



Quarterly Research Digest on HIV and Key Populations

December 2016

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 - 4

1. Gall, J., et al. **"Global Trends of Monitoring and Data Collection on the HIV Response among Key Populations Since the 2001 UN Declaration of Commitment on HIV/AIDS."** *AIDS Behav* 2016. Monitoring and evaluation indicators for HIV programs' response to the epidemic among key populations (sex workers, people who inject drugs, men who have sex with men, transgender people) are critical for reviewing the global response. From the beginning of global reporting, insufficiency of data has been a challenge for monitoring the epidemic response among key populations. However, key populations were only indirectly referenced in the 2001 Declaration of Commitment. By the 2006 Political Declaration on HIV/AIDS, data from key populations were still not required from every country, and were sparsely reported compared to other indicators. The 2011 Political Declaration on HIV/AIDS referenced key populations by name for the first time. In 2006, fewer than twenty countries (10%) reported HIV prevalence among key populations, whereas in 2012 the number of countries surpassed sixty (30%).
2. Borquez, A., et al. **"The Incidence Patterns Model to Estimate the Distribution of New HIV Infections in Sub-Saharan Africa: Development and Validation of a Mathematical Model."** *PLoS Med* 2016 13(9): e1002121. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5021265/pdf/pmed.1002121.pdf>

BACKGROUND: Programmatic planning in HIV requires estimates of the distribution of new HIV infections according to identifiable characteristics of individuals. In sub-Saharan Africa, robust routine data sources and

historical epidemiological observations are available to inform and validate such estimates.

METHODS AND FINDINGS: We developed a predictive model, the Incidence Patterns Model (IPM), representing populations according to factors that have been demonstrated to be strongly associated with HIV acquisition risk: gender, marital/sexual activity status, geographic location, "key populations" based on risk behaviours (sex work, injecting drug use, and male-to-male sex), HIV and ART status within married or cohabiting unions, and circumcision status. The IPM estimates the distribution of new infections acquired by group based on these factors within a Bayesian framework accounting for regional prior information on demographic and epidemiological characteristics from trials or observational studies. We validated and trained the model against direct observations of HIV incidence by group in seven rounds of cohort data from four studies ("sites") conducted in Manicaland, Zimbabwe; Rakai, Uganda; Karonga, Malawi; and Kisesa, Tanzania. The IPM performed well, with the projections' credible intervals for the proportion of new infections per group overlapping the data's confidence intervals for all groups in all rounds of data. In terms of geographical distribution, the projections' credible intervals overlapped the confidence intervals for four out of seven rounds, which were used as proxies for administrative divisions in a country. We assessed model performance after internal training (within one site) and external training (between sites) by comparing mean posterior log-likelihoods and used the best model to estimate the distribution of HIV incidence in six countries (Gabon, Kenya, Malawi, Rwanda, Swaziland, and Zambia) in the region. We subsequently inferred the potential contribution of each group to transmission using a simple model that builds on the results from the IPM and makes further assumptions about sexual mixing patterns and transmission rates. In all countries except Swaziland, individuals in unions were the single group contributing to the largest proportion of new infections acquired (39%-77%), followed by never married women and men. Female sex workers accounted for a large proportion of new infections (5%-16%) compared to their population size. Individuals in unions were also the single largest contributor to the proportion of infections transmitted (35%-62%), followed by key populations and previously married men and women. Swaziland exhibited different incidence patterns, with never married men and women accounting for over 65% of new infections acquired and also contributing to a large proportion of infections transmitted (up to 56%). Between- and within-country variations indicated different incidence patterns in specific settings.

CONCLUSIONS: It is possible to reliably predict the distribution of new HIV infections acquired using data routinely available in many countries in the sub-Saharan African region with a single relatively simple mathematical model. This tool would complement more specific analyses to guide resource allocation, data collection, and programme planning.

3. Friedman, S. R., et al. **"Interpersonal Attacks on the Dignity of Members of HIV Key Populations: A Descriptive and Exploratory Study."** *AIDS Behav* 2016.

Attacks on peoples' dignity help to produce and maintain stigmatization and interpersonal hostility. As part of an effort to develop innovative measures of possible pathways between structural interventions or socially-disruptive Big Events and HIV outbreaks, we developed items to measure dignity denial. These measures were administered to 300 people who inject drugs (PWID), 260 high-risk heterosexuals who do not inject drugs, and 191 men who have sex with men who do not inject drugs (MSM). All of the PWID and many of the high risk heterosexuals and MSM were referred to our study in 2012-2015 by a large New York city study that used respondent-driven sampling; the others were recruited by chain-referral. Members of all three key populations experienced attacks on their dignity fairly often and also reported frequently seeing others' dignity being attacked. Relatives are major sources of dignity attacks. MSM were significantly more likely to report having their dignity attacked by police officers than were the other groups. 40 % or more of each key population reported that dignity attacks are followed "sometimes" or more often both by using more drugs and also by using more alcohol. Dignity attacks and their health effects require more research and creative interventions, some of which might take untraditional forms like social movements.

4. Cowan, F. M., et al. **"PrEP implementation research in Africa: what is new?"** *J Int AIDS Soc* 2016 19(7(Suppl 6)): 21101. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5071780/pdf/JIAS-19-21101.pdf>

INTRODUCTION: Of the two million new HIV infections in adults in 2014, 70% occurred in sub-Saharan Africa. Several African countries have already approved guidelines for pre-exposure prophylaxis (PrEP) for individuals at substantial risk of HIV as part of combination HIV prevention but key questions remain about how to identify and deliver PrEP to those at greatest need. Throughout the continent, individuals in sero-discordant relationships, and members of key populations (sex workers, men who have sex with men (MSM), transgender women and injection drug users) are likely to benefit from the availability of PrEP. In addition, adolescent girls and young women (AGYW) are at substantial risk in some parts of the continent. It has been estimated that at least three million individuals in Africa are likely to be eligible for PrEP according to WHO's criteria. Tens of demonstration projects are planned or underway across the continent among a range of countries, populations and delivery settings.

DISCUSSION: In each of the target populations, there are overarching issues related to (i) creating demand for PrEP, (ii) addressing supply-side issues and (iii) providing appropriate and tailored adherence support. Critical for creating demand for PrEP is the normalization of HIV prevention. Community-level interventions which engage opinion leaders as well as empowerment interventions for those at highest risk will be key. Critical to supply of PrEP is that services are accessible for all, including for stigmatized populations. Establishing accessible integrated services provides the opportunity to address other public health priorities including the unmet need for HIV testing, contraception and sexually transmitted infections treatment. National policies need to include minimum standards for training and quality assurance for PrEP implementation and to address supply chain issues. Adherence support needs to recognize that social and structural factors are likely to have an important influence. Combining interventions that build self-efficacy, empowerment and social cohesion, with evidence-based individualized adherence support for PrEP, are most likely to be effective.

CONCLUSIONS: Efficacy of tenfovir-based PrEP is proven but many issues related to implementation remain unclear. Here, we have summarized some of the important implementation questions that need to be assessed as PrEP is rolled out across Africa.

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People Who Inject Drugs - 25

1. Benedikt, C., et al. "**Allocative and implementation efficiency in HIV prevention and treatment for people who inject drugs.**" *Int J Drug Policy* 2016 38: 73-80.

BACKGROUND: Estimated global new HIV infections among people who inject drugs (PWID) remained stable over the 2010-2015 period and the target of a 50% reduction over this period was missed. To achieve the 2020 UNAIDS target of reducing adult HIV infections by 75% compared to 2010, accelerated action in scaling up HIV programs for PWID is required. In a context of diminishing external support to HIV programs in countries where most HIV-affected PWID live, it is essential that available resources are allocated and used as efficiently as possible.

METHODS: Allocative and implementation efficiency analysis methods were applied. Optima, a dynamic, population-based HIV model with an integrated program and economic analysis framework was applied in eight countries in Eastern Europe and Central Asia (EECA). Mathematical analyses established optimized allocations of resources. An implementation efficiency analysis focused on examining technical efficiency, unit costs, and heterogeneity of service delivery models and practices.

RESULTS: Findings from the latest reported data revealed that countries allocated between 4% (Bulgaria) and 40% (Georgia) of total HIV resources to programs targeting PWID - with a median of 13% for the eight

countries. When distributing the same amount of HIV funding optimally, between 9% and 25% of available HIV resources would be allocated to PWID programs with a median allocation of 16% and, in addition, antiretroviral therapy would be scaled up including for PWID. As a result of optimized allocations, new HIV infections are projected to decline by 3-28% and AIDS-related deaths by 7-53% in the eight countries. Implementation efficiencies identified involve potential reductions in drug procurement costs, service delivery models, and practices and scale of service delivery influencing cost and outcome. A high level of implementation efficiency was associated with high volumes of PWID clients accessing a drug harm reduction facility.

CONCLUSION: A combination of optimized allocation of resources, improved implementation efficiency and increased investment of non-HIV resources is required to enhance coverage and improve outcomes of programs for PWID. Increasing efficiency of HIV programs for PWID is a key step towards avoiding implicit rationing and ensuring transparent allocation of resources where and how they would have the largest impact on the health of PWID, and thereby ensuring that funding spent on PWID becomes a global best buy in public health.

2. Coleman, R. L., et al. "**Commentary: the value of PrEP for people who inject drugs.**" *J Int AIDS Soc* 2016 19(7(Suppl 6)): 21112. Online at: http://www.jiasociety.org/index.php/jias/article/download/21112/pdf_1

INTRODUCTION: The offer of pre-exposure prophylaxis (PrEP) is recommended as an additional option for HIV prevention for people at substantial risk of HIV infection as part of combination HIV prevention approaches. Implementing this depends on integrating PrEP in public health programmes that address risky practices with evidence-based interventions, and that operate in an enabling legal and policy environment for the delivery of health services to those at higher risk of HIV infection. What does this recommendation mean in terms of the diverse range of HIV prevention needs of key populations, some of whom are so discriminated against that they exist essentially outside formal systems such as national public health services, and for whom a substantial risk of HIV is part of a larger adverse and hostile situation? We discuss this question with reference to people who inject drugs, informed by concerns and comments that emerged from a series of consultations.

DISCUSSION: HIV prevention is part of a spectrum of injecting drug users' priorities, and their access and uptake of HIV prevention services is contingent on their wider "risk environment." The need to address structural barriers to services and human rights violations, and to improve access to comprehensive harm reduction programmes are of prime importance and would have higher value than a mono-focus on HIV prevention. Where existing harm reduction activities are inadequate, fragile or dependent on external donors, shifts in funding priorities, including, for example, towards PrEP, could threaten investment in the broader programmes. For these reasons, it cannot be assumed that PrEP promotion will always be supported by people who inject drugs. The sexual partners of people who inject drugs, non-opioid users who also inject and for whom there is no established substitution treatment, as well as drug users who are unable to negotiate safe sex may value PrEP. As for all key populations, the involvement of people who inject drugs in shaping services for their consumption is vital and too often ignored.

CONCLUSIONS: For people who inject drugs and who experience discrimination, violence or harassment, implementation of PrEP should be guided by understanding and engaging with their interconnected range of needs, risk practices, priorities and options. The differentiated needs of sub-populations that inject a range of drugs, and their sexual partners, require further exploration.

3. Page, K., et al. "**Commitment issues: PrEP adherence in injecting drug users.**" *Lancet HIV* 2016.
4. Zelenev, A., et al. "**The complex interplay of social networks, geography and HIV risk among Malaysian Drug Injectors: Results from respondent-driven sampling.**" *Int J Drug Policy* 2016 37: 98-106.

BACKGROUND: HIV is primarily concentrated among people who inject drugs (PWID) in Malaysia, where currently HIV prevention and treatment coverage is inadequate. To improve the targeting of interventions,

we examined HIV clustering and the role that social networks and geographical distance play in influencing HIV transmission among PWID.

METHODS: Data were derived from a respondent-driven survey sample (RDS) collected during 2010 of 460 PWID in greater Kuala Lumpur. Analysis focused on socio-demographic, clinical, behavioural, and network information. Spatial probit models were developed based on a distinction between the influence of peers (individuals nominated through a recruitment network) and neighbours (residing a close distance to the individual). The models were expanded to account for the potential influence of the network formation.

RESULTS: Recruitment patterns of HIV-infected PWID clustered both spatially and across the recruitment networks. In addition, HIV-infected PWID were more likely to have peers and neighbours who inject with clean needles were HIV-infected and lived nearby (<5km), more likely to have been previously incarcerated, less likely to use clean needles (26.8% vs 53.0% of the reported injections, $p<0.01$), and have fewer recent injection partners (2.4 vs 5.4, $p<0.01$). The association between the HIV status of peers and neighbours remained significantly correlated even after controlling for unobserved variation related to network formation and sero-sorting.

CONCLUSION: The relationship between HIV status across networks and space in Kuala Lumpur underscores the importance of these factors for surveillance and prevention strategies, and this needs to be more closely integrated. RDS can be applied to identify injection network structures, and this provides an important mechanism for improving public health surveillance, accessing high-risk populations, and implementing risk-reduction interventions to slow HIV transmission.

5. Culbert, G. J., et al. "**Confronting the HIV, Tuberculosis, Addiction, and Incarceration Syndemic in Southeast Asia: Lessons Learned from Malaysia.**" *J Neuroimmune Pharmacol* 2016 11(3): 446-55.

Throughout Southeast Asia, repressive drug laws have resulted in high rates of imprisonment in people who inject drugs (PWID) and people living with HIV (PLH), greatly magnifying the harm associated with HIV, tuberculosis, and addiction. We review findings from Malaysia's largest prison to describe the negative synergistic effects of HIV, tuberculosis, addiction, and incarceration that contribute to a 'perfect storm' of events challenging public and personal health and offer insights into innovative strategies to control these converging epidemics. The majority of PLH who are imprisoned in Malaysia are opioid dependent PWID. Although promoted by official policy, evidence-based addiction treatment is largely unavailable, contributing to rapid relapse and/or overdose after release. Similarly, HIV treatment in prisons and compulsory drug treatment centers is sometimes inadequate or absent. The prevalence of active tuberculosis is high, particularly in PLH, and over 80 % of prisoners and prison personnel are latently infected. Mandatory HIV testing and subsequent segregation of HIV-infected prisoners increases the likelihood of tuberculosis acquisition and progression to active disease, amplifying the reservoir of infection for other prisoners. We discuss strategies to control these intersecting epidemics including screening linked to standardized treatment protocols for all three conditions, and effective transitional programs for released prisoners. For example, recently introduced evidence-based interventions in prisons like antiretroviral therapy (ART) to treat HIV, isoniazid preventive therapy to treat latent tuberculosis infection, and methadone maintenance to treat opioid dependence, have markedly improved clinical care and reduced morbidity and mortality. Since introduction of these interventions in September 2012, all-cause and HIV-related mortality have decreased by 50.0 % and 75.7 %, respectively. We discuss the further deployment of these interventions in Malaysian prisons.

6. Solomon, S. S., et al. "**Design of the Indian NCA study (Indian national collaboration on AIDS): a cluster randomized trial to evaluate the effectiveness of integrated care centers to improve HIV outcomes among men who have sex with men and persons who inject drugs in India.**" *BMC Health Serv Res* 2016 16(1): 652. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5109686/pdf/12913_2016_Article_1905.pdf

BACKGROUND: Globally, men who have sex with men and people who inject drugs remain

disproportionately affected by HIV, but they have not been the focus of prevention and treatment interventions in many resource-limited settings.

METHODS/DESIGN: This cluster-randomized trial (conducted from June 2012 to June 2017), evaluates whether single-venue, integrated delivery of core HIV services to vulnerable high-risk populations improves service utilization and consequently, HIV testing and other outcomes along the HIV care continuum. Core services include: HIV counseling and testing, information, education and communication, condom distribution, needle and syringe exchange programs, opioid agonist therapy, management of sexually transmitted infections, tuberculosis screening, diagnosis, and treatment, and antiretroviral therapy. Stratified restricted randomization was used to allocate 22 Indian cities (10 men who have sex with men and 12 people who inject drugs sites) at a 1:1 ratio to either the intervention or control condition. Integrated care centers were scaled-up and implemented in the 11 intervention cities and outcomes will be assessed by pre- and post-intervention surveys at intervention and control sites. As men who have sex with men and people who inject drugs are hidden populations, with no sampling frame, respondent-driven sampling will be used to accrue samples for the two independent cross-sectional surveys.

DISCUSSION: For an AIDS-free generation to be realized, prevention, care and treatment services need to reach all populations at risk for HIV infection. There is a clear gap in access to services among men who have sex with men and people who inject drugs. Trials need to be designed to optimize utilization of services in these populations.

TRIAL REGISTRATION: ClinicalTrials.gov Identifier: NCT01686750 Date of Registration: September 13, 2012.

7. Hser, Y. I., et al. **"Drug Abuse, HIV, and HCV in Asian Countries."** *J Neuroimmune Pharmacol* 2016 11(3): 383-93.

Drug abuse and co-occurring infections are associated with significant morbidity and mortality. Asian countries are particularly vulnerable to the deleterious consequences of these risks/problems, as they have some of the highest rates of these diseases. This review describes drug abuse, HIV, and hepatitis C (HCV) in Asian countries. The most commonly used illicit drugs include opioids, amphetamine-type stimulants (ATS), cannabis, and ketamine. Among people who inject drugs, HIV rates range from 6.3 % in China to 19 % in Malaysia, and HCV ranges from 41 % in India and Taiwan to 74 % in Vietnam. In the face of the HIV epidemics, drug policies in these countries are slowly changing from the traditional punitive approach (e.g., incarcerating drug users or requiring registration as a drug user) to embrace public health approaches, including, for example, community-based treatment options as well as harm reduction approaches to reduce needle sharing and thus HIV transmission. HIV and HCV molecular epidemiology indicates limited geographic diffusion. While the HIV prevalence is declining in all five countries, use of new drugs (e.g., ATS, ketamine) continues to increase, as well as high-risk sexual behaviors associated with drug use-increasing the risk of sexual transmission of HIV, particularly among men who have sex with men. Screening, early intervention, and continued scaling up of therapeutic options (drug treatment and recovery support, ART, long-term HIV and HCV care for drug users) are critical for effective control or continued reduction of drug abuse and co-infections.

8. Degenhardt, L., et al. **"Estimating the burden of disease attributable to injecting drug use as a risk factor for HIV, hepatitis C, and hepatitis B: findings from the Global Burden of Disease Study 2013."** *Lancet Infect Dis* 2016.

BACKGROUND: Previous estimates of the burden of HIV, hepatitis B virus (HBV), and hepatitis C virus (HCV) among people who inject drugs have not included estimates of the burden attributable to the consequences of past injecting. We aimed to provide these estimates as part of the Global Burden of Disease (GBD) Study 2013.

METHODS: We modelled the burden of HBV and HCV (including cirrhosis and liver cancer burden) and HIV at the country, regional, and global level. We extracted United Nations data on the proportion of notified

HIV cases by transmission route, and estimated the contribution of injecting drug use (IDU) to HBV and HCV disease burden by use of a cohort method that recalibrated individuals' history of IDU, and accumulated risk of HBV and HCV due to IDU. We estimated data on current IDU from a meta-analysis of HBV and HCV incidence among injecting drug users and country-level data on the incidence of HBV and HCV between 1990 and 2013. We calculated estimates of burden of disease through years of life lost (YLL), years of life lived with disability (YLD), deaths, and disability-adjusted life-years (DALYs), with 95% uncertainty intervals (UIs) calculated for each metric.

FINDINGS: In 2013, an estimated 10.08 million DALYs were attributable to previous exposure to HIV, HBV, and HCV via IDU, a four-times increase since 1990. In total in 2013, IDU was estimated to cause 4.0% (2.82 million DALYs, 95% UI 2.4 million to 3.8 million) of DALYs due to HIV, 1.1% (216 000, 101 000-338 000) of DALYs due to HBV, and 39.1% (7.05 million, 5.88 million to 8.15 million) of DALYs due to HCV. IDU-attributable HIV burden was highest in low-to-middle-income countries, and IDU-attributable HCV burden was highest in high-income countries.

INTERPRETATION: IDU is a major contributor to the global burden of disease. Effective interventions to prevent and treat these important causes of health burden need to be scaled up. **FUNDING:** Bill & Melinda Gates Foundation and Australian National Health and Medical Research Council.

9. Martin, M., et al. "**Factors associated with the uptake of and adherence to HIV pre-exposure prophylaxis in people who have injected drugs: an observational, open-label extension of the Bangkok Tenofovir Study.**" *Lancet HIV* 2016.

BACKGROUND: Results of the randomised, double-blind, placebo-controlled Bangkok Tenofovir Study (BTS) showed that taking tenofovir daily as pre-exposure prophylaxis (PrEP) can reduce the risk of HIV infection by 49% in people who inject drugs. In an extension to the trial, participants were offered 1 year of open-label tenofovir. We aimed to examine the demographic characteristics, drug use, and risk behaviours associated with participants' uptake of and adherence to PrEP.

METHODS: In this observational, open-label extension of the BTS (NCT00119106), non-pregnant, non-breastfeeding, HIV-negative BTS participants, all of whom were current or previous injecting drug users at the time of enrolment in the BTS, were offered daily oral tenofovir (300 mg) for 1 year at 17 Bangkok Metropolitan Administration drug-treatment clinics. Participant demographics, drug use, and risk behaviours were assessed at baseline and every 3 months using an audio computer-assisted self-interview. HIV testing was done monthly and serum creatinine was assessed every 3 months. We used logistic regression to examine factors associated with the decision to take daily tenofovir as PrEP, the decision to return for at least one PrEP follow-up visit, and greater than 90% adherence to PrEP.

FINDINGS: Between Aug 1, 2013, and Aug 31, 2014, 1348 (58%) of the 2306 surviving BTS participants returned to the clinics, 33 of whom were excluded because they had HIV (n=27) or grade 2-4 creatinine results (n=6). 798 (61%) of the 1315 eligible participants chose to start open-label PrEP and were followed up for a median of 335 days (IQR 0-364). 339 (42%) participants completed 12 months of follow-up; 220 (28%) did not return for any follow-up visits. Participants who were 30 years or older (odds ratio [OR] 1.8, 95% CI 1.4-2.2; p<0.0001), injected heroin (OR 1.5, 1.1-2.1; p=0.007), or had been in prison (OR 1.7, 1.3-2.1; p<0.0001) during the randomised trial were more likely to choose PrEP than were those without these characteristics. Participants who reported injecting heroin or being in prison during the 3 months before open-label enrolment were more likely to return for at least one open-label follow-up visit than those who did not report injecting heroin (OR 3.0, 95% CI 1.3-7.3; p=0.01) or being in prison (OR 2.3, 1.4-3.7; p=0.0007). Participants who injected midazolam or were in prison during open-label follow-up were more likely to be greater than 90% adherent than were those who did not inject midazolam (OR 2.2, 95% CI 1.2-4.3; p=0.02) or were not in prison (OR 4.7, 3.1-7.2; p<0.0001). One participant tested positive for HIV, yielding an HIV incidence of 2.1 (95% CI 0.05-11.7) per 1000 person-years. No serious adverse events related to tenofovir use were reported.

INTERPRETATION: More than 60% of returning, eligible BTS participants started PrEP, which indicates that a substantial proportion of PWID who are knowledgeable about PrEP might be interested in taking it. Participants who had injected heroin or been in prison were more likely to choose to take PrEP, suggesting that participants based their decision to take PrEP, at least in part, on their perceived risk of incident HIV infection. **FUNDING:** US Centers for Disease Control and Prevention and the Bangkok Metropolitan Administration.

