTRODUCTION:** Reducing high-risk behaviours (i.e. multiple partnership, condomless anal/vaginal sex, alcohol use before sex, illicit drug use) after HIV diagnosis is critical for curtailing HIV transmission. We designed an intervention to explore peer- counselling in reducing high-risk behaviours among newly diagnosed HIV-positive Chinese men who have sex with men (MSM).

**METHODS:** We randomized 367 newly diagnosed HIV-positive men to either standard-of-care (SOC; n = 183) or peer-counselling intervention (n = 184), and followed them for 12 months (visit at 0-, 3-, 6-, 9- and 12-month). SOC participants received counselling on high-risk behaviour reduction by clinic staff. Intervention participants received both SOC and peer counselling. A generalized estimating equation was used to compare pre-post diagnosis high-risk behaviour change; logistic regression was used to assess the likelihood of practicing high-risk behaviours between intervention and SOC participants. Both intent-to-treat and per-protocol (full-dosage) approaches were used for the analyses.

**RESULTS:** For pre- and post-diagnosis comparisons, multiple partnership fell from 50% to 16% ( $p < 0.001$ ), alcohol use before sex from 23% to 9% ( $p = 0.001$ ), illicit drug use from 33% to 6% ( $p < 0.001$ ), condomless anal sex from 47% to 4% (insertive from 23% to 2%; receptive from 36% to 3%;  $p < 0.001$ ). In the intent-to-treat analysis accounting for repeated measures, peer counselling was more likely to reduce insertive anal sex (AOR = 0.65; 95% CI: 0.45 to 0.94), condomless anal sex (AOR = 0.27; 95% CI: 0.10 to 0.64) and illicit drug use (AOR = 0.32; 95% CI: 0.16 to 0.64). In the per-protocol analysis, peer counselling was associated with a lower likelihood of using illicit drug (OR = 0.23; 95% CI: 0.07 to 0.81) and having condomless vaginal sex with women (OR = 0.12; 95% CI: 0.07 to 0.98).

**CONCLUSIONS:** We observed a 14 to 43% decrease in the prevalence of selected high-risk behaviours after HIV diagnosis. Peer counselling had a greater impact in reducing condomless anal sex with men, illicit drug use and condomless vaginal sex with women over time. Future studies with exclusive peer-counselling arm are necessary to test its efficacy and effectiveness among Chinese MSM. Clinical Trial Number: NCT01904877.

41. Tomori, C., et al. "**Perspectives on Sexual Identity Formation, Identity Practices, and Identity Transitions Among Men Who Have Sex With Men in India.**" *Arch Sex Behav* 2018 47(1): 235-244. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/27393039>

Men who have sex with men (MSM) remain at high risk for HIV infection. Culturally specific sexual identities, encompassing sexual roles, behavior, and appearance, may shape MSM's experiences of stigmatization and discrimination, and affect their vulnerability to HIV. This multi-site qualitative study (n = 363) encompassing 31 focus group discussions (FGDs) and 121 in-depth interviews (IDIs) across 15 sites in India investigated sexual identity formation, identity practices, and transitions and their implications for HIV prevention. IDIs and FGDs were transcribed, translated, and underwent thematic analysis. Our findings document heterogeneous sexual identity formation, with MSM who have more gender nonconforming behaviors or appearance reporting greater family- and community-level disapproval, harassment, violence, and exclusion. Concealing feminine aspects of sexual identities was important in daily life, especially for married MSM. Some participants negotiated their identity practices in accordance with socioeconomic and cultural pressures, including taking on identity characteristics to suit consumer demand in sex work and on extended periods of joining communities of hijras (sometimes called TG or transgender women). Participants also reported that some MSM transition toward more feminine and hijra or transgender women identities,

motivated by intersecting desires for feminine gender expression and by social exclusion and economic marginalization. Future studies should collect information on gender nonconformity stigma, and any changes in sexual identity practices or plans for transitions to other identities over time, in relation to HIV risk behaviors and outcomes.

42. Chu, Z. X., et al. "**Poppers use and Sexual Partner Concurrency Increase the HIV Incidence of MSM: a 24-month Prospective Cohort Survey in Shenyang, China.**" *Sci Rep* 2018 8(1): 24. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29311552>

The use of poppers is highly prevalent in MSM, but little is known about the association between their use and HIV incidence in China. A prospective cohort study was conducted from 2011 to 2013 in MSM in Shenyang. 475(79.6%) of eligible HIV-negative MSM participated in this prospective survey and near one fourth MSM (23.4%) ever used poppers. About one-third of the participants had condomless anal intercourse, half had multiple sexual partners and 10.5% were syphilis positive. The HIV incidence densities were 15.5 (95% CI:9.4-23.4)/100 PY[person-years] and 4.6 (95% CI:2.9-7.0)/100 PY in poppers-users and non-poppers-users, respectively. Predictors of HIV seroconversion included poppers-using-behavior, having had more than two male partners, practicing group sex, unprotected anal intercourse(UAI) with male partners, and baseline syphilis positivity (all  $P < 0.05$ ). In conclusion, the use of poppers, high-risk-sexual behaviors and syphilis infection significantly increase the HIV incidence among Shenyang MSM. It is essential for policy makers to add poppers to the official controlled illicit drug list to reduce HIV transmission among the MSM community. A comprehensive strategy should also be implemented to control both their high-risk-sexual behaviors and risk of syphilis infection, since these may represent novel ways to prevent new HIV infections in these MSM.

43. Baral, S., et al. "**Population Size Estimation of Gay and Bisexual Men and Other Men Who Have Sex With Men Using Social Media-Based Platforms.**" *JMIR Public Health Surveill* 2018 4(1): e15. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29422452>

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

**OBJECTIVE:** This study leverages estimates of the number of members of a social app geared towards gay men (Hornet) and members of Facebook using self-reported relationship interests in men, men and women, and those with at least one reported same-sex interest. Results were categorized by country of residence to validate official size estimates of GBMSM in 13 countries across five continents.

**METHODS:** Data were collected through the Hornet Gay Social Network and by using an a priori determined framework to estimate the numbers of Facebook members with interests associated with GBMSM in South Africa, Ghana, Nigeria, Senegal, Cote d'Ivoire, Mauritania, The Gambia, Lebanon, Thailand, Malaysia, Brazil, Ukraine, and the United States. These estimates were compared with the most recent Joint United Nations Programme on HIV/AIDS (UNAIDS) and national estimates across 143 countries.

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

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

44. Carballo-Diequez, A., et al. "**Preference of Oral Tenofovir Disoproxil Fumarate/Emtricitabine Versus Rectal Tenofovir Reduced-Glycerin 1% Gel Regimens for HIV Prevention Among Cisgender Men and Transgender Women Who Engage in Receptive Anal Intercourse with Men.**" *AIDS Behav* 2017 21(12): 3336-3345. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29119473>

Oral pre-exposure prophylaxis (PrEP) can prevent HIV transmission. Yet, some may prefer not to take systemic daily medication. MTN-017 was a 3-period, phase 2 safety and acceptability study of microbicide gel applied rectally either daily or before and after receptive anal intercourse (RAI), compared to daily oral tablet. At baseline, cisgender men and transgender women who reported RAI (N = 187) rated the daily oral regimen higher in overall liking, ease of use, and likelihood of future use than the gel regimens. After trying all three, 28% liked daily oral the least. Gel did not affect sexual enjoyment (88%) or improved it (7-8%). Most partners had no reaction to gel use. Ease of gel use improved significantly between the first and the last few times of daily use. A rectal gel used before and after RAI may constitute an attractive alternative to daily tablet. Experience with product use may increase acceptability.

45. Combes, J. D., et al. "**Prevalence and risk factors for anal human papillomavirus infection in HIV-positive men having sex with men.**" *J Infect Dis* 2018. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29394362>

**Background:** We assessed prevalence and risk factors for anal HPV in HIV-positive MSM, who are at high-risk of HPV-related anal cancer.

**Methods:** APACHES is a multicentric prospective study of anal HPV infection and lesions in HIV-positive MSM aged  $\geq 35$ . At baseline, participants underwent anal swabs for HPV and cytology, plus high resolution anoscopy. High-risk (HR) HPV was tested by Cobas(R)4800, with genotyping of HR-HPV positives by PapilloCheck(R).

**Results:** Among 490 participants, prevalence of HPV16 and HR-HPV was 29% and 70%, respectively, and did not differ significantly by age, sexual behaviour, or markers of HIV or immune deficiency. Smoking was the only, albeit weak (OR=1.8, 95%CI 1.2-2.7) predictor of HR-HPV. HR-HPV and HPV16 prevalence increased strongly with anal diagnosis severity, both by worse cytological/histological (composite) diagnosis at APACHES baseline, as well as worse historical diagnosis. HPV16 rose from 19% among participants with negative, to 63% in high-grade lesions. In contrast, non-16 HR-HPVs were less prevalent in high-grade (37%) than negative (64%) composite diagnosis, and their causal attribution was further challenged by multiple HPV infections.

**Conclusions:** HPV16 is ubiquitously frequent among HIV-positive MSM and strongly associated with detection of high-grade anal lesions, representing a potentially useful marker of anal cancer risk.

46. Ye, Z., et al. "**A randomized controlled trial to enhance coping and posttraumatic growth and decrease posttraumatic stress disorder in HIV-Infected men who have sex with men in Beijing, China.**" *AIDS Care* 2017: 1-9. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29254367>

Although HIV-infected men who have sex with men (MSM) constitute a newly emerged high-risk group in China, little research outside Western countries is available on effective intervention programs to enhance their well-being. The purpose of this randomized controlled trial was to evaluate the efficacy of a group intervention program designed to improve the well-being and adaptive coping strategies of 60 HIV-infected MSM in Beijing, China, randomly assigned either to the intervention group for participation in four weekly sessions or to the control group for placement on a waiting list. They all completed measurements at pre- and postintervention. Compared with the control group, the intervention group reported significantly increased problem-focused coping strategies and levels of posttraumatic growth (PTG) as well as decreased symptoms of posttraumatic stress disorder (PTSD) at the completion of the intervention. In addition, mediation analysis showed that changes in problem-focused coping strategies mediated the intervention effect on increases in PTG; however, the mediating effect of coping strategies on the association of intervention and PTSD was not significant. This study provides empirical evidence for conducting psychological intervention to promote the well-being of HIV-infected MSM. The findings also elucidate the mechanism through which intervention improved PTG.

47. Tang, W., et al. **"Receiving HIV Serostatus Disclosure from Partners Before Sex: Results from an Online Survey of Chinese Men Who Have Sex with Men."** *AIDS Behav* 2018. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29470809>

HIV serostatus disclosure before sex can facilitate serosorting, condom use and potentially decrease the risk of HIV acquisition. However, few studies have evaluated HIV serostatus disclosure from partners before sex. We examined the rate and correlates of receiving HIV serostatus disclosure from regular and casual male partners before sex among an online sample of men who have sex with men (MSM) in China. An online cross-sectional study was conducted among MSM in eight Chinese cities in July 2016. Participants completed questions covering sociodemographic information, sexual behaviors, HIV testing (including HIV self-testing) history, self-reported HIV status, and post-test violence. In addition, participants were asked whether they received HIV serostatus disclosure from their most recent partners before sex. Overall, 2105 men completed the survey. Among them, 85.9% were never married, and 35.4% had high school or less education. A minority (20.6%, 346/1678; 17.8%, 287/1608) of men received HIV serostatus disclosure from their most recent regular and casual male partners, respectively. Multivariate analysis indicated that participants who ever self-tested for HIV were more likely to have received HIV status disclosure from regular [adjusted OR (aOR) = 1.92, 95% CI 1.50-2.44] and casual (aOR = 2.34, 95% CI 1.80-3.04) male partners compared to never self-tested participants. Compared to participants who had not received HIV status disclosure from regular partners, participants who received disclosure from regular male partners had higher likelihood in experiencing post-test violence (aOR = 5.18, 95% CI 1.53-17.58). Similar results were also found for receiving HIV serostatus disclosure from casual partners. This study showed that HIV serostatus disclosure from partners was uncommon among Chinese MSM. Interventions and further implementation research to facilitate safe disclosure are urgently needed for MSM.

48. He, L., et al. **"Reduction in HIV community viral loads following the implementation of a "Treatment as Prevention" strategy over 2 years at a population-level among men who have sex with men in Hangzhou, China."** *BMC Infect Dis* 2018 18(1): 62. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29390979>

**BACKGROUND:** Previous studies have shown that the increased coverage of antiretroviral therapy (ART) could reduce the community viral load (CVL) and reduce the occurrence of new HIV infections. However, the impact on the reduction of HIV transmission among men who have sex with men (MSM) is much less certain. The frequency of HIV infections in MSM have been rapidly increasing in recent years in Hangzhou, China. The "Treatment as Prevention" strategy was implemented at a population-level for HIV-infected MSM from January 2014 to June 2016 in Hangzhou; it aimed to increase the ART coverage, reduce the CVL, and reduce HIV transmission.

**METHODS:** We investigated a subset of MSM diagnosed with HIV pre- and post-implementation of the strategy, using random sampling methods. Viral load (VL) testing was performed for all enrolled individuals;

the lower limits of detection were 20 and 50 copies/mL. The data on infections were collected from the national epidemiology database of Hangzhou. Logistic regression analyses were conducted to identify factors associated with the differences in social demographic characteristics and available VL data.

**RESULTS:** The ART coverage increased from 60.7% (839/1383) during the pre-implementation period to 92.3% (2183/2365) during the post-implementation period in Hangzhou. A total of 940 HIV-infected MSM were selected for inclusion in this study: 490 (52.1%) and 450 (47.9%) MSM in the pre- and post-implementation periods, respectively. In total, 89.5% (841/940) of patients had data available on VL rates. The mean CVL was 579 copies/mL pre-implementation and this decreased to 33 copies/mL post-implementation (Kruskal-Wallis < 0.001). The mean CVL decreased for all variables investigated post-implementation of the treatment strategy (P < 0.05). The undetectable VL (<=400 copies/mL) rate pre-implementation period was 50.0% which increased to 84.7% post-implementation (P < 0.001). The mean CVL at the county level significantly decreased in each county post-implementation (Kruskal-Wallis < 0.05).

**CONCLUSION:** Our study confirmed a population-level association between increased ART coverage and decreased mean CVL; overall 84.7% of HIV infected MSM had an undetectable VL and were no longer infectious.

49. Sosa-Rubi, S. G., et al. "**The Relationship Between Psychological Temporal Perspective and HIV/STI Risk Behaviors Among Male Sex Workers in Mexico City.**" *Arch Sex Behav* 2018. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29380090>

Men who have sex with men (MSM) face a disproportionate burden of HIV incidence and HIV prevalence, particularly young men who have sex with men. The aim of this article was to analyze the relation between a psychological temporal perspective and HIV/sexually transmitted infection (STI) risk behaviors among male sex workers (MSWs), a potentially highly present-oriented group of MSM. A total sample of 326 MSWs were included and responded to a validated psychological scale: the Zimbardo's Time Perspective Inventory; they also reported how frequently they engaged in protective behaviors against HIV and other STI risks behaviors, including condom use with casual and regular partners, as well as prior HIV testing. We adjusted structural equation models to analyze the relation between a psychological temporal perspective and HIV/STI risk behaviors. We found that orientation toward the past was correlated with decreased condom use with casual partners (beta = - 0.18; CI95% - 0.23, - 0.12). Future orientation was not associated with condom use with casual partners. Regarding condom use with regular partners, past and present orientation were related to lower likelihood of condom use (beta = - 0.23; CI95% - 0.29, - 0.17; beta = - 0.11; CI95% - 0.19, - 0.02), whereas future orientation increased the likelihood of condom use with regular partners (beta = 0.40; CI95% 0.31, 0.50). Time orientation (past, present, or future) did not predict the probability of having an HIV test. The design of HIV/STI prevention programs among vulnerable populations, such as MSM and MSWs, should consider specific time-frame mechanisms that can importantly affect sexual risk behavior decisions.