10. Balaji, D., et al. **"First Report of Gender Based Violence as a Deterrent to Methadone Access Among Females Who Use Heroin in Dar es Salaam, Tanzania."** *AIDS Behav* 2016.

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

11. McFall, A. M., et al. **"Getting to 90: linkage to HIV care among men who have sex with men and people who inject drugs in India."** *AIDS Care* 2016 28(10): 1230-9.

UNAIDS set an ambitious target of "90-90-90" by 2020. The first 90 being 90% of those HIV-infected will be diagnosed; the second 90 being 90% of those diagnosed will be linked to medical care and on antiretroviral therapy (ART). While there has been dramatic improvement in HIV testing and ART use, substantial losses continue to occur at linkage-to-care following HIV diagnosis. Data on linkage among men who have sex with men (MSM) and people who inject drugs (PWID) are sparse, despite a greater burden of HIV in these populations. This cross-sectional study was conducted in 27 sites across India. Participants were recruited using respondent-driven sampling and had to be ≥ 18 years and self-identify as male and report sex with a man in the prior year (MSM) or injection drug use in the prior 2 years (PWID). Analyses were restricted to HIV-infected persons aware of their status. Linkage was defined as ever visiting a doctor for management of HIV after diagnosis. We explored factors that discriminated between those linked and not linked to care using multi-level logistic regression and area under the receiver operating curves (AUC), focusing on modifiable factors. Of 1726 HIV-infected persons aware of their status, 80% were linked to care. Modifiable factors around the time of diagnosis that best discriminated linkage included receiving assistance with HIV medical care (odds ratio [OR]: 10.0, 95% confidence interval [CI]: 5.6-18.2), disclosure of HIV-positive status (OR: 2.8; 95% CI: 2.4-6.1) and receiving information and counseling on management of HIV (OR: 2.3; 95% CI: 1.1-4.6). The AUC for these three factors together was 0.85, higher than other combinations of factors. We identified three simple modifiable factors around the time of diagnosis that could facilitate linkage to care among MSM and PWID in low- and middle-income countries to achieve UNAIDS targets.

12. Dolan, K., et al. **"Global burden of HIV, viral hepatitis, and tuberculosis in prisoners and detainees."** *Lancet* 2016 388(10049): 1089-102.

The prison setting presents not only challenges, but also opportunities, for the prevention and treatment of HIV, viral hepatitis, and tuberculosis. We did a comprehensive literature search of data published between 2005 and 2015 to understand the global epidemiology of HIV, hepatitis C virus (HCV), hepatitis B virus (HBV), and tuberculosis in prisoners. We further modelled the contribution of imprisonment and the potential impact of prevention interventions on HIV transmission in this population. Of the estimated 10.2 million people incarcerated worldwide on any given day in 2014, we estimated that 3.8% have HIV (389 000 living with HIV), 15.1% have HCV (1 546 500), 4.8% have chronic HBV (491 500), and 2.8% have active tuberculosis (286 000). The few studies on incidence suggest that intraprisn transmission is generally low, except for

large-scale outbreaks. Our model indicates that decreasing the incarceration rate in people who inject drugs and providing opioid agonist therapy could reduce the burden of HIV in this population. The prevalence of HIV, HCV, HBV, and tuberculosis is higher in prison populations than in the general population, mainly because of the criminalisation of drug use and the detention of people who use drugs. The most effective way of controlling these infections in prisoners and the broader community is to reduce the incarceration of people who inject drugs.

13. Heath, A. J., et al. "**Healthcare avoidance by people who inject drugs in Bangkok, Thailand.**" *J Public Health (Oxf)* 2016 38(3): e301-e308.

BACKGROUND: Although people who inject drugs (IDU) often contend with various health-related harms, timely access to health care among this population remains low. We sought to identify specific individual, social and structural factors constraining healthcare access among IDU in Bangkok, Thailand.

METHODS: Data were derived from a community-recruited sample of IDU participating in the Mitsampan Community Research Project between July and October 2011. We assessed the prevalence and correlates of healthcare avoidance due to one's drug use using multivariate logistic regression.

RESULTS: Among 437 participants, 112 (25.6%) reported avoiding health care because they were IDU. In multivariate analyses, factors independently associated with avoiding health care included having ever been drug tested by police [adjusted odds ratio (AOR) = 1.80], experienced verbal abuse (AOR = 3.15), been discouraged from engaging in usual family activities (AOR = 3.27), been refused medical care (AOR = 10.90), experienced any barriers to health care (AOR = 4.87) and received healthcare information and support at a drop-in centre (AOR = 1.92) (all $P < 0.05$).

CONCLUSIONS: These findings highlight the need to address the broader policy environment, which perpetuates the criminalization and stigmatization of IDU, and to expand peer-based interventions to facilitate access to health care for IDU in this setting.

14. Stulhofer, A., et al. "**HIV and HCV prevalence and incarceration-related risks among injecting drug users in three West Bank governorates.**" *AIDS Care* 2016 28(9): 1159-65.

In the Middle East, the HIV epidemic among injecting drug users (IDUs) seems to be in an early phase, which increases the importance of prevention and systematic risk surveillance. To gain information about HIV and HCV infection rates among IDUs in the West Bank, a biobehavioral survey was conducted using time-location sampling in the Ramallah, Hebron, and Bethlehem governorates in 2013. The researchers recruited 288 Palestinian IDUs ages 16-64 (Mage = 39.2, SD = 11.11). While no HIV cases were found in the sample, 41% of participants tested positive for HCV. Imprisonment was common among participants (83%), so we explored the association of incarceration experience with HCV infection and HIV testing. In multivariate assessments, incarceration was shown to increase the odds of being infected with HCV and ever tested for HIV. HIV prevention should be strengthened in West Bank prisons and correctional facilities, and imprisonment for drug use re-examined.

15. Booth, R. E., et al. "**HIV incidence among people who inject drugs (PWIDs) in Ukraine: results from a clustered randomised trial.**" *Lancet HIV* 2016 3(10): e482-9.

BACKGROUND: HIV prevalence among people who inject drugs (PWID) in Ukraine is among the highest in the world. In this study, we aimed to assess whether a social network intervention was superior to HIV testing and counselling in affecting HIV incidence among PWID. Although this was not the primary aim of the study, it is associated with reducing drug and sex risk behaviours, which were primary aims.

METHODS: In this clustered randomised trial, PWID who were 16 years of age or older, had used self-reported drug injection in the past 30 days, were willing to be interviewed for about 1 hour and tested for HIV, were not too impaired to comprehend and provide informed consent, and, for this paper, who tested

HIV negative at baseline were recruited from the streets by project outreach workers in three cities in southern and eastern Ukraine: Odessa, Donetsk, and Nikolayev. Index or peer leaders, along with two of their network members, were randomly assigned (1:1) by the study statistician to the testing and counselling block (control group) or the testing and counselling plus a social network intervention block (intervention group). No stratification or minimisation was done. Participants in the network intervention received five sessions to train their network members in risk reduction. Those participants assigned to the control group received no further intervention after counselling. The main outcome of this study was HIV seroconversion in the intent-to-treat population as estimated with Cox regression and incorporating a gamma frailty term to account for clustering. This trial is registered with ClinicalTrials.gov, number NCT01159704.

FINDINGS: Between July 12, 2010, and Nov 23, 2012, 2304 PWIDs were recruited, 1200 of whom were HIV negative and are included in the present study. 589 index or peer leaders were randomly assigned to the control group and 611 were assigned to the intervention group. Of the 1200 HIV-negative participants, 1085 (90%) were retained at 12 months. In 553.0 person-years in the intervention group, 102 participants had seroconversion (incidence density 18.45 per 100 person-years; 95% CI 14.87-22.03); in 497.1 person-years in the control group 158 participants seroconverted (31.78 per 100 person-years; 26.83-36.74). This corresponded to a reduced hazard in the intervention group (hazard ratio 0.53, 95% CI 0.38-0.76, $p=0.0003$). No study-related adverse events were reported.

INTERPRETATION: These data provide strong support for integrating peer education into comprehensive HIV prevention programmes for PWID and suggest the value in developing and testing peer-led interventions to improve access and adherence to pre-exposure prophylaxis and antiretroviral therapy.
FUNDING: The National Institute on Drug Abuse.

16. Kozlov, A. P., et al. "**HIV incidence and behavioral correlates of HIV acquisition in a cohort of injection drug users in St Petersburg, Russia.**" *Medicine (Baltimore)* 2016 95(44): e5238.

The aim of the project was to study human immunodeficiency virus (HIV) incidence, sociodemographic and behavioral correlates of HIV acquisition among injection drug users (IDUs). A total of 717 IDUs were recruited, tested, and counseled for HIV-1; 466 HIV-negative participants were enrolled and followed-up at 6 and 12 months. Sociodemographic and behavioral data were collected during each study visit. The association of sociodemographic and behavioral factors to HIV-1 incidence was assessed. During the 9-month recruitment period, 717 IDUs were screened and 466 participants were enrolled. HIV-1 prevalence at baseline was 35%. Most enrolled subjects were young (median age 30), male (75%), injected heroin in the previous 3 months (86%), about 50% had shared syringes and other paraphernalia, and 44% had unprotected sex in the last month. The retention rate at the 12-month follow-up was 72% and the adjusted retention rate was 88%. The HIV incidence rate was 7.2/100 person-years. HIV incidence was significantly associated with specific drug risk behaviors, including injecting the mixture of heroin and psychostimulants, the frequency of injecting in groups with other people, and having more drug dealers. The St Petersburg IDUs cohort demonstrates one of the highest HIV incidence rates in the world. In 2004 to 2006, the HIV incidence was 4.5, in 2005 to 2007-19.6, and in 2008 to 2009-7.2/100 person-years. The peak of HIV epidemic among IDUs in St Petersburg, as determined by 3 independent cohort studies, was in 2006 to 2007. Interventions targeting IDUs with long experience of heroin injection and high levels of injection risk behaviors are urgently needed.

17. Go, V. F., et al. "**Increased survival among HIV-infected PWID receiving a multi-level HIV risk and stigma reduction intervention: results from a randomized controlled trial.**" *J Acquir Immune Defic Syndr* 2016.

OBJECTIVE: In Vietnam, where 58% of prevalent HIV cases are attributed to PWID, we evaluated whether a multi-level intervention could improve care outcomes and increase survival.

METHODS: We enrolled 455 HIV-infected male PWID from 32 communes in Thai Nguyen Province. Communes were randomized to a community stigma reduction intervention or standard of care and then within each commune, to an individual enhanced counseling intervention or standard of care, resulting in

four arms: Arm 1 (standard of care); Arm 2 (community intervention alone); Arm 3 (individual intervention alone); and Arm 4 (community + individual interventions). Follow-up was conducted at 6, 12, 18, and 24 months to assess survival.

RESULTS: Overall mortality was 23% (n = 103/455) over two years. There were no losses to follow-up for the mortality endpoint. Survival at 24-months was different across arms: Arm 4 (87%) vs Arm 1 (82%) vs Arm 2 (68%) vs Arm 3 (73%); log-rank test for comparison among arms: p=0.001. Among those with CD4 cell count <200 cells/mm³ and not on antiretroviral therapy (ART) at baseline (n=162), survival at 24 months was higher in Arm 4 (84%) compared to other arms (Arm 1: 61%; Arm 2: 50%; Arm 3: 53%; p-value=0.002). Overall, Arm 4 (community + individual interventions), increased uptake of ART compared to Arms 1, 2, and 3.

CONCLUSION: This multi-level behavioral intervention appeared to increase survival of HIV-infected participants over a two-year period. Relative to the standard of care, the greatest intervention effect was among those with lower CD4 cell counts.

18. Des Jarlais, D., et al. **"Integrated respondent-driven sampling and peer support for persons who inject drugs in Haiphong, Vietnam: a case study with implications for interventions."** *AIDS Care* 2016 28(10): 1312-5.

Combined prevention for HIV among persons who inject drugs (PWID) has led to greatly reduced HIV transmission among PWID in many high-income settings, but these successes have not yet been replicated in resource-limited settings. Haiphong, Vietnam experienced a large HIV epidemic among PWID, with 68% prevalence in 2006. Haiphong has implemented needle/syringe programs, methadone maintenance treatment (MMT), and anti-retroviral treatment (ART), but there is an urgent need to identify high-risk PWID and link them to services. We examined integration of respondent-driven sampling (RDS) and strong peer support groups as a mechanism for identifying high-risk PWID and linking them to services. The peer support staff performed the key tasks that required building and maintaining trust with the participants, including recruiting the RDS seeds, greeting and registering participants at the research site, taking electronic copies of participant fingerprints (to prevent multiple participation in the study), and conducting urinalyses. A 6-month cohort study with 250 participants followed the RDS cross-sectional study. The peer support staff maintained contact with these participants, tracking them if they missed appointments, and providing assistance in accessing methadone and ART. The RDS recruitment was quite rapid, with 603 participants recruited in three weeks. HIV prevalence was 25%, Hepatitis C (HCV) prevalence 67%, and participants reported an average of 2.7 heroin injections per day. Retention in the cohort study was high, with 86% of participants re-interviewed at 6-month follow-up. Assistance in accessing services led to half of the participants in need of methadone enrolled in methadone clinics, and half of HIV-positive participants in need of ART enrolled in HIV clinics by the 6-month follow-up. This study suggests that integrating large-scale RDS and strong peer support may provide a method for rapidly linking high-risk PWID to combined prevention and care, and greatly reducing HIV transmission among PWID in resource-limited settings.

19. Kiriazova, T., et al. **"It is easier for me to shoot up": stigma, abandonment, and why HIV-positive drug users in Russia fail to link to HIV care."** *AIDS Care* 2016: 1-5.

Many HIV-positive people who inject drugs (PWID) globally are not receiving HIV care. This represents a major challenge among key populations to end the global HIV epidemic. This qualitative study explored the process and associated barriers of linking HIV-positive PWID who are in addiction treatment to HIV care in St. Petersburg, Russia. We conducted three focus groups and seven semi-structured interviews with participants in the LINC ("Linking Infectious and Narcology Care") project at addiction and HIV hospitals in St. Petersburg. The sample consisted of 25 HIV-infected patients with opioid dependence and seven health-care providers, including addiction and infectious disease physicians and case managers. A variety of intertwining factors influence effective engagement of PWID with HIV treatment. Stigma, problematic patient-provider relationships, and fragmented health care were the main challenges for HIV care initiation

by PWID, which were further exacerbated by injection drug use. Effective linkage of PWID to HIV care requires acknowledging and addressing stigma's role and different perspectives of patients and providers.

20. Martin, N. K., et al. **"Overlapping substance using high-risk groups and infectious diseases: how dynamic modelling can evaluate risk and target HIV prevention."** *Addiction* 2016 111(9): 1512-5.

21. Vasylyeva, T. I., et al. **"Reducing HIV infection in people who inject drugs is impossible without targeting recently-infected subjects."** *Aids* 2016 30(18): 2885-2890.

OBJECTIVE: Although our understanding of viral transmission among people who inject drugs (PWID) has improved, we still know little about when and how many times each injector transmits HIV throughout the duration of infection. We describe HIV dynamics in PWID to evaluate which preventive strategies can be efficient.

DESIGN: Due to the notably scarce interventions, HIV-1 spread explosively in Russia and Ukraine in 1990s. By studying this epidemic between 1995 and 2005, we characterized naturally occurring transmission dynamics of HIV among PWID.

METHOD: We combined publicly available HIV pol and env sequences with prevalence estimates from Russia and Ukraine under an evolutionary epidemiology framework to characterize HIV transmissibility between PWID. We then constructed compartmental models to simulate HIV spread among PWID.

RESULTS: In the absence of interventions, each injector transmits on average to 10 others. Half of the transmissions take place within 1 month after primary infection, suggesting that the epidemic will expand even after blocking all the post-first month transmissions. Primary prevention can realistically target the first month of infection, and we show that it is very efficient to control the spread of HIV-1 in PWID. Treating acutely infected on top of primary prevention is notably effective.

CONCLUSION: As a large proportion of transmissions among PWID occur within 1 month after infection, reducing and delaying transmissions through scale-up of harm reduction programmes should always form the backbone of HIV control strategies in PWID. Growing PWID populations in the developing world, where primary prevention is scarce, constitutes a public health time bomb.

22. Jiao, M., et al. **"Resilience associated with mental health problems among methadone maintenance treatment patients in Guangzhou, China."** *AIDS Care* 2016: 1-6.

A considerable proportion of methadone maintenance treatment (MMT) clients have experienced mental health problems (e.g., depression and anxiety), and poor mental health status is associated with HIV-related risk behaviors and treatment drop-out. Resilience is known to be a protective factor for mental health problems but is not studied among MMT clients in China. This study aimed to explore the relationship between resilience and mental health problems (depression, anxiety and stress) among clients of community-based MMT clinics in China. A total of 208 MMT clients completed the face-to-face interview conducted at 4 of 11 MMT clinics in Guangzhou. The Chinese short version of Depression Anxiety Stress Scale (DASS-21) was used to assess the presence of depressive, anxiety and stress symptoms, and the Connor-Davidson Resilience Scale (CD-RISC) was used to measure resilience. Logistic regression models were fit in data analyses. Of all participants, 12.8%, 19.5% and 8.3% had depression, anxiety and stress, respectively. The mean resilience score was 57.6 (SD = 15.9). In the univariate analyses, resilience was negatively associated with two studied mental health problems (depression and anxiety, ORu = 0.96 and 0.96, $p < .01$). In multivariate models adjusting for both background and other psycho-social factors, resilience was independently associated with probable depression (ORa = 0.97, 95% CI: 0.93-0.99) and anxiety (ORa = 0.96, 95% CI: 0.94-0.99). Resilience was independently associated with depression and anxiety. As resilience is changeable, interventions targeting mental health problems of MMT users should consider resilience as an important part in the designing of such interventions.

23. Latkin, C. A., et al. **"Roles and Functions of Social Networks Among Men Who Use Drugs in ART Initiation in Vietnam."** *AIDS Behav* 2016 20(11): 2782-2789.

Support from social network members may help to facilitate access to HIV medical care, especially in low resourced communities. As part of a randomized clinical trial of a community-level stigma and risk reduction intervention in Thai Nguyen, Vietnam for people living with HIV who inject drugs (PWID), 341 participants were administered a baseline social network inventory. Network predictors of antiretroviral therapy (ART) initiation at the 6-month follow-up were assessed. The social networks of PWID were sparse. Few participants who reported injectors in their networks also reported family members, whereas those who did not have injectors were more likely to report family members and network members providing emotional support and medical advice. In multivariate models, having at least one network member who provided medical advice predicted ART initiation at 6 months (OR 2.74, CI 1.20-6.28). These results suggest the importance of functional social support and network support mobilization for ART initiation among PWID.

24. Latkin, C. A., et al. **"Social Desirability Response Bias and Other Factors That May Influence Self-Reports of Substance Use and HIV Risk Behaviors: A Qualitative Study of Drug Users in Vietnam."** *AIDS Educ Prev* 2016 28(5): 417-425.

The accuracy of self-report data may be marred by a range of cognitive and motivational biases, including social desirability response bias. The current study used qualitative interviews to examine self-report response biases among participants in a large randomized clinical trial in Vietnam. A sample of study participants was reinterviewed. The vast majority reported being truthful and emphasized the importance of rapport with the study staff for achieving veridical data. However, some stated that rapport may lead to under reporting of risk behaviors in order not to disappoint study staff. Other factors that appeared to influence accuracy of self-reports include fear that the information may be divulged, desire to enroll in the study, length of the survey, and memory. There are several methods that can be employed to reduce response biases, and future studies should systematically address response bias and include methods to assess whether approaches and survey items are effective in improving accuracy of self-report data.

25. Brown, J. L., et al. **"Substance Use Patterns of HIV-Infected Russian Women with and Without Hepatitis C Virus Co-infection."** *AIDS Behav* 2016 20(10): 2398-407.

Individuals with HIV and hepatitis C virus (HCV) co-infection may experience substance use related health complications. This study characterized substance use patterns between HIV/HCV co-infected and HIV mono-infected Russian women. HIV-infected women (N = 247; M age = 30.0) in St. Petersburg, Russia, completed a survey assessing substance use, problematic substance use, and the co-occurrence of substance use and sexual behaviors. Covariate adjusted logistic and linear regression analyses indicated that HIV/HCV co-infected participants (57.1 %) reported more lifetime drug use (e.g., heroin: AOR: 13.2, 95 % CI 4.9, 35.3, $p < .001$), problem drinking (beta = 1.2, $p = .05$), substance use problems (beta = 1.3, $p = .009$), and increased likelihood of past injection drug use (AOR: 26.4, 95 % CI 8.5, 81.9, $p < .001$) relative to HIV mono-infected individuals. HIV/HCV co-infection was prevalent and associated with increased substance use and problematic drug use. Findings highlight the need for ongoing substance use and HIV/HCV risk behavior assessment and treatment among HIV/HCV co-infected Russian women.

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1. Pal, K., et al. **"Acceptability Study on HIV Self-Testing among Transgender Women, Men who Have Sex with Men, and Female Entertainment Workers in Cambodia: A Qualitative Analysis."** *PLoS One* 2016 11(11): e0166129. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5102413/pdf/pone.0166129.pdf>

BACKGROUND: In Cambodia, HIV prevalence is high while HIV testing rates remain low among transgender women (TG women), men who have sex with men (MSM), and female entertainment workers (FEW). Introducing self-testing for HIV to these key populations (KPs) could potentially overcome the under-diagnosis of HIV and significantly increase testing rates and receipt of the results, and thus could decrease transmission. Therefore, this study aimed to determine the acceptability of HIV self-testing (HIVST) among these three categories of KPs.

METHODS: This study was conducted through focus group discussions (FGDs) with TG women, MSM, and FEW in Phnom Penh city, Kampong Cham, Battambang, and Siem Reap provinces of Cambodia. Convenience sampling was used to recruit the participants. Two FGDs (six participants in each FGD) were conducted in each target group in each study site, totaling 24 FGDs (144 participants). Thematic analysis was performed to identify common or divergent patterns across the target groups.

RESULTS: Almost all participants among the three groups (TG women, MSM, and FEW) had not heard about HIVST, but all of them expressed willingness to try it. They perceived HIVST as confidential, convenient, time-saving, and high-tech. Barriers to obtaining HIVST included cost, access, administration technique, embarrassment, and fear of pain. The majority preferred counseling before and after testing.

CONCLUSIONS: Participants showed high willingness to use and acceptability of HIVST due to its confidentiality/privacy and convenience even if it is not linked to a confirmatory test or care and treatment. Notwithstanding, to increase HIVST, the target groups would need affordable self-test kits, education about how to perform HIVST and read results, assurance about accuracy and reliability of HIVST, and provision of post-test counseling and facilitation of linkage to care and treatment.

2. Khawcharoenporn, T., et al. **"Active targeted HIV testing and linkage to care among men who have sex with men attending a gay sauna in Thailand."** *AIDS Care* 2016: 1-10.