50. Vargas, S. K., et al. "**The Relationship Between Risk Perception and Frequency of HIV Testing Among Men Who Have Sex with Men and Transgender Women, Lima, Peru.**" *AIDS Behav* 2018. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29313193>

HIV infections in Peru are concentrated among men who have sex with men (MSM) and transgender women (TW). HIV testing rates among them remain low, delaying entrance into care. We assessed the prevalence of frequent HIV testing (at least every 6 months) and associated factors among 310 MSM and TW who attend sexual health clinics in Lima, Peru, and who reported that they were HIV seronegative or unaware of their status. Only 39% of participants tested frequently, and 22% had never tested; 29% reported that they were at low or no risk for acquiring HIV. Reporting low or no risk for acquiring HIV was associated with frequent testing (adjusted prevalence ratio [aPR] = 1.53, 95% CI 1.13-2.08); those reporting unprotected anal sex were less likely to test frequently (aPR = 0.66, 95% CI 0.50-0.87). HIV prevalence was 12% and did not vary by risk perception categories. This at-risk population tests infrequently and may not understand the risk of having unprotected sex.

51. Grinsztejn, B., et al. "**Retention, engagement, and adherence to pre-exposure prophylaxis for men who have sex with men and transgender women in PrEP Brasil: 48 week results of a demonstration study.**" *Lancet HIV* 2018. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29467098>

**BACKGROUND:** PrEP Brasil was a demonstration study to assess feasibility of daily oral tenofovir diphosphate disoproxil fumarate plus emtricitabine provided at no cost to men who have sex with men (MSM) and transgender women at high risk for HIV within the Brazilian public health system. We report week 48 pre-exposure prophylaxis (PrEP) retention, engagement, and adherence, trends in sexual behaviour, and incidence of HIV and sexually transmitted infections in this study cohort.

**METHODS:** PrEP Brasil was a 48 week, open-label, demonstration study that assessed PrEP delivery at three referral centres for HIV prevention and care in Rio de Janeiro, Brazil (Fundacao Oswaldo Cruz), and Sao Paulo, Brazil (Universidade de Sao Paulo and Centro de Referencia e Treinamento em DST e AIDS). Eligible participants were MSM and transgender women who were HIV negative, aged at least 18 years, resident in Rio de Janeiro or Sao Paulo, and reported one or more sexual risk criteria in the previous 12 months (eg, condomless anal sex with two or more partners, two or more episodes of anal sex with an HIV-infected partner, or history of sexually transmitted infection [STI] diagnosis). Participants were seen at weeks 4, 12, 24, 36, and 48 for PrEP provision, clinical and laboratory evaluation, and HIV testing. Computer-assisted self-interviews were also done at study visits 12, 24, 36, and 48, and assessed sexual behaviour and drug use. PrEP retention was defined by attendance at the week 48 visit, PrEP engagement was an ordinal five-level variable combining presence at the study visit and drug concentrations, and PrEP adherence was evaluated by measuring tenofovir diphosphate concentrations in dried blood spots. Logistic regression models were used to quantify the association of variables with high adherence ( $\geq 4$  doses per week). The study is registered with ClinicalTrials.gov, number NCT01989611.

**FINDINGS:** Between April 1, 2014, and July 8, 2016, 450 participants initiated PrEP, 375 (83%) of whom were retained until week 48. At week 48, 277 (74%) of 375 participants had protective drug concentrations consistent with at least four doses per week: 183 (82%) of 222 participants from Sao Paulo compared with 94 (63%) of 150 participants from Rio de Janeiro (adjusted odds ratio 1.88, 95% CI 1.06-3.34); 119 (80%) of 148 participants who reported sex with HIV-infected partners compared with 158 (70%) of 227 participants who did not (1.78, 1.03-3.08); 67 (87%) of 77 participants who used stimulants compared with 210 (71%) of 298 participants who did not (2.23, 1.02-4.92); and 232 (80%) of 289 participants who had protective concentrations of tenofovir diphosphate at week 4 compared with 42 (54%) of 78 participants who did not (3.28, 1.85-5.80). Overall, receptive anal sex with the last three partners increased from 45% at enrolment to 49% at week 48 ( $p=0.17$ ), and the mean number of sexual partners in the previous 3 months decreased from 11.4 (SD 28.94) at enrolment to 8.3 (19.55) at week 48 ( $p<0.0013$ ). Two individuals seroconverted during follow-up (HIV incidence 0.51 per 100 person-years, 95% CI 0.13-2.06); both of these patients had undetectable tenofovir concentrations at seroconversion.

**INTERPRETATION:** Our results support the effectiveness and feasibility of PrEP in a real-world setting. Offering PrEP at public health-care clinics in a middle-income setting can retain high numbers of participants and achieve high levels of adherence without risk compensation in the investigated populations. **FUNDING:** Brazilian Ministry of Health, Conselho Nacional de Desenvolvimento Cientifico e Tecnologico, Secretaria de Vigilancia em Saude, Fundacao Carlos Chagas Filho de Amparo a Pesquisa do Estado do Rio de Janeiro, and Fundacao de Amparo a Pesquisa do Estado de Sao Paulo.

52. Li, H., et al. "**Safer sex practices among newly diagnosed HIV-positive men who have sex with men in China: results from an ethnographic study.**" *Int J Qual Stud Health Well-being* 2017 12(1): 1335167. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29284374>

The study reported here sought to understand the rationales of safer sex practices adopted by newly diagnosed HIV-positive men who have sex with men (MSM). Guided by a socio-ecological framework, an ethnography was conducted among newly diagnosed HIV-positive MSM. In-depth interviews and participant observation were employed to produce an account of the social and cultural settings that was faithful to the



perspectives of participants. A total of 31 participants with diverse backgrounds were recruited in a southern city of China. Participant observation was conducted in local healthcare settings, MSM venues, and NGO offices. Most participants (24/31) reported stopping unprotected anal intercourse (UAI) immediately after being diagnosed as HIV-positive. Factors associated with safer sex practices were identified at both individual and environmental levels, including self-protection, establishment of self-esteem, dignity, altruism and reciprocity, disease experience as a source of personal growth, and organizational culture and values. Newly diagnosed HIV-positive MSM navigate their sexual practices within the context of multiple competing factors. Implications for sustained behaviour change enabling safer sex practices include stimulating survival instinct, facilitating safer sex decision making, motivating and facilitating personal growth, and encouraging volunteerism to promote intentional activities for safer sex practices.

53. Jagdagsuren, D., et al. "**The second molecular epidemiological study of HIV infection in Mongolia between 2010 and 2016.**" *PLoS One* 2017 12(12): e0189605. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29244859>

**OBJECTIVE:** Our previous 2005-2009 molecular epidemiological study in Mongolia identified a hot spot of HIV-1 transmission in men who have sex with men (MSM). To control the infection, we collaborated with NGOs to promote safer sex and HIV testing since mid-2010. In this study, we carried out the second molecular epidemiological survey between 2010 and 2016 to determine the status of HIV-1 infection in Mongolia.

**METHODS:** The study included 143 new cases of HIV-1 infection. Viral RNA was extracted from stocked plasma samples and sequenced for the pol and the env regions using the Sanger method. Near-full length sequencing using MiSeq was performed in 3 patients who were suspected to be infected with recombinant HIV-1. Phylogenetic analysis was performed using the neighbor-joining method and Bayesian Markov chain Monte Carlo method.

**RESULTS:** MSM was the main transmission route in the previous and current studies. However, heterosexual route showed a significant increase in recent years. Phylogenetic analysis documented three taxa; Mongolian B, Korean B, and CRF51\_01B, though the former two were also observed in the previous study. CRF51\_01B, which originated from Singapore and Malaysia, was confirmed by near-full length sequencing. Although these strains were mainly detected in MSM, they were also found in increasing numbers of heterosexual males and females. Bayesian phylogenetic analysis estimated transmission of CRF51\_01B into Mongolia around early 2000s. An extended Bayesian skyline plot showed a rapid increase in the effective population size of Mongolian B cluster around 2004 and that of CRF51\_01B cluster around 2011.

**CONCLUSIONS:** HIV-1 infection might expand to the general population in Mongolia. Our study documented a new cluster of HIV-1 transmission, enhancing our understanding of the epidemiological status of HIV-1 in Mongolia.

54. Chard, A. N., et al. "**Social Stressors and Intoxicated Sex Among an Online Sample of Men who have Sex with Men (MSM) Drawn from Seven Countries.**" *Subst Use Misuse* 2018 53(1): 42-50. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/28792280>

**BACKGROUND:** Rates of drug and alcohol use are higher among men who have sex with men (MSM) than the general adult male population, and are often associated with increased sexual risk-taking.

**OBJECTIVES:** We aim to examine the prevalence of drunk or high sex and their associations with socio-demographic characteristics, gay social network size, and social stress among an online sample of MSM drawn from seven countries.

**METHODS:** Sexually-active MSM aged over 18 residing in Australia, Brazil, Canada, South Africa, Thailand, the United Kingdom, or the United States were recruited through Facebook for a quantitative survey (n = 2,403) in 2012. Two outcomes were examined via logistic regression: reporting being buzzed/drunken at last

sex, and reporting being high at last sex.

**RESULTS:** Results highlight the role of social stressors in shaping drug use among MSM. Results were context-specific, though commonalities were seen across countries. Being in a male-male sexual relationship was associated with lower odds of being buzzed/drunken at last sex in five countries. Higher scores on measures of external homonegative discrimination and internalized homonegativity were associated with greater odds of reporting being high at last sex in three countries.

**Conclusions/Importance:** Social networks and minority stressors can have significant effects on drug use and sex while drunk or high. This points to the importance of focusing on structural issues when designing interventions for MSM aimed at reducing the transmission of HIV and other STIs.

55. Logie, C. H., et al. "**Social-ecological factors associated with HIV infection among men who have sex with men in Jamaica.**" *Int J STD AIDS* 2018 29(1): 80-88. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/28669320>

In Jamaica, where homosexuality is criminalized, scant research has examined associations between sexual stigma and HIV infection. The study objective was to examine correlates of HIV infection among men who have sex with men (MSM) in Jamaica. We conducted a cross-sectional tablet-based survey with MSM in Jamaica using chain referral sampling. We assessed socio-demographic, individual, social, and structural factors associated with HIV infection. A logit-link model, fit using backwards-stepwise regression, was used to estimate a final multivariable model. Among 498 participants (median age: 24, interquartile range: 22-28), 67 (13.5%) were HIV-positive. In the multivariable model, HIV infection was associated with increased odds of socio-demographic (older age, odds ratio [OR]: 1.05, 95% confidence interval [CI]: 1.00-1.10); residing in Kingston versus Ocho Rios [OR: 6.99, 95% CI 2.54-19.26]), individual (poor/fair versus excellent/good self-rated health [OR: 4.55, 95% CI: 1.81-11.42], sexually transmitted infection [STI] history [OR: 3.67, 95% CI: 1.61-8.38]), and structural (enacted sexual stigma [OR: 1.08, 95% CI: 1.01-1.15], having a health care provider [OR: 2.23, 95% CI: 1.06-4.66]) factors. This is among the first studies to demonstrate associations between sexual stigma and HIV infection in Jamaica. Findings underscore the need to integrate STI testing in the HIV care continuum and to address stigma and regional differences among MSM in Jamaica.

56. Logie, C. H., et al. "**Social-ecological factors associated with selling sex among men who have sex with men in Jamaica: results from a cross-sectional tablet-based survey.**" *Glob Health Action* 2018 11(1): 1424614. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29338660>

**BACKGROUND:** Globally, men who have sex with men (MSM) experience social marginalization and criminalization that increase HIV vulnerability by constraining access to HIV prevention and care. People who sell sex also experience criminalization, rights violations, and violence, which elevate HIV exposure. MSM who sell sex may experience intersectional stigma and intensified social marginalization, yet have largely been overlooked in epidemiological and social HIV research. In Jamaica, where same sex practices and sex work are criminalized, scant research has investigated sex selling among MSM, including associations with HIV vulnerability.

**OBJECTIVE:** We aimed to examine social ecological factors associated with selling sex among MSM in Jamaica, including exchanging sex for money, shelter, food, transportation, or drugs/alcohol (past 12 months).

**METHODS:** We conducted a cross-sectional survey with a peer-driven sample of MSM in Kingston, Ocho Rios, and Montego Bay. Multivariable logistic regression analyses were conducted to estimate intrapersonal/individual, interpersonal/social, and structural factors associated with selling sex.

**RESULTS:** Among 556 MSM, one-third (n = 182; 32.7%) reported selling sex. In the final multivariable model, correlates of selling sex included: individual/intrapersonal (lower safer sex self-efficacy [AOR: 0.85, 95% CI: 0.77, 0.94]), interpersonal/social (concurrent partnerships [AOR: 5.52, 95% CI: 1.56, 19.53], a higher need for

social support [AOR: 1.08, 95% CI: 1.03, 1.12], lifetime forced sex [AOR: 2.74, 95% CI: 1.65, 4.55]) and structural-level factors (sexual stigma [AOR: 1.09, 95% CI: 1.04, 1.15], food insecurity [AOR: 2.38, 95% CI: 1.41, 4.02], housing insecurity [AOR: 1.94, 95% CI: 1.16, 3.26], no regular healthcare provider [AOR: 2.72, 95% CI: 1.60, 4.64]).

**CONCLUSIONS:** This study highlights social ecological correlates of selling sex among MSM in Jamaica, in particular elevated stigma and economic insecurity. Findings suggest that MSM in Jamaica who sell sex experience intensified social and structural HIV vulnerabilities that should be addressed in multi-level interventions to promote health and human rights.

57. Kim, H. Y., et al. "**Stigma as a barrier to health care utilization among female sex workers and men who have sex with men in Burkina Faso.**" *Ann Epidemiol* 2018 28(1): 13-19. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29425532>

**PURPOSE:** The aim of this study is to examine the prevalence and correlates of perceived health care stigma among female sex workers (FSWs) and men who have sex with men (MSM), including other stigma types, suicidal ideation, and participation in social activities.

**METHODS:** FSWs (N = 350) and MSM (N = 330) aged  $\geq 18$  were recruited in Bobo-Dioulasso, Burkina Faso. Perceived health care stigma was defined as either ever being afraid of or avoiding health care services because someone might find out the participant has sex with men (for MSM) or sells sex (for FSW). Correlates of perceived health care stigma were examined using multivariable logistic regression.

**RESULTS:** The prevalence of perceived health care stigma was 14.9% (52/350) and 24.5% (81/330) in FSWs and MSM, respectively. Among FSWs, experienced or social stigma, including verbal harassment (adjusted odds ratio [aOR] = 3.59, 95% confidence interval [CI] 1.48-8.71), feeling rejected by friends (aOR = 2.30, 95% CI 1.14-4.64), and feeling police refused to protect them (aOR = 2.58, 95% CI 1.27-5.25), was associated with perceived health care stigma. Among MSM, experiencing verbal harassment (aOR = 1.95, 95% CI 1.09-3.50) and feeling scared to walk in public (aOR = 2.93, 95% CI 1.47-5.86) were associated with perceived health care stigma.

**CONCLUSIONS:** In these key populations, perceived health care stigma was prevalent and associated with experienced and social stigmas. To increase coverage of effective HIV services, interventions should incorporate approaches to comprehensively mitigate stigma.

58. Dubov, A., et al. "**Strategies to Implement Pre-exposure Prophylaxis with Men Who Have Sex with Men in Ukraine.**" *AIDS Behav* 2017. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29214409>

Ukrainian men who have sex with men (MSM) remain highly stigmatized group with HIV prevalence as high as 23%. Despite documented effectiveness of pre-exposure prophylaxis (PrEP), PrEP remains unavailable in Ukraine. The aim of this study was to elicit MSM preferences in order to inform program development to facilitate successful delivery of PrEP to Ukrainian MSM. 1184 MSM were recruited through social networking applications to complete a stated preference (choice-based conjoint) survey. Respondents completed 14 choice tasks presenting experimentally-varied combinations of five attributes related to PrEP administration (dosing frequency, dispensing venue, prescription practices, adherence support, and costs). Latent class analysis was used to estimate the relative importance of each attribute and preferences across nine possible PrEP delivery programs. Preferences clustered into five groups. PrEP affordability was the most influential attribute across groups, followed by dosing strategy. Only one group preferred injectable PrEP (n = 216), while the other four groups disliked daily PrEP and strongly preferred the 'on demand' option. One group (n = 258) almost exclusively considered cost in their decision making. One group (n = 151) had very low level of interest in PrEP initiation correlated with low self-perceived risk for HIV. The two most at-risk groups (n = 415) were also more sensitive to changes in program delivery. PrEP uptake among MSM is most likely to be successful when PrEP is affordable, its implementation is targeted, provided as "on-demand" with associated education, and when more thorough medical care and related testing is provided to at-risk populations. Its

introduction will need affirmation by the Ukrainian government, and guidelines that reflect safety, efficacy, and patient preferences.

59. De Boni, R. B., et al. "**Syndemics among individuals enrolled in the PrEP Brasil Study.**" *Drug Alcohol Depend* 2018 185: 168-172. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29454927>

**BACKGROUND:** Concurrent psychosocial problems may synergistically increase the risk of HIV infection (syndemics), representing a challenge for prevention. We aimed to evaluate the prevalence and associated factors of syndemics among men who have sex with men (MSM) and transgender women (TGW) enrolled in the Brazilian pre-exposure prophylaxis demonstration study (PrEP Brasil Study).

**METHODS:** Secondary cross-sectional analysis of the PrEP Brasil Study was performed. Of 450 HIV-seronegative MSM/TGW enrolled in the PrEP Brasil Study- conducted at Rio de Janeiro and Sao Paulo, Brazil- 421 participants with complete data were included in the present analysis. Syndemics was defined as occurrence of  $\geq 2$  of the following conditions: polysubstance ( $\geq 2$ ) use, binge drinking, positive depression screen, compulsive sexual behavior, and intimate partner violence (IPV).

**RESULTS:** The prevalence of recent polysubstance use was 22.8%, binge drinking 51.1%, positive depression screening 5.2%, compulsive sexual behavior 7.1%, and IPV 7.3%. Syndemics prevalence was 24.2%, and associated factors were younger age (adjusted Odds Ratio (aOR) 0.95, 95% Confidence Interval (95% CI) 0.92-0.98 per year increase), TGW vs. MSM (aOR 3.09, 95% CI: 1.2-8.0), some college education or more vs. less than college (aOR 2.49, 95% CI: 1.31-4.75), and multiple male sexual partners in prior 3 months (aOR 1.69, 95% CI: 0.92-3.14).

**CONCLUSION:** Given the high prevalence of syndemics, particularly of polysubstance use and binge drinking, PrEP delivery offers an opportunity to diagnose and intervene in mental and social well-being.

60. Hassan, N. R., et al. ""**There is not a safe space where they can find themselves to be free**": (Un)safe spaces and the promotion of queer visibilities among township males who have sex with males (MSM) in Cape Town, South Africa." *Health Place* 2018 49: 93-100. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29227887>

Males who have sex with males (MSM) are prioritised in the global fight against HIV/AIDS, as a key affected population to receive HIV prevention, treatment, and HIV-related care and support (WHO, 2016). There is, however, limited empirical research conducted on how to engage communities of South African MSM in clinical HIV prevention research programs. The development of LGBTIQ safe spaces may potentially be a viable option to promote community-based engagement by bridging the divides between HIV-prevention researchers, marginalised queer populations, and other HIV-prevention stakeholders located in heteronormative spaces (Molyneux et al., 2016). We conducted ten in-depth, qualitative interviews with MSM safe space members who have been involved in HIV prevention research programs. Data were analysed using a thematic analytic strategy (Braun and Clarke, 2006). Our results indicate that the "safe spaces" currently operational in Cape Town are not stable spaces nor are they always safe, but they form part of a broader and much more long-term political and geographical strategy of inclusion and emancipation.

61. Liu, C., et al. "**Transplantation or rurality? Migration and HIV risk among Chinese men who have sex with men in the urban areas.**" *J Int AIDS Soc* 2018 21(1). Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29327442>

**INTRODUCTION:** Migration of men who have sex with men (MSM) from rural to urban areas is common across low- and middle-income countries and is widely believed to contribute to elevated HIV risk among migrant MSM in urban areas. Little consensus exists on whether their risk is due to their transplantation or their being from resource-constrained rural areas. This study seeks to clarify the relationship between migration and HIV risks by comparing differences in HIV-related risky sexual behaviours and healthcare utilization across competing conceptualizations of migratory statuses.

**METHODS:** In July 2016, MSM  $\geq 16$  years old currently residing in one of eight urban cities in China were recruited for an online cross-sectional survey, which collected information on socio-demographics, sexual behaviours, HIV care-seeking behaviours, and healthcare utilization. Based on a question about residency status, each participant was classified as an urban local resident, urban transplant, or rural transplant. Multivariable multinomial logistic regression was used to examine the associations between risky behaviours and healthcare utilization among these three groups.

**RESULTS:** Among 2007 MSM, the proportion of local, urban transplant and rural transplant were 32% (648/2007), 24% (478/2007), and 44% (881/2007), respectively. Compared with urban local resident MSM, urban transplant MSM were more likely to have ever tested for HIV (adjusted odds ratio (aOR) = 1.39, 95% confidence interval (CI): 1.08 to 1.80). Compared with urban transplant MSM, rural transplant MSM were less likely to have utilized any governmental sexual health services in the past three months (aOR = 0.75, 95% CI: 0.60 to 0.93), ever tested for HIV (aOR = 0.77, 95% CI: 0.61 to 0.96), ever initiated antiretroviral therapy (ART) (aOR = 0.16, 95% CI: 0.05 to 0.52), and ever purchased sex (aOR = 0.57, 95% CI: 0.38 to 0.85). No other significant differences were found in sexual behaviours among three groups.

**CONCLUSIONS:** The widely used local/migrant categorization obscures important differences in HIV risk present between urban/rural subgroups among them. Previous studies of HIV risks in Chinese "migrant" may have failed to consider the role of structural factors such as discrimination or barriers to healthcare when interpreting their findings of higher HIV prevalence in this population. Low ART uptake among rural transplant MSM in this study is particularly concerning and underscore the need for HIV-related interventions tailored for this group.

62. Purnomo, J., et al. "Using eHealth to engage and retain priority populations in the HIV treatment and care cascade in the Asia-Pacific region: a systematic review of literature." *BMC Infect Dis* 2018 18(1): 82. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29454322>

**BACKGROUND:** The exponential growth in the reach and development of new technologies over the past decade means that mobile technologies and social media play an increasingly important role in service delivery models to maximise HIV testing and access to treatment and care. This systematic review examines the impact of electronic and mobile technologies in medical care (eHealth) in the linkage to and retention of priority populations in the HIV treatment and care cascade, focussing on the Asia-Pacific region.

**METHODS:** The review was informed by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement from the Cochrane Collaboration guidelines. Both grey and published scientific literature from five different databases were searched for all original articles in English published from 2010 to 2017. Studies conducted outside the Asia-Pacific region or not including HIV priority populations were excluded. The methodological quality of studies included in the review was assessed using the Quality Assessment Tool for Quantitative Studies.

**RESULTS:** The database search identified 7309 records. Of the 224 peer-reviewed articles identified for full text review, 16 studies from seven countries met inclusion criteria. Six cross sectional studies found evidence to support the use of eHealth, via text messages, instant messaging, social media and health promotion websites, to increase rates of HIV testing and re-testing among men who have sex with men (MSM). Evidence regarding the efficacy of eHealth interventions to improve antiretroviral treatment (ART) adherence was mixed, where one randomised controlled trial (RCT) showed significant benefit of weekly phone call reminders on improving ART adherence. Three further RCTs found that biofeedback eHealth interventions that provided estimated ART plasma concentration levels, showed promising results for ART adherence.

**CONCLUSIONS:** This review found encouraging evidence about how eHealth can be used across the HIV treatment and care cascade in the Asia-Pacific region, including increasing HIV testing and re-testing in priority populations as well as ART adherence. eHealth interventions have an important role to play in the movement towards the end of AIDS, particularly to target harder-to-reach HIV priority populations, such as MSM.

63. Rees, K., et al. "**Utilization of Sexually Transmitted Infection Services at 2 Health Facilities Targeting Men Who Have Sex With Men in South Africa: A Retrospective Analysis of Operational Data.**" *Sex Transm Dis* 2017 44(12): 768-773. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/28876299>

**BACKGROUND:** Men who have sex with men (MSM) are a key population, particularly vulnerable to sexually transmitted infections (STIs) and HIV, but there are limited data on health programs targeting MSM in Africa. This study aims to describe the utilization of nongovernmental organization-supported sexual health services for MSM at 2 public sector health facilities in Johannesburg, South Africa.

**METHODS:** We retrospectively analyzed routine data over the period of January 2014 to June 2016. We report on service utilization for STI syndromes, HIV testing, and the antiretroviral therapy (ART) program.

**RESULTS:** Some 5796 men visited the facilities. Seven thousand one hundred eighty-eight STI episodes were managed, 68.2% (4903 episodes) of which were classified as male urethritis and 9.8% (704 episodes) as genital ulcers. Positivity yield for first-time HIV tests was 38.0% (205 positive test results) in MSM, compared with 14.1% (471 positive test results) in other men. At the end of the study, there were 1090 clients on ART, and 2-year retention was 82% (95% confidence interval, 78%-85%). There was no difference in retention between MSM and other men (P = 0.49).

**CONCLUSIONS:** This study is the first to show that sexual health services targeting MSM in Africa have managed to attract MSM and other men in need of STI and HIV care. The observed high HIV testing yield among MSM illustrates the relevance of MSM-focused services in the South African public health sector, and the good retention on ART demonstrates that high-quality care can be provided to MSM in our setting.

64. Miller, W. M., et al. "**The Where and How for Reaching Transgender Women and Men Who Have Sex with Men with HIV Prevention Services in Guatemala.**" *AIDS Behav* 2017 21(12): 3279-3286. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/28008544>

This study aims to describe the transgender women and men who have sex with men (MSM) missed through venue-based sampling and illustrate how data on venues can be used to prioritize service delivery. Respondent-driven sampling (RDS) and time-location sampling (TLS) were used concurrently in 2010 for behavioral surveillance among MSM and transgender women in Guatemala City. RDS recruits who did not frequent venues (n = 106) were compared to TLS recruits (n = 609). TLS participants recruited at different types of venues were compared. RDS recruits who did not frequent venues were less educated, less likely to identify as gay, more likely to have concurrent partners and female sexual partners. Participants recruited at NGOs, saunas, hotels, streets and parks had more partners, were more likely to receive money for sex or have concurrent partners. Prevention programs for MSM and transgender women should characterize social venues and people that frequent them and improve service coverage through venues and social networks.

65. Shrestha, R., et al. "**Why don't key populations access HIV testing and counselling centres in Nepal? Findings based on national surveillance survey.**" *BMJ Open* 2017 7(12): e017408. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29288177>

**OBJECTIVES:** To assess the demographic, behavioural, psychosocial and structural factors associated with non-utilisation of HIV testing and counselling (HTC) services by female sex workers (FSWs) and men who have sex with men/transgender (MSM/TG).

**METHODS:** This study involved a cross-sectional design. We used the national surveillance survey data of 2012, which included 610 FSWs and 400 MSM/TG recruited randomly from 22 and three districts of Nepal, respectively. Adjusted prevalence ratio (aPR) and 95% confidence interval (CI) using modified Poisson regression was used to assess and infer the association between outcome (non-utilisation of HTC in last year) and independent variables.

**RESULTS:** Non-utilisation of HTC in the last year was 54% for FSWs and 55% for MSM/TG. The significant factors for non-utilisation of HTC among FSWs were depression (aPR=1.4 (95% CI 1.1 to 1.6)), injectable drug abuse (ever) (aPR=1.4 (95% CI 1.1 to 1.8)), participation (ever) in HIV awareness programmes (aPR=1.2 (95% CI 1.0 to 1.4)), experience of forced sex in previous year (aPR=1.1 (95% CI 1.0 to 1.3)) and absence of dependents in the family (aPR=1.1 (95% CI 1.0 to 1.3)). Non-utilisation of HTC among MSM/TG had significant association with age 16-19 years (aPR=1.4 (95% CI 1.1 to 1.7)), non-condom use (aPR=1.2 (95% CI 1.0 to 1.4)), participation (ever) in HIV awareness programmes (aPR=1.6 (95% CI 1.3 to 2.0)), physical assault in previous year (aPR=1.8 (95% CI 1.0 to 3.1)), experience of forced sex in previous year (aPR=0.5 (95% CI 0.3 to 0.9)).

**CONCLUSION:** Although limited by cross-sectional design, we found many programmatically relevant findings. Creative strategies should be envisaged for effective behavioural change communication to improve access to HIV testing. Psychosocial and structural interventions should be integrated with HIV prevention programmes to support key populations in accessing HIV testing.

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## Sex Workers - 35

1. 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* 2018 187(2): 287-297. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/28633387>

Current evidence suggests that anal intercourse (AI) during sex work is common in sub-Saharan Africa, but there have been few studies in which the contribution of heterosexual AI to human immunodeficiency virus (HIV) epidemics has been investigated. Using a respondent-driven sampling survey of female sex workers (FSWs; n = 466) in Abidjan, Cote d'Ivoire, in 2014, we estimated AI prevalence and frequency. Poisson regressions were used to identify AI determinants. Approximately 20% of FSWs engaged in AI during a normal week (95% confidence interval: 15, 26). Women who performed AI were generally younger, had been selling sex for longer, were born in Cote d'Ivoire, and 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 interval: 11, 37%) of new HIV infections could have been averted among FSWs during 2000-2015 if AI had been substituted for vaginal intercourse. Despite representing a small fraction of all sex acts, AI is an underestimated source of HIV transmission. Increasing availability and uptake of condoms, lubricants, and pre-exposure prophylaxis for women engaging in AI could help mitigate HIV risk.

2. Pfeiffer, E. J., et al. **"Bewitching sex workers, blaming wives: HIV/AIDS, stigma, and the gender politics of panic in western Kenya."** *Glob Public Health* 2018 13(2): 234-248. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/27590587>

Since access to HIV testing, counselling, and drug therapy has improved so dramatically, scholars have investigated ways this 'scale-up' has interacted with HIV/AIDS-related stigma in sub-Saharan Africa. Drawing on data collected during ethnographic research in a trading centre in western Kenya, this paper critically analyses two violent and localised case studies of panic over the ill health of particular community residents as a nuanced lens through which to explore the dynamic interplay of gender politics and processes of HIV/AIDS-related stigma in the aftershocks of the AIDS crisis. Gaining theoretical momentum from literatures focusing on stigma, gender, witchcraft, gossip, and accusation, we argue that the cases highlight collective anxieties, as well as local critiques of shifting gender roles and the strain of globalisation and legacies of

uneven development on myriad forms of relationships. We further contend that these heightened moments of panic and accusation were deployments of power that ultimately sharpened local gender politics and conflicts on the ground in ways that complicated the social solidarity necessary to tackle social and health inequalities. The paper highlights one community's challenge to eradicate the stigma associated with HIV/AIDS during a period of increased access to HIV services.

3. Liu, H. "Can Burt's Theory of Structural Holes be Applied to Study Social Support Among Mid-Age Female Sex Workers? A Multi-Site Egocentric Network Study in China." *AIDS Behav* 2017 21(12): 3567-3577. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/28828738>

The epidemic of HIV/AIDS continues to spread among older adults and mid-age female sex workers (FSWs) over 35 years old. We used egocentric network data collected from three study sites in China to examine the applicability of Burt's Theory of Social Holes to study social support among mid-age FSWs. Using respondent-driven sampling, 1245 eligible mid-age FSWs were interviewed. Network structural holes were measured by network constraint and effective size. Three types of social networks were identified: family networks, workplace networks, and non-FSW networks. A larger effective size was significantly associated with a higher level of social support [regression coefficient (beta) 5.43-10.59] across the three study samples. In contrast, a greater constraint was significantly associated with a lower level of social support (beta -9.33 to -66.76). This study documents the applicability of the Theory of Structural Holes in studying network support among marginalized populations, such as FSWs.