Existing data on the feasibility of human immunodeficiency virus (HIV) testing and counseling (HTC) and linkage to care among men who have sex with men (MSM) in hotspots are currently limited. A prospective study on active targeted HTC and linkage to care among MSM (≥ 18 years old) was conducted at a gay sauna in Thailand from November 2013 to October 2015. HIV risks and risk perception were evaluated through an anonymous survey. HIV testing with result notification and care appointment arrangement were provided on-site. Of the 358 participants; median age was 30 years; 206/358(58%) were at high risk for HIV acquisition; 148/358(41%) accepted HTC, all of whom either had prior negative HIV tests [98/148 (66%)] or had not known their HIV status [50/148 (34%)]. The three most common reasons for declining HTC were prior HIV testing within 6 months (48%), not ready (19%) and perceiving self as no risk (11%). Of the 262 moderate- and high-risk participants, 172 (66%) had false perception of low HIV risk which was significantly associated with declining HTC. Among the 148 participants undergoing HTC, 25 (17%) were HIV-infected. Having false perception of low risk ($P = 0.004$) and age < 30 years ($P = 0.02$) were independently associated with HIV positivity. Only 14 of the 25 HIV-infected participants (56%) could be contacted after the result notification, of whom 12 (86%) had established HIV care and received immediate antiretroviral therapy. The active targeted HTC and facilitating care establishment was feasible among MSM attending the gay sauna but required strategies to improve accuracy of HIV-risk perception and linkage to care.

3. Liu, Y., et al. **"Alcohol misuse, risky sexual behaviors, and HIV or syphilis infections among Chinese men who have sex with men."** *Drug Alcohol Depend* 2016 168: 239-246.

BACKGROUND: Few studies have employed standardized alcohol misuse measures to assess relationships with sexual risk and HIV/syphilis infections among Chinese men who have sex with men (MSM).

METHODS: We conducted a cross-sectional study among MSM in Beijing during 2013-2014. An interviewer-administered survey was conducted to collect data on sociodemographics, high-risk behaviors, and alcohol use/misuse patterns (hazardous/binge drinking and risk of alcohol dependence) in the past 3 months using Alcohol Use Disorder Identification Test-Consumption (AUDIT-C). We defined AUDIT-C score ≥ 4 as recent hazardous drinkers, and drinking ≥ 6 standard drinks on one occasion as recent binge drinkers.

RESULTS: Of 3588 participants, 14.4% reported hazardous drinking, 16.8% reported binge drinking. Hazardous and binge drinking are both associated with these factors ($p < 0.05$): older age, being migrants, living longer in Beijing, township/village origin, being employed, higher income, self-perceived low/no HIV risk, and sex-finding via non-Internet venues. Hazardous (vs non-hazardous) or binge (vs. non-binge) drinkers were more likely to use illicit drugs, use alcohol before sex, have multiple partnerships, pay for sex, and have condomless insertive anal intercourse. MSM who reported binge (AOR, 1.34, 95% CI, 1.02-1.77) or hazardous (AOR, 1.36, 95% CI, 1.02-1.82) drinking were more likely to be HIV-infected. MSM at high risk of current alcohol dependence (AUDIT-C ≥ 8) were more likely to be HIV- (AOR, 2.37, 95% CI, 1.39-4.04) or syphilis-infected (AOR, 1.96, 95% CI, 1.01-3.86).

CONCLUSIONS: Recent alcohol misuse was associated with increased sexual and HIV/syphilis risks among Chinese MSM, emphasizing the needs of implementing alcohol risk reduction programs in this population.

4. Clark, J. L., et al. "**Anticipated Notification of Sexual Partners following STD Diagnosis among Men Who Have Sex with Men and Transgender Women in Lima, Peru: A Mixed Methods Analysis.**" *PLoS One* 2016 11(9): e0163905. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5042523/pdf/pone.0163905.pdf>

BACKGROUND: New strategies to support partner notification (PN) are critical for STD control and require detailed understanding of how specific individual and partnership characteristics guide notification decisions. **METHODS:** From 2011 to 2012, 397 MSM and TW recently diagnosed with HIV, syphilis, or another STD completed a survey on anticipated notification of recent sexual partners and associated factors. Qualitative interviews were conducted with a subset of participants to provide further depth to quantitative findings. Prevalence ratios and generalized estimating equation (GEE) models were used to analyze participant- and partner-level factors associated with anticipated PN.

RESULTS: Among all partners reported, 52.5% were described as "Very Likely" or "Somewhat Likely" to be notified. Anticipated notification was more likely for main partners than casual (adjusted Prevalence Ratio [aPR], 95% CI: 0.63, 0.54-0.75) or commercial (aPR, 95% CI: 0.44, 0.31-0.62) partners. Other factors associated with likely notification included perception of the partner as an STD source (aPR, 95% CI: 1.27, 1.10-1.48) and anticipated future sexual contact with the partner (aPR, 95% CI: 1.30, 1.11-1.52). An HIV diagnosis was associated with a lower likelihood of notification than non-HIV STDs (aPR: 0.68, 0.55-0.86). Qualitative discussion of the barriers and incentives to PN reflected a similar differentiation of anticipated notification according to partnership type and type of HIV/STD diagnosis.

DISCUSSION: Detailed attention to how partnership characteristics guide notification outcomes is essential to the development of new PN strategies. By accurately and thoroughly assessing the diversity of partnership interactions among individuals with HIV/STD, new notification techniques can be tailored to partner-specific circumstances.

5. Coulaud, P. J., et al. "**An Assessment of Health Interventions Required to Prevent the Transmission of HIV Infection Among Men Having Sex with Men in Bujumbura, Burundi.**" *J Community Health* 2016 41(5): 1033-43.

Data regarding HIV among men having sex with men (MSM) in Burundi are scarce. In a context where same-sex practices are illegal, national recommendations including MSM have been issued in 2012. However, no study has been conducted to evaluate MSM's health needs, which would be useful to adapt recommendations and implement evidence-based interventions. This study aimed at identifying health

needs expressed by MSM. A cross-sectional study was conducted in Bujumbura in 2014, in collaboration with the National Association for HIV positive people and AIDS patients. Fifty-one MSM, recruited during HIV prevention activities, self-completed a questionnaire. A descriptive analysis was conducted. Participants had a median age of 23 years, over 60 % declared being a member of an LGBT organisation and 76 % lived their homosexuality secretly or discretely. Over the last month, 67 % declared having had sex with a man and 32 % with a woman. In the previous 6 months, 40 % declared having systematically used a condom during sexual intercourse. In terms of health needs, 22 % did not use the services offered by HIV providers. Participants expressed needs in terms of prevention (access to rapid HIV tests, in a confidential setting, with counselling) and care (listening centre, free treatment, confidentiality). Medical expertise and being a good listener were the predominant healthcare staff qualities desired by participants. Results suggest that Burundian MSM represent an at-risk population, with low access to HIV services, in need of a comprehensive approach for HIV prevention, with community-based activities (HIV testing, counselling, prevention tools), psychological and social support.

6. Liu, Y., et al. **"Associations of current marital status and living arrangements with HIV and syphilis risk: findings from a community-based sample of men who have sex with men in China."** *AIDS Care* 2016 28(11): 1461-6.

Chinese men who have sex with men (MSM) are disproportionately affected by HIV and sexually transmitted infections (STIs), but little is known about the role of current marital status and living arrangements in shaping their HIV/syphilis risk. A cross-sectional study was conducted among MSM in Beijing, China to assess their sociodemographic/behavioral characteristics between married and single MSM, and test the hypothesis that currently married MSM have a lower odds of being HIV- and/or syphilis-infected. Participants were recruited via short message services, peer referral, internet, and community outreach. Data collection was based on a questionnaire survey and self-report. Infection status was lab-confirmed. Multivariable logistic regression modeling was used to assess the association of marital status and living arrangement with HIV/syphilis risk. Of the 3588 MSM, infection prevalence was high (HIV = 12.7%; syphilis = 7.5%). Compared to single MSM living with their boyfriends or male sex partners, single/alone MSM and married MSM living with wives were less likely to practice condomless insertive (CIAI) or receptive (CRAI) anal intercourse with men; while married MSM living with boyfriends or male sex partner were more likely to practice CIAI and CRAI, and married MSM were more likely to practice condomless vaginal sex. Compared to men living with boyfriends/sexual partners, significantly reduced odds of being HIV-positive were seen among married MSM who were living alone (aOR: 0.52; 95%CI: 0.28, 0.94) or living with their wives (aOR: 0.53; 95%CI: 0.31, 0.89). Similarly, single MSM living alone (aOR: 0.67; 95%CI: 0.48, 0.95) and married MSM living with their wives were comparatively less likely to be syphilis-infected (aOR: 0.43; 95%CI: 0.23, 0.79). Future efforts should consider characteristics of marital status and living arrangements for designing subgroup-specific risk reduction strategies among Chinese MSM.

7. Lee, M., et al. **"Breakage is the norm: use of condoms and lubrication in anal sex among Black South African men who have sex with men."** *Cult Health Sex* 2016: 1-14.

This paper explores condom use and lubrication practices among Black men who have sex with men in South African townships. Results are from 81 in-depth individual interviews conducted among a purposive sample from four townships surrounding Pretoria as part of a larger qualitative study. Awareness that condoms should be used to have safer anal sex was ubiquitous. Fewer men reported that lubricants should be used to facilitate anal intercourse. Partner pressure and partner distrust were the most common barriers cited for not using condoms and lubricants. Knowledge about condom-lubricant compatibility was rare. Condom problems were a norm, with widespread expectations of condom failure. Men's subjectivities - their perceptions of and preferences for specific brands, types and flavours of condoms and lubricants - influenced engagement with such safer-sex technologies. However, what was available in these settings was often neither what men needed nor preferred. Findings show the need to enhance access to appropriate and comprehensive: safer-sex supplies, health services and health education, and underline the importance of efforts to develop targeted programmes relevant to experiences of men who have sex with men in the South African context.

8. Qu, L., et al. "A Cross-sectional Survey of HIV Transmission and Behavior among Men Who Have Sex with Men in Different Areas of Inner Mongolia Autonomous Region, China." *BMC Public Health* 2016 16(1): 1161. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC511207/pdf/12889_2016_Article_3809.pdf

BACKGROUND: Little research has been conducted on the human immunodeficiency virus (HIV) epidemic and the sexual intercourse habits of men who have sex with men (MSM) in crowded places, both locally and abroad. This study conducted a survey of MSM in different locales of Inner Mongolia to provide a reference for developing strategies or measures to prevent and control HIV among this understudied population.

METHODS: We conducted a cross-sectional survey of men aged 18 years and older at different venues popular among MSM in Inner Mongolia. Between April and July 2012, MSM volunteered to participate in this study, receive HIV/syphilis testing, and complete a questionnaire about their behavior. A total of 1611 MSM participated. Participants signed a voluntary informed consent form, completed an anonymous questionnaire and were tested for HIV and syphilis antibodies.

RESULTS: Of the 1611 MSM surveyed, 6.83 and 23.65 % had HIV and syphilis, respectively, and the co-infection rate was 3.17 %. Sociodemographic factors such as age, culture, marital status, knowledge of acquired immune deficiency syndrome (AIDS) transmission, and peer education significantly differed between venues ($P < 0.01$). MSM who were under 22 years, 23-35 years, and over 36 years primarily contacted their potential partners online, at bars/other (streetwalkers), and at public baths/parks, respectively. MSM partners found in bars, in public baths, in parks and online were primarily high school students and technical secondary school students. MSM who were streetwalkers or cross-dressing male sex workers primarily had junior middle school education levels or below. Married MSM primarily had intercourse in public baths and parks, and MSM who had intercourse in public baths and parks also reported the greatest proportions of intercourse with women (39.1 and 35.0 %, respectively). Furthermore, MSM who had intercourse in parks reported having the most anal sex with same-sex partners and unprotected intercourse in the past 6 months. Unprotected intercourse with women in the past 6 months was also common among MSM who met partners in bathhouses or online. MSM were most likely to have anal sex with other men in public baths. MSM who had intercourse in bars were the least likely to have used a condom with female partners in the past 6 months. The culture of the MSM who had frequent intercourse with streetwalkers and cross-dressing male sex workers did not predict behavior.

CONCLUSION: This study indicated that AIDS-related risky behaviors as well as HIV and syphilis infection were associated with the different locations frequented by MSM. When developing intervention strategies for AIDS, it is better to conduct targeted health education and behavioral interventions at bars/online for MSM aged 23-35 years and at public baths/parks for MSM over 36 years. Additionally, the current survey showed that information on AIDS/sexually transmitted diseases (STDs) must be popularized to reach streetwalkers and cross-dressing male sex workers, whose mobility limits their attainment of higher levels of health education.

9. Solomon, S. S., et al. "Design of the Indian NCA study (Indian national collaboration on AIDS): a cluster randomized trial to evaluate the effectiveness of integrated care centers to improve HIV outcomes among men who have sex with men and persons who inject drugs in India." *BMC Health Serv Res* 2016 16(1): 652. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5109686/pdf/12913_2016_Article_1905.pdf

BACKGROUND: Globally, men who have sex with men and people who inject drugs remain disproportionately affected by HIV, but they have not been the focus of prevention and treatment interventions in many resource-limited settings.

METHODS/DESIGN: This cluster-randomized trial (conducted from June 2012 to June 2017), evaluates whether single-venue, integrated delivery of core HIV services to vulnerable high-risk populations improves

service utilization and consequently, HIV testing and other outcomes along the HIV care continuum. Core services include: HIV counseling and testing, information, education and communication, condom distribution, needle and syringe exchange programs, opioid agonist therapy, management of sexually transmitted infections, tuberculosis screening, diagnosis, and treatment, and antiretroviral therapy. Stratified restricted randomization was used to allocate 22 Indian cities (10 men who have sex with men and 12 people who inject drugs sites) at a 1:1 ratio to either the intervention or control condition. Integrated care centers were scaled-up and implemented in the 11 intervention cities and outcomes will be assessed by pre- and post-intervention surveys at intervention and control sites. As men who have sex with men and people who inject drugs are hidden populations, with no sampling frame, respondent-driven sampling will be used to accrue samples for the two independent cross-sectional surveys.

DISCUSSION: For an AIDS-free generation to be realized, prevention, care and treatment services need to reach all populations at risk for HIV infection. There is a clear gap in access to services among men who have sex with men and people who inject drugs. Trials need to be designed to optimize utilization of services in these populations.

TRIAL REGISTRATION: ClinicalTrials.gov Identifier: NCT01686750 Date of Registration: September 13, 2012.

10. Davis, A., et al. **"Differences in risk behaviours, HIV/STI testing and HIV/STI prevalence between men who have sex with men and men who have sex with both men and women in China."** *Int J STD AIDS* 2016 27(10): 840-9.

Differences in risk behaviours between men who have sex with men (MSM) and men who have sex with both men and women (MSMW) have important implications for HIV and sexually transmitted infection (STI) transmission. We examined differences in risk behaviours, HIV/STI testing, self-reported HIV/STI diagnoses, and linkage to HIV care between MSM and MSMW across China. Participants were recruited through three MSM-focused websites in China. An online survey containing items on socio-demographics, risk behaviours, testing history, self-reported HIV/STI diagnosis, and linkage to and retention in HIV care was completed from September to October 2014. Chi square tests and logistic regression analyses were conducted. MSMW were less likely to use a condom during last anal sex ($p \leq 0.01$) and more likely to engage in group sex ($p \leq 0.01$) and transactional sex ($p \leq 0.01$) compared to MSM. Self-reported HIV/STI testing and positivity rates between MSM and MSMW were similar. Among HIV-infected MSM, there was no difference in rates of linkage to or retention in antiretroviral therapy when comparing MSM and MSMW. Chinese MSM and MSMW may benefit from different HIV and STI intervention and prevention strategies. Achieving a successful decrease in HIV/STI epidemics among Chinese MSM and MSMW will depend on the ability of targeted and culturally congruent HIV/STI control programmes to facilitate a reduction in risk behaviours.

11. Miller, C. J. **"Dying for Money: The Effects of Global Health Initiatives on NGOs Working with Gay Men and HIV/AIDS in Northwest China."** *Med Anthropol Q* 2016 30(3): 414-30.

Drawing on 17 months of ethnographic fieldwork (2007-2011), this article critically examines the consequences of two global health initiatives (GHIs), the Global Fund and the Gates Foundation, on NGOs engaged in HIV/AIDS prevention and treatment among gay men in northwest China. I argue that a short-term surge in funding provided by GHIs between 2008 and 2010 exacerbated preexisting conflicts between NGOs by promoting a neoliberal process in which the state outsourced public health services to civil society organizations, deliberately encouraging a climate of competition among NGOs. I also show how GHIs encouraged the bureaucratization and medicalization of one grassroots gay NGO, channeling its activities away from broader political and social objectives and compelling the group to develop a narrower and more entrepreneurial emphasis on HIV testing and treatment. This article contributes to a deeper ethnographic understanding of the complex and perhaps unintended consequences of GHIs.

12. Tao, J., et al. **"Effects of depression and anxiety on antiretroviral therapy adherence among newly diagnosed hiv-infected chinese men who have sex with men."** *Aids* 2016.

OBJECTIVE: To explore the effect of depression and anxiety on adherence to antiretroviral therapy (ART) among men who have sex with men (MSM) with newly diagnosed HIV infections.

DESIGN: We conducted a prospective study of Chinese MSM with newly diagnosed HIV infections.

METHODS: The Hospital Anxiety and Depression Scale (HADS) was used to measure depression and anxiety at baseline, 6 and 12 months, separately. ART adherence was self-reported once every three months ("perfect" or no missing dose in the past three months vs. "imperfect" adherence or at least one missing dose in the past three months). We utilized a priori substantial knowledge guided by causal models to identify confounding covariates, and performed mixed-effect logistic regression to assess the effects of depression and anxiety on ART adherence.

RESULTS: We included 228 participants who initiated ART after HIV diagnosis and before the end of study. A one-unit increase in the depression and anxiety score was associated with a 16% increase (adjusted odds ratio [aOR], 1.16; 95% confidence interval [CI], 1.02-1.32) and a 17% increase (aOR, 1.17; 95% CI, 1.03-1.33) in the odds of reporting imperfect ART adherence, respectively. When depression and anxiety were categorized (normal, borderline, and likely), only likely anxiety had a significant association with ART adherence (aOR, 4.79; 95% CI, 1.12-20.50).

CONCLUSIONS: Depression and anxiety are risk factors for imperfect ART adherence among Chinese MSM with newly diagnosed HIV infections. Intensive intervention on depression and/or anxiety beyond regular post HIV-testing counseling may increase adherence to ART, and improve HIV treatment outcomes.

13. Li, Z., et al. "**Exploring HIV-related stigma among HIV-infected men who have sex with men in Beijing, China: a correlation study.**" *AIDS Care* 2016 28(11): 1394-401.

Human immunodeficiency virus (HIV)-related stigma among HIV-infected men who have sex with men (MSM) has been associated with adverse health outcomes, including poor adherence to antiretroviral therapy and care, and increased participation in behaviors linked to higher rates of HIV transmission. In China, the incidence of HIV is growing more rapidly among MSM than among other subgroups. This study characterizes and quantifies HIV stigma among HIV-infected MSM in Beijing, China, which arguably may be driving this epidemic. A cross-sectional survey study was performed among 266 HIV-positive MSM in Beijing, China, in 2014. The Berger HIV Stigma Scale was used to measure levels of HIV-related stigma. Participants additionally answered questions regarding socio-demographic characteristics and HIV-associated risk factors; previously validated Mandarin-language scales assessed depression, coping style, and social support networks. Multivariable linear regression models were used to identify variables significantly associated with HIV stigma. The mean overall HIV stigma score among the study population was 112.78 +/- 18.11 (score range: 40-160). Higher HIV stigma scores were positively associated with depression (beta = 7.99, 95% CI:3.69, 12.29, p < .001) and negative coping skills (beta = 0.64, 95% CI:0.21,1.08, p < .01), and was negatively associated with disclosed HIV status (beta = -6.45, 95%CI:-11.80, -1.11, p < .05), and availability of social support networks (beta = -0.12, 95%CI:-0.22, -0.02, p < .05). Other variables such as poor self-rated health status and presence of opportunistic infections were positively associated with individual dimensions of HIV-related stigma. The results of this study can inform the development of culturally sensitive interventions to reduce HIV-related stigma among MSM with HIV in China, with the overarching goal of reducing HIV transmission in this vulnerable population.

14. Billings, J. D., et al. "**Factors associated with previously undiagnosed human immunodeficiency virus infection in a population of men who have sex with men and male-to-female transgender women in Lima, Peru.**" *Medicine (Baltimore)* 2016 95(42): e5147. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5079329/pdf/medi-95-e5147.pdf>

The aim of the study was to identify factors associated with undiagnosed human immunodeficiency virus (HIV) infection among men who have sex with men (MSM) and male-to-female transgender women in Lima, Peru. We analyzed characteristics of 378 MSM and transgender women recruited from 2 sexually transmitted

infection (STI) clinics in Lima, Peru. Descriptive analyses compared: (A) HIV-uninfected, (B) previously undiagnosed HIV-infected, and (C) previously diagnosed HIV-infected participants. Multivariable logistic regression models identified: (1) correlates of previously undiagnosed HIV-infection among participants thought to be HIV-uninfected (B vs A); and (2) correlates of previously undiagnosed HIV-infection among HIV-infected participants (B vs C). Subanalysis identified correlates of frequent HIV testing among participants thought to be HIV-uninfected. Among participants, 31.0% were HIV-infected; of those, 35.0% were previously undiagnosed. Among participants thought to be HIV-uninfected (model 1), recent condomless receptive anal intercourse and last HIV test being over 1-year ago (compared to within the last 6-months) were associated with increased odds of being previously undiagnosed HIV-infected (adjusted odds ratio [aOR] = 2.43, 95% confidence interval [95%CI] = 1.10-5.36; aOR = 2.87, 95%CI = 1.10-7.53, respectively). Among HIV-infected participants (model 2), recent condomless receptive anal intercourse was again associated with previously undiagnosed HIV-infection (aOR = 2.54, 95%CI = 1.04-6.23). Achieving post-secondary education and prior syphilis infection were associated with lower odds of having previously undiagnosed HIV-infection (aOR = 0.35, 95%CI = 0.15-0.81; aOR = 0.32, 95%CI = 0.14-0.75, respectively). Reporting semiannual testing was associated with higher educational attainment, identifying as a transgender woman, or reporting a history of syphilis (aOR = 1.94, 95%CI = 1.11-3.37; aOR = 2.40, 95%CI = 1.23-4.70; aOR = 2.76, 95%CI = 1.62-4.71, respectively). Lower odds of semiannual testing were associated with recent condomless insertive anal intercourse or reporting a moderate or high self-perceived risk of acquiring HIV (aOR = 0.56, 95%CI = 0.33-0.96; aOR = 0.32, 95%CI = 0.18-0.59 and aOR = 0.43, 95%CI = 0.21-0.86, respectively). In our study, undiagnosed HIV-infection was associated with recent condomless receptive anal intercourse, infrequent HIV testing, lower education, and absence of prior syphilis diagnosis. Infrequent HIV testing was associated with lower education, not identifying as transgender, recent condomless insertive anal intercourse, absence of prior syphilis diagnosis, and higher self-perceived risk of HIV. Further efforts to decrease HIV transmission and increase HIV-serostatus awareness should be directed towards effectively promoting condom use and frequent HIV testing, integrated with STI management.

15. Gay, C. L., et al. **"Fixed-dose combination emtricitabine/tenofovir/efavirenz initiated during acute HIV infection; 96-week efficacy and durability."** *Aids* 2016 30(18): 2815-2822.

BACKGROUND: Updated guidelines recommend immediate antiretroviral treatment (ART) during acute HIV infection (AHI), but efficacy data on regimens during AHI are limited.

METHODS: We provide final data on a prospective, single-arm 96-week open-label study of once-daily emtricitabine/tenofovir/efavirenz initiated during AHI. The primary endpoint was the proportion of responders with HIV RNA less than 200 copies/ml by week 24. We examined time to viral suppression, retention, and CD8 cell activation through week 96 in relation to baseline characteristics.

RESULTS: Between January 2005 and December 2011, 92 AHI participants enrolled. Most participants (78%) were men who have sex with men (MSM), and 42% were young MSM (18-25 years of age). Two participants withdrew leaving 90 patients for analysis. Eighty-one (90%) remained on therapy and achieved viral suppression to less than 200 copies/ml by week 24, and 71 (79%) to less than 50 copies/ml at week 48. The median time from ART initiation to suppression less than 200 copies/ml was 65 days (range 7-523) and to less than 50 copies/ml was 105 days (range 14-523). The frequency of immune activation declined from a median of 67% to 16% through week 96. Retention on study was maintained in 92% of participants at week 48 and in 83% through week 96. Among 75 participants retained through week 96, 92% were suppressed to less than 50 copies/ml. Among 39 young MSM, 79% completed a week 96 visit and 67% were suppressed at week 96.

CONCLUSION: ART during AHI resulted in rapid and sustained viral suppression with high rates of retention in care and on ART in this cohort including a large proportion of young MSM.

16. McFall, A. M., et al. **"Getting to 90: linkage to HIV care among men who have sex with men and people who inject drugs in India."** *AIDS Care* 2016 28(10): 1230-9.

UNAIDS set an ambitious target of "90-90-90" by 2020. The first 90 being 90% of those HIV-infected will be diagnosed; the second 90 being 90% of those diagnosed will be linked to medical care and on antiretroviral therapy (ART). While there has been dramatic improvement in HIV testing and ART use, substantial losses continue to occur at linkage-to-care following HIV diagnosis. Data on linkage among men who have sex with men (MSM) and people who inject drugs (PWID) are sparse, despite a greater burden of HIV in these populations. This cross-sectional study was conducted in 27 sites across India. Participants were recruited using respondent-driven sampling and had to be ≥ 18 years and self-identify as male and report sex with a man in the prior year (MSM) or injection drug use in the prior 2 years (PWID). Analyses were restricted to HIV-infected persons aware of their status. Linkage was defined as ever visiting a doctor for management of HIV after diagnosis. We explored factors that discriminated between those linked and not linked to care using multi-level logistic regression and area under the receiver operating curves (AUC), focusing on modifiable factors. Of 1726 HIV-infected persons aware of their status, 80% were linked to care. Modifiable factors around the time of diagnosis that best discriminated linkage included receiving assistance with HIV medical care (odds ratio [OR]: 10.0, 95% confidence interval [CI]: 5.6-18.2), disclosure of HIV-positive status (OR: 2.8; 95% CI: 2.4-6.1) and receiving information and counseling on management of HIV (OR: 2.3; 95% CI: 1.1-4.6). The AUC for these three factors together was 0.85, higher than other combinations of factors. We identified three simple modifiable factors around the time of diagnosis that could facilitate linkage to care among MSM and PWID in low- and middle-income countries to achieve UNAIDS targets.

17. Roberts, C. P., et al. **"Global challenges in human immunodeficiency virus and syphilis coinfection among men who have sex with men."** *Expert Rev Anti Infect Ther* 2016 14(11): 1037-1046.

INTRODUCTION: Syphilis and human immunodeficiency virus (HIV) coinfection disproportionately affects men who have sex with men (MSM), and the rate of coinfection has been increasing over the last decade. HIV and syphilis coinfection is particularly challenging because the infections interact synergistically thereby increasing the risk of acquisition and transmission as well as accelerating disease progression. Areas covered: This paper reviews and summarizes the epidemiology, pathogenesis, diagnosis, clinical management and prevention of HIV and syphilis coinfection among MSM. Expert commentary: Research does not support a different syphilis treatment for coinfecting individuals; however, coinfection may warrant a recommendation for antiretroviral therapy. In order to reverse the epidemic of syphilis and HIV coinfection, there needs to be greater awareness, improved cultural sensitivity among health care providers, improved access to preventative services and increased screening for syphilis and HIV.

18. Hogg, R. S., et al. **"Heightened epidemic in men who have sex with men in Brazil."** *Lancet HIV* 2016 3(10): e454-5.
19. Bowring, A. L., et al. **"HIV and Sexual Risk Among Men Who Have Sex With Men and Women in Asia: A Systematic Review and Meta-Analysis."** *AIDS Behav* 2016 20(10): 2243-65.

We performed a systematic review to estimate the proportion of men who have sex with men (MSM) in Asia who are bisexual and compare prevalence of HIV and sexual risk between men who have sex with men and women (MSMW) and men who have sex with men only (MSMO). Forty-eight articles based on 55 unique samples were identified from nine countries in Asia. Bisexual behaviour was common among MSM (pooled prevalence 32.8 %). Prevalence of HIV (pooled OR 0.90; 95 % CI 0.77-1.05), recent syphilis infection (pooled OR 0.99; 95 % CI 0.93-1.06) and unprotected anal intercourse (pooled OR 0.80; 95 % CI 0.57-1.11) were similar between MSMW and MSMO, but heterogeneity was high. MSMW had lower odds of reporting a prior HIV test than MSMO (OR 0.82; 95 % CI 0.70-0.95; $p = 0.01$, $I(2) = 0\%$). Targeted interventions are needed to increase uptake of HIV testing among MSMW. Increased reporting of disaggregated data in surveillance and research will help improve understanding of risk in MSMW and inform targeted interventions.

20. Tang, S., et al. **"HIV epidemiology and responses among men who have sex with men and transgender individuals in China: a scoping review."** *BMC Infect Dis* 2016 16(1): 588. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5073436/pdf/12879_2016_Article_1904.pdf

BACKGROUND: Despite global efforts to control HIV among key populations, new infections among men who have sex with men (MSM) and transgender (TG) individuals are still increasing. The increasing HIV epidemic among MSM/TG in China indicates that more effective services are urgently needed. However, policymakers and program managers must have a clear understanding of MSM/TG sexual health in China to improve service delivery. To meet this need, we undertook a scoping review to summarize HIV epidemiology and responses among MSM and TG individuals in China.

METHODS: We searched MEDLINE, EMBASE and the Cochrane Library for recent studies on MSM/TG HIV epidemiology and responses. We also included supplemental articles, grey literature, government reports, policy documents, and best practice guidelines.

RESULTS: Overall, HIV prevalence among Chinese MSM was approximately 8 % in 2015 with a higher prevalence observed in Southwest China. TG are not captured in national HIV, STD, or other sexual health surveillance systems. There is limited data sharing between the public health authorities and community-based organizations (CBOs). Like other low and middle income countries, China is challenged by low rates of HIV testing, linkage, and retention. Several pilot interventions have been shown to be effective to increase HIV testing among MSM and TG individuals, but have not been widely scaled up. Data from two randomized controlled trials suggests that crowdsourcing contests can increase HIV testing, creating demand for services while engaging communities.

CONCLUSION: Improving HIV surveillance and expanding HIV interventions for Chinese MSM and TG individuals are essential. Further implementation research is needed to ensure high-quality HIV services for MSM and TG individuals in China.

21. Sargin, F., et al. **"HIV prevalence among men who have sex with men in Istanbul."** *Int J Infect Dis* 2016. Online at: <http://www.sciencedirect.com/science/article/pii/S1201971216316241/pdf?md5=9b88c99589bbcfa5d056291543e074e8&pid=1-s2.0-S1201971216316241-main.pdf>

OBJECTIVES: A re-emergence of the HIV epidemic among men who have sex with men (MSM) represents a serious health issue. This study aimed to assess the HIV prevalence among MSM in a large metropole of a very low prevalence population.

DESIGN AND METHODS: A public campaign for raising awareness on HIV infection and for providing access to anonymous testing was conducted in places frequented by MSM and through a mobile phone application. No identity information was requested from individuals calling the call-center, and anonymous and free HIV testing was offered proactively. Those who agreed to have a test were provided a code number, which was used in blood sampling procedures.

RESULTS: Of 1.200 subjects who called the call center, 197 showed consent to undergo HIV testing and visited the laboratory for giving a blood sample. Twenty-five subjects were found to have a reactive ELISA result on two different occasions plus a positive western blot test result. Thus, the HIV prevalence in this group of MSM was 12.7%.

CONCLUSIONS: MSM is still a high risk group for HIV infection in low prevalence setting, thus representing a key target population for diagnostic and therapeutic intervention.

22. Krueger, E. A., et al. **"HIV testing among social media-using Peruvian men who have sex with men: correlates and social context."** *AIDS Care* 2016 28(10): 1301-5.

HIV remains concentrated among men who have sex with men (MSM) in Peru, and homophobia and AIDS-related stigmas have kept the epidemic difficult to address. Gay self-identity has been associated with increased HIV testing, though this relationship has not been examined extensively. Social media use has been rapidly increasing in Peru, yet little is known about MSM social media users in Peru. This study sought

to investigate the demographic, behavioral, and stigma-related factors associated with HIV testing among social media-using Peruvian MSM. Five hundred and fifty-six MSM from Lima and surrounding areas were recruited from social networking websites to complete a survey on their sexual risk behaviors. We examined the demographic and social correlates of HIV testing behavior among this sample. Younger age and non-gay identity were significantly associated with lower likelihood of getting tested in univariate analysis. After controlling for key behaviors and AIDS-related stigma, younger age remained significantly associated with decreased testing. Participants who engaged in discussions online about HIV testing were more likely to get tested, while AIDS-related stigma presented a significant barrier to testing. Stigma severity also varied significantly by sexual identity. Youth appear to be significantly less likely than older individuals to test for HIV. Among Peruvian MSM, AIDS-related stigma remains a strong predictor of willingness to get tested. Social media-based intervention work targeting Peruvian youth should encourage discussion around HIV testing, and must also address AIDS-related stigma.

23. Yi, S., et al. **"Improving prevention and care for HIV and sexually transmitted infections among men who have sex with men in Cambodia: the sustainable action against HIV and AIDS in communities (SAHACOM)."** *BMC Health Serv Res* 2016 16(1): 599. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5073448/pdf/12913_2016_Article_1857.pdf

BACKGROUND: The prevalence of HIV and sexually transmitted infections (STIs) among key populations in Cambodia continues to rise. To address this issue, KHANA, the largest national HIV organization in the country developed and implemented the Sustainable Action against HIV and AIDS in Communities (SAHACOM) project. This study aims to determine the impacts of the SAHACOM on sexual behaviors and the uptake of HIV/STI services among men who have sex with men (MSM) in Cambodia.

METHODS: We compared outcome indicators at midterm (n = 352) and endline (n = 394). Surveys were conducted in 2012 and 2014 in Battambang and Siem Reap provinces. A two-stage cluster sampling method was employed to select the study sample for structured interviews.

RESULTS: The midterm and endline samples were similar. The average number of sexual partners in the past three months decreased significantly from 6.2 to 4.0 (p = 0.03). The proportion of MSM who reported paying for sex with men in the past three months also decreased significantly from 19.0 % to 9.7 % (OR = 2.0, 95 % CI = 1.3-3.0). No significant change was found in condom and lubricant use in all types of relationships. Regarding STIs, 28.1 % of MSM at midterm reported having at least one STI symptom in the past three months compared to 6.1 % at endline (OR = 4.6, 95 % CI = 2.9-7.4); out of them, 14.1 % of MSM at midterm sought treatment compared to 20.7 % at endline (OR = 2.6, 95 % CI = 1.1-6.9). The proportion of MSM who reported using illicit drugs in the past three months also decreased significantly from 12.2 % to 5.1 % (OR = 2.4, 95 % CI = 1.4-4.2). However, the proportion of MSM who reported having been tested for HIV in the past six months decreased significantly from 94.1 % to 77.1 % (OR = 2.9, 95 % CI = 1.8-3.6).

CONCLUSIONS: Findings from this study indicate that the SAHACOM was effective in improving sexual behaviors and related health outcomes among MSM under the project. However, it could not increase condom use and HIV testing rates among this key population. Tailored intervention programs are needed to improve condom use and HIV testing among MSM in Cambodia.

24. Ahn, J. Y., et al. **"Incidence of syphilis seroconversion among HIV-infected persons in Asia: results from the TREAT Asia HIV Observational Database."** *J Int AIDS Soc* 2016 19(1): 20965. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5075717/pdf/JIAS-19-20965.pdf>

INTRODUCTION: Outbreaks of syphilis have been described among HIV-infected men who have sex with men (MSM) in Western communities, whereas reports in Asian countries are limited. We aimed to characterize the incidence and temporal trends of syphilis among HIV-infected MSM compared with HIV-infected non-MSM in Asian countries.

METHODS: Patients enrolled in the TREAT Asia HIV Observational Database cohort and with a negative non-

treponemal test since enrolment were analyzed. Incidence of syphilis seroconversion, defined as a positive non-treponemal test after previously testing negative, was evaluated among patients at sites performing non-treponemal tests at least annually. Factors associated with syphilis seroconversion were investigated at sites doing non-treponemal testing in all new patients and subsequently testing routinely or when patients were suspected of having syphilis.

RESULTS: We included 1010 patients from five sites that performed non-treponemal tests in all new patients; those included had negative non-treponemal test results during enrolment and subsequent follow-ups. Among them, 657 patients were from three sites conducting regular non-treponemal testing. The incidence of syphilis seroconversion was 5.38/100 person-years (PY). Incidence was higher in MSM than non-MSM (7.64/100 PY vs. 2.44/100 PY, $p < 0.001$). Among MSM, the incidence rate ratio (IRR) for every additional year from 2009 was 1.19 ($p = 0.051$). MSM status (IRR 3.48, 95% confidence interval (CI) 1.88–6.47), past syphilis diagnosis (IRR 5.15, 95% CI 3.69–7.17) and younger age (IRR 0.84 for every additional 10 years, 95% CI 0.706–0.997) were significantly associated with syphilis seroconversion.

CONCLUSIONS: We observed a higher incidence of syphilis seroconversion among HIV-infected MSM and a trend to increasing annual incidence. Regular screening for syphilis and targeted interventions to limit transmission are needed in this population.

25. Ubrihien, A., et al. **"Is cost a structural barrier preventing men who have sex with men accessing condoms? A systematic review."** *AIDS Care* 2016 28(11): 1473-80.

A systematic review was undertaken to determine whether cost is a structural barrier preventing men who have sex with men (MSM) accessing condoms. Studies were examined from a range of countries where condoms have been distributed free to particular populations and also those where condoms were available at a cost to the individual. The study inclusion criteria were: published between January 1990 and September 2014 inclusive; published in any language, discussed cost as a barrier to condom use, discussed cost barriers to MSM accessing condoms and included a measure of outcome. Articles were systematically extracted from MEDLINE, Embase, PsycINFO and Informat using the five search terms; Male Homosexuality, Access, Cost, Cost and Cost analysis, Condoms. Sixty-four articles were initially identified and 11 included in the final review. The included studies used cost-utility analysis, qualitative, cross-sectional, cohort or randomised control trial design. Large-scale free distribution programmes and smaller targeted programmes showed positive correlations in reducing the burden of disease from HIV and other sexually transmitted infections through eliminating the issue of cost. Decreasing the cost of condoms, and providing them for no cost, appears to increase their utilisation amongst MSM and possibly reduce the burden from HIV and other sexually transmitted infections. Inequality and stigma remain important barriers to MSM accessing and using condoms particularly in the developing world.

26. Ganju, D., et al. **"Knowledge and exercise of human rights, and barriers and facilitators to claiming rights: a cross-sectional study of female sex workers and high-risk men who have sex with men in Andhra Pradesh, India."** *BMC Int Health Hum Rights* 2016 16(1): 29. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5112884/pdf/12914_2016_Article_102.pdf

BACKGROUND: HIV prevention interventions recognize the need to protect the rights of key populations and support them to claim their rights as a vulnerability reduction strategy. This study explores knowledge of human rights, and barriers and facilitators to claiming rights, among female sex workers (FSWs) and high-risk men who have sex with men (HR-MSM) who are beneficiaries of a community mobilization intervention in Andhra Pradesh, India.

METHODS: Data are drawn from a cross-sectional survey (2014) among 2400 FSWS and 1200 HR-MSM. Human rights awareness was assessed by asking respondents if they had heard of human rights (yes/no); those reporting awareness of rights were asked to spontaneously name specific rights from the following five pre-defined categories: right to health; dignity/equality; education; property; and freedom from discrimination. Respondents were classified into two groups: more knowledgeable (could identify two or

more rights) and less knowledgeable (could identify one or no right). Univariate and bivariate analyses and chi-square tests were used. Data were analyzed using STATA 11.2.

RESULTS: Overall 17% FSWs and 8% HR-MSM were not aware of their rights. Among those aware, 62% and 31% respectively were aware of just one or no right (less knowledgeable); only around half (54% vs 57%) were aware of health rights, and fewer (20% vs 16%) aware of their right to freedom from discrimination. Notably, 27% and 17% respectively had not exercised their rights. Barriers to claiming rights among FSWs and HR-MSM were neighbors (35% vs 37%), lack of knowledge (15% vs 14%), stigma (13% vs 22%) and spouse (19% FSWs). Community organizations (COs) were by far the leading facilitator in claiming rights (57% vs 72%).

CONCLUSIONS: The study findings show that awareness of human rights is limited among FSWs and HR-MSM, and a large proportion have not claimed their rights, elevating their HIV vulnerability. For a sustained HIV response, community mobilization efforts must focus on building key populations' awareness of rights, and addressing the multiple barriers to claiming rights, with a view to creating a safe environment where vulnerable groups can demand and use services without fear of stigma, discrimination and violation of rights.

27. Zablotska, I. B. **"Likely impact of pre-exposure prophylaxis on HIV epidemics among men who have sex with men."** *Sex Health* 2016.

Rapid developments in the field of HIV pre-exposure prophylaxis (PrEP) with antiretrovirals offer a promise to bring HIV transmission among gay and other men who have sex with men (MSM) to zero by 2030. This review evaluates studies, which modelled the impact of PrEP on HIV diagnoses, and discusses the progress towards PrEP implementation. Studies in English, conducted after 2010 among MSM in countries of the Organization for Economic Cooperation and Development (OECD) were reviewed. Six modelling studies were included, three of which had been conducted outside the US. None of the published models showed that PrEP alone can reduce HIV diagnoses to zero and eliminate HIV transmission by 2030. However, PrEP in combination with other biomedical interventions can reduce HIV diagnoses on the population level by ~95%. Other upcoming biomedical prevention strategies may strengthen combination prevention. Access to PrEP remains limited, even in the OECD countries. Modelling studies can assist governments with decision-making about PrEP implementation and add urgency to the implementation of PrEP. More work is needed on modelling of the impact of PrEP on HIV diagnoses trends outside the US where PrEP implementation is in its early stages.

28. Hladik, W., et al. **"Men Who Have Sex with Men in Kampala, Uganda: Results from a Bio-Behavioral Respondent Driven Sampling Survey."** *AIDS Behav* 2016.

We report on the results of a respondent-driven sampling survey among men who have sex with men (MSM) in Kampala, Uganda, where same-sex behavior is criminalized and highly stigmatized. We enrolled 608 MSM aged 18 + years and residing in greater Kampala from June 2012-November 2013. Anonymous data were collected through audio-computer assisted self-interviews; blood was tested for HIV-1 antibodies, CD4 + T cell counts, and viral load. Estimated HIV prevalence was 12.2 % (95 % confidence interval [CI] 8.0-16.1), increasing with age. One in five (19.6 %) stated knowing their HIV-positive status and a similar proportion of HIV-infected MSM were virally suppressed (19.3 %; 95 % CI 3.3-33.1). HIV-related risk behaviors included unprotected anal sex (35.8 % at last sex act), selling sex (38.5 %), having multiple steady (54.3 %) or casual (63.6 %) partners, and ever injecting drugs (31.6 %). Forty percent experienced homophobic abuse; 44.5 % ever experienced suicide ideation. HIV prevalence among MSM remains high whereas knowledge of seropositive status and suppression of viral load remains low. MSM report a wide range of high risk behaviors, frequent homophobic abuse, poor mental health, as well as low levels of testing and treatment. Better access to tailored prevention and treatment services to improve population-level viral load suppression are warranted.

29. MacCarthy, S., et al. "**Mind the gap: implementation challenges break the link between HIV/AIDS research and practice.**" *Cad Saude Publica* 2016 32(10): e00047715. Online at: <http://www.scielo.br/pdf/csp/v32n10/1678-4464-csp-32-10-e00047715.pdf>

Sampling strategies such as respondent-driven sampling (RDS) and time-location sampling (TLS) offer unique opportunities to access key populations such as men who have sex with men (MSM) and transgender women. Limited work has assessed implementation challenges of these methods. Overcoming implementation challenges can improve research quality and increase uptake of HIV services among key populations. Drawing from studies using RDS in Brazil and TLS in Peru, we summarize challenges encountered in the field and potential strategies to address them. In Brazil, study site selection, cash incentives, and seed selection challenged RDS implementation with MSM. In Peru, expansive geography, safety concerns, and time required for study participation complicated TLS implementation with MSM and transgender women. Formative research, meaningful participation of key populations across stages of research, and transparency in study design are needed to link HIV/AIDS research and practice. Addressing implementation challenges can close gaps in accessing services among those most burdened by the epidemic.

30. Coelho, L., et al. "**Mortality in HIV-infected women, heterosexual men, and men who have sex with men in Rio de Janeiro, Brazil: an observational cohort study.**" *Lancet HIV* 2016 3(10): e490-8.

BACKGROUND: Mortality in HIV-infected individuals might differ by sex and mode of HIV acquisition. We aimed to study mortality in HIV-infected women, heterosexual men, and men who have sex with men (MSM) in a cohort from Rio de Janeiro, Brazil.

METHODS: In this observational cohort study, we included HIV-infected women, heterosexual men, and MSM (aged ≥ 18 years) from the Instituto Nacional de Infectologia Evandro Chagas database who were enrolled between Jan 1, 2000, and Oct 30, 2011, and who had at least 60 days of follow-up. Causes of deaths, defined with the Coding of Death in HIV protocol, were documented. Cox proportional hazards models accounting for competing risks were used to explore risk factors for AIDS-related and non-AIDS-related deaths.

FINDINGS: We had 10 142 person-years of follow-up from 2224 individuals: 817 (37%) women, 554 (25%) heterosexual men, and 853 (38%) MSM. Of 103 deaths occurred, 64 were AIDS related, 31 were non-AIDS related, and eight were of unknown causes. In unadjusted analyses, compared with women, the hazard of AIDS-related deaths was higher for heterosexual men (hazard ratio [HR] 3.52, 95% CI 1.30-9.08; $p=0.009$) and for MSM (2.30, 0.89-5.94; $p=0.084$). After adjustment for age, CD4 cell counts, last HIV viral load, antiretroviral therapy use, and AIDS-defining infection, AIDS-defining malignant disease, and hospital admission during follow-up, the excess risk of AIDS-related death decreased for heterosexual men (adjusted HR 1.99, 0.75-5.25; $p=0.163$) but was unchanged for MSM (2.24, 0.82-6.11; $p=0.114$). Non-AIDS-related mortality did not differ by group.

INTERPRETATION: Compared with women, increased risk of AIDS-related death in heterosexual men was partly mitigated by risk factors for AIDS mortality, whereas the excess risk in MSM was unchanged. Further study of reasons for disparity in AIDS-related mortality by mode of transmission is needed.

FUNDING: US National Institutes of Health, Brazilian National Council of Technological and Scientific Development (CNPq), and Research Funding Agency of the State of Rio de Janeiro (FAPERJ).

31. Zea, M. C., et al. "**MSM in Bogota are living with HIV for extended periods without diagnosis or treatment.**" *Int J STD AIDS* 2016.