4. Stuart, R. M., et al. "The City of Johannesburg can end AIDS by 2030: modelling the impact of achieving the Fast-Track targets and what it will take to get there." *J Int AIDS Soc* 2018 21(1). Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29359533>

**INTRODUCTION:** In 2014, city leaders from around the world endorsed the Paris Declaration on Fast-Track Cities, pledging to achieve the 2020 and 2030 HIV targets championed by UNAIDS. The City of Johannesburg - one of South Africa's metropolitan municipalities and also a health district - has over 600,000 people living with HIV (PLHIV), more than any other city worldwide. We estimate what it would take in terms of programmatic targets and costs for the City of Johannesburg to meet the Fast-Track targets, and demonstrate the impact that this would have.

**METHODS:** We applied the Optima HIV epidemic and resource allocation model to demographic, epidemiological and behavioural data on 26 sub-populations in Johannesburg. We used data on programme costs and coverage to produce baseline projections. We calculated how many people must be diagnosed, put onto treatment and maintained with viral suppression to achieve the 2020 and 2030 targets. We also estimated how treatment needs - and therefore fiscal commitments - could be reduced if the treatment targets are combined with primary HIV prevention interventions (voluntary medical male circumcision (VMMC), an expanded condom programme, and comprehensive packages for female sex workers (FSW) and young females).

**RESULTS:** If current programmatic coverage were maintained, Johannesburg could expect 303,000 new infections and 96,000 AIDS-related deaths between 2017 and 2030 and 769,000 PLHIV by 2030. Achieving the Fast-Track targets would require an additional 135,000 diagnoses and 232,000 people on treatment by 2020 (an increase in around 80% over 2016 treatment numbers), but would avert 176,000 infections and 56,500 deaths by 2030. Assuming stable ART unit costs, this would require ZAR 29 billion (USD 2.15 billion) in cumulative treatment investments over the 14 years to 2030. Plausible scale-ups of other proven interventions (VMMC, condom distribution and FSW strategies) could yield additional reductions in new infections (between 4 and 15%), and in overall treatment investment needs. Scaling up VMMC in line with national targets is found to be cost-effective in the medium term.

**CONCLUSIONS:** The scale-up in testing and treatment programmes over this decade has been rapid, but these efforts must be doubled to reach 2020 targets. Strategic investments in proven interventions will help Johannesburg achieve the treatment targets and be on track to end AIDS by 2030.



5. Mantsios, A., et al. "**Community Savings Groups, Financial Security, and HIV Risk Among Female Sex Workers in Iringa, Tanzania.**" *AIDS Behav* 2018. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29478147>

This study assessed the association between community savings group participation and consistent condom use (CCU) among female sex workers (FSW) in Iringa, Tanzania. Using cross-sectional data from a survey of venue-based FSW (n = 496), logistic regression was used to examine the associations between financial indicators including community savings group participation and CCU. Over one-third (35%) of the women participated in a savings group. Multivariable regression results indicated that participating in a savings group was significantly associated with nearly two times greater odds of CCU with new clients in the last 30 days (aOR = 1.77, 95% CI 1.10-2.86). Exploratory mediation analysis indicated that the relationship between savings group participation and CCU was partially mediated by financial security, as measured by monthly income. Findings indicate that community savings groups may play an important role in reducing sexual risk behaviors of FSW and hold promise as part of comprehensive, community-led HIV prevention strategies among FSW.

6. Schmidt-Sane, M. M. "**Community vulnerability and stratified risk: Hegemonic masculinity, socioeconomic status, and HIV/AIDS in a sex work community in Kampala, Uganda.**" *Glob Public Health* 2018: 1-12. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29376472>

This article examines the social patterning of health, economic uncertainty, hegemonic masculinity, and vulnerability among men who live and work in a low-income sex work community in Kampala, Uganda. This problematizes the notion that vulnerable communities are homogenous, in demographics, economic status, and risk. This article draws on ethnographic data collected in 2016, including semi-structured interviews and participant observation. This article uses a stratified risk framework to describe the central finding of this study, which is that men's experience in Kataba is characterized by a struggle to fulfil the provider role that constitutes a core aspect of their socially ascribed gender role. In a context of economic scarcity, men's lives are fraught with strain and this intersects with other forms of risk. Finally, by focusing on community vulnerability rather than individual risk, this work contributes to theories of gender and sex work, and informs HIV/AIDS praxis.

7. Ferguson, A., et al. "**A comprehensive review of HIV/STI prevention and sexual and reproductive health services among sex Workers in Conflict-Affected Settings: call for an evidence- and rights-based approach in the humanitarian response.**" *Confl Health* 2017 11: 25. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29213302>

**Background:** While the conditions in emergency humanitarian and conflict-affected settings often result in significant sex work economies, there is limited information on the social and structural conditions of sex work in these settings, and the impacts on HIV/STI prevention and access to sexual and reproductive health (SRH) services for sex workers. Our objective was to comprehensively review existing evidence on HIV/STI prevention and access to SRH services for sex workers in conflict-affected settings globally.

**Methods:** We conducted a comprehensive review of all peer review (both epidemiological and qualitative) and grey literature published in the last 15 years (2000-2015), focusing on 1) HIV/STI vulnerability or prevention, and/or 2) access to SRH services for sex workers in conflict-affected settings. Five databases were searched, using combinations of sex work, conflict/mobility, HIV/STI, and SRH service terms. Relevant peer-reviewed and grey literature were also hand-searched, and key papers were cross-referenced for additional material.

**Results:** Five hundred fifty one records were screened and 416 records reviewed. Of 33 records describing HIV/STI prevention and/or access to SRH services among sex workers in conflict-affected settings, 24 were from sub-Saharan Africa; 18 studies described the results of primary research (13 quantitative, 3 qualitative, 2 mixed-methods) and 15 were non-primary research (e.g., commentaries, policy reports, programmatic manuals). Available evidence indicated that within conflict-affected settings, SWs' capacity to engage in

HIV/STI prevention and access SRH services is severely undermined by social and structural determinants including widespread violence and human rights violations, the collapse of livelihoods and traditional social structures, high levels of displacement, and difficulties accessing already scant health services due to stigma, discrimination and criminalization.

**Discussion/Conclusions:** This review identified significant gaps in HIV/STI and SRH research, policy, and programming for conflict-affected sex workers, highlighting a critical gap in the humanitarian response. Sex worker-informed policies and interventions to promote HIV/STI prevention and access to HIV and SRH services using a rights-based approach are recommended, and further research on the degree to which conflict-affected sex workers are accessing HIV/STI and SRH services is recommended. A paradigm shift from the behavioural and biomedical approach to a human rights-based approach to HIV/STI prevention and SRH is strongly recommended.

8. Semple, S. J., et al. **"Correlates of unprotected sex with male clients among female sex workers in 13 Mexican cities."** *Glob Public Health* 2017 12(12): 1538-1552. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/27416059>

This study examined correlates of unprotected vaginal and anal sex (UVA) with male clients among female sex workers (FSWs). Baseline data were gathered from 1089 FSWs recruited from 13 cities across Mexico enrolled in an evidence-based sexual risk reduction intervention. We used generalised estimating equations (GEE) to predict total UVA while controlling for the nested structure of the data. Total UVA with clients in the past month was examined in relation to selected sociodemographic, substance-use, and micro- and macro-environmental factors. A greater number of UVA acts was associated with three micro-level environmental factors (i.e. never getting condoms for free, unaffordability of condoms, greater number of clients per month), and three macro-level environmental factors (i.e. lower health and higher education indices, greater population size of city). These findings suggest the development of social and structural approaches to HIV prevention for FSWs in Mexico, including modification of venue-based policies that pressure FSWs to maximise client volume, changes to the work environment that promote availability and affordability of condoms, and improved population health. Moreover, our findings call for the development of context-specific HIV interventions that take into account variations in the sexual risk behaviours and HIV risk environments of FSWs throughout Mexico.

9. Pinho, A. A., et al. **"Differences and similarities in women living and not living with HIV: contributions by the GENIH study to sexual and reproductive healthcare."** *Cad Saude Publica* 2017 33(12): e00057916. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29267678>

This quantitative study in the city of Sao Paulo, Brazil, compared contexts of social vulnerability and sexual and reproductive behavior in a sample of 975 women living with HIV/AIDS (WLHIV) and 1,003 women not living with HIV, the latter recruited among users of the primary healthcare system. WLHIV experienced situations of greater vulnerability that potentially increased their risk of HIV infection and unplanned pregnancy and abortion. Compared to women users of the primary healthcare system, WLHIV reported higher rates of drug use, sex for money, exposure to intimate partner violence, difficulties in access to services for prevention and early diagnosis, unplanned pregnancies, induced abortion, and teenage pregnancy. A considerable number of the women users of the primary healthcare system shared these same experiences, but at lower rates. The identification of contexts of vulnerability and the integration of HIV testing services with sexual and reproductive health services should constitute lines of care for these women, both in specialized and primary care services.

10. Mamulwar, M., et al. **"Differing HIV vulnerability among female sex workers in a high HIV burden Indian state."** *PLoS One* 2018 13(2): e0192130. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29420577>

**INTRODUCTION:** The HIV sentinel surveillance [HSS] conducted in 2010-11 among female sex workers [FSW] in the state of Maharashtra, India provided an opportunity to assess characteristics of different types of FSWs and their HIV risk. It is important for India's National AIDS Control Program, to understand the

differences in vulnerability among these FSW, in order to define more specific and effective risk reduction intervention strategies. Therefore, we analyzed data from HSS with the objective of understanding the HIV vulnerability among different types of FSW in Maharashtra.

**MATERIAL AND METHODS:** Cross sectional data collected as a part of HSS among FSWs in year 2010-11 from 21 sentinel sites in the state of Maharashtra were analyzed to understand the vulnerability and characteristics of different types of female sex workers based on their place of solicitation using multinomial logistic regression.

**RESULTS:** While the HIV prevalence was 6.6% among all FSWs, it was 9.9% among brothel based [BB], 9% among street based [SB] and 3.1% and 3.7% among home based [HB], and bar based [Bar-B] sex workers respectively. SB FSWs were least likely to be located in HIV low burden districts [ANC] [ARRR: 0.61 [95% CI: 0.49, 0.77]], but were 6 times more likely to be recently [<1 year] involved in sex work [ARRR: 6.15 [95% CI: 3.15, 12.0]]. The number of clients of SB FSWs in the preceding week were lower than 11% [ARRR: 0.89 [95%CI: 0.87, 0.90]] as compared to the BB FSWs denoting lesser client load. The duration since last paid sex was shorter [ARRR: 0.94[95%CI: 0.91, 0.96]] as compared to the BB FSWs.

**CONCLUSION:** Street based FSWs have emerged as one of the most vulnerable types of FSW with a high HIV prevalence similar to BB FSWs. Our study reveals that they have more frequent sex acts despite lower client loads, and are more likely to be located in districts highly affected by HIV (ANC prevalence >1%). We identify them as a group to be focused on for prevention interventions and it is likely that they would be easily amenable to novel interventions due to their higher literacy rate as compared to other typologies.

11. Rhead, R., et al. "**Do female sex workers have lower uptake of HIV treatment services than non-sex workers? A cross-sectional study from east Zimbabwe.**" *BMJ Open* 2018 8(2): e018751. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29490957>

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

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

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

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

12. Oldenburg, C. E., et al. "**Effect of HIV self-testing on the number of sexual partners among female sex workers in Zambia: A randomized controlled trial.**" *AIDS* 2018. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29334552>

**OBJECTIVES:** To assess the effect of two health systems approaches to distribute HIV self-tests on the number of female sex workers' client and non-client sexual partners in a randomized controlled trial of HIV self-testing among female sex workers (FSW) in Zambia.

**DESIGN:** Cluster randomized controlled trial.

**METHODS:** Peer educators recruited 965 participants. Peer educator-participant groups were randomized 1:1:1 to one of three arms: 1) delivery of HIV self-tests directly from a peer educator, 2) free facility-based delivery of HIV-self tests in exchange for coupons, or 3) referral to standard HIV testing (standard of care). Participants in all three arms completed four peer educator intervention sessions, which included counseling and condom distribution. Participants were asked the average number of client partners they had per night at baseline, one and four months, and the number of non-client partners they had in the past 12 months (at baseline) and in the past month (at one month and four months).

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

**CONCLUSIONS:** Expansion of HIV self-testing may have positive spillover effects on HIV prevention efforts among FSW in Zambia. **TRIAL REGISTRATION:** ClinicalTrials.gov NCT02827240.

13. Looker, K. J., et al. "Effect of HSV-2 infection on subsequent HIV acquisition: an updated systematic review and meta-analysis." *Lancet Infect Dis* 2017 17(12): 1303-1316. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/28843576>

**BACKGROUND:** HIV and herpes simplex virus type 2 (HSV-2) infections cause a substantial global disease burden and are epidemiologically correlated. Two previous systematic reviews of the association between HSV-2 and HIV found evidence that HSV-2 infection increases the risk of HIV acquisition, but these reviews are now more than a decade old.

**METHODS:** For this systematic review and meta-analysis, we searched PubMed, MEDLINE, and Embase (from Jan 1, 2003, to May 25, 2017) to identify studies investigating the risk of HIV acquisition after exposure to HSV-2 infection, either at baseline (prevalent HSV-2 infection) or during follow-up (incident HSV-2 infection). Studies were included if they were a cohort study, controlled trial, or case-control study (including case-control studies nested within a cohort study or clinical trial); if they assessed the effect of pre-existing HSV-2 infection on HIV acquisition; and if they determined the HSV-2 infection status of study participants with a type-specific assay. We calculated pooled random-effect estimates of the association between prevalent or incident HSV-2 infection and HIV seroconversion. We also extended previous investigations through detailed meta-regression and subgroup analyses. In particular, we investigated the effect of sex and risk group (general population vs higher-risk populations) on the relative risk (RR) of HIV acquisition after prevalent or incident HSV-2 infection. Higher-risk populations included female sex workers and their clients, men who have sex with men, serodiscordant couples, and attendees of sexually transmitted infection clinics.

**FINDINGS:** We identified 57 longitudinal studies exploring the association between HSV-2 and HIV. HIV acquisition was almost tripled in the presence of prevalent HSV-2 infection among general populations (adjusted RR 2.7, 95% CI 2.2-3.4; number of estimates [Ne]=22) and was roughly doubled among higher-risk populations (1.7, 1.4-2.1; Ne=25). Incident HSV-2 infection in general populations was associated with the highest risk of acquisition of HIV (4.7, 2.2-10.1; Ne=6). Adjustment for confounders at the study level was often incomplete but did not significantly affect the results. We found moderate heterogeneity across study estimates, which was explained by risk group, world region, and HSV-2 exposure type (prevalent vs incident).

**INTERPRETATION:** We found evidence that HSV-2 infection increases the risk of HIV acquisition. This finding has important implications for management of individuals diagnosed with HSV-2 infection, particularly for those who are newly infected. Interventions targeting HSV-2, such as new HSV vaccines, have the potential for additional benefit against HIV, which could be particularly powerful in regions with a high incidence of co-infection. **FUNDING:** World Health Organization.

14. McClelland, R. S., et al. "**Evaluation of the association between the concentrations of key vaginal bacteria and the increased risk of HIV acquisition in African women from five cohorts: a nested case-control study.**" *Lancet Infect Dis* 2018. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29396006>

**BACKGROUND:** Disruptions of vaginal microbiota might increase women's susceptibility to HIV infection. Advances in molecular microbiology have enabled detailed examination of associations between vaginal bacteria and HIV acquisition. Therefore, this study aimed to evaluate the association between the concentrations of specific vaginal bacteria and increased risk of HIV acquisition in African women.