We examined recency of infection in serum samples obtained from 69 newly identified HIV-positive cases in a sample of 1000 men who have sex with men (MSM) in Bogota. HIV antibody avidity assays were performed using the Architect HIV Ag/AB combo. Avidity indices ranged from 0.62 to 1.22, with a cut-off score below

0.80 indicative of recent infection. Two samples were classified as recent, six fell within the gray zone (0.75 to 0.85), and the remaining 61 were considered established infections. Results provided evidence of widespread, long-term, undiagnosed HIV infection, as well as an estimate of one-year incidence at .25 in the population of MSM in Bogota. This incidence rate is approximately 8.5 times the rate estimated for the general adult population in Colombia. The large proportion of newly diagnosed cases found among individuals with established infections indicates that many MSM in Bogota are living with HIV for extended periods without being diagnosed and treated. Greater efforts to detect and treat undiagnosed infections are crucial to decrease HIV incidence and increase maximum effectiveness of medical intervention. Given the over-representation of MSM and transgender women in the HIV epidemic in Colombia, such efforts should specifically target this population.

32. Chow, J. Y., et al. "**Peru's HIV care continuum among men who have sex with men and transgender women: opportunities to optimize treatment and prevention.**" *Int J STD AIDS* 2016 27(12): 1039-1048.

The HIV epidemic in Peru is concentrated in men who have sex with men (MSM) and transgender women (TW), who have an estimated prevalence > 10%, while the overall population prevalence remains < 1%. Because MSM and TW account for >60% of new infections, it is crucial to understand the full HIV continuum of care for these key populations. We performed a review of the peer-reviewed scientific and grey literature to determine the proportion of HIV-infected MSM and TW in Peru who are diagnosed, linked to and retained in care, are taking antiretroviral therapy (ART), and who have attained virologic suppression. Of the estimated 613,080 MSM and TW in Peru in 2015, approximately 63,981 are HIV-infected. Only 24.0% of HIV-infected MSM and TW are aware of their diagnosis, 15.6% are retained in care, 13.6% are on ART, and 12.0% have achieved adequate virologic control. The largest drop-off in the HIV care continuum occurs at the first step: diagnosis of HIV. Improving HIV serostatus awareness among MSM and TW is crucial to controlling Peru's HIV epidemic. In the era of 'treatment as prevention', understanding the full HIV care continuum may help guide efforts to curb transmission and reduce HIV-related morbidity and mortality.

33. Mitchell, K. M., et al. "**Potential impact of pre-exposure prophylaxis for female sex workers and men who have sex with men in Bangalore, India: a mathematical modelling study.**" *J Int AIDS Soc* 2016 19(1): 20942. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5016494/pdf/JIAS-19-20942.pdf>

INTRODUCTION: In Bangalore, new HIV infections of female sex workers and men who have sex with men continue to occur, despite high condom use. Pre-exposure prophylaxis (PrEP) has high anti-HIV efficacy for men who have sex with men. PrEP demonstration projects are underway amongst Indian female sex workers. We estimated the impact and efficiency of prioritizing PrEP to female sex workers and/or men who have sex with men in Bangalore.

METHODS: A mathematical model of HIV transmission and treatment for female sex workers, clients, men who have sex with men and low-risk groups was parameterized and fitted to Bangalore data. The proportion of transmission attributable (population attributable fraction) to commercial sex and sex between men was calculated. PrEP impact (infections averted, life-years gained) and efficiency (life-years gained/infections averted per 100 person-years on PrEP) were estimated for different levels of PrEP adherence, coverage and prioritization strategies (female sex workers, high-risk men who have sex with men, both female sex workers and high-risk men who have sex with men, or female sex workers with lower condom use), under current conditions and in a scenario with lower baseline condom use amongst key populations.

RESULTS: Population attributable fractions for commercial sex and sex between men have declined over time, and they are predicted to account for 19% of all new infections between 2016 and 2025. PrEP could prevent a substantial proportion of infections amongst female sex workers and men who have sex with men in this setting (23%/27% over 5/10 years, with 60% coverage and 50% adherence), which could avert 2.9%/4.3% of infections over 5/10 years in the whole Bangalore population. Impact and efficiency in the whole population was greater if female sex workers were prioritized. Efficiency increased, but impact decreased, if only female sex workers with lower condom use were given PrEP. Greater impact and efficiency was predicted for the scenario with lower condom use.

CONCLUSIONS: PrEP could be beneficial for female sex workers and men who have sex with men in Bangalore, and give some benefits in the general population, especially in similar settings with lower condom use levels.

34. Zablotska, I., et al. **"PrEP implementation in the Asia-Pacific region: opportunities, implementation and barriers."** *J Int AIDS Soc* 2016 19(7(Suppl 6)): 21119. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5071746/pdf/JIAS-19-21119.pdf>

INTRODUCTION: HIV epidemics in the Asia-Pacific region are concentrated among men who have sex with men (MSM) and other key populations. Pre-exposure prophylaxis (PrEP) is an effective HIV prevention intervention and could be a potential game changer in the region. We discuss the progress towards PrEP implementation in the Asia-Pacific region, including opportunities and barriers.

DISCUSSION: Awareness about PrEP in the Asia-Pacific is still low and so are its levels of use. A high proportion of MSM who are aware of PrEP are willing to use it. Key PrEP implementation barriers include poor knowledge about PrEP, limited access to PrEP, weak or non-existent HIV prevention programmes for MSM and other key populations, high cost of PrEP, stigma and discrimination against key populations and restrictive laws in some countries. Only several clinical trials, demonstration projects and a few larger-scale implementation studies have been implemented so far in Thailand and Australia. However, novel approaches to PrEP implementation have emerged: researcher-, facility- and community-led models of care, with PrEP services for fee and for free. The WHO consolidated guidelines on HIV testing, treatment and prevention call for an expanded access to PrEP worldwide and have provided guidance on PrEP implementation in the region. Some countries like Australia have released national PrEP guidelines. There are growing community leadership and consultation processes to initiate PrEP implementation in Asia and the Pacific.

CONCLUSIONS: Countries of the Asia-Pacific region will benefit from adding PrEP to their HIV prevention packages, but for many this is a critical step that requires resourcing. Having an impact on the HIV epidemic requires investment. The next years should see the region transitioning from limited PrEP implementation projects to growing access to PrEP and expansion of HIV prevention programmes.

35. Galea, J. T., et al. **"Rectal Douching Prevalence and Practices Among Peruvian Men Who have Sex with Men and Transwomen: Implications for Rectal Microbicides."** *AIDS Behav* 2016 20(11): 2555-2564.

Peruvian men who have sex with men (MSM) and transwomen (TW) could benefit from a rectal microbicide (RM) formulated as a rectal douche to prevent HIV infection. However, little is known about rectal douching practices among Peruvian MSM and TW, information necessary to inform RM douche development and future uptake. Using a self-administered interview, we examined the prevalence of and factors associated with rectal douching among a convenience sample of 415 Peruvian MSM and 68 TW. In the previous 6 months, 18 % of participants reported rectal douching using pre-filled commercial kits or plastic bottles or enema bags filled with water, water/soap or saltwater. Multivariate logistic analysis found that "equally insertive and receptive" or "exclusively/mainly receptive" sex roles were associated with douche use. Rectal douching among Peruvian MSM and TW is similar to reports from other studies and supports the potential uptake of a douche-formulated RM in these populations.

36. Sathane, I., et al. **"Risk Factors Associated with HIV Among Men Who Have Sex Only with Men and Men Who Have Sex with Both Men and Women in Three Urban Areas in Mozambique."** *AIDS Behav* 2016 20(10): 2296-308.

Using respondent-driven sampling (RDS), an integrated biological behavioral survey among men that have sex with men (MSM) enrolled 457 participants in Maputo [63.0 % were MSM who had sex with women (MSMW)], 538 in Beira (36.2 % MSMW) and 330 in Nampula-Nacala (54.8 % MSMW) in 2011. Analysis suggests that MSM who have sex only with men (MSMO) had increased odds of having HIV (aOR 2.7) compared to MSMW. HIV among MSMO associated with age, self-reported STI (aOR 4.2), having a single

male anal partner (aOR 3.8) and having transactional sex with a man (aOR 3.5) in the past year. Among MSMW, HIV associated with age, lower education (aOR 32.5), being uncircumcised (aOR 3.1) and having transactional sex with a woman (aOR 6.0) in the past year. Findings confirm that MSMO and MSMW have distinct HIV risks in Mozambique; HIV programs for MSM in Southern Africa should take such differences into consideration.

37. Liu, Y., et al. **"Seeking Male Sexual Partners via Internet and Traditional Venues among Chinese Men Who Have Sex with Men: Implications for HIV Risk Reduction Interventions."** *AIDS Behav* 2016 20(10): 2222-30.

The dynamic nature of finding male sexual partners (sex-finding) among Chinese men who have sex with men (MSM) may play a substantial role in the HIV epidemic. We compared characteristics and behaviors of MSM who mostly sought sex via the Internet versus traditional venues in a cross-sectional survey among 3588 Chinese MSM. We assessed the sociodemographic predictors and compared high-risk behaviors of using Internet versus traditional venues for sex-finding. Compared to non-Internet MSM, Internet-user MSM were more likely to have been: younger, currently single, better educated, health-insured, with higher income, with Beijing residency ('Hukou'), living longer in the city, HIV-positive, ever using drug and engaging in condomless receptive anal sex. Internet sex-finding users were less likely to be sexually active for longer duration, drink alcohol, drink alcohol before sex, or ever have sex with women. Knowledge of differential characteristics of various sex-finding MSM can help design targeted interventions.

38. Rodriguez-Hart, C., et al. **"Serosorting and Sexual Risk for HIV Infection at the Ego-Alter Dyadic Level: An Egocentric Sexual Network Study Among MSM in Nigeria."** *AIDS Behav* 2016 20(11): 2762-2771.

The objective of this egocentric network study was to investigate engagement in serosorting by HIV status and risk for HIV between seroconcordant and serodiscordant ego-alter dyads. Respondent-driving sampling was used to recruit 433 Nigerian men who have sex with men (MSM) from 2013 to 2014. Participant (ego) characteristics and that of five sex partners (alters) were collected. Seroconcordancy was assessed at the ego level and for each dyad. Among 433 egos, 18 % were seroconcordant with all partners. Among 880 dyads where participants knew their HIV status, 226 (25.7 %) were seroconcordant, with 11.7 % of HIV positive dyads seroconcordant and 37.0 % of HIV negative dyads seroconcordant. Seroconcordant dyads reported fewer casual sex partners, less partner concurrency, and partners who had ever injected drugs, but condom use did not differ significantly. Serosorting may be a viable risk reduction strategy among Nigerian MSM, but awareness of and communication about HIV status should be increased. Future studies should assess serosorting on a partner-by-partner basis.

39. Blair, C. S., et al. **"Sexual Orientation, Gender Identity and Perceived Source of Infection Among Men Who Have Sex with Men (MSM) and Transgender Women (TW) Recently Diagnosed with HIV and/or STI in Lima, Peru."** *AIDS Behav* 2016 20(10): 2178-85.

Risk perception and health behaviors result from individual-level factors influenced by specific partnership contexts. We explored individual- and partner-level factors associated with partner-specific perceptions of HIV/STI risk among 372 HIV/STI-positive MSM and transgender women (TW) in Lima, Peru. Generalized estimating equations explored participants' perception of their three most recent partner(s) as a likely source of their HIV/STI diagnosis. Homosexual/gay (PR = 2.07; 95 % CI 1.19-3.61) or transgender (PR = 2.84; 95 % CI 1.48-5.44) partners were more likely to be considered a source of infection than heterosexual partners. Compared to heterosexual respondents, gay and TW respondents were less likely to associate their partner with HIV/STI infection, suggesting a cultural link between gay or TW identity and perceived HIV/STI risk. Our findings demonstrate a need for health promotion messages tailored to high-risk MSM partnerships addressing how perceived HIV/STI risk aligns or conflicts with actual transmission risks in sexual partnerships and networks.

40. Rhoton, J., et al. "**Sexual Preferences and Presentation on Geosocial Networking Apps by Indian Men Who Have Sex With Men in Maharashtra.**" *JMIR Mhealth Uhealth* 2016 4(4): e120. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5108933/>

BACKGROUND: The affordability of smartphones and improved mobile networks globally has increased the popularity of geosocial networking (GSN) apps (eg, Grindr, Scruff, Planetromeo) as a method for men who have sex with men (MSM) to seek casual sex partners and engage with the queer community. As mobile penetration continues to grow in India, it is important to understand how self-presentation on GSN app is relevant because it offers insight into a population that has not been largely studied. There is very little information about how Indian MSM discuss their sexual preferences and condom preferences and disclose their human immunodeficiency virus (HIV) status with potential sex partners on Web-based platforms.

OBJECTIVE: The objective of this study was to describe how self-presentation by Indian MSM on GSN apps contributes to sexual preferences, HIV or sexually transmitted infection (STI) disclosure, and if the presentation differs due to proximity to the Greater Mumbai or Thane region.

METHODS: Between September 2013 and May 2014, participants were recruited through banner advertisements on gay websites, social media advertisements and posts, and distribution of print materials at outreach events hosted by lesbian, gay, bisexual, transgender (LGBT) and HIV service organizations in Maharashtra, India. Eligible participants self-identified as being MSM or hijra (transgender) women, living in Maharashtra, aged above 18 years, having regular Internet access, and having at least one male sex partner in the previous 90 days.

RESULTS: Indian MSM living inside and outside the Greater Mumbai or Thane region reported an average of 6.7 (SD 11.8) male sex partners in the last 3 months; on average HIV status of the sex partners was disclosed to 2.9 (SD 8.9). The most commonly used websites and GSN apps by MSM living inside Greater Mumbai or Thane region were Planetromeo, Grindr, and Gaydar. Results demonstrated that MSM used smartphones to access GSN apps and stated a preference for both condomless and protected anal sex but did not disclose their HIV status. This low level of HIV disclosure potentially increases risk of HIV or STI transmission; therefore, trends in use should be monitored.

CONCLUSIONS: Our data helps to fill the gap in understanding how Indian MSM use technology to find casual sex partners, disclose their sexual preference, and their HIV status on Web-based platforms. As mobile penetration in India continues to grow and smartphone use increases, the use of GSN sex-seeking apps by MSM should also increase, potentially increasing the risk of HIV or STI transmission within the app's closed sexual networks.

41. Ross, M. W., et al. "**Social networks of men who have sex with men and their implications for HIV/STI interventions: results from a cross-sectional study using respondent-driven sampling in a large and a small city in Tanzania.**" *BMJ Open* 2016 6(11): e012072. Online at: <http://bmjopen.bmj.com/content/6/11/e012072.full.pdf>

OBJECTIVE: Men who have sex with men (MSM) in sub-Saharan Africa remain hidden and hard to reach for involvement in HIV and sexually transmitted infection (STI) services. The aim of the current study was to describe MSM social networks in a large and a small Tanzanian city in order to explore their utility for peer-based healthcare interventions.

METHODS: Data were collected through respondent-driven sampling (RDS) in Dar es Salaam (n=197) and in Tanga (n=99) in 2012 and 2013, using 5 and 4 seeds, respectively. All results were adjusted for RDS sampling design. **RESULTS:** Mean personal network size based on the number of MSM who were reported by the participants, as known to them was 12.0+/-15.5 in Dar es Salaam and 7.6+/-8.1 in Tanga. Mean actual RDS network size was 39.4+/-31.4 in Dar es Salaam and 25.3+/-9.7 in Tanga. A majority (97%) reported that the person from whom they received the recruitment coupon was a sexual partner, close friend or acquaintance. Homophile in recruitment patterns (selective affiliation) was present for age, gay openness, and HIV status in

Dar es Salaam, and for sexual identification in Tanga.

CONCLUSIONS: The personal network sizes and existence of contacts between recruiter and referral indicate that it is possible to use peer-driven interventions to reach MSM for HIV/STI interventions in larger and smaller sub-Saharan African cities. The study was reviewed and approved by the University of Texas Health Science Center's Institutional Review Board (HSC-SPH-10-0033) and the Tanzanian National Institute for Medical Research (NIMR/HQ/R.8a/Vol. IX/1088).

42. Nguyen, T. V., et al. "**Sociodemographic Factors, Sexual Behaviors, and Alcohol and Recreational Drug Use Associated with HIV Among Men Who Have Sex with Men in Southern Vietnam.**" *AIDS Behav* 2016 20(10): 2357-71.

A total of 2768 MSM participated in a survey in southern Vietnam. Univariate and multivariate logistic regression analyses were performed to determine predictors of HIV infection. The prevalence of HIV among MSM was 2.6 %. HIV infection was more likely in MSM who were older, had a religion, had engaged in anal sex with a foreigner in the past 12 months, previously or currently used recreational drugs, perceived themselves as likely or very likely to be infected with HIV, and/or were syphilis seropositive. MSM who had ever married, were exclusively or frequently receptive, sometimes consumed alcohol before sex, and/or frequently used condoms during anal sex in the past 3 months were less likely to be infected with HIV. Recreational drug use is strongly associated with HIV infection among MSM in southern Vietnam. HIV interventions among MSM should incorporate health promotion, condom promotion, harm reduction, sexually transmitted infection treatment, and address risk behaviors.

43. Chatterjee, A., et al. "**Spread of human immunodeficiency virus 1 among men who have sex with men is emerging as a genuine social concern and affecting the general populace - case reports from Eastern India.**" *World J Virol* 2016 5(4): 183-188. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5105051/pdf/WJV-5-183.pdf>.

Human immunodeficiency virus (HIV) infection among men who have sex with men (MSM) has increased to a drastic proportion throughout India in the last couple of years due to a lack of productive identification and management framework. In apprehension of social disgrace these men attempt to live a normal hetero conjugal life and, in the process, act as a bridge in spreading the virus to their women partners. In this case report we have highlighted two cases which clearly distinguished the adequacy of HIV treatment among MSM when they are diagnosed during early or late phases of infection. An intensive and ample counseling to comprehend the psychology and sexual behavior of these men was found to be critically important in both the cases. Our study, which is actually the first of its kind, recorded and documented evidence of HIV infected MSM from Eastern India and renders a ray of hope among this marginally isolated group to comprehend the challenges and health risks faced by the MSM population. It also provides a format for the medical practitioners here in managing and treating related cases.

44. Zhang, C., et al. "**Substance use and HIV-risk behaviors among HIV-positive men who have sex with men in China: repeated measures in a cohort study design.**" *AIDS Care* 2016: 1-10.

Global literature revealed that seropositive men who have sex with men (MSM) posed an even higher risk compared to their seronegative counterparts. Identifying risk factors that contribute to HIV-risk behaviors will help to curb the rapid HIV transmission among this group. Our hypothesis was that MSM with substance use were more likely to conduct HIV-risk behaviors, even after accounting for repeated measures. In the current study, we employed a cohort study design by following a group of 367 HIV-positive MSM up to four visits for one year to collect information regarding their sexual behaviors and history of substance use in the past three months. We used Generalized Estimating Equations (GEE) models to account both within- and between-subject variation when assessing associations between substance use and HIV-risk behaviors. A total of 367 MSM were included at the baseline with a mean age of 29.6 years. After accounting for potential confounders and time-varying effects, our models indicated that drug and alcohol use increase HIV risks at the population level by increasing risks of drinking alcohol before sex, having unprotected sex with men and

seropositive partners, having more lifetime female sex partners and having a higher number of male sexual partners in the past three months. The current study is one of the first studies with repeated measures to evaluate the association between substance use and sexual risk behaviors among MSM in China. Findings in the current study have several implications for future research. We call for more rigorous study design for future research to better capture changes of risky behaviors among this at-risk population.

45. Beyrer, C., et al. **"Towards Equity in Service Provision for Gay Men and Other Men Who Have Sex with Men in Repressive Contexts."** *PLoS Med* 2016 13(10): e1002154. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5079578/pdf/pmed.1002154.pdf>

Chris Beyrer and colleagues reflect on an underappreciated trend in multiple African, Asian, and Caribbean settings, in which the provision of HIV and other essential health services for sexual and gender minorities is expanding despite challenging legal and social environments.

46. Bissio, E., et al. **"Very high incidence of syphilis in HIV-infected men who have sex with men in Buenos Aires city: a retrospective cohort study."** *Sex Transm Infect* 2016.

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

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

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

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

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

47. Ayala, G., et al. **"Will the global HIV response fail gay and bisexual men and other men who have sex with men?"** *J Int AIDS Soc* 2016 19(1): 21098. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5120409/pdf/JIAS-19-21098.pdf>

INTRODUCTION: Gay and bisexual men and other men who have sex with men are among the small number of groups for whom HIV remains uncontrolled worldwide. Although there have been recent and notable decreases in HIV incidence across several countries, prevalence and incidence is consistently higher or rising among men who have sex with men when compared with other groups.

METHODS: In 2014, MSMGF (the Global Forum on MSM & HIV) conducted its third biennial Global Men's Health and Rights Study, an international, multilingual, web-based cross-sectional survey of men who have sex with men recruited through online convenience sampling. We tested hypothesized correlates (selected a priori) of successfully achieving each step along the HIV prevention and treatment continuum by fitting separate generalized estimating equation models adjusted for clustering by country in multivariate analyses.

All models controlled for ability to meet basic financial needs, age, healthcare coverage, having a regular provider, region and country-level income.

RESULTS: Higher provider discrimination and sexual stigma were associated with lower odds of perceived access to services, service utilization and virologic suppression. Conversely, accessing services from community-based organizations focused on lesbian, gay, bisexual and transgender people; greater engagement in gay community; and comfort with healthcare providers were associated with higher odds of achieving steps along the prevention and treatment continuum.

CONCLUSIONS: To meet accelerated global HIV targets, global leaders must adopt a differentiated and bolder response, in keeping with current epidemiologic trends and community-based research. The HIV-related needs of gay and bisexual men and other men who have sex with men must be addressed openly, quickly and with sufficient resources to support evidence-based, community-led and human rights-affirming interventions at scale.

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Sex Workers - 33

1. Kerrigan, D., et al. "**Abriendo Puertas: Feasibility and Effectiveness a Multi-Level Intervention to Improve HIV Outcomes Among Female Sex Workers Living with HIV in the Dominican Republic.**" *AIDS Behav* 2016 20(9): 1919-27.

Female sex workers (FSW) are disproportionately affected by HIV. Yet, few interventions address the needs of FSW living with HIV. We developed a multi-level intervention, Abriendo Puertas (Opening Doors), and assessed its feasibility and effectiveness among a cohort of 250 FSW living with HIV in the Dominican Republic. We conducted socio-behavioral surveys and sexually transmitted infection and viral load testing at baseline and 10-month follow-up. We assessed changes in protected sex and adherence to antiretroviral therapy (ART) with logistic regression using generalized estimating equations. Significant pre-post intervention changes were documented for adherence (72-89 %; $p < 0.001$) and protected sex (71-81 %; $p < 0.002$). Higher intervention exposure was significantly associated with changes in adherence (AOR 2.42; 95 % CI 1.23-4.51) and protected sex (AOR 1.76; 95 % CI 1.09-2.84). Illicit drug use was negatively associated with both ART adherence and protected sex. Abriendo Puertas is feasible and effective in improving behavioral HIV outcomes in FSW living with HIV.

2. Pal, K., et al. "**Acceptability Study on HIV Self-Testing among Transgender Women, Men who Have Sex with Men, and Female Entertainment Workers in Cambodia: A Qualitative Analysis.**" *PLoS One* 2016 11(11): e0166129. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5102413/pdf/pone.0166129.pdf>

BACKGROUND: In Cambodia, HIV prevalence is high while HIV testing rates remain low among transgender women (TG women), men who have sex with men (MSM), and female entertainment workers (FEW). Introducing self-testing for HIV to these key populations (KPs) could potentially overcome the under-diagnosis of HIV and significantly increase testing rates and receipt of the results, and thus could decrease transmission. Therefore, this study aimed to determine the acceptability of HIV self-testing (HIVST) among these three categories of KPs.