**METHODS:** We did a nested case-control study of participants from eastern and southern Africa. Data from five cohorts of African women (female sex workers, pregnant and post-partum women, and women in serodiscordant relationships) were used to form a nested case-control analysis between women who acquired HIV infection versus those who remained seronegative. Deep sequence analysis of broad-range 16S rRNA gene PCR products was applied to a subset of 55 cases and 55 controls. From these data, 20 taxa were selected for bacterium-specific real-time PCR assays, which were examined in the full cohort as a four-category exposure (undetectable, first tertile, second tertile, and third tertile of concentrations). Conditional logistic regression was used to generate odds ratios (ORs) and 95% CIs. Regression models were stratified by cohort, and adjusted ORs (aORs) were generated from a multivariable model controlling for confounding variables. The Shannon Diversity Index was used to measure bacterial diversity. The primary analyses were the associations between bacterial concentrations and risk of HIV acquisition.

**FINDINGS:** Between November, 2004, and August, 2014, we identified 87 women who acquired HIV infection (cases) and 262 controls who did not acquire HIV infection. Vaginal bacterial community diversity was higher in women who acquired HIV infection (median 1.3, IQR 0.4-2.3) than in seronegative controls (0.7, 0.1-1.5;  $p=0.03$ ). Seven of the 20 taxa showed significant concentration-dependent associations with increased odds of HIV acquisition: *Parvimonas* species type 1 (first tertile aOR 1.67, 95% CI 0.61-4.57; second tertile 3.01, 1.13-7.99; third tertile 4.64, 1.73-12.46;  $p=0.005$ ) and type 2 (first tertile 3.52, 1.63-7.61; second tertile 0.85, 0.36-2.02; third tertile 2.18, 1.01-4.72;  $p=0.004$ ), *Gemella asaccharolytica* (first tertile 2.09, 1.01-4.36; second tertile 2.02, 0.98-4.17; third tertile 3.03, 1.46-6.30;  $p=0.010$ ), *Mycoplasma hominis* (first tertile 1.46, 0.69-3.11; second tertile 1.40, 0.66-2.98; third tertile 2.76, 1.36-5.63;  $p=0.048$ ), *Leptotrichia/Sneathia* (first tertile 2.04, 1.02-4.10; second tertile 1.45, 0.70-3.00; third tertile 2.59, 1.26-5.34;  $p=0.046$ ), *Eggerthella* species type 1 (first tertile 1.79, 0.88-3.64; second tertile 2.62, 1.31-5.22; third tertile 1.53, 0.72-3.28;  $p=0.041$ ), and vaginal *Megasphaera* species (first tertile 3.15, 1.45-6.81; second tertile 1.43, 0.65-3.14; third tertile 1.32, 0.57-3.05;  $p=0.038$ ).

**INTERPRETATION:** Differences in the vaginal microbial diversity and concentrations of key bacteria were associated with greater risk of HIV acquisition in women. Defining vaginal bacterial taxa associated with HIV risk could point to mechanisms that influence HIV susceptibility and provide important targets for future prevention research. **FUNDING:** National Institute of Child Health and Human Development.

15. Eakle, R., et al. "**Exploring acceptability of oral PrEP prior to implementation among female sex workers in South Africa.**" *J Int AIDS Soc* 2018 21(2). Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29457868>

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

acceptability among the FGD participants as future potential users.

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

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

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

16. Guadamuz, T. E., et al. "**Heavy Alcohol Use Among Migrant and Non-Migrant Male Sex Workers in Thailand: A Neglected HIV/STI Vulnerability.**" *Subst Use Misuse* 2018: 1-8. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29461132>

**BACKGROUND:** There is scarce research on male sex workers in the context of alcohol use. While heavy alcohol use has been established as a risk factor for HIV and STI infections among men who have sex with men (MSM), men who engage in sex work with other men, particularly from the Global South, have not been included in these studies. Moreover, studies among male sex workers in Asia often do not explore migration contexts of these men.

**OBJECTIVES:** The objective of this exploratory study is to examine the prevalence and correlates of heavy alcohol use among migrant and non-migrant male sex workers in Bangkok and Pattaya, Central Thailand.

**METHODS:** Between August and October 2015, 18-24 year-old migrant and non-migrant male sex workers (n = 212) were recruited from various male sex work-identified venues (bars, clubs, massage parlors, and go-go bars) to take an interviewer-administered cross-sectional survey in Bangkok and Pattaya, Thailand. Measures were adapted from previous studies in similar populations and included structured questions across four domains, including demographic characteristics, alcohol use, stimulant use, and sexual behaviors. Multivariable logistic regression assessed the independent associations between heavy alcohol use (heavy versus not heavy) and demographic characteristics, stimulant use and sexual behavior.

**RESULTS:** Heavy alcohol use was prevalent among one-third of participants. Heavy alcohol use was positively associated with male sex workers who were non-migrant and Thai, currently using stimulants, having 15 or more male clients in the past month and having first consumed alcohol at age 15 years or younger.

**CONCLUSIONS:** Current HIV prevention efforts should consider subpopulations of MSM, including male sex workers and migrants, as well as other risk behaviors like alcohol, as important contexts for HIV and STI risks.

17. Coetzee, J., et al. "HIV-1 viraemia and drug resistance amongst female sex workers in Soweto, South Africa: A cross sectional study." *PLoS One* 2017 12(12): e0188606. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29244809>

**BACKGROUND:** HIV drug resistance (HIVDR) poses a threat to future antiretroviral therapy success. Monitoring HIVDR patterns is of particular importance in populations such as sex workers (SWs), where documented HIV prevalence is between 34-89%, and in countries with limited therapeutic options. Currently in South Africa, there is a dearth in evidence and no ongoing surveillance of HIVDR amongst sex work populations. This study aims to describe the prevalence of HIVDR amongst a sample of female sex workers (FSWs) from Soweto, South Africa.

**METHODOLOGY:** A cross-sectional, respondent driven sampling (RDS) recruitment methodology was used to enrol FSWs based in Soweto. Participants were tested for HIV and undertook a survey that included HIV knowledge and treatment status. Whole blood specimens were collected from HIV positive FSWs to measure for CD4 counts, viral load (VL) and perform HIVDR genotyping. Frequencies were determined for categorical variables and medians and interquartile ranges (IQR) for the continuous.

**RESULTS:** Of the 508 enrolled participants, 55% (n = 280) were HIV positive and of median age 32 (IQR: 20-51) years. Amongst the HIV positive, 51.8% (132/269) were defined as virologically suppressed (VL < 400 copies/ml). Of the 119 individuals with unsuppressed viral loads who were successfully genotyped for resistance testing 37.8% (45/119) had detectable drug resistance. In this group, HIVDR mutations were found amongst 73.7% (14/19) of individuals on treatment, 27.4% (26/95) of individuals who were treatment naive, and 100% (5/5) of defaulters. One phylogenetic cluster was found amongst treatment naive FSWs. The K103N mutation was detected most commonly in 68.9% (31/45) individuals with HIVDR mutations, with 20/26 (76.9%) of treatment naive FSW with detectable resistance having this mutation. The M184V mutation was found in both FSWs on treatment (12/14, 85.7%) and those defaulting (1/5, 20.0%).

**DISCUSSION:** More than one third (45/119) of the genotyped sample had HIVDR, with resistance to the NNRTI class being the most common. Almost half of HIV positive FSWs had unsuppressed viral loads, increasing the likelihood for onward transmission of HIV. Disturbingly, more than 1:4 treatment naive women with unsuppressed viral loads had HIVDR suggesting that possible sexual transmission of drug resistance is occurring in this high-risk population. Given the high burden of HIVDR in a population with a high background prevalence of HIV, it is imperative that routine monitoring of HIVDR be implemented. Understanding transmission dynamics of HIVDR in FSW and its impact on treatment success should be urgently elucidated.

18. Quinn, C., et al. "HIV Partner Notification Values and Preferences Among Sex Workers, Fishermen, and Mainland Community Members in Rakai, Uganda: A Qualitative Study." *AIDS Behav* 2018. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29372453>

HIV partner notification involves contacting sexual partners of people who test HIV positive and referring them to HIV testing, treatment, and prevention services. To understand values and preferences of key and general populations in Rakai, Uganda, we conducted 6 focus group discussions and 63 in-depth interviews in high prevalence fishing communities and low prevalence mainland communities. Participants included fishermen and sex workers in fishing communities, male and female mainland community members, and healthcare providers. Questions explored three approaches: passive referral, provider referral, and contract referral. Qualitative data were coded and analyzed using a team-based matrix approach. Participants agreed that passive referral was most suitable for primary partners. Provider referral was acceptable in fishing communities for notifying multiple, casual partners. Healthcare providers voiced concerns about limited time, resources, and training for provider-assisted approaches. Options for partner notification may help people overcome barriers to HIV serostatus disclosure and help reach key populations.

19. Grosso, A., et al. "HIV risks and needs related to the Sustainable Development Goals among female sex workers who were commercially sexually exploited as children in Lesotho." *J Int AIDS Soc* 2018 21 Suppl 1. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29485709>

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

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

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

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

20. Tokar, A., et al. "HIV Testing and Counseling Among Female Sex Workers: A Systematic Literature Review." *AIDS Behav* 2018. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29464430>

HIV testing uptake continues to be low among Female Sex Workers (FSWs). We synthesize evidence on barriers and facilitators to HIV testing among FSW as well as frequencies of testing, willingness to test, and return rates to collect results. We systematically searched the MEDLINE/PubMed, EMBASE, SCOPUS databases for articles published in English between January 2000 and November 2017. Out of 5036 references screened, we retained 36 papers. The two barriers to HIV testing most commonly reported were financial and time costs-including low income, transportation costs, time constraints, and formal/informal payments-as well as the stigma and discrimination ascribed to HIV positive people and sex workers. Social support facilitated testing with consistently higher uptake amongst married FSWs and women who were encouraged to test by peers and managers. The consistent finding that social support facilitated HIV testing calls for its inclusion into current HIV testing strategies addressed at FSW.

21. Shen, T., et al. "HIV, Sex Work, and Law Enforcement in China." *Health Hum Rights* 2017 19(2): 133-146. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29302171>

HIV prevalence in China is low in the general population but higher among certain key affected populations, including sex workers. Providing and purchasing sexual services are administrative offenses. Police engage in humiliating and repressive practices against sex workers. A study reported here based on the experience of



over 500 sex workers highlights that the human rights abuses that sex workers face at the hands of the police directly undermine the country's HIV response toward sex workers. An important element of this phenomenon is the police's use of condoms as evidence of sex work, which impedes sex workers' possession and use of condoms. Whereas in some countries, sex worker collectives have helped empower sex workers to stand up to the police and safeguard their use of condoms, restrictions on civil society in China make such a strategy impossible. Removing sex work and related activities as offenses under the law in China, however politically difficult it might be, would ease this situation. Short of that, improving the coordination among and strategic harmony of public health and police roles and authorities would be useful.

22. Goldenberg, S. M., et al. **"Influence of indoor work environments on health, safety, and human rights among migrant sex workers at the Guatemala-Mexico Border: a call for occupational health and safety interventions."** *BMC Int Health Hum Rights* 2018 18(1): 9. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29394893>

**BACKGROUND:** Migrant women are over-represented in the sex industry, and migrant sex workers experience disproportionate health inequities, including those related to health access, HIV and sexually transmitted infections (STIs), and violence. Despite calls for occupational sex work interventions situated in labour rights frameworks, there remains a paucity of evidence pertaining to migrant sex workers' needs and realities, particularly within Mexico and Central America. This study investigated migrant sex workers' narratives regarding the ways in which structural features of work environments shape vulnerability and agency related to HIV/STI prevention and violence at the Guatemala-Mexico border.

**METHODS:** Drawing on theoretical perspectives on risk environments and structural determinants of HIV in sex work, we analyzed in-depth interviews, focus groups, and ethnographic fieldwork conducted with 39 migrant sex workers in indoor work environments between 2012 and 2015 in Tecun Uman, Guatemala.

**RESULTS:** Participant narratives revealed the following intersecting themes to be most closely linked to safety and agency to engage in HIV/STI prevention: physical features of indoor work environments (e.g., physical layout of venue, proximity to peers and third parties); social norms and practices for alcohol use within the workplace; the existence and nature of management practices and policies on health and safety practices; and economic influences relating to control over earnings and clients. Across work environments, health and safety were greatly shaped by human rights concerns stemming from workplace interactions with police, immigration authorities, and health authorities.

**CONCLUSIONS:** Physical isolation, establishment norms promoting alcohol use, restricted economic agency, and human rights violations related to sex work policies and immigration enforcement were found to exacerbate risks. However, some establishment policies and practices promoted 'enabling environments' for health and safety, supporting HIV/STI prevention, economic agency, and protection from violence and exploitation; these practices and policies were especially crucial for recent migrants. Policy reforms and structural workplace interventions tailored to migrant sex workers' needs are recommended to promote improved working conditions and migrant sex workers' health, safety, and human rights.

23. Febres-Cordero, B., et al. **"Influence of peer support on HIV/STI prevention and safety amongst international migrant sex workers: A qualitative study at the Mexico-Guatemala border."** *PLoS One* 2018 13(1): e0190787. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29304164>

**BACKGROUND:** Migrant women engaged in precarious employment, such as sex work, frequently face pronounced social isolation alongside other barriers to health and human rights. Although peer support has been identified as a critical HIV and violence prevention intervention for sex workers, little is known about access to peer support or its role in shaping health and social outcomes for migrant sex workers. This article analyses the role of peer support in shaping vulnerability and resilience related to HIV/STI prevention and violence among international migrant sex workers at the Mexico-Guatemala border.

**METHODS:** This qualitative study is based on 31 semi-structured interviews conducted with international

migrant sex workers in the Mexico-Guatemala border communities of Tapachula, Mexico and Tecun Uman and Quetzaltenango, Guatemala.

**RESULTS:** Peer support was found to be critical for reducing social isolation; improving access to HIV/STI knowledge, prevention and resources; and mitigating workplace violence, particularly at the initial stages of migration and sex work. Peer support was especially critical for countering social isolation, and peers represented a valuable source of HIV/STI prevention knowledge and resources (e.g., condoms), as well as essential safety supports in the workplace. However, challenges to accessing peer support were noted, including difficulties establishing long-lasting relationships and other forms of social participation due to frequent mobility, as well as tensions among peers within some work environments. Variations in access to peer support related to country of work, work environment, sex work and migration stage, and sex work experience were also identified.

**CONCLUSIONS:** Results indicate that peer-led and community empowerment interventions represent a promising strategy for promoting the health, safety and human rights of migrant sex workers. Tailored community empowerment interventions addressing the unique migration-related contexts and challenges faced by migrant sex workers should be a focus of future community-based research, alongside promotion of broader structural changes.

24. McClarty, L. M., et al. "**Key Programme Science lessons from an HIV prevention 'Learning Site' for sex workers in Mombasa, Kenya.**" *Sex Transm Infect* 2017. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29242195>

**OBJECTIVES:** In 2013, Kenya's National AIDS and STI Control Programme established a Learning Site (LS) in Mombasa County to support and strengthen capacity for HIV prevention programming within organisations working with sex workers. A defining feature of LS was the use of a Programme Science approach throughout its development and implementation. We provide an overview of the key components of LS, present findings from 23 months of programme monitoring data, and highlight key Programme Science lessons from its implementation and monitoring.

**METHODS:** Routine monitoring data collected from September 2013 through July 2015 are presented. Individual-level service utilisation data were collected monthly and indicators of interest were analysed over time to illustrate trends in enrolment, programme coverage and service utilisation among sex workers in Mombasa County.

**RESULTS:** Over the monitoring period, outreach programme enrolment occurred rapidly; condom distribution targets were met consistently; rates of STI screening remained high and diagnoses declined; and reporting of and response to violent incidents increased. At the same time, enrolment in LS clinics was relatively low among female sex workers, and HIV testing at LS was low among both female and male sex workers.

**CONCLUSION:** Lessons learnt from operationalising the Programme Science framework through the Mombasa LS can inform the development and implementation of similar LS in different geographical and epidemiological contexts. Importantly, meaningful involvement of sex workers in the design, implementation and monitoring processes ensures that overall programme performance is optimised in the context of local, 'on-the-ground' realities. Additionally, learnings from LS highlight the importance of introducing enhanced monitoring and evaluations systems into complex programmes to better understand and explain programme dynamics over time.