METHODS: This study was conducted through focus group discussions (FGDs) with TG women, MSM, and FEW in Phnom Penh city, Kampong Cham, Battambang, and Siem Reap provinces of Cambodia. Convenience sampling was used to recruit the participants. Two FGDs (six participants in each FGD) were conducted in each target group in each study site, totaling 24 FGDs (144 participants). Thematic analysis was performed to

identify common or divergent patterns across the target groups.

RESULTS: Almost all participants among the three groups (TG women, MSM, and FEW) had not heard about HIVST, but all of them expressed willingness to try it. They perceived HIVST as confidential, convenient, time-saving, and high-tech. Barriers to obtaining HIVST included cost, access, administration technique, embarrassment, and fear of pain. The majority preferred counseling before and after testing.

CONCLUSIONS: Participants showed high willingness to use and acceptability of HIVST due to its confidentiality/privacy and convenience even if it is not linked to a confirmatory test or care and treatment. Notwithstanding, to increase HIVST, the target groups would need affordable self-test kits, education about how to perform HIVST and read results, assurance about accuracy and reliability of HIVST, and provision of post-test counseling and facilitation of linkage to care and treatment.

3. White, D., et al. "**Alcohol Use and Associations With Biological Markers and Self-Reported Indicators of Unprotected Sex in Human Immunodeficiency Virus-Positive Female Sex Workers in Mombasa, Kenya.**" *Sex Transm Dis* 2016 43(10): 642-7.

BACKGROUND: Studies of alcohol use and sexual behavior in African populations have primarily been cross-sectional, used nonvalidated measures of alcohol use, or relied on self-reported sexual risk endpoints. Few have focused on human immunodeficiency virus (HIV)-positive women.

METHODS: Longitudinal data were collected from a cohort of HIV-positive Kenyan female sex workers. At enrollment and annual visits, participants were asked about past-year alcohol use using the Alcohol Use Disorders Identification Test (AUDIT). The primary endpoint was detection of prostate-specific antigen (PSA) in vaginal secretions at quarterly examinations. Associations between hazardous/harmful alcohol use (AUDIT score ≥ 7), PSA detection, and secondary measures of sexual risk were evaluated using generalized estimating equations with a log binomial regression model.

RESULTS: A total of 405 women contributed 2750 vaginal samples over 606 person-years of follow-up. Hazardous/harmful alcohol use was reported at 16.6% of AUDIT assessments and was associated with higher risk of PSA detection (relative risk 1.50; 95% confidence interval, 1.11-2.01) relative to no alcohol use. This association was attenuated and no longer statistically significant, after adjusting for age, work venue, intimate partner violence, depression, and partnership status (adjusted relative risk, 1.13; 95% confidence interval, 0.82-1.56). In exploratory analyses, alcohol use was associated with self-report of unprotected sex and with sexually transmitted infection acquisition.

CONCLUSIONS: Although hazardous/harmful alcohol use was not associated with detection of PSA in adjusted analysis, associations with secondary outcomes suggest that alcohol use is at least a marker of sexual risk behavior.

4. Johnston, L. G., et al. "**Associations of HIV Testing, Sexual Risk and Access to Prevention Among Female Sex Workers in the Dominican Republic.**" *AIDS Behav* 2016.

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

5. Davis, A., et al. **"Barriers to health service access among female migrant Ugandan sex workers in Guangzhou, China."** *Int J Equity Health* 2016 15(1): 170. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5064915/pdf/12939_2016_Article_453.pdf

BACKGROUND: Increased trade between China and Uganda has fueled trafficking of female Ugandans into China. These women may face challenges accessing health services. This study focused on examining barriers to health care access among female Ugandan sex workers in China.

METHODS: In 2014, we undertook in-depth interviews with 19 female Ugandan sex workers in Guangzhou, China. Interviews focused on barriers to health service access and were analyzed using an a priori coding framework followed by open-coding to capture emergent themes.

RESULTS: Out of 19 women, 12 women reported a history of being trafficked into China. None of the women had a valid Chinese visa. Fear of being arrested for lack of documentation discouraged women in this sample from accessing hospital services. Low pay, housing exploitation, and remittances contributed to participants' lack of financial resources, which further inhibited their ability to access health services. Participants expressed feeling social isolation from the local community and reported mistrust of local individuals and organizations, including hospitals.

CONCLUSION: Ugandan sex workers in China faced substantial structural barriers that limited health service access. Policy changes and the development of new programs are urgently needed to ensure these women have improved access to health services.

6. Duff, P., et al. **"Barriers to Viral Suppression Among Female Sex Workers: Role of Structural and Intimate Partner Dynamics."** *J Acquir Immune Defic Syndr* 2016 73(1): 83-90.

OBJECTIVE: Despite global evidence that sex workers (SWs) are disproportionately impacted by HIV, data on HIV treatment outcomes among SWs living with HIV remains sparse. This study examined the correlates of undetectable plasma viral load (pVL) among street- and off-street SWs living with HIV and on antiretroviral therapy (ART) in Metro Vancouver, Canada.

METHODS: Analyses drew on data (2010-2014) from a longitudinal cohort of SWs (An Evaluation of Sex Workers Health Access) and confidential linkages with the Drug Treatment Program (DTP) data on ART dispensation and outcomes. Bivariate and multivariable generalized linear mixed-effects models were used to identify longitudinal correlates of undetectable pVL (<50 copies/mL).

RESULTS: Of the 72 SWs living with HIV who had ever used ART, 38.9% had an undetectable pVL at baseline. Although 84.7% had undetectable pVL at least once over the study period, 18.1% exhibited sustained undetectable pVL. In multivariable generalized linear mixed-effects model analyses, $\geq 95\%$ pharmacy refill adherence (adjusted odds ratio (AOR) = 4.21; 95% confidence interval (CI) 2.16 to 8.19) and length of time since diagnosis (AOR = 1.06; 95% CI: 1.00 to 1.13) were positively correlated with undetectable pVL. Having an intimate male partner (AOR = 0.35; 95% CI: 0.16 to 0.78) and being homelessness were negatively correlated with undetectable pVL (AOR = 0.22; 95% CI: 0.10 to 0.47).

DISCUSSION/CONCLUSIONS: There is a need to more closely consider the social and structural contexts that shape SWs' experiences on ART and impact treatment outcomes, including the gendered power dynamics within intimate partnerships. Future research on HIV care among SWs is urgently needed, alongside structural and community-led interventions to support SWs' access to and retention in care.

7. 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* 2016: 1-15.

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.

8. Willis, B., et al. "**Causes of maternal and child mortality among Cambodian sex workers and their children: a cross sectional study.**" *BMC Public Health* 2016 16(1): 1176. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5117563/pdf/12889_2016_Article_3838.pdf

BACKGROUND: To reach global and national goals for maternal and child mortality, countries must identify vulnerable populations, which includes sex workers and their children. The objective of this study was to identify and describe maternal deaths of female sex workers in Cambodia and causes of death among their children.

METHODS: A convenience sample of female sex workers were recruited by local NGOs that provide support to sex workers. We modified the maternal mortality section of the 2010 Cambodia Demographic and Health Survey and collected reports of all deaths of female sex workers. For each death we ask the 'sisterhood' methodology questions to identify maternal deaths. For child deaths we asked each mother who reported the death of a child about the cause of death. We also asked all participants about the cause of deaths of children of other female sex workers.

RESULTS: We interviewed 271 female sex workers in the four largest Cambodian cities between May and September 2013. Participants reported 32 deaths of other female sex workers that met criteria for maternal death. The most common reported causes of maternal deaths were abortion (n = 13;40%) and HIV (n = 5;16%). Participants report deaths of 8 of their children and 50 deaths of children of other female sex workers. HIV was the reported cause of death for 13 (36%) children under age five.

CONCLUSION: This is the first report of maternal deaths of sex workers in Cambodia or any other country. This modification of the sisterhood methodology has not been validated and did not allow us to calculate maternal mortality rates so the results are not generalizable, however these deaths may represent unrecognized maternal deaths in Cambodia. The results also indicate that children of sex workers in Cambodia are at risk of HIV and may not be accessing treatment. These issues require additional studies but in the meantime we must assure that sex workers in Cambodia and their children have access to quality health services.

9. Reed, E., et al. "**Client-perpetrated and husband-perpetrated violence among female sex workers in Andhra Pradesh, India: HIV/STI risk across personal and work contexts.**" *Sex Transm Infect* 2016 92(6): 424-9.

OBJECTIVES: This study examines violence experienced in work and personal contexts and relation to HIV risk factors in these contexts among female sex workers (FSW) in Andhra Pradesh, India.

METHODS: FSW at least 18 years of age (n=2335) were recruited through three rounds of respondent-driven sampling between 2006 and 2010 for a survey on HIV risk. Using crude and adjusted logistic regression models, any sexual/physical violence (last 6 months) perpetrated by clients and husbands were separately assessed in association with accepting more money for sex without a condom (last 30 days), consistent condom use with clients and husbands (last 30 days), and sexually transmitted infection (STI)

symptoms (last 6 months).

RESULTS: The mean age among participants was 32, 22% reported being currently married, and 22% and 21% reported physical/sexual violence by clients and husbands, respectively. In adjusted logistic regression models, FSW who experienced client violence were more likely to report accepting more money for unprotected sex trades (adjusted OR (AOR)=1.7; 95% CI 1.4 to 2.2), less likely to report consistent condom use with clients (AOR=0.6; 95% CI 0.5 to 0.7) and more likely to report STI symptoms (AOR=3.5; 95% CI 2.6 to 4.6). Women who reported husband violence were more likely to report accepting more money for unprotected sex trades (AOR=2.1; 95% CI 1.2 to 3.7), less likely to report consistent condom use with clients (AOR=0.5; 95% CI 0.3 to 0.8) and more likely to report STI symptoms (AOR=2.6; 95% CI 1.6 to 4.1).

CONCLUSIONS: Among FSW, experiences of violence in work and personal contexts are associated with sexual HIV risk behaviours with clients as well as STI symptoms.

10. Fehrenbacher, A. E., et al. "**Consistent Condom Use by Female Sex Workers in Kolkata, India: Testing Theories of Economic Insecurity, Behavior Change, Life Course Vulnerability and Empowerment.**" *AIDS Behav* 2016 20(10): 2332-45.

Consistent condom use (CCU) is the primary HIV/STI prevention option available to sex workers globally but may be undermined by economic insecurity, life-course vulnerabilities, behavioral factors, disempowerment, or lack of effective interventions. This study examines predictors of CCU in a random household survey of brothel-based female sex workers (n = 200) in two neighborhoods served by Durbar (the Sonagachi Project) in Kolkata, India. Multivariate logistic regression analyses indicated that CCU was significantly associated with perceived HIV risk, community mobilization participation, working more days in sex work, and higher proportion of occasional clients to regular clients. Exploratory analyses stratifying by economic insecurity indicators (i.e., debt, savings, income, housing security) indicate that perceived HIV risk and community mobilization were only associated with CCU for economically secure FSW. Interventions with FSW must prioritize economic security and access to social protections as economic insecurity may undermine the efficacy of more direct condom use intervention strategies.

11. Le, T. T., et al. "**Correlates of HIV infection among street-based and venue-based sex workers in Vietnam.**" *Int J STD AIDS* 2016 27(12): 1093-1103.

SummaryCommercial sex work is one of the driving forces of the HIV epidemic across the world. In Vietnam, although female sex workers (FSWs) carry a disproportionate burden of HIV, little is known about the risk profile and associated factors for HIV infection among this population. There is a need for large-scale research to obtain reliable and representative estimates of the measures of association. This study involved secondary data analysis of the 'HIV/STI Integrated Biological and Behavioral Surveillance' study in Vietnam in 2009-2010 to examine the correlates of HIV among FSWs. Data collected from 5298 FSWs, including 2530 street-based sex workers and 2768 venue-based sex workers from 10 provinces in Vietnam, were analyzed using descriptive statistics and bivariate and multivariate logistic regression analyses. HIV prevalence among the overall FSW population was 8.6% (n = 453). However, when stratified by FSW subpopulations, HIV prevalence was 10.6% (n = 267) for street-based sex workers and 6.7% (n = 186) for venue-based sex workers. Factors independently associated with HIV infection in the multivariate analysis, regardless of sex work types, were injecting drug use, high self-perceived HIV risk, and age \geq 25 years. Additional factors independently associated with HIV risk within each FSW subpopulation included having ever been married among street-based sex workers and inconsistent condom use with clients and having sex partners who injected drugs among venue-based sex workers. Apart from strategies addressing modifiable risk behaviours among all FSWs, targeted strategies to address specific risk behaviours within each FSW subpopulation should be adopted.

12. Yu, Y. J., et al. "**Demographic and behavioral correlates of HIV/STI among Vietnamese female sex workers in southwest China.**" *AIDS Care* 2016 28(11): 1455-60.

Previous literature has suggested high rates of HIV/STIs among Chinese FSWs. However, limited data were available regarding HIV-related risks among Vietnamese FSWs - a rapidly increasing, vulnerable population in southwest China. The current study examined the demographic and behavioral factors associated with the infection rates of HIV, syphilis, and Hepatitis C (HCV) among Vietnamese FSWs in Guangxi, China. We conducted a secondary data analysis of a cumulative sample of 1026 Vietnamese FSWs (aged 14-66) recruited over five years (2010-2014) from 35 National Sentinel Surveillance sites in Guangxi. Analyses included Fisher's exact chi-square test, t-test, and binary logistic regression. The overall prevalence of HIV, syphilis, and HCV infections among the cross-border women were 3.2%, 6.9%, and 2.6%, respectively. Multivariate analysis showed that greater lengths of sex work and low paying work venues were significant risk factors for HIV infection; for syphilis infection, older age, drug use experience, and forgoing condom use were significant risk factors; for HCV infection, drug use experience was the only significant risk factor. Our findings suggest that elevated HIV-related risks among the Vietnamese FSWs are closely related to their financial disadvantages and that drug use is a prominent risk factor for cross-border women in the sex trade. Furthermore, culturally tailored and linguistically accessible HIV prevention and intervention initiatives that target cross-border FSWs, with a close international collaboration between China and Vietnam, are urgently needed.

13. Lim, R. B., et al. **"Efficacy of Human Immunodeficiency Virus/Sexually Transmitted Infection Prevention Interventions Targeting Female Entertainment Workers: A Systematic Review and Meta-analysis."** *AIDS Behav* 2016.

Female entertainment workers (FEWs) working in karaoke lounges, bars, pubs, nightclubs, discotheques, dance halls, massage parlours, restaurants (as hostesses or singers) and beer gardens are at high risk for human immunodeficiency virus (HIV)/sexually transmitted infection (STI). The aim of the systematic review and meta-analysis is to evaluate the efficacy of HIV/STI intervention programmes targeting FEWs. Among the 14 included studies, majority were in Asia and targeted native FEWs. Most studies were quasi-experimental and the overall quality was relatively low. While most studies employed only behavioural strategies, structural interventions were the least common. In studies with structural interventions, there was a preference for behavioural and biomedical-based outcome measurements rather than structural-related indicators. FEWs in the intervention group were significantly more likely to report condom use with paying (odds ratio OR 1.7; 95% CI 1.0-2.9, p 0.04), but not with regular (OR 1.0; 95% CI 0.8-1.3, p 0.84) partner than the control/comparison group post-intervention.

14. Schwartz, S., et al. **"Engagement in the HIV care cascade and barriers to antiretroviral therapy uptake among female sex workers in Port Elizabeth, South Africa: findings from a respondent-driven sampling study."** *Sex Transm Infect* 2016.

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

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

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

healthcare services (aPR 0.71, 95% CI 0.57 to 0.89).

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

15. Cernigliaro, D., et al. "**Factors Related to Pregnancy Among Female Sex Workers Living with HIV in the Dominican Republic.**" *AIDS Behav* 2016 20(10): 2346-56.

Female sex workers (FSWs) living with HIV are a vulnerable population for multiple health concerns and have been vastly understudied in public health literature. This study analyzes factors related to pregnancy among 268 FSWs living with HIV in the Dominican Republic. Results indicate that 34 % of participants had been pregnant since HIV diagnosis. Multivariate analysis revealed significant associations between pregnancy after HIV diagnosis and ART interruption (AOR 2.41; 95 % CI 1.19, 4.94), knowledge of mother-to-child transmission (AOR 2.12; 95 % CI 0.99, 4.55), serostatus disclosure to a sex partner (AOR 2.46; 95 % CI 1.31, 4.62), older age (AOR 0.91; 95 % CI 0.87, 0.95) and a more negative perception of their health provider (AOR 0.56; 95 % CI 0.34, 0.93). Results indicate noteworthy associations between having been pregnant and the health provider experience and ART interruption, indicating a significant need for further research on this population to ensure both maternal and child health.

16. Urada, L. A., et al. "**A human rights-focused HIV intervention for sex workers in Metro Manila, Philippines: evaluation of effects in a quantitative pilot study.**" *Int J Public Health* 2016 61(8): 945-957.

OBJECTIVES: This study evaluated a brief human rights-focused HIV community mobilization intervention for sex workers in the Philippines, a country with one of the fastest rising number of HIV cases worldwide.

METHODS: Five single-session group interventions to reduce sexual risk and increase HIV testing among 86 sex workers in Manila were evaluated with pre-post-test data via Wilcoxon's signed-ranks and Mann-Whitney tests. The 4-h intervention, Kapihan (August-November, 2013), integrated human rights with HIV skill-building. Demographic data, violence/trafficking victimization, human rights knowledge, and intentions to HIV test and treat were collected.

RESULTS: Participants were median aged 23; female (69 %); had children (55; 22 % had 3+ children); used drugs (past 3 months: 16 %); sexually/physically abused by clients (66 %); 20 % street sex workers ever took an HIV test. Pre-post-test scores significantly improved in knowledge of HIV ($z = -8.895$, $p < 0.001$), reproductive health ($z = -3.850$, $p < 0.001$), human rights ($z = -4.391$, $p < 0.001$), ethical rights of research participants ($z = -5.081$, $p < 0.001$), and intentions to HIV test ($z = -4.868$, $p < 0.001$).

CONCLUSIONS: Integrating human rights into HIV interventions may empower sex workers to address their health and human rights and test for HIV.

17. George, P. E., et al. "**Is Intimate Partner and Client Violence Associated with Condomless Anal Intercourse and HIV Among Male Sex Workers in Lima, Peru?**" *AIDS Behav* 2016 20(9): 2078-89.

Violence experience can increase HIV risk behaviors; however, literature is scarce on violence among male sex workers (MSWs) globally. In 2014, 210 Peruvian MSWs (median age 24.9) were interviewed about their experience of physical, emotional, and sexual violence and condom use with non-paying intimate partners and clients and were tested for HIV. Multivariable models examined relationships between violence in the past 6 months, condomless anal intercourse (CLAI) in the past 3 months and HIV infection. HIV infection (24 %), CLAI (43 %), being a violence victim (42 %) and perpetrator (39 %) were common. In separate multivariable models, being a violence victim [adjusted prevalence ratio aPR = 1.49 (95 % CI 1.09-2.03)] and perpetrator [aPR = 1.39 (1.03-1.87)] were associated with CLAI. Further, being a victim [aPR = 1.65 (1.04-2.62)] was associated with HIV infection. Violence, which was significantly associated with CLAI and HIV

infection, is common among Peruvian MSWs, reinforcing the importance of violence awareness and prevention as HIV risk-reduction strategies.

18. Ganju, D., et al. "**Knowledge and exercise of human rights, and barriers and facilitators to claiming rights: a cross-sectional study of female sex workers and high-risk men who have sex with men in Andhra Pradesh, India.**" *BMC Int Health Hum Rights* 2016 16(1): 29. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5112884/pdf/12914_2016_Article_102.pdf

BACKGROUND: HIV prevention interventions recognize the need to protect the rights of key populations and support them to claim their rights as a vulnerability reduction strategy. This study explores knowledge of human rights, and barriers and facilitators to claiming rights, among female sex workers (FSWs) and high-risk men who have sex with men (HR-MSM) who are beneficiaries of a community mobilization intervention in Andhra Pradesh, India.

METHODS: Data are drawn from a cross-sectional survey (2014) among 2400 FSWs and 1200 HR-MSM. Human rights awareness was assessed by asking respondents if they had heard of human rights (yes/no); those reporting awareness of rights were asked to spontaneously name specific rights from the following five pre-defined categories: right to health; dignity/equality; education; property; and freedom from discrimination. Respondents were classified into two groups: more knowledgeable (could identify two or more rights) and less knowledgeable (could identify one or no right). Univariate and bivariate analyses and chi-square tests were used. Data were analyzed using STATA 11.2.

RESULTS: Overall 17% FSWs and 8% HR-MSM were not aware of their rights. Among those aware, 62% and 31% respectively were aware of just one or no right (less knowledgeable); only around half (54% vs 57%) were aware of health rights, and fewer (20% vs 16%) aware of their right to freedom from discrimination. Notably, 27% and 17% respectively had not exercised their rights. Barriers to claiming rights among FSWs and HR-MSM were neighbors (35% vs 37%), lack of knowledge (15% vs 14%), stigma (13% vs 22%) and spouse (19% FSWs). Community organizations (COs) were by far the leading facilitator in claiming rights (57% vs 72%).

CONCLUSIONS: The study findings show that awareness of human rights is limited among FSWs and HR-MSM, and a large proportion have not claimed their rights, elevating their HIV vulnerability. For a sustained HIV response, community mobilization efforts must focus on building key populations' awareness of rights, and addressing the multiple barriers to claiming rights, with a view to creating a safe environment where vulnerable groups can demand and use services without fear of stigma, discrimination and violation of rights.

19. Mitchell, K. M., et al. "**Potential impact of pre-exposure prophylaxis for female sex workers and men who have sex with men in Bangalore, India: a mathematical modelling study.**" *J Int AIDS Soc* 2016 19(1): 20942. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5016494/pdf/JIAS-19-20942.pdf>

INTRODUCTION: In Bangalore, new HIV infections of female sex workers and men who have sex with men continue to occur, despite high condom use. Pre-exposure prophylaxis (PrEP) has high anti-HIV efficacy for men who have sex with men. PrEP demonstration projects are underway amongst Indian female sex workers. We estimated the impact and efficiency of prioritizing PrEP to female sex workers and/or men who have sex with men in Bangalore.

METHODS: A mathematical model of HIV transmission and treatment for female sex workers, clients, men who have sex with men and low-risk groups was parameterized and fitted to Bangalore data. The proportion of transmission attributable (population attributable fraction) to commercial sex and sex between men was calculated. PrEP impact (infections averted, life-years gained) and efficiency (life-years gained/infections averted per 100 person-years on PrEP) were estimated for different levels of PrEP adherence, coverage and prioritization strategies (female sex workers, high-risk men who have sex with men, both female sex workers and high-risk men who have sex with men, or female sex workers with lower condom use), under current conditions and in a scenario with lower baseline condom use amongst key populations.

RESULTS: Population attributable fractions for commercial sex and sex between men have declined over time, and they are predicted to account for 19% of all new infections between 2016 and 2025. PrEP could prevent a substantial proportion of infections amongst female sex workers and men who have sex with men in this setting (23%/27% over 5/10 years, with 60% coverage and 50% adherence), which could avert 2.9%/4.3% of infections over 5/10 years in the whole Bangalore population. Impact and efficiency in the whole population was greater if female sex workers were prioritized. Efficiency increased, but impact decreased, if only female sex workers with lower condom use were given PrEP. Greater impact and efficiency was predicted for the scenario with lower condom use.