25. Zhong, L., et al. "**Modeling the Intervention of HIV Transmission across Intertwined Key Populations.**" *Sci Rep* 2018 8(1): 2432. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29402964>

The HIV transmissions between multiple key populations make interventions difficult, particularly with multiple transmission behaviors. It remains unclear how significant the role of bridge individuals (who

connect multiple communities) is in HIV transmission, and how to develop more effective intervention strategies targeting different transmission modes across key populations. In this research, we proposed a 2-layer social network framework to simulate the HIV transmissions across female sex workers (FSWs) and persons who inject drugs (PWID) through two behaviors: unprotected sex and needle-sharing. We proposed a set of intervention strategies based on the topological properties of individuals in the social network and estimated the efficacy of these strategies. Simulation studies demonstrated that bridge individuals played a significant role in HIV transmissions across the two networks. Prevention on such bridge individuals could help reduce both the scale and speed of HIV transmissions.

26. Yu, Y. J., et al. "**Network and Individual Factors Associated with Drug Use among Female Sex Workers (FSWs) in Southern China: A Mixed-Method Approach.**" *Subst Use Misuse* 2018: 1-8. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29461126>

Research on women who engage both in drug use and sex work has been limited, as most previous studies have focused on these risk behaviors separately. The current study examines the network properties as well as the demographic and behavioral factors associated with drug use among female sex workers (FSWs) in southern China. We collected survey data (n = 175) in the Hainan province during our 26 months of ethnographic fieldwork in China. Our analyses included Fisher's exact chi-square tests, independent-samples t-tests, Mann-Whitney U, binary logistic regression (LR), as well as ethnographic data analysis. Multivariate analysis showed that women who were younger age, single, more educated, and earning a higher income were more likely to use drugs. Pertaining to network properties, FSWs with a lower percentage of long-term clients (and men) in ego networks were more likely to use drugs; this would imply a mechanism by which drug-using FSWs are more at risk, as the women take a greater number of transient clients. In addition, FSWs who were influential network members (i.e., higher betweenness centrality) and were closely related to other network members (i.e., higher closeness centrality) were more likely to use drugs; this may suggest that drug use is a means of sustaining the high functionality of the workers. Our ethnographic data also showed that club drug use was easily accessible in entertainment venues and was often a means of socialization in FSW communities. Network characteristics correlated to HIV-related risks among FSWs should be further examined in future studies.

27. Galarraga, O., et al. "**Punto Seguro: A Randomized Controlled Pilot Using Conditional Economic Incentives to Reduce Sexually Transmitted Infection Risks in Mexico.**" *AIDS Behav* 2017 21(12): 3440-3456. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29110216>

Randomized controlled pilot evaluated effect of conditional economic incentives (CEIs) on number of sex partners, condom use, and incident sexually transmitted infections (STIs) among male sex workers in Mexico City. Incentives were contingent on testing free of new curable STIs and/or clinic attendance. We assessed outcomes for n = 227 participants at 6 and 12 months (during active phase with incentives), and then at 18 months (with incentives removed). We used intention-to-treat and inverse probability weighting for the analysis. During active phase, CEIs increased clinic visits (10-13 percentage points) and increased condom use (10-15 percentage points) for CEI groups relative to controls. The effect on condom use was not sustained once CEIs were removed. CEIs did not have an effect on number of partners or incident STIs. Conditional incentives for male sex workers can increase linkage to care and retention and reduce some HIV/STI risks such as condomless sex, while incentives are in place.

28. Sosa-Rubi, S. G., et al. "**The Relationship Between Psychological Temporal Perspective and HIV/STI Risk Behaviors Among Male Sex Workers in Mexico City.**" *Arch Sex Behav* 2018. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29380090>

Men who have sex with men (MSM) face a disproportionate burden of HIV incidence and HIV prevalence, particularly young men who have sex with men. The aim of this article was to analyze the relation between a psychological temporal perspective and HIV/sexually transmitted infection (STI) risk behaviors among male sex workers (MSWs), a potentially highly present-oriented group of MSM. A total sample of 326 MSWs were included and responded to a validated psychological scale: the Zimbardo's Time Perspective Inventory; they

also reported how frequently they engaged in protective behaviors against HIV and other STI risks behaviors, including condom use with casual and regular partners, as well as prior HIV testing. We adjusted structural equation models to analyze the relation between a psychological temporal perspective and HIV/STI risk behaviors. We found that orientation toward the past was correlated with decreased condom use with casual partners (beta = - 0.18; CI95% - 0.23, - 0.12). Future orientation was not associated with condom use with casual partners. Regarding condom use with regular partners, past and present orientation were related to lower likelihood of condom use (beta = - 0.23; CI95% - 0.29, - 0.17; beta = - 0.11; CI95% - 0.19, - 0.02), whereas future orientation increased the likelihood of condom use with regular partners (beta = 0.40; CI95% 0.31, 0.50). Time orientation (past, present, or future) did not predict the probability of having an HIV test. The design of HIV/STI prevention programs among vulnerable populations, such as MSM and MSWs, should consider specific time-frame mechanisms that can importantly affect sexual risk behavior decisions.

29. Logie, C. H., et al. **"Social-ecological factors associated with selling sex among men who have sex with men in Jamaica: results from a cross-sectional tablet-based survey."** *Glob Health Action* 2018 11(1): 1424614. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29338660>

**BACKGROUND:** Globally, men who have sex with men (MSM) experience social marginalization and criminalization that increase HIV vulnerability by constraining access to HIV prevention and care. People who sell sex also experience criminalization, rights violations, and violence, which elevate HIV exposure. MSM who sell sex may experience intersectional stigma and intensified social marginalization, yet have largely been overlooked in epidemiological and social HIV research. In Jamaica, where same sex practices and sex work are criminalized, scant research has investigated sex selling among MSM, including associations with HIV vulnerability.

**OBJECTIVE:** We aimed to examine social ecological factors associated with selling sex among MSM in Jamaica, including exchanging sex for money, shelter, food, transportation, or drugs/alcohol (past 12 months).

**METHODS:** We conducted a cross-sectional survey with a peer-driven sample of MSM in Kingston, Ocho Rios, and Montego Bay. Multivariable logistic regression analyses were conducted to estimate intrapersonal/individual, interpersonal/social, and structural factors associated with selling sex.

**RESULTS:** Among 556 MSM, one-third (n = 182; 32.7%) reported selling sex. In the final multivariable model, correlates of selling sex included: individual/intrapersonal (lower safer sex self-efficacy [AOR: 0.85, 95% CI: 0.77, 0.94]), interpersonal/social (concurrent partnerships [AOR: 5.52, 95% CI: 1.56, 19.53], a higher need for social support [AOR: 1.08, 95% CI: 1.03, 1.12], lifetime forced sex [AOR: 2.74, 95% CI: 1.65, 4.55]) and structural-level factors (sexual stigma [AOR: 1.09, 95% CI: 1.04, 1.15], food insecurity [AOR: 2.38, 95% CI: 1.41, 4.02], housing insecurity [AOR: 1.94, 95% CI: 1.16, 3.26], no regular healthcare provider [AOR: 2.72, 95% CI: 1.60, 4.64]).

**CONCLUSIONS:** This study highlights social ecological correlates of selling sex among MSM in Jamaica, in particular elevated stigma and economic insecurity. Findings suggest that MSM in Jamaica who sell sex experience intensified social and structural HIV vulnerabilities that should be addressed in multi-level interventions to promote health and human rights.

30. Longo, J. D., et al. **"Spectrum of female commercial sex work in Bangui, Central African Republic."** *Sahara j* 2017 14(1): 171-184. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29092678>

Classification of professional and non-professional female sex workers (FSWs) into different categories, never previously reported in the Central African Republic (CAR), may be useful to assess the dynamics of the human immunodeficiency virus (HIV) epidemic, design operational intervention programmes to combat HIV and other sexually transmitted infections (STIs) and to adapt these programmes to the broad spectrum of sexual transactions in the CAR. Our study proposes a socio-behavioural classification of FSWs living in the CAR and engaged in transactional and commercial sex. Thus, the aims of the study were these: (i) to

categorize FSWs according to socio-anthropologic criteria in Bangui and (ii) to examine the association between a selection of demographic and risk variables with the different categories of female sex work as an outcome. A cross-sectional questionnaire survey was conducted in 2013 to describe the spectrum of commercial sex work (CSW) in Bangui among 345 sexually active women having more than 2 sexual partners, other than their regular partner, during the prior 3 months and reporting to have received money or gifts in return for their sexual relationships. According to socio-behavioural characteristics, FSWs were classified into six different categories. Professional FSWs, constituting 32.5% of the interviewed women, were divided in two categories: pupulenge (13.9%), i.e., dragonflies (sometimes called gba moundjou, meaning literally look at the White) consisting of roamers, who travel around the city to hotels and nightclubs seeking wealthy clients, with a preference for French men; and the category of kata (18.6%), i.e., FSWs working in poor neighbourhoods. Non-professional FSWs, constituting 67.5% of the interviewed women, were divided into four categories: street and market vendors (20.8%), students (19.1%), housewives (15.7%) and unskilled civil servants (11.9%). In general, CSW in the CAR presents a remarkably heterogeneous phenomenon. Risk-taking behaviour regarding STI/HIV infection appears to be different according to the different categories of female CSW. The groups of katas and street vendors were poorer and less educated, consumed more alcohol or other psycho-active substances (cannabis, tramadol and glue) and, consequently, were more exposed to STI. Our results emphasise the high level of vulnerability of both poor professional FSWs (kata) and non-professional sex workers, especially street vendors, who should be taken into account when designing prevention programmes targeting this population for STI/HIV control purposes.

31. Kim, H. Y., et al. "**Stigma as a barrier to health care utilization among female sex workers and men who have sex with men in Burkina Faso.**" *Ann Epidemiol* 2018 28(1): 13-19. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29425532>

**PURPOSE:** The aim of this study is to examine the prevalence and correlates of perceived health care stigma among female sex workers (FSWs) and men who have sex with men (MSM), including other stigma types, suicidal ideation, and participation in social activities.

**METHODS:** FSWs (N = 350) and MSM (N = 330) aged  $\geq 18$  were recruited in Bobo-Dioulasso, Burkina Faso. Perceived health care stigma was defined as either ever being afraid of or avoiding health care services because someone might find out the participant has sex with men (for MSM) or sells sex (for FSW). Correlates of perceived health care stigma were examined using multivariable logistic regression.

**RESULTS:** The prevalence of perceived health care stigma was 14.9% (52/350) and 24.5% (81/330) in FSWs and MSM, respectively. Among FSWs, experienced or social stigma, including verbal harassment (adjusted odds ratio [aOR] = 3.59, 95% confidence interval [CI] 1.48-8.71), feeling rejected by friends (aOR = 2.30, 95% CI 1.14-4.64), and feeling police refused to protect them (aOR = 2.58, 95% CI 1.27-5.25), was associated with perceived health care stigma. Among MSM, experiencing verbal harassment (aOR = 1.95, 95% CI 1.09-3.50) and feeling scared to walk in public (aOR = 2.93, 95% CI 1.47-5.86) were associated with perceived health care stigma.

**CONCLUSIONS:** In these key populations, perceived health care stigma was prevalent and associated with experienced and social stigmas. To increase coverage of effective HIV services, interventions should incorporate approaches to comprehensively mitigate stigma.

32. Connors, E. E., et al. "**Structural factors associated with methamphetamine smoking among female sex workers in Tijuana, Mexico.**" *Drug Alcohol Rev* 2017. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29218799>

**INTRODUCTION AND AIMS:** Smoking methamphetamine is associated with increased risk of HIV among female sex workers (FSW). The structural context of substance use is an important shaper of individual behaviour; however, structural determinants of methamphetamine use among FSWs are largely unknown. We identified individual, structural and neighbourhood factors associated with smoking methamphetamine among FSWs in the border city of Tijuana, Baja California, Mexico.

**DESIGN AND METHODS:** A prospective cohort of 301 FSWs sampled from indoor and outdoor sex work venues throughout Tijuana participated in quantitative surveys on behaviours and mapping of home and work neighbourhoods across three visits. Multinomial logistic regression using generalised estimating equations identified individual, structural and neighbourhood variables associated with smoking methamphetamine.

**RESULTS:** Methamphetamine use, particularly smoking, was highly prevalent among FSWs. Over half (61%) of FSWs had ever used methamphetamine in their lifetime and at baseline, 38% currently smoked methamphetamine. Smoking methamphetamine daily was associated with living in the red light district [adjusted odds ratio (AOR) = 2.72, 95% confidence interval (CI) = 1.23-6.02] and with perceived homelessness, but only among women in a good financial situation (AOR = 4.08, 95% CI = 1.58-10.50). Smoking methamphetamine less than daily was associated with older age (AOR = 1.06, 95% CI = 1.02-1.10).

**DISCUSSION AND CONCLUSIONS:** Our findings point to the important dynamic between the residential environment and more severe methamphetamine use. FSWs may prioritise the purchase of methamphetamine over stable housing if they have the financial means. Given the high prevalence of smoking methamphetamine among FSWs in Tijuana, drug treatment options, especially for women living in the red light district, are needed.

33. Eaton, E. F., et al. "**Trends in antiretroviral therapy prescription, durability and modification: new drugs, more changes, but less failure.**" *Aids* 2018 32(3): 347-355. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29194118>

**OBJECTIVE:** To evaluate the real world durability of contemporary ART for treatment-naive people living with HIV (PLWH). **DESIGN:** A retrospective follow-up study in a multisite cohort.

**METHODS:** This study of the CNICS (CFAR Network of Integrated Clinical Systems) cohort integrates data from eight Center for AIDS Research (CFARs). PLWH initiating ART between 2007 and 2014 were included. Durability was defined as time from the initiation until discontinuation/modification using Kaplan-Meier survival curves. Cox Proportional Hazards measured associations with various sociodemographic and clinical characteristics.

**RESULTS:** Among 5373 PLWH, the initial regimen was modified in 2285 (43%) patients. Efavirenz/emtricitabine/tenofovir (n = 2173, 40%) was the most commonly prescribed initial ART regimen; elvitegravir/cobicistat/emtricitabine/tenofovir became more common after 2012. Median durability for all regimens was 48.6 months. There were statistically significant differences in median durability for NNRTI, InSTI, and protease inhibitor-based regimens, which lasted 61, 44, and 32 months, respectively. Female sex (aHR = 1.4; 95% CI 1.2-1.6), intravenous drug use (aHR = 1.6; 95% CI 1.3-1.9), and CD4 cell count less than 200 cells/mul (aHR = 1.2; 95% CI 1.1-1.3) were significantly associated with regimen modification. Compared with InSTI, those receiving an InSTI/protease inhibitor (aHR = 2.7; 95% CI 2.0-3.7) or protease inhibitor-based ART (aHR = 1.9; 95% CI 1.6-2.2) were significantly more likely to be modified; but those receiving NNRTI (aHR = 1.1; 95% CI 0.9-1.3) were not.

**CONCLUSION:** In treatment-naive PLWH, NNRTI and InSTI-based ART were most durable, relative to protease inhibitor and InSTI/protease inhibitor-based ART, and were least likely to be modified/discontinued. A greater understanding of reasons for regimen modification/discontinuation is needed to analyze contemporary regimen durability.

34. McMillan, K., et al. "**Usage of the Terms Prostitution, Sex Work, Transactional Sex, and Survival Sex: Their Utility in HIV Prevention Research.**" *Arch Sex Behav* 2018. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29305773>

This article considers the terms prostitution, sex work, transactional sex, and survival sex, the logic of their deployment and utility to research concerned with people who are paid for sex, and HIV. The various names

for paid sex in HIV research are invested in strategically differentiated positionings of people who receive payment and emphasize varying degrees of choice. The terminologies that seek to distinguish a range of economically motivated paid sex practices from sex work are characterized by an emphasis on the local and the particular, efforts to evade the stigma attached to the labels sex worker and prostitute, and an analytic prioritizing of culture. This works to bestow cultural legitimacy on some locally specific forms of paid sex and positions those practices as artifacts of culture rather than economy. This article contends that, in HIV research in particular, it is necessary to be cognizant of ways the deployment of alternative paid sex categories relocates and reinscribes stigma elsewhere. While local identity categories may be appropriate for program implementation, a global category is necessary for planning and funding purposes and offers a purview beyond that of isolated local phenomena. We argue that "sex work" is the most useful global term for use in research into economically motivated paid sex and HIV, primarily because it positions paid sex as a matter of labor, not culture or morality.

35. Shrestha, R., et al. **"Why don't key populations access HIV testing and counselling centres in Nepal? Findings based on national surveillance survey."** *BMJ Open* 2017 7(12): e017408. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29288177>

**OBJECTIVES:** To assess the demographic, behavioural, psychosocial and structural factors associated with non-utilisation of HIV testing and counselling (HTC) services by female sex workers (FSWs) and men who have sex with men/transgender (MSM/TG).

**METHODS:** This study involved a cross-sectional design. We used the national surveillance survey data of 2012, which included 610 FSWs and 400 MSM/TG recruited randomly from 22 and three districts of Nepal, respectively. Adjusted prevalence ratio (aPR) and 95% confidence interval (CI) using modified Poisson regression was used to assess and infer the association between outcome (non-utilisation of HTC in last year) and independent variables.

**RESULTS:** Non-utilisation of HTC in the last year was 54% for FSWs and 55% for MSM/TG. The significant factors for non-utilisation of HTC among FSWs were depression (aPR=1.4 (95% CI 1.1 to 1.6)), injectable drug abuse (ever) (aPR=1.4 (95% CI 1.1 to 1.8)), participation (ever) in HIV awareness programmes (aPR=1.2 (95% CI 1.0 to 1.4)), experience of forced sex in previous year (aPR=1.1 (95% CI 1.0 to 1.3)) and absence of dependents in the family (aPR=1.1 (95% CI 1.0 to 1.3)). Non-utilisation of HTC among MSM/TG had significant association with age 16-19 years (aPR=1.4 (95% CI 1.1 to 1.7)), non-condom use (aPR=1.2 (95% CI 1.0 to 1.4)), participation (ever) in HIV awareness programmes (aPR=1.6 (95% CI 1.3 to 2.0)), physical assault in previous year (aPR=1.8 (95% CI 1.0 to 3.1)), experience of forced sex in previous year (aPR=0.5 (95% CI 0.3 to 0.9)).

**CONCLUSION:** Although limited by cross-sectional design, we found many programmatically relevant findings. Creative strategies should be envisaged for effective behavioural change communication to improve access to HIV testing. Psychosocial and structural interventions should be integrated with HIV prevention programmes to support key populations in accessing HIV testing.

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## Transgender People - 17

1. Wang, Z., et al. **"Acceptability of Daily Use of Free Oral Pre-exposure Prophylaxis (PrEP) Among Transgender Women Sex Workers in Shenyang, China."** *AIDS Behav* 2017 21(12): 3287-3298. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/28752354>

This study investigated the acceptability of daily use of free oral pre-exposure prophylaxis (PrEP) and associated factors among transgender women sex workers in Shenyang, China, following a briefing on PrEP. A total of 183 HIV negative or sero-status unknown participants completed the cross-sectional survey. The prevalence of acceptability of daily use of free oral PrEP was 61.2%. Adjusting for education level and monthly income, variables on negative attitudes toward PrEP (i.e., having concerns about the side-effects of PrEP) [Adjusted odds ratios (AOR): 0.26], perceived subjective norms (i.e., perceiving support from male partners to take PrEP) (AOR: 2.08), and perceived behavioral control (e.g., perceiving complete control over using PrEP) (AOR: 2.10-16.72) were significantly associated with acceptability of daily use of free oral PrEP. In addition, experiencing violence during sex work, perceived risk of contracting HIV from clients and probable anxiety were also significant. Future PrEP promotion campaigns should consider these factors.

2. Veronese, V., et al. **"Acceptability of Peer-Delivered HIV Testing and Counselling Among Men Who Have Sex with Men (MSM) and Transgender Women (TW) in Myanmar."** *AIDS Behav* 2018. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29427231>

Men who have sex with men (MSM) and transgender women (TW) are a priority population for HIV prevention in Myanmar but report sub-optimal HIV testing frequency. Previous studies have shown that peer involvement in HIV testing can normalize stigmatized sexualities and reduce barriers to testing. We explored the acceptability of peer-delivered HIV testing among 425 undiagnosed MSM and TW in Yangon and Mandalay. An overwhelming majority of participants (86%) reported being 'comfortable/very comfortable' with peer-delivered HIV testing. Logistic regression identified reporting sexual identity as Apone [adjusted odds ratio (aOR) 3.8; 95% CI 1.2-11.7], recent HIV testing (aOR 3.1; 95% CI 1.4-6.5), reporting a high likelihood of HIV acquisition (aOR 3.6; 95% CI 1.7-7.6), and reporting  $\geq 5$  casual partners in the past 3 months (aOR 0.2; 95% CI 0.1-0.6) as associated with peer-delivered HIV testing acceptability. Given ongoing HIV vulnerability among MSM and TW in Myanmar, peer-delivered testing may offer prevention benefits by increasing testing rates and identifying undiagnosed infection earlier.

3. Garcia, J., et al. **"And Then Break the Cliche": Understanding and Addressing HIV Vulnerability Through Development of an HIV Prevention Telenovela with Men Who Have Sex with Men and Transwomen in Lima, Peru.** *Arch Sex Behav* 2018. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29464455>

HIV and other sexually transmitted infections (STIs) continue to affect men who have sex with men (MSM) and transgender women (TW) in Peru at disproportionately high rates. The ineffectiveness of traditional prevention strategies may be due to the disconnect between health promotion messages and community-level understandings of sexual cultures. We conducted 15 workshops with MSM and TW to develop a community-based sexual health intervention. Intervention development consisted of focus groups and scenic improvisation to identify sexual scripts for an HIV prevention telenovela, or Spanish soap opera. Workshops were stratified by self-reported socioeconomic status, sexual orientation, and gender identity: (1) low-income MSM (n = 9); (2) middle/high-income MSM (n = 6); and (3) TW (n = 8). Employing a conceptual model based on sexual scripts and critical consciousness theories, this paper reports on three themes identified during the telenovela-development process as participants sought to "rescript" social and sexual stereotypes associated with HIV-related vulnerability: (1) management of MSM and TW social identities at the intersection of socioeconomic status, sexuality, and gender performance; (2) social constructions of gender and/or sexual role and perceived and actual HIV/STI risk(s) within sexual partnership interactions; and (3) idealized and actual sexual scripts in the negotiation of safer sex practices between MSM/TW and their partners. These findings are key to reframing existing prevention strategies that fail to effectively engage poorly defined "high-risk populations." Leveraging community-based expertise, the results provide an alternative to the static transfer of information through expert-patient interactions in didactic sessions commonly used in HIV prevention interventions among MSM and TW.

4. Logie, C. H., et al. **"Associations between Police Harassment and HIV Vulnerabilities among Men Who Have Sex with Men and Transgender Women in Jamaica."** *Health Hum Rights* 2017 19(2): 147-154. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29302172>



5. Nugroho, A., et al. **"Driving factors of retention in care among HIV-positive MSM and transwomen in Indonesia: A cross-sectional study."** *PLoS One* 2018 13(1): e0191255. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29342172>

Little is known about the prevalence of and factors that influence retention in HIV-related care among Indonesian men who have sex with men (MSM) and transgender women (transwomen, or waria in Indonesian term). Therefore, we explored the driving factors of retention in care among HIV-positive MSM and waria in Indonesia. This cross-sectional study involved 298 self-reported HIV-positive MSM (n = 165) and waria (n = 133). Participants were recruited using targeted sampling and interviewed using a structured questionnaire. We applied a four-step model building process using multivariable logistic regression to examine how sociodemographic, predisposing, enabling, and reinforcing factors were associated with retention in care. Overall, 78.5% of participants were linked to HIV care within 3 months after diagnosis or earlier, and 66.4% were adequately retained in care (at least one health care visit every three months once a person is diagnosed with HIV). Being on antiretroviral therapy (adjusted odds ratio [AOR] = 6.00; 95% confidence interval [CI]: 2.93-12.3), using the Internet to find HIV-related information (AOR = 2.15; 95% CI: 1.00-4.59), and having medical insurance (AOR = 2.84; 95% CI: 1.27-6.34) were associated with adequate retention in care. Involvement with an HIV-related organization was associated negatively with retention in care (AOR = 0.47; 95% CI: 0.24-0.95). Future interventions should increase health insurance coverage and utilize the Internet to help MSM and waria to remain in HIV-related care, thereby assisting them in achieving viral suppression.

6. Bumanglag, K. C. **"Enhancing HIV/AIDS Surveillance in the Philippines to Ensure the Transgender Population's Visibility."** *Am J Public Health* 2018 108(1): 58-60. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29211538>

7. Barrington, C., et al. **"'HIV and work don't go together': Employment as a social determinant of HIV outcomes among men who have sex with men and transgender women in the Dominican Republic."** *Glob Public Health* 2017 12(12): 1506-1521. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/26999251>

Men who have sex with men (MSM) and transgender women are disproportionately affected by HIV in the Dominican Republic. Little is known about their experiences living with HIV as a chronic condition. We explored employment as a social determinant of well-being with HIV. We conducted 42 qualitative in-depth interviews with MSM (n = 16) and transgender women (n = 5) living with HIV; each participant completed 2 interviews to facilitate depth and iterative analysis. We used narrative analysis and systematic coding to identify salient themes related to employment and the HIV experience and developed a conceptual model of the pathways between HIV stigma, unemployment, and HIV outcomes. Early life experiences, including rejection from families and school, resulted in limited work opportunities, especially among transgender women. Following HIV diagnosis, participants across all socio-economic levels lost jobs and/or were unable to get jobs due to illegal HIV testing and HIV stigma and discrimination. Not being able to work impacted mental health, engagement in HIV care, and overall well-being. We conclude that lack of employment is a salient concern among MSM and transgender women living with HIV. Holistic, multi-level programmes that address illegal HIV testing and discriminatory hiring practices are urgently needed to facilitate engagement in care and long-term well-being.

8. Costa, A. B., et al. **"HIV-Related Healthcare Needs and Access Barriers for Brazilian Transgender and Gender Diverse People."** *AIDS Behav* 2018. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29299789>

The aim of this study is to investigate HIV-related healthcare needs and access barriers for Brazilian transgender and gender diverse people. Data were collected from gender identity clinics and the questionnaire was also made available on the Internet. Out of the 543 participants-62.1% (n = 337) transgender women, 28.7% (n = 156) transgender men and 9.2% (n = 50) gender diverse people, 63.7% had

been tested at least once in their lives. The prevalence of self-reported HIV-positive status among transgender women was 16.5%, of which 92.0% reported having a physician with whom they regularly consulted about HIV, whereas none of the transgender men or gender diverse people reported HIV-positive status. In addition, 8.2% of transgender men and 12.5% of gender diverse people did not know their serological status. Finally, 71.0% of the participants were unfamiliar with post-exposure prophylaxis. The study discusses the need for adequate behavior-oriented HIV health policies and training of healthcare professionals regarding the needs of Brazilian transgender and gender diverse people.

9. Plotzker, R., et al. "**Importance of Risk Perception: Predictors of PrEP Acceptance Among Thai MSM and TG Women at a Community-Based Health Service.**" *J Acquir Immune Defic Syndr* 2017 76(5): 473-481. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/28902071>

**BACKGROUND:** HIV prevalence among Thai men who have sex with men (MSM) and transgender women (TG) are 9.15% and 11.8%, respectively, compared with 1.1% in the general population. To better understand early adopters of pre-exposure prophylaxis (PrEP) in Thailand, we analyzed biobehavioral and sociodemographic characteristics of PrEP-eligible MSM and TG.

**SETTING:** Four Thai urban community clinics between October 2015 and February 2016.

**METHODS:** Sociodemographics, HIV risk characteristics, and PrEP knowledge and attitudes were analyzed in association with PrEP initiation among eligible Thai MSM and TG. Adjusted analysis explored factors associated with PrEP acceptance. We then analyzed HIV risk perception, which was strongly associated with PrEP initiation.

**RESULTS:** Of 297 participants, 55% accepted PrEP (48% of MSM, 54% of TG). Perceived HIV risk levels were associated with PrEP acceptance [odds ratio (OR): 4.3; 95% confidence interval (95% CI): 1.5 to 12.2. OR: 6.3; 95% CI: 2.1 to 19.0. OR: 14.7; 95% CI: 3.9 to 55.1; for minimal, moderate, and high perceived risks, respectively]. HIV risk perception was associated with previous HIV testing (OR: 2.2; 95% CI: 1.4 to 3.5); inconsistent condom use (OR: 1.8; 95% CI: 1.1 to 2.9); amphetamine use in the past 6 months (OR: 3.1; 95% CI: 1.1 to 8.6); and uncertainty in the sexually transmitted infection history (OR: 2.3; 95% CI: 1.4 to 3.7). Approximately half of those who reported either inconsistent condom use (46%), multiple partners (50%), group sex (48%), or had baseline bacterial sexually transmitted infection (48%) perceived themselves as having no or mild HIV risk.

**CONCLUSIONS:** HIV risk perception plays an important role in PrEP acceptance. Perception does not consistently reflect actual risk. It is therefore critical to assess a client's risk perception and provide education about HIV risk factors that will improve the accuracy of perceived HIV risk.

10. Reisner, S. L., et al. "**Perceived Barriers and Facilitators to Integrating HIV Prevention and Treatment with Cross-Sex Hormone Therapy for Transgender Women in Lima, Peru.**" *AIDS Behav* 2017 21(12): 3299-3311. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/28421354>

Transgender women (TW) represent a vulnerable population at increased risk for HIV infection in Peru. A mixed-methods study with 48 TW and 19 healthcare professionals was conducted between January and February 2015 to explore barriers and facilitators to implementing a model of care that integrates HIV services with gender-affirmative medical care (i.e., hormone therapy) in Lima, Peru. Perceived acceptability of the integrated care model was high among TW and healthcare professionals alike. Barriers included stigma, lack of provider training or Peruvian guidelines regarding optimal TW care, and service delivery obstacles (e.g., legal documents, spatial placement of clinics, hours of operation). The hiring of TW staff was identified as a key facilitator for engagement in health care. Working in partnership with local TW and healthcare provider organizations is critical to overcoming existing barriers to successful implementation of an integrated HIV services and gender-affirmative medical care model for this key population in Peru.

11. Carballo-Diequez, A., et al. **"Preference of Oral Tenofovir Disoproxil Fumarate/Emtricitabine Versus Rectal Tenofovir Reduced-Glycerin 1% Gel Regimens for HIV Prevention Among Cisgender Men and Transgender Women Who Engage in Receptive Anal Intercourse with Men."** *AIDS Behav* 2017 21(12): 3336-3345. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29119473>

Oral pre-exposure prophylaxis (PrEP) can prevent HIV transmission. Yet, some may prefer not to take systemic daily medication. MTN-017 was a 3-period, phase 2 safety and acceptability study of microbicide gel applied rectally either daily or before and after receptive anal intercourse (RAI), compared to daily oral tablet. At baseline, cisgender men and transgender women who reported RAI (N = 187) rated the daily oral regimen higher in overall liking, ease of use, and likelihood of future use than the gel regimens. After trying all three, 28% liked daily oral the least. Gel did not affect sexual enjoyment (88%) or improved it (7-8%). Most partners had no reaction to gel use. Ease of gel use improved significantly between the first and the last few times of daily use. A rectal gel used before and after RAI may constitute an attractive alternative to daily tablet. Experience with product use may increase acceptability.

12. Vargas, S. K., et al. **"The Relationship Between Risk Perception and Frequency of HIV Testing Among Men Who Have Sex with Men and Transgender Women, Lima, Peru."** *AIDS Behav* 2018. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29313193>

HIV infections in Peru are concentrated among men who have sex with men (MSM) and transgender women (TW). HIV testing rates among them remain low, delaying entrance into care. We assessed the prevalence of frequent HIV testing (at least every 6 months) and associated factors among 310 MSM and TW who attend sexual health clinics in Lima, Peru, and who reported that they were HIV seronegative or unaware of their status. Only 39% of participants tested frequently, and 22% had never tested; 29% reported that they were at low or no risk for acquiring HIV. Reporting low or no risk for acquiring HIV was associated with frequent testing (adjusted prevalence ratio [aPR] = 1.53, 95% CI 1.13-2.08); those reporting unprotected anal sex were less likely to test frequently (aPR = 0.66, 95% CI 0.50-0.87). HIV prevalence was 12% and did not vary by risk perception categories. This at-risk population tests infrequently and may not understand the risk of having unprotected sex.