CONCLUSIONS: PrEP could be beneficial for female sex workers and men who have sex with men in Bangalore, and give some benefits in the general population, especially in similar settings with lower condom use levels.

20. Wilson, K. S., et al. **"Prevalence and correlates of intimate partner violence in HIV-positive women engaged in transactional sex in Mombasa, Kenya."** *Int J STD AIDS* 2016 27(13): 1194-1203.

Summary: We evaluated the prevalence and correlates of intimate partner violence (IPV) in the past year by a regular male partner in HIV-positive female sex workers (FSWs) in Mombasa, Kenya. This cross-sectional study included HIV-positive women ≥ 18 years old who reported engagement in transactional sex at the time of enrolment in the parent cohort. We asked 13 questions adapted from the World Health Organization survey on violence against women about physical, sexual, or emotional violence in the past year by the current or most recent emotional partner (index partner). We used standardised instruments to assess socio-demographic and behavioural characteristics as possible correlates of IPV. Associations between IPV and these correlates were evaluated using univariate and multivariate logistic regression. Overall, 286/357 women (80.4%) had an index partner, and 52/357 (14.6%, 95% confidence interval 10.9%-18.2%) reported IPV by that partner in the past year. In multivariate analysis, women with severe alcohol problems (adjusted odds ratio 4.39, 1.16-16.61) and those experiencing controlling behaviours by the index partner (adjusted odds ratio 4.98, 2.31-10.74) were significantly more likely to report recent IPV. Recent IPV was common in HIV-positive FSWs. Interventions targeting risk factors for IPV, including alcohol problems and partner controlling behaviours, could help to reduce recurrent violence and negative health outcomes in this key population.

21. Nguyen, T., et al. **"Prevalence of HIV Infection and Risk Factors Among Female Sex Workers in a Southeast Province of Vietnam."** *AIDS Behav* 2016.

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

22. Reza-Paul, S., et al. **"Prioritizing Risk in Preparation for a Demonstration Project: A Mixed Methods Feasibility Study of Oral Pre-Exposure Prophylaxis (PrEP) among Female Sex Workers in South India."** *PLoS One* 2016 11(11): e0166889. Online at: <http://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0166889&type=printable>

BACKGROUND: HIV prevalence among female sex workers (FSWs) in India remains well above the national average. Pre-exposure prophylaxis (PrEP), a new HIV prevention technology, may help to reduce HIV incidence, but there is a dearth of research that can inform the potential scale-up of PrEP in India. In partnership with Ashodaya Samithi, a local sex worker collective, we conducted a feasibility study to assess

acceptance of a planned PrEP demonstration project, willingness to use PrEP, and recommendations for project roll-out among FSWs in southern Karnataka.

METHODS: From January-April 2015, 6 focus group discussions, 47 in-depth interviews, and 427 interviewer-administered questionnaires were completed by female sex workers. All participants were 18 years of age or older and practiced sex work. Qualitative data were coded for key themes and emergent categories. Univariate descriptive analysis was employed to summarise the quantitative data.

RESULTS: Qualitative. PrEP was described as an exciting new prevention technology that places control in the hands of FSWs and provides a "double safety" in combination with condom use. Participants expressed agreement that women who may experience more HIV risk in their occupational environments should be prioritized for enrollment into a demonstration project. Quantitative. 406 participants (95%) expressed interest in PrEP. Participants prioritized the inclusion of FSWs under the age of 25 (79%), those who do not use condoms when clients offer more money (58%), who do not consistently use condoms with regular partners (57%), who drink alcohol regularly (49%), and who do not use condoms consistently with clients (48%).

DISCUSSION: This feasibility study indicated strong interest in PrEP and a desire to move forward with the demonstration project. Participants expressed their responses in terms of public health discourses surrounding risk, pointing to the importance of situating PrEP scale up within the trusted spaces of community-based organizations as a means of supporting PrEP uptake and adherence.

23. Wilson, K. S., et al. **"A Prospective Cohort Study of Intimate Partner Violence and Unprotected Sex in HIV-Positive Female Sex Workers in Mombasa, Kenya."** *AIDS Behav* 2016 20(9): 2054-64.

We conducted a prospective cohort study to test the hypothesis that intimate partner violence (IPV) is associated with unprotected sex in HIV-positive female sex workers in Mombasa, Kenya. Women completed monthly visits and quarterly examinations. Any IPV in the past year was defined as ≥ 1 act of physical, sexual, or emotional violence by the current or most recent emotional partner ('index partner'). Unprotected sex with any partner was measured by self-report and prostate specific antigen (PSA) test. Recent IPV was associated with significantly higher risk of unprotected sex (adjusted relative risk [aRR] 1.91, 95 % CI 1.32, 2.78, $p = 0.001$) and PSA (aRR 1.54, 95 % CI 1.17, 2.04, $p = 0.002$) after adjusting for age, alcohol use, and sexual violence by someone besides the index partner. Addressing IPV in comprehensive HIV programs for HIV-positive women in this key population is important to improve wellbeing and reduce risk of sexual transmission of HIV.

24. Wilson, K. S., et al. **"A Prospective Study of Intimate Partner Violence as a Risk Factor for Detectable Plasma Viral Load in HIV-Positive Women Engaged in Transactional Sex in Mombasa, Kenya."** *AIDS Behav* 2016 20(9): 2065-77.

We conducted a prospective cohort study to evaluate intimate partner violence (IPV) as a risk factor for detectable plasma viral load in HIV-positive female sex workers (FSWs) on antiretroviral therapy (ART) in Kenya. IPV in the past year was defined as ≥ 1 act of physical, sexual, or emotional violence by the index partner (i.e. boyfriend/husband). The primary outcome was detectable viral load (≥ 180 copies/ml). In-depth interviews and focus groups were included to contextualize results. Analyses included 195 women (570 visits). Unexpectedly, IPV was associated with significantly lower risk of detectable viral load (adjusted relative risk 0.21, 95 % CI 0.05-0.84, p -value = 0.02). Qualitative findings revealed that women valued emotional and financial support from index partners, despite IPV. IPV was not a major barrier to ART adherence. The observed association between IPV and lower risk of detectable viral load in FSWs may be due to unmeasured personal and relationship factors, warranting further research.

25. Basu, A. **"Reba and Her Insurgent Prose: Sex Work, HIV/AIDS, and Subaltern Narratives."** *Qual Health Res* 2016.

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

26. Conroy, A. A., et al. "**Relationship Power and Sexual Violence Among HIV-Positive Women in Rural Uganda.**" *AIDS Behav* 2016 20(9): 2045-53.

Gender-based power imbalances place women at significant risk for sexual violence, however, little research has examined this association among women living with HIV/AIDS. We performed a cross-sectional analysis of relationship power and sexual violence among HIV-positive women on anti-retroviral therapy in rural Uganda. Relationship power was measured using the Sexual Relationship Power Scale (SRPS), a validated measure consisting of two subscales: relationship control (RC) and decision-making dominance. We used multivariable logistic regression to test for associations between the SRPS and two dependent variables: recent forced sex and transactional sex. Higher relationship power (full SRPS) was associated with reduced odds of forced sex (AOR = 0.24; 95 % CI 0.07-0.80; $p = 0.020$). The association between higher relationship power and transactional sex was strong and in the expected direction, but not statistically significant (AOR = 0.47; 95 % CI 0.18-1.22; $p = 0.119$). Higher RC was associated with reduced odds of both forced sex (AOR = 0.18; 95 % CI 0.06-0.59; $p < 0.01$) and transactional sex (AOR = 0.38; 95 % CI 0.15-0.99; $p = 0.048$). Violence prevention interventions with HIV-positive women should consider approaches that increase women's power in their relationships.

27. Bradburn, C. K., et al. "**Risky Business: condom failures as experienced by female sex workers in Mombasa, Kenya.**" *Cult Health Sex* 2016: 1-10.

Limited research exists about condom failure as experienced by female sex workers. We conducted a qualitative study to examine how female sex workers in Mombasa, Kenya contextualise and explain the occurrence of condom failure. In-depth, semi-structured interviews were conducted with thirty female sex workers to ascertain their condom failure experiences. We qualitatively analysed interview transcripts to determine how the women mitigate risk and cope with condom failure. Condom failure was not uncommon, but women mitigated the risk by learning about correct use, and by supplying and applying condoms themselves. Many female sex workers felt that men intentionally rupture condoms. Few women were aware of or felt empowered to prevent HIV, STIs, and pregnancy after condom failure. Interventions to equip female sex workers with strategies for minimising the risk of HIV, STIs, and pregnancy in the aftermath of a condom failure should be investigated.

28. Khanam, R., et al. "**Sexually Transmitted Infections and Associated Risk Factors Among Street-Based and Residence-Based Female Sex Workers in Dhaka, Bangladesh.**" *Sex Transm Dis* 2016.

BACKGROUND: Female sex workers (FSWs) in Bangladesh remain at elevated risk of sexually transmitted infections (STIs) although the human immunodeficiency virus (HIV) prevalence among them is low. Recent information on the burden and etiological diagnosis of STIs among them has been lacking. This study examines prevalence and risk behaviors of selected STIs among FSWs in Dhaka in 2014.

METHODS: Between August and October 2014, a cross-sectional study was conducted among street-based and residence-based FSWs receiving HIV prevention services at 24 drop in centers in Dhaka. Participants underwent behavioral interview, clinical examination, and laboratory testing for selected STIs using cervical swabs and blood.

RESULTS: The sample consisted of 371 streets and 329 residence FSWs. Prevalence of gonorrhoea, chlamydia, and active syphilis were 5.1%, 4.6%, 1.3% in street FSWs and were 5.8%, 8.2%, and 0.6% for residence FSWs which are lower compared with the previously reported rates. The following factors were associated with having any STI: being ≤ 5 years in sex trade (odds ratio, 2.2; 95% confidence interval, 1.2-3.9; $P < 0.01$), and having a cervical discharge (odds ratio, 2.6, 95% confidence interval, 1.5-4.6; $P < 0.01$). Resistance to cefixime and azithromycin was observed for 1 and 3 *Neisseria gonorrhoeae* strains, respectively.

CONCLUSIONS: Despite receiving HIV/STI prevention services, bacterial STIs remain prevalent among FSWs suggesting the need for more effective management of STIs. The guidelines for management of STIs need revision in view of the emerging resistance.

29. Wamoyi, J., et al. "**Transactional sex and risk for HIV infection in sub-Saharan Africa: a systematic review and meta-analysis.**" *J Int AIDS Soc* 2016 19(1): 20992. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5095351/pdf/JIAS-19-20992.pdf>

INTRODUCTION: Young women aged 15 to 24 years in sub-Saharan Africa continue to be disproportionately affected by HIV. A growing number of studies have suggested that the practice of transactional sex may in part explain women's heightened risk, but evidence on the association between transactional sex and HIV has not yet been synthesized. We set out to systematically review studies that assess the relationship between transactional sex and HIV among men and women in sub-Saharan Africa and to summarize the findings through a meta-analysis.

METHODS: The search strategy included 8 databases, hand searches in 10 journals, and searches across 17 websites and portals for organizations as informed by expert colleagues. A systematic review of cross-sectional and longitudinal studies was carried out for studies on women and men who engage in transactional sex published up through 2014. Random effects meta-analysis was used to further examine the relationship between transactional sex and prevalent HIV infection across a subset of studies with the same exposure period. Analyses were conducted separately for men and women.

RESULTS: Nineteen papers from 16 studies met our inclusion criteria. Of these 16 studies, 14 provided data on women and 10 on men. We find a significant, positive, unadjusted or adjusted association between transactional sex and HIV in 10 of 14 studies for women, one of which used a longitudinal design (relative risk (RR)=2.06, 95% confidence interval (CI): 1.22 -3.48). Out of 10 studies involving men, only 2 indicate a positive association between HIV and transactional sex in unadjusted or adjusted models. The meta-analysis confirmed general findings from the systematic review (unadjusted meta-analysis findings are significant for women (n=4; pooled odds ratio (OR)=1.54, 95% CI: 1.04-2.28; I²=42.5%, p=0.156), but not for men (n=4; pooled OR=1.47, 95% CI: 0.85-2.56; I²=50.8%, p=0.107).

CONCLUSIONS: Transactional sex is associated with HIV among women, whereas findings for men were inconclusive. Given that only two studies used a longitudinal approach, there remains a need for better measurement of the practice of transactional sex and additional longitudinal studies to establish the causal pathways between transactional sex and HIV.

30. Gomez, G. B., et al. "**Treatment And Prevention for female Sex workers in South Africa: protocol for the TAPS Demonstration Project.**" *BMJ Open* 2016 6(9): e011595. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5051507/pdf/bmjopen-2016-011595.pdf>

INTRODUCTION: Updated guidelines from the WHO recommend antiretroviral treatment for adults with HIV at any CD4 count and daily oral pre-exposure prophylaxis (PrEP) for people at substantial risk of HIV infection. However, implementation challenges may hinder the ability of programmes to translate these recommendations into successful practice. This demonstration project is the first to integrate PrEP and immediate treatment (ITx) for female sex workers (FSWs) in South Africa to answer operational research questions.

METHODS AND ANALYSIS: This is a prospective cohort study where the main outcome is retention at 12 months. The study population is recruited into two arms across two urban sites: (1) PrEP for HIV-negative FSWs (n=400) and (2) ITx for HIV-positive FSWs with CD4 greater than national guidelines (n=300). We investigate process and other health indicators, uptake and use of PrEP and ITx through qualitative research, and evaluate cost-effectiveness analysis combined with estimates of impact through epidemiological modelling.

ETHICS AND DISSEMINATION: The Treatment And Prevention for female Sex workers in South Africa (TAPS) Project was designed as an implementation study before emtricitabine/tenofovir disoproxil fumarate was licenced as an indication for PrEP in South Africa. Therefore, clinical trial requirements for ethical and South African Medicines Control Council approvals were followed. Results will be disseminated to participants, local health officials and other stakeholders, as well as in peer-reviewed journals and at conferences.

31. Mendoza, C., et al. "**Violence from a Sexual Partner is Significantly Associated with Poor HIV Care and Treatment Outcomes among Female Sex Workers in the Dominican Republic.**" *J Acquir Immune Defic Syndr* 2016.

BACKGROUND: Female sex workers (FSW) experience high rates of violence from their sexual partners. While violence is associated with HIV risk behaviors among FSW, there is limited evidence on the association between violence and HIV treatment outcomes.

METHODS: We analyzed data from a socio-behavioral survey with a cohort of FSW living with HIV in the Dominican Republic (n=268) to describe the burden of violence from a sexual partner in the last 6 months. We assessed the relationship between violence and HIV treatment outcomes, comparing findings across two types of sexual partners: intimate partners and clients.

RESULTS: Nearly one-fifth of women (18.3%) experienced violence in the last six months. More women experienced violence from an intimate partner (12.3%) than a client (8.3%), with some (2.6%) reporting both. While violence from an intimate partner was significantly associated with not currently being on ART (AOR: 4.05, 95% CI: 1.00-16.36), and missing an ART dose in the last 4 days (AOR: 5.26, 95% CI 1.91-14.53), violence from a client was associated with never having received HIV care (AOR: 2.85, 95% CI 1.03-7.92) and ever interrupting ART (AOR: 5.45, 95% CI 1.50-19.75).

CONCLUSIONS: Violence from a sexual partner is associated with poor HIV treatment outcomes among FSW. Different patterns by type of partner reflect how relationship dynamics may influence these associations. Violence prevention and support services should be tailored based on type of partner. Violence screening and referrals should be integrated into HIV care services for FSW to improve their health and reduce ongoing transmission.

32. Goldenberg, S. M., et al. "**War-Related Abduction and History of Incarceration Linked to High Burden of HIV Among Female Sex Workers in Conflict-Affected Northern Uganda.**" *J Acquir Immune Defic Syndr* 2016 73(1): 109-16.

OBJECTIVE: Sex workers (SWs) in sub-Saharan Africa face a disproportionate HIV burden and growing concerns of severe human rights violations. Given the dearth of evidence on the burden and correlates of HIV among SWs in sub-Saharan Africa, particularly within conflict-affected settings, we examined the relationship between structural determinants (eg, war-related abduction, incarceration) and HIV infection among conflict-affected SWs in Northern Uganda.

DESIGN: Cross-sectional community-based research study among female SWs in conflict-affected Gulu, Northern Uganda.

METHODS: Interview questionnaires and voluntary HIV testing were conducted with participants recruited

through SW/peer-led outreach and time-location sampling from 2011 to 2012. HIV prevalence was calculated, and bivariable and multivariable logistic regression was used to identify independent associations with HIV seroprevalence.

RESULTS: Of 400 SWs, 135 (33.75%) were HIV seropositive; of whom one-third were new/previously undiagnosed HIV infections. In multivariable analysis, after adjusting for age of sex work entry and education, lifetime incarceration (adjusted odds ratio: 1.93, 95% confidence interval: 1.17 to 3.20) was independently associated with HIV seroprevalence, and history of wartime abduction (adjusted odds ratio: 1.62, 95% confidence interval: 1.00 to 2.63) was marginally associated (P = 0.051).

CONCLUSIONS: This study documented a high rate of undiagnosed HIV infections and associations between war-related human rights violations, incarceration, and a heavy HIV burden among SWs in conflict-affected Northern Uganda. These findings highlight the serious harms of conflict and criminalization of marginalized women in sub-Saharan African contexts. SW-led interventions that address conflict experiences and policy shifts to promote a rights-based approach to HIV prevention and care remain critically needed.

33. Carrasco, M. A., et al. **"We talk, we do not have shame': addressing stigma by reconstructing identity through enhancing social cohesion among female sex workers living with HIV in the Dominican Republic."** *Cult Health Sex* 2016: 1-14.

This study explores social cohesion as a strategy used by female sex workers to address layered HIV and sex work-related stigma. Data derive from a thematic analysis of 23 in-depth interviews and 2 focus groups with female sex workers living with HIV enrolled in a multi-level HIV/STI prevention, treatment and care intervention in Santo Domingo, Dominican Republic. Drawing on Foucault's conceptualisation of modern power, discipline and resistance, we argue that social cohesion provides the psychosocial space (of trust, solidarity and mutual aid) to subvert oppressive societal norms, enabling the reconstruction of identity. Among study participants, identity reconstruction happened through the production, repetition and performance of new de-stigmatised narratives that emerged and were solidified through collective interaction. Findings highlight that enabling the collective reconstruction of identity through social cohesion - rather than solely attempting to change individual beliefs - is a successful approach to addressing stigma.

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Transgender People - 13

1. Pal, K., et al. **"Acceptability Study on HIV Self-Testing among Transgender Women, Men who Have Sex with Men, and Female Entertainment Workers in Cambodia: A Qualitative Analysis."** *PLoS One* 2016 11(11): e0166129. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5102413/pdf/pone.0166129.pdf>

BACKGROUND: In Cambodia, HIV prevalence is high while HIV testing rates remain low among transgender women (TG women), men who have sex with men (MSM), and female entertainment workers (FEW). Introducing self-testing for HIV to these key populations (KPs) could potentially overcome the under-diagnosis of HIV and significantly increase testing rates and receipt of the results, and thus could decrease transmission. Therefore, this study aimed to determine the acceptability of HIV self-testing (HIVST) among these three categories of KPs.

METHODS: This study was conducted through focus group discussions (FGDs) with TG women, MSM, and FEW in Phnom Penh city, Kampong Cham, Battambang, and Siem Reap provinces of Cambodia. Convenience sampling was used to recruit the participants. Two FGDs (six participants in each FGD) were conducted in each target group in each study site, totaling 24 FGDs (144 participants). Thematic analysis was performed to

identify common or divergent patterns across the target groups.

RESULTS: Almost all participants among the three groups (TG women, MSM, and FEW) had not heard about HIVST, but all of them expressed willingness to try it. They perceived HIVST as confidential, convenient, time-saving, and high-tech. Barriers to obtaining HIVST included cost, access, administration technique, embarrassment, and fear of pain. The majority preferred counseling before and after testing.

CONCLUSIONS: Participants showed high willingness to use and acceptability of HIVST due to its confidentiality/privacy and convenience even if it is not linked to a confirmatory test or care and treatment. Notwithstanding, to increase HIVST, the target groups would need affordable self-test kits, education about how to perform HIVST and read results, assurance about accuracy and reliability of HIVST, and provision of post-test counseling and facilitation of linkage to care and treatment.

2. Clark, J. L., et al. "**Anticipated Notification of Sexual Partners following STD Diagnosis among Men Who Have Sex with Men and Transgender Women in Lima, Peru: A Mixed Methods Analysis.**" *PLoS One* 2016 11(9): e0163905. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5042523/pdf/pone.0163905.pdf>

BACKGROUND: New strategies to support partner notification (PN) are critical for STD control and require detailed understanding of how specific individual and partnership characteristics guide notification decisions.

METHODS: From 2011 to 2012, 397 MSM and TW recently diagnosed with HIV, syphilis, or another STD completed a survey on anticipated notification of recent sexual partners and associated factors. Qualitative interviews were conducted with a subset of participants to provide further depth to quantitative findings. Prevalence ratios and generalized estimating equation (GEE) models were used to analyze participant- and partner-level factors associated with anticipated PN.

RESULTS: Among all partners reported, 52.5% were described as "Very Likely" or "Somewhat Likely" to be notified. Anticipated notification was more likely for main partners than casual (adjusted Prevalence Ratio [aPR], 95% CI: 0.63, 0.54-0.75) or commercial (aPR, 95% CI: 0.44, 0.31-0.62) partners. Other factors associated with likely notification included perception of the partner as an STD source (aPR, 95% CI: 1.27, 1.10-1.48) and anticipated future sexual contact with the partner (aPR, 95% CI: 1.30, 1.11-1.52). An HIV diagnosis was associated with a lower likelihood of notification than non-HIV STDs (aPR: 0.68, 0.55-0.86). Qualitative discussion of the barriers and incentives to PN reflected a similar differentiation of anticipated notification according to partnership type and type of HIV/STD diagnosis.

DISCUSSION: Detailed attention to how partnership characteristics guide notification outcomes is essential to the development of new PN strategies. By accurately and thoroughly assessing the diversity of partnership interactions among individuals with HIV/STD, new notification techniques can be tailored to partner-specific circumstances.

3. Rana, A. K., et al. "**Effects of In-country and Cross-Border Mobility on Condom Use Among Transgender Women (hijras) in Bangladesh: A Cross-Sectional Study.**" *AIDS Behav* 2016 20(10): 2165-77.

In Bangladesh transgender women (hijras) are thought to be highly mobile that may be an impediment to condom use. This cross-sectional study was conducted to determine the extent of mobility of hijras, in-country and cross-border, and whether mobility affects condom use in anal intercourse. Hijras ≥ 15 years of age, receiving services from the Global Fund supported HIV prevention program were enrolled. A behavioral questionnaire was administered and blood was tested for antibodies to HIV and syphilis. Of 889 hijras sampled, 41.3 % never traveled, 26.4 % traveled in-country and 32.3 % crossed the border in the last year. HIV and active syphilis was at 0.8 and 1.8 % respectively. Among hijras who crossed the border condom use was less likely in last anal intercourse (AOR 0.68; 95 % CI 0.48-0.96), and consistently with new (AOR 0.59; 95 % CI 0.34-1.01) and regular clients (AOR 0.45; 95 % CI 0.27-0.76) in the last week. This study concludes that in Bangladesh hijras are highly mobile and cross-border mobility negatively affects condom use.

4. Billings, J. D., et al. "Factors associated with previously undiagnosed human immunodeficiency virus infection in a population of men who have sex with men and male-to-female transgender women in Lima, Peru." *Medicine (Baltimore)* 2016 95(42): e5147. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5079329/pdf/medi-95-e5147.pdf>

The aim of the study was to identify factors associated with undiagnosed human immunodeficiency virus (HIV) infection among men who have sex with men (MSM) and male-to-female transgender women in Lima, Peru. We analyzed characteristics of 378 MSM and transgender women recruited from 2 sexually transmitted infection (STI) clinics in Lima, Peru. Descriptive analyses compared: (A) HIV-uninfected, (B) previously undiagnosed HIV-infected, and (C) previously diagnosed HIV-infected participants. Multivariable logistic regression models identified: (1) correlates of previously undiagnosed HIV-infection among participants thought to be HIV-uninfected (B vs A); and (2) correlates of previously undiagnosed HIV-infection among HIV-infected participants (B vs C). Subanalysis identified correlates of frequent HIV testing among participants thought to be HIV-uninfected. Among participants, 31.0% were HIV-infected; of those, 35.0% were previously undiagnosed. Among participants thought to be HIV-uninfected (model 1), recent condomless receptive anal intercourse and last HIV test being over 1-year ago (compared to within the last 6-months) were associated with increased odds of being previously undiagnosed HIV-infected (adjusted odds ratio [aOR] = 2.43, 95% confidence interval [95%CI] = 1.10-5.36; aOR = 2.87, 95%CI = 1.10-7.53, respectively). Among HIV-infected participants (model 2), recent condomless receptive anal intercourse was again associated with previously undiagnosed HIV-infection (aOR = 2.54, 95%CI = 1.04-6.23). Achieving post-secondary education and prior syphilis infection were associated with lower odds of having previously undiagnosed HIV-infection (aOR = 0.35, 95%CI = 0.15-0.81; aOR = 0.32, 95%CI = 0.14-0.75, respectively). Reporting semiannual testing was associated with higher educational attainment, identifying as a transgender woman, or reporting a history of syphilis (aOR = 1.94, 95%CI = 1.11-3.37; aOR = 2.40, 95%CI = 1.23-4.70; aOR = 2.76, 95%CI = 1.62-4.71, respectively). Lower odds of semiannual testing were associated with recent condomless insertive anal intercourse or reporting a moderate or high self-perceived risk of acquiring HIV (aOR = 0.56, 95%CI = 0.33-0.96; aOR = 0.32, 95%CI = 0.18-0.59 and aOR = 0.43, 95%CI = 0.21-0.86, respectively). In our study, undiagnosed HIV-infection was associated with recent condomless receptive anal intercourse, infrequent HIV testing, lower education, and absence of prior syphilis diagnosis. Infrequent HIV testing was associated with lower education, not identifying as transgender, recent condomless insertive anal intercourse, absence of prior syphilis diagnosis, and higher self-perceived risk of HIV. Further efforts to decrease HIV transmission and increase HIV-serostatus awareness should be directed towards effectively promoting condom use and frequent HIV testing, integrated with STI management.

5. Sevelius, J. M., et al. "The future of PrEP among transgender women: the critical role of gender affirmation in research and clinical practices." *J Int AIDS Soc* 2016 19(7(Suppl 6)): 21105. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5071750/pdf/JIAS-19-21105.pdf>

INTRODUCTION: Globally, transgender ("trans") women are one of the key populations most disproportionately impacted by HIV. Pre-exposure prophylaxis (PrEP) is the newest and most promising biomedical HIV prevention intervention to date. This paper reviews relevant literature to describe the current state of the science and describes the potential role of PrEP among trans women, including a discussion of unique considerations for maximizing the impact of PrEP for this vulnerable population.

METHODS: Available information, including but not limited to existing scientific literature, about trans women and PrEP was reviewed and critiqued based on author expertise, including PrEP clinical trials and rollout.

RESULTS: To date, PrEP demonstration projects and clinical trials have largely excluded trans women, or have not included them in a meaningful way. Data collection strategies that fail to identify trans women in clinical trials and research further limit the ability to draw conclusions about trans women's unique needs and devise strategies to meet them. Gender-affirming providers and clinic environments are essential components of any sexual health programme that aims to serve trans women, as they will largely avoid

settings that may result in stigmatizing encounters and threats to their identities. While there is currently no evidence to suggest drug-drug interactions between PrEP and commonly used feminizing hormone regimens, community concerns about potential interactions may limit interest in and uptake of PrEP among trans women.

CONCLUSIONS: In scaling up PrEP for trans women, it is essential to engage trans communities, utilize trans-inclusive research and marketing strategies and identify and/or train healthcare providers to provide gender-affirming healthcare to trans women, including transition-related care such as hormone provision. PrEP implementation guidelines must consider and address trans women's unique barriers and facilitators to uptake and adherence.

6. Hadikusumo, A. A., et al. "**High Rates of Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), and Human Immunodeficiency Virus Infections and Uncommon HBV Genotype/Subtype and HCV Subtype Distributions among Transgender Individuals in Surabaya, Indonesia.**" *Jpn J Infect Dis* 2016 69(6): 493-499. Online at: https://www.jstage.jst.go.jp/article/yoken/69/6/69_JJID.2015.384/_pdf

Transgender people are at a high risk for sexually transmitted viruses such as hepatitis B virus (HBV) and human immunodeficiency virus (HIV). Moreover, Indonesia has a moderate-to-high rate of HBV infection and rapid epidemic growth of HIV infection; hepatitis C virus (HCV) infection can co-occur with HBV and HIV infections. In this study, 10 of 107 individuals (9.3%) were positive for HBV surface antigen (HBsAg) and/or HBV DNA, whereas 19 of 101 individuals (18.8%) with negative results for HBsAg were positive for HBV core antibody (anti-HBc). Seven of the 107 individuals (6.5%) were anti-HCV positive, and 16 of the 100 tested samples (16.0%) were HIV positive. Genotype and subtype analyses of all 10 HBV DNA (6 HBsAg positive and 4 anti-HBc positive) strains showed that 3 were of the HBV genotype/HBsAg subtype C/adw2, one was of C/adw2, and 5 were of B/adw2. The HCV subtype distribution showed that 33.3% were of HCV-1b, and 66.7% were of HCV-3k (n = 6). These distributions differed from those found in the general population of Surabaya, Indonesia. Interestingly, HIV subtype analysis showed a high prevalence of HIV, with possible recombinants of CRF01_AE and subtype B.

7. Tang, S., et al. "**HIV epidemiology and responses among men who have sex with men and transgender individuals in China: a scoping review.**" *BMC Infect Dis* 2016 16(1): 588. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5073436/pdf/12879_2016_Article_1904.pdf

BACKGROUND: Despite global efforts to control HIV among key populations, new infections among men who have sex with men (MSM) and transgender (TG) individuals are still increasing. The increasing HIV epidemic among MSM/TG in China indicates that more effective services are urgently needed. However, policymakers and program managers must have a clear understanding of MSM/TG sexual health in China to improve service delivery. To meet this need, we undertook a scoping review to summarize HIV epidemiology and responses among MSM and TG individuals in China.

METHODS: We searched MEDLINE, EMBASE and the Cochrane Library for recent studies on MSM/TG HIV epidemiology and responses. We also included supplemental articles, grey literature, government reports, policy documents, and best practice guidelines.

RESULTS: Overall, HIV prevalence among Chinese MSM was approximately 8 % in 2015 with a higher prevalence observed in Southwest China. TG are not captured in national HIV, STD, or other sexual health surveillance systems. There is limited data sharing between the public health authorities and community-based organizations (CBOs). Like other low and middle income countries, China is challenged by low rates of HIV testing, linkage, and retention. Several pilot interventions have been shown to be effective to increase HIV testing among MSM and TG individuals, but have not been widely scaled up. Data from two randomized controlled trials suggests that crowdsourcing contests can increase HIV testing, creating demand for services while engaging communities.

CONCLUSION: Improving HIV surveillance and expanding HIV interventions for Chinese MSM and TG

individuals are essential. Further implementation research is needed to ensure high-quality HIV services for MSM and TG individuals in China.

8. MacCarthy, S., et al. **"Mind the gap: implementation challenges break the link between HIV/AIDS research and practice."** *Cad Saude Publica* 2016 32(10): e00047715. Online at: <http://www.scielo.br/pdf/csp/v32n10/1678-4464-csp-32-10-e00047715.pdf>

Sampling strategies such as respondent-driven sampling (RDS) and time-location sampling (TLS) offer unique opportunities to access key populations such as men who have sex with men (MSM) and transgender women. Limited work has assessed implementation challenges of these methods. Overcoming implementation challenges can improve research quality and increase uptake of HIV services among key populations. Drawing from studies using RDS in Brazil and TLS in Peru, we summarize challenges encountered in the field and potential strategies to address them. In Brazil, study site selection, cash incentives, and seed selection challenged RDS implementation with MSM. In Peru, expansive geography, safety concerns, and time required for study participation complicated TLS implementation with MSM and transgender women. Formative research, meaningful participation of key populations across stages of research, and transparency in study design are needed to link HIV/AIDS research and practice. Addressing implementation challenges can close gaps in accessing services among those most burdened by the epidemic.

9. Satcher, M. F., et al. **"Partner-Level Factors Associated with Insertive and Receptive Condomless Anal Intercourse Among Transgender Women in Lima, Peru."** *AIDS Behav* 2016.

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

10. Chow, J. Y., et al. **"Peru's HIV care continuum among men who have sex with men and transgender women: opportunities to optimize treatment and prevention."** *Int J STD AIDS* 2016 27(12): 1039-1048.

The HIV epidemic in Peru is concentrated in men who have sex with men (MSM) and transgender women (TW), who have an estimated prevalence $> 10\%$, while the overall population prevalence remains $< 1\%$. Because MSM and TW account for $>60\%$ of new infections, it is crucial to understand the full HIV continuum of care for these key populations. We performed a review of the peer-reviewed scientific and grey literature to determine the proportion of HIV-infected MSM and TW in Peru who are diagnosed, linked to and retained in care, are taking antiretroviral therapy (ART), and who have attained virologic suppression. Of the estimated 613,080 MSM and TW in Peru in 2015, approximately 63,981 are HIV-infected. Only 24.0% of HIV-infected MSM and TW are aware of their diagnosis, 15.6% are retained in care, 13.6% are on ART, and 12.0% have achieved adequate virologic control. The largest drop-off in the HIV care continuum occurs at the first step: diagnosis of HIV. Improving HIV serostatus awareness among MSM and TW is crucial to controlling Peru's HIV epidemic. In the era of 'treatment as prevention', understanding the full HIV care continuum may help guide efforts to curb transmission and reduce HIV-related morbidity and mortality.

11. Logie, C. H., et al. **"Prevalence and Correlates of HIV Infection and HIV Testing Among Transgender Women in Jamaica."** *AIDS Patient Care STDS* 2016 30(9): 416-24.

Transgender women are overrepresented in the Caribbean HIV epidemic. The study objective was to examine correlates of HIV infection and HIV testing among transgender women in Jamaica. We implemented a cross-sectional survey with transgender women in Kingston and Ocho Rios, Jamaica. We conducted multivariable logistic regression to identify factors associated with HIV testing and HIV infection. Among 137 transgender women [mean age 24.0; standard deviation (SD) 5.5], three-quarters (n = 103, 75.7%) had received an HIV test. Of these, one-quarter (n = 26, 25.2%) were HIV positive. In multivariable analyses, HIV testing was associated with: perceived HIV risk [adjusted odds ratio (AOR) 2.42, confidence interval (CI) 1.36-4.28], depression (AOR 1.34, CI 1.01-1.77), forced sex (AOR 3.83, CI 1.42-10.35), physical abuse (AOR 4.11, CI 1.44-11.72), perceived transgender stigma (AOR 1.23, 1.06-1.42), having a healthcare provider (AOR 5.89, CI 1.46-23.77), and lower HIV-related stigma (AOR 0.96, CI 0.92-0.99), incarceration (AOR 0.28, CI 0.10-0.78), and drug use (AOR 0.74, CI 0.58-0.95). HIV infection was associated with the following: homelessness (AOR 5.94, CI 1.27-27.74), perceived HIV risk (AOR 1.67, CI 1.02-2.72), depression (AOR 1.39, CI 1.06-1.82), STI history (AOR 56.79, CI 5.12-630.33), perceived (AOR 1.26, CI 1.06-1.51) and enacted (AOR 1.16, CI 1.04-1.29) transgender stigma, forced sex (AOR 4.14, CI 1.49-11.51), physical abuse (AOR 3.75, CI 1.39-10.12), and lower self-rated health (AOR 0.55, CI 0.30-0.98) and social support (AOR 0.79, CI 0.64-0.97). Transgender women in Jamaica experience high HIV infection rates and suboptimal HIV testing. Combination HIV prevention approaches should address transgender women's social and structural vulnerabilities.

12. Galea, J. T., et al. **"Rectal Douching Prevalence and Practices Among Peruvian Men Who have Sex with Men and Transwomen: Implications for Rectal Microbicides."** *AIDS Behav* 2016 20(11): 2555-2564.

Peruvian men who have sex with men (MSM) and transwomen (TW) could benefit from a rectal microbicide (RM) formulated as a rectal douche to prevent HIV infection. However, little is known about rectal douching practices among Peruvian MSM and TW, information necessary to inform RM douche development and future uptake. Using a self-administered interview, we examined the prevalence of and factors associated with rectal douching among a convenience sample of 415 Peruvian MSM and 68 TW. In the previous 6 months, 18 % of participants reported rectal douching using pre-filled commercial kits or plastic bottles or enema bags filled with water, water/soap or saltwater. Multivariate logistic analysis found that "equally insertive and receptive" or "exclusively/mainly receptive" sex roles were associated with douche use. Rectal douching among Peruvian MSM and TW is similar to reports from other studies and supports the potential uptake of a douche-formulated RM in these populations.

13. Blair, C. S., et al. **"Sexual Orientation, Gender Identity and Perceived Source of Infection Among Men Who Have Sex with Men (MSM) and Transgender Women (TW) Recently Diagnosed with HIV and/or STI in Lima, Peru."** *AIDS Behav* 2016 20(10): 2178-85.

Risk perception and health behaviors result from individual-level factors influenced by specific partnership contexts. We explored individual- and partner-level factors associated with partner-specific perceptions of HIV/STI risk among 372 HIV/STI-positive MSM and transgender women (TW) in Lima, Peru. Generalized estimating equations explored participants' perception of their three most recent partner(s) as a likely source of their HIV/STI diagnosis. Homosexual/gay (PR = 2.07; 95 % CI 1.19-3.61) or transgender (PR = 2.84; 95 % CI 1.48-5.44) partners were more likely to be considered a source of infection than heterosexual partners. Compared to heterosexual respondents, gay and TW respondents were less likely to associate their partner with HIV/STI infection, suggesting a cultural link between gay or TW identity and perceived HIV/STI risk. Our findings demonstrate a need for health promotion messages tailored to high-risk MSM partnerships addressing how perceived HIV/STI risk aligns or conflicts with actual transmission risks in sexual partnerships and networks.

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Young Key Populations - 6

1. Newman, P. A., et al. "**Acceptability and Preferences for Hypothetical Rectal Microbicides among a Community Sample of Young Men Who Have Sex with Men and Transgender Women in Thailand: A Discrete Choice Experiment.**" *AIDS Behav* 2016 20(11): 2588-2601.

Rectal microbicides (RMs) may offer substantial benefits in expanding HIV prevention options for key populations. From April to August 2013, we conducted Tablet-Assisted Survey Interviewing, including a discrete choice experiment, with participants recruited from gay entertainment venues and community-based organizations in Chiang Mai and Pattaya, Thailand. Among 408 participants, 74.5 % were young men who have sex with men, 25.5 % transgender women, with mean age = 24.3 years. One-third (35.5 %) had </=9th grade education; 63.4 % engaged in sex work. Overall, 83.4 % reported they would definitely use a RM, with more than 2-fold higher odds of choice of a RM with 99 versus 50 % efficacy, and significantly higher odds of choosing gel versus suppository, intermittent versus daily dosing, and prescription versus over-the-counter. Sex workers were significantly more likely to use a RM immediately upon availability, with greater tolerance for moderate efficacy and daily dosing. Engaging key populations in assessing RM preferences may support biomedical research and evidence-informed interventions to optimize the effectiveness of RMs in HIV prevention.

2. Gay, C. L., et al. "**Fixed-dose combination emtricitabine/tenofovir/efavirenz initiated during acute HIV infection; 96-week efficacy and durability.**" *Aids* 2016 30(18): 2815-2822.

BACKGROUND: Updated guidelines recommend immediate antiretroviral treatment (ART) during acute HIV infection (AHI), but efficacy data on regimens during AHI are limited.

METHODS: We provide final data on a prospective, single-arm 96-week open-label study of once-daily emtricitabine/tenofovir/efavirenz initiated during AHI. The primary endpoint was the proportion of responders with HIV RNA less than 200 copies/ml by week 24. We examined time to viral suppression, retention, and CD8 cell activation through week 96 in relation to baseline characteristics.

RESULTS: Between January 2005 and December 2011, 92 AHI participants enrolled. Most participants (78%) were men who have sex with men (MSM), and 42% were young MSM (18-25 years of age). Two participants withdrew leaving 90 patients for analysis. Eighty-one (90%) remained on therapy and achieved viral suppression to less than 200 copies/ml by week 24, and 71 (79%) to less than 50 copies/ml at week 48. The median time from ART initiation to suppression less than 200 copies/ml was 65 days (range 7-523) and to less than 50 copies/ml was 105 days (range 14-523). The frequency of immune activation declined from a median of 67% to 16% through week 96. Retention on study was maintained in 92% of participants at week 48 and in 83% through week 96. Among 75 participants retained through week 96, 92% were suppressed to less than 50 copies/ml. Among 39 young MSM, 79% completed a week 96 visit and 67% were suppressed at week 96.

CONCLUSION: ART during AHI resulted in rapid and sustained viral suppression with high rates of retention in care and on ART in this cohort including a large proportion of young MSM.

3. Deuba, K., et al. "**HIV decline associated with changes in risk behaviours among young key populations in Nepal: analysis of population-based HIV prevalence surveys between 2001 and 2012.**" *Int J STD AIDS* 2016.

We assessed changes in HIV prevalence and risk behaviours among young key populations in Nepal. A total of 7505 participants (aged 16-24 years) from key populations who were at increased risk of HIV infection (2767 people who inject drugs (PWID); 852 men who have sex with men/transgender (MSM/TG); 2851 female sex workers (FSW) and 1035 male labour migrants) were recruited randomly over a 12-year period, 2001-2012. Local epidemic zones of Nepal (Kathmandu valley, Pokhara valley, Terai Highway and West to Far West

hills) were analysed separately. We found a very strong and consistent decline in HIV prevalence over the past decade in different epidemic zones among PWID and MSM/TG in Kathmandu, the capital city, most likely due to a parallel increase in safe needle and syringe use and increased condom use. A decrease in HIV prevalence in 22 Terai highway districts, sharing an open border with India, was also consistent with increased condom use among FSW. Among male labour migrants, HIV prevalence was low throughout the period in the West to Far West hilly regions. Condom use by migrant workers involved with FSW abroad increased while their condom use with Nepalese FSW declined. Other risk determinants such as mean age at starting first injection, injection frequency, place of commercial sex solicitation, their mean age when leaving to work abroad did not change consistently across epidemic zones among the young key populations under study. In Nepal, the decline in HIV prevalence over the past decade was remarkably significant and consistent with an increase in condom use and safer use of clean needles and syringes. However, diverging trends in risk behaviours across local epidemic zones of Nepal suggest a varying degree of implementation of national HIV prevention policies. This calls for continued preventive efforts as well as surveillance to sustain the observed downward trend.

4. Foroughi, M., et al. "**Prevalence of HIV, HBV and HCV among street and labour children in Tehran, Iran.**" *Sex Transm Infect* 2016.

OBJECTIVES: The existence of street and working children in Iran is undeniable. The precarious conditions of these children (including disrupted family, poverty, high prevalence of crime among relatives, family members and peers) cause social harm and high-risk behaviours, including drug addiction, selling sex or having sex with adolescents or peers. Here we explore the HIV, hepatitis B and hepatitis C status of street and working children in Tehran.

METHODS: One thousand street and labour children, aged 10-18 years, were recruited by using the time-location sampling method, and semistructured questionnaires were used to find demographic information and information on HIV/AIDS-related high-risk sexual behaviours. Blood samples were collected from children, with use of the dried blood sampling method.

RESULTS: 4.5% of children were HIV infected, 1.7% were infected with hepatitis B virus and 2.6% were infected with hepatitis C virus (HCV). Having parents who used drug, infected with HCV and having experience in trading sex significantly increased the likelihood of getting HIV among the street children of Tehran.

CONCLUSION: HIV prevalence among street children is much higher than general population (<0.1%), and in fact, the rate of positivity comes close to that among female sex workers in Iran. These findings must be an alarm for HIV policymakers to consider immediate and special interventions for this at-risk group.

5. Johnston, L. G., et al. "**Recent HIV Testing Among Young Men Who Have Sex with Men in Bangkok and Chiang Mai: HIV Testing and Prevention Strategies Must Be Enhanced in Thailand.**" *AIDS Behav* 2016 20(9): 2023-32.

HIV infection among men who have sex with men, particularly in Thai urban settings and among younger cohorts, is escalating. HIV testing and counseling (HTC) are important for prevention and obtaining treatment and care. We examine data from a 2013 survey of males, 15-24 years, reporting past-year sex with a male and living in Bangkok or Chiang Mai. Almost three quarters of young MSM (YMSM) in Bangkok and only 27 % in Chiang Mai had an HIV test in the previous year. Associations for HIV testing varied between cities, although having employment increased the odds of HIV testing for both cities. In Bangkok, family knowledge of same sex attraction and talking to parents/guardians about HIV/AIDS had higher odds of HIV testing. Expanded HTC coverage is needed for YMSM in Chiang Mai. All health centers providing HTC, including those targeting MSM, need to address the specific needs of younger cohorts.

6. Clatts, M. C., et al. "**Sexually transmissible infection and HIV prevention and treatment for young male sex workers in Vietnam: findings from the SHEATH intervention.**" *Sex Health* 2016.

BACKGROUND: Urban centres in Vietnam have high rates of HIV infection, especially among men who have sex with men (MSM). A subgroup of MSM, young male sex workers (YMSW), are at especially high risk due to concurrent sex with multiple male and female partners, low levels of knowledge regarding HIV and sexually transmissible infection (STI) transmission, and limited engagement with health services, including STI and HIV screening and treatment.

METHODS: A targeted intervention (SHEATH) derived from Harm Reduction and Sexual Health Promotion intervention technology was implemented in an out-of-treatment population of YMSW in Hanoi and Ho Chi Minh City (n=919).

RESULTS: YMSW reported high levels of satisfaction with each of the seven core modules within the intervention and for the intervention as a whole. The intervention conferred significant benefit in relation to improved knowledge of STI and HIV transmission ($P < 0.001$). Although only 36% of participants had seen a healthcare provider in the past year, following the intervention 81% intended to see one in the next 6 months. Similarly, although 71% of participants did not disclose that they were MSM the last time they visited a healthcare provider, following the intervention 71% intended to do so at their next visit. High rates of STIs (> 10%) and HIV (9.5%) were also found.

CONCLUSION: The data show that the SHEATH intervention can be implemented in this population and setting, is met with high rates of acceptability, and positively impacts STI and HIV knowledge and multiple health services outcomes (including knowledge of HIV status and disposition towards habituation of HIV screening).

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