13. Grinsztejn, B., et al. **"Retention, engagement, and adherence to pre-exposure prophylaxis for men who have sex with men and transgender women in PrEP Brasil: 48 week results of a demonstration study."** *Lancet HIV* 2018. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29467098>

**BACKGROUND:** PrEP Brasil was a demonstration study to assess feasibility of daily oral tenofovir diphosphate disoproxil fumarate plus emtricitabine provided at no cost to men who have sex with men (MSM) and transgender women at high risk for HIV within the Brazilian public health system. We report week 48 pre-exposure prophylaxis (PrEP) retention, engagement, and adherence, trends in sexual behaviour, and incidence of HIV and sexually transmitted infections in this study cohort.

**METHODS:** PrEP Brasil was a 48 week, open-label, demonstration study that assessed PrEP delivery at three referral centres for HIV prevention and care in Rio de Janeiro, Brazil (Fundacao Oswaldo Cruz), and Sao Paulo, Brazil (Universidade de Sao Paulo and Centro de Referencia e Treinamento em DST e AIDS). Eligible participants were MSM and transgender women who were HIV negative, aged at least 18 years, resident in Rio de Janeiro or Sao Paulo, and reported one or more sexual risk criteria in the previous 12 months (eg, condomless anal sex with two or more partners, two or more episodes of anal sex with an HIV-infected partner, or history of sexually transmitted infection [STI] diagnosis). Participants were seen at weeks 4, 12, 24, 36, and 48 for PrEP provision, clinical and laboratory evaluation, and HIV testing. Computer-assisted self-interviews were also done at study visits 12, 24, 36, and 48, and assessed sexual behaviour and drug use. PrEP retention was defined by attendance at the week 48 visit, PrEP engagement was an ordinal five-level variable combining presence at the study visit and drug concentrations, and PrEP adherence was evaluated by measuring tenofovir diphosphate concentrations in dried blood spots. Logistic regression models were used to quantify the association of variables with high adherence ( $\geq 4$  doses per week). The study is registered with ClinicalTrials.gov, number NCT01989611.

**FINDINGS:** Between April 1, 2014, and July 8, 2016, 450 participants initiated PrEP, 375 (83%) of whom were retained until week 48. At week 48, 277 (74%) of 375 participants had protective drug concentrations consistent with at least four doses per week: 183 (82%) of 222 participants from Sao Paulo compared with 94 (63%) of 150 participants from Rio de Janeiro (adjusted odds ratio 1.88, 95% CI 1.06-3.34); 119 (80%) of 148 participants who reported sex with HIV-infected partners compared with 158 (70%) of 227 participants who did not (1.78, 1.03-3.08); 67 (87%) of 77 participants who used stimulants compared with 210 (71%) of 298 participants who did not (2.23, 1.02-4.92); and 232 (80%) of 289 participants who had protective concentrations of tenofovir disphosphate at week 4 compared with 42 (54%) of 78 participants who did not (3.28, 1.85-5.80). Overall, receptive anal sex with the last three partners increased from 45% at enrolment to 49% at week 48 ( $p=0.17$ ), and the mean number of sexual partners in the previous 3 months decreased from 11.4 (SD 28.94) at enrolment to 8.3 (19.55) at week 48 ( $p<0.0013$ ). Two individuals seroconverted during follow-up (HIV incidence 0.51 per 100 person-years, 95% CI 0.13-2.06); both of these patients had undetectable tenofovir concentrations at seroconversion.

**INTERPRETATION:** Our results support the effectiveness and feasibility of PrEP in a real-world setting. Offering PrEP at public health-care clinics in a middle-income setting can retain high numbers of participants and achieve high levels of adherence without risk compensation in the investigated populations. **FUNDING:** Brazilian Ministry of Health, Conselho Nacional de Desenvolvimento Cientifico e Tecnologico, Secretaria de Vigilancia em Saude, Fundacao Carlos Chagas Filho de Amparo a Pesquisa do Estado do Rio de Janeiro, and Fundacao de Amparo a Pesquisa do Estado de Sao Paulo.

14. De Boni, R. B., et al. "**Syndemics among individuals enrolled in the PrEP Brasil Study.**" *Drug Alcohol Depend* 2018 185: 168-172. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29454927>

**BACKGROUND:** Concurrent psychosocial problems may synergistically increase the risk of HIV infection (syndemics), representing a challenge for prevention. We aimed to evaluate the prevalence and associated factors of syndemics among men who have sex with men (MSM) and transgender women (TGW) enrolled in the Brazilian pre-exposure prophylaxis demonstration study (PrEP Brasil Study).

**METHODS:** Secondary cross-sectional analysis of the PrEP Brasil Study was performed. Of 450 HIV-seronegative MSM/TGW enrolled in the PrEP Brasil Study- conducted at Rio de Janeiro and Sao Paulo, Brazil- 421 participants with complete data were included in the present analysis. Syndemics was defined as occurrence of  $\geq 2$  of the following conditions: polysubstance ( $\geq 2$ ) use, binge drinking, positive depression screen, compulsive sexual behavior, and intimate partner violence (IPV).

**RESULTS:** The prevalence of recent polysubstance use was 22.8%, binge drinking 51.1%, positive depression screening 5.2%, compulsive sexual behavior 7.1%, and IPV 7.3%. Syndemics prevalence was 24.2%, and associated factors were younger age (adjusted Odds Ratio (aOR) 0.95, 95% Confidence Interval (95% CI) 0.92-0.98 per year increase), TGW vs. MSM (aOR 3.09, 95% CI: 1.2-8.0), some college education or more vs. less than college (aOR 2.49, 95% CI: 1.31-4.75), and multiple male sexual partners in prior 3 months (aOR 1.69, 95% CI: 0.92-3.14).

**CONCLUSION:** Given the high prevalence of syndemics, particularly of polysubstance use and binge drinking, PrEP delivery offers an opportunity to diagnose and intervene in mental and social well-being.

15. Willie, T. C., et al. "**Victimization and Human Immunodeficiency Virus-Related Risk Among Transgender Women in India: A Latent Profile Analysis.**" *Violence Gend* 2017 4(4): 121-129. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29279854>

Globally, transgender women (TGW) experience multiple forms of victimization such as violence and discrimination that can place them at risk for poor sexual health. To date, research overlooks the heterogeneity in experiences of victimization among TGW. Furthermore, few studies have examined the association between victimization and sexual risk among TGW in India, despite the high burden of HIV and victimization in this community. Latent profile analysis was performed to identify patterns of victimization in

a convenience sample of 299 TGW recruited from nongovernmental organizations across four states in India. Analysis of covariance was performed to examine differences in sexual risk (i.e., alcohol use before sex; inconsistent condom use with a male regular partner, a male casual partner, and a male paying partner; and having multiple sexual partners) between latent profiles. Five distinct profiles of Indian TGW were identified based on the type and severity of victimization: (1) Low victimization, (2) High verbal police victimization, (3) High verbal and physical police victimization, (4) Moderate victimization, and (5) High victimization. While controlling for age, education, income, HIV status, and marital status, results revealed that TGW in the moderate victimization and high victimization profiles had higher sexual risk than TGW in the low victimization and high verbal police victimization profiles. In addition, TGW in high verbal and physical police victimization profile had higher sexual risk than TGW in low victimization profile. These findings underscore the importance of tailoring sexual risk reduction interventions to the specific needs of TGW based on patterns of victimization.

16. Miller, W. M., et al. "**The Where and How for Reaching Transgender Women and Men Who Have Sex with Men with HIV Prevention Services in Guatemala.**" *AIDS Behav* 2017 21(12): 3279-3286. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/28008544>

This study aims to describe the transgender women and men who have sex with men (MSM) missed through venue-based sampling and illustrate how data on venues can be used to prioritize service delivery. Respondent-driven sampling (RDS) and time-location sampling (TLS) were used concurrently in 2010 for behavioral surveillance among MSM and transgender women in Guatemala City. RDS recruits who did not frequent venues (n = 106) were compared to TLS recruits (n = 609). TLS participants recruited at different types of venues were compared. RDS recruits who did not frequent venues were less educated, less likely to identify as gay, more likely to have concurrent partners and female sexual partners. Participants recruited at NGOs, saunas, hotels, streets and parks had more partners, were more likely to receive money for sex or have concurrent partners. Prevention programs for MSM and transgender women should characterize social venues and people that frequent them and improve service coverage through venues and social networks.

17. Shrestha, R., et al. "**Why don't key populations access HIV testing and counselling centres in Nepal? Findings based on national surveillance survey.**" *BMJ Open* 2017 7(12): e017408. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29288177>

**OBJECTIVES:** To assess the demographic, behavioural, psychosocial and structural factors associated with non-utilisation of HIV testing and counselling (HTC) services by female sex workers (FSWs) and men who have sex with men/transgender (MSM/TG).

**METHODS:** This study involved a cross-sectional design. We used the national surveillance survey data of 2012, which included 610 FSWs and 400 MSM/TG recruited randomly from 22 and three districts of Nepal, respectively. Adjusted prevalence ratio (aPR) and 95% confidence interval (CI) using modified Poisson regression was used to assess and infer the association between outcome (non-utilisation of HTC in last year) and independent variables.

**RESULTS:** Non-utilisation of HTC in the last year was 54% for FSWs and 55% for MSM/TG. The significant factors for non-utilisation of HTC among FSWs were depression (aPR=1.4 (95% CI 1.1 to 1.6)), injectable drug abuse (ever) (aPR=1.4 (95% CI 1.1 to 1.8)), participation (ever) in HIV awareness programmes (aPR=1.2 (95% CI 1.0 to 1.4)), experience of forced sex in previous year (aPR=1.1 (95% CI 1.0 to 1.3)) and absence of dependents in the family (aPR=1.1 (95% CI 1.0 to 1.3)). Non-utilisation of HTC among MSM/TG had significant association with age 16-19 years (aPR=1.4 (95% CI 1.1 to 1.7)), non-condom use (aPR=1.2 (95% CI 1.0 to 1.4)), participation (ever) in HIV awareness programmes (aPR=1.6 (95% CI 1.3 to 2.0)), physical assault in previous year (aPR=1.8 (95% CI 1.0 to 3.1)), experience of forced sex in previous year (aPR=0.5 (95% CI 0.3 to 0.9)).

**CONCLUSION:** Although limited by cross-sectional design, we found many programmatically relevant findings. Creative strategies should be envisaged for effective behavioural change communication to

improve access to HIV testing. Psychosocial and structural interventions should be integrated with HIV prevention programmes to support key populations in accessing HIV testing.

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## Young Key Populations - 4

1. Tinasti, K. "**HIV and AIDS among adolescents who use drugs: opportunities for drug policy reform within the sustainable development agenda.**" *J Int AIDS Soc* 2018 21 Suppl 1. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29485748>

**INTRODUCTION:** The international community's commitment to halve by 2015 the HIV transmission among people who inject drugs has not only been largely missed, instead new HIV infections have increased by 30%. Moreover, drug injection remains one of the drivers of new HIV infections due to punitive responses and lack of harm reduction resourcing. In the midst of this situation, adolescents are a forgotten component of the global response to illegal drugs and their link with HIV infection. The Sustainable Development Goals (SDGs) present an opportunity to achieve the global objective of ending AIDS among adolescents who use drugs, by addressing the structural vulnerabilities they face be they economic, social, criminal, health-related or environmental.

**DISCUSSION:** The implementation of the SDGs presents an opportunity to address the horizontal nature of drug policy and to efficiently address the drugs-adolescents-HIV risk nexus. Adolescent-focused drug policies are linked to goals 1, 3, 4, 10, 16 and 17. Goals 3 and 16 are the most relevant; the targets of the latter link to the criminalization of drug use and punitive policy environments and their impact on adolescents' health and HIV transmission risks. Moreover, it presents an opportunity to include adolescent needs that are missing in the three drug control conventions (1961, 1971 and 1988), and link them with the provisions of the Convention on the Rights of the Child (1989). Finally, the six principles to deliver on sustainable development are also an opportunity to divert adolescents who use drugs away from criminalization and punitive environments in which their vulnerability to HIV is greater.

**CONCLUSIONS:** Addressing HIV among adolescents who use drugs is an extremely complex policy issue depending on different sets of binding and non-binding commitments, interventions and stakeholders. The complexity requires a horizontal response provided by the SDGs framework, starting with the collection of disaggregated data on this specific subgroup. Ending AIDS among adolescents who use drugs requires the implementation of national drugs and HIV plans based on the multi-sectoral approach and the transformative nature of the SDGs, to provide a comprehensive response to the epidemic among this key affected subgroup.

2. 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* 2018 53(1): 101-113. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/28820622>

**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.

3. Muller, A., et al. "**The no-go zone: a qualitative study of access to sexual and reproductive health services for sexual and gender minority adolescents in Southern Africa.**" *Reprod Health* 2018 15(1): 12. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29370809>

**BACKGROUND:** Adolescents have significant sexual and reproductive health needs. However, complex legal frameworks, and social attitudes about adolescent sexuality, including the values of healthcare providers, govern adolescent access to sexual and reproductive health services. These laws and social attitudes are often antipathetic to sexual and gender minorities. Existing literature assumes that adolescents identify as heterosexual, and exclusively engage in (heteronormative) sexual activity with partners of the opposite sex/gender, so little is known about if and how the needs of sexual and gender minority adolescents are met.

**METHODS:** In this article, we have analysed data from fifty in-depth qualitative interviews with representatives of organisations working with adolescents, sexual and gender minorities, and/or sexual and reproductive health and rights in Malawi, Mozambique, Namibia, Zambia and Zimbabwe.

**RESULTS:** Sexual and gender minority adolescents in these countries experience double-marginalisation in pursuit of sexual and reproductive health services: as adolescents, they experience barriers to accessing LGBT organisations, who fear being painted as "homosexuality recruiters," whilst they are simultaneously excluded from heteronormative adolescent sexual and reproductive health services. Such barriers to services are equally attributable to the real and perceived criminalisation of consensual sexual behaviours between partners of the same sex/gender, regardless of their age.

**DISCUSSION/ CONCLUSION:** The combination of laws which criminalise consensual same sex/gender activity and the social stigma towards sexual and gender minorities work to negate legal sexual and reproductive health services that may be provided. This is further compounded by age-related stigma regarding sexual activity amongst adolescents, effectively leaving sexual and gender minority adolescents without access to necessary information about their sexuality and sexual and reproductive health, and sexual and reproductive health services.

4. Chemnasiri, T., et al. "**Risk Behaviors Among Young Men Who Have Sex With Men in Bangkok: A Qualitative Study to Understand and Contextualize High HIV Incidence.**" *J Homosex* 2018: 1-16. Online at: <https://www.ncbi.nlm.nih.gov/pubmed/29308991>

The Bangkok Men Who Have Sex With Men (MSM) Cohort Study has shown high HIV incidence (8-12/100 person-years) among 18-21-year-old MSM. These data led to a further study using qualitative methods among young (18-24 years old) MSM in order to understand the factors driving the HIV epidemic among YMSM. We conducted eight focus group discussions and 10 key informant interviews among YMSM in Bangkok, Thailand. Sociodemographic and behavioral data were collected using a questionnaire. We audio-recorded, transcribed, and analyzed qualitative and questionnaire data using computer software. The categories relating to risk behavior were (1) the use of social networks for seeking sexual partners and the

marketing promotions of MSM entertainment venues, (2) social influence by peers and older MSM, (3) easy access to high parties and group sex, (4) easy access to club drugs, (5) conceptions related to HIV risk, and (6) sexual preferences of YMSM. Increased HIV testing, same-sex education, and YMSM-specific HIV prevention efforts are urgently needed for YMSM in Bangkok.

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