



Quarterly Research Digest on HIV and Key Populations

June 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 - 2

1. Bajunirwe, F., et al. "**Identification of gaps for implementation science in the HIV prevention, care and treatment cascade; a qualitative study in 19 districts in Uganda.**" *BMC Res Notes* 2016 9(1): 217. Online at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4831085/pdf/13104_2016_Article_2024.pdf.

BACKGROUND: Over the last 20 years, countries in sub Saharan Africa have made significant strides in the implementation of programs for HIV prevention, care and treatment. Despite, the significant progress made, many targets set by the United Nations have not been met. There remains a large gap between the ideal and what has been achieved. There are several operational issues that may be responsible for this gap, and these need to be addressed in order to achieve the targets. Therefore, the aim of this study was to identify gaps in the HIV prevention, care and treatment cascade, in a large district based HIV implementation program. We aimed to identify gaps that are amenable for evaluation using implementation science, in order to improve the delivery of HIV programs in rural Uganda.

METHODS: We conducted key informant (KI) interviews with 60 district health officers and managers of HIV/AIDS clinics and organizations and 32 focus group discussions with exit clients seeking care and treatment for HIV in the 19 districts. The data analysis process was guided using a framework approach. The recordings were transcribed verbatim. Transcripts were read back and forth and codes generated based on the framework.

RESULTS: Nine emerging themes that comprise the gaps were identified and these were referral mechanisms indicating several loop holes, low levels of integration of HIV/TB services, low uptake of services for PMTCT services by pregnant women, low coverage of services for most at risk populations (MARPs), poor HIV coordination structures in the districts, poor continuity in the delivery of pediatric HIV/AIDS services, limited community support for orphans and vulnerable (OVC's), inadequate home based care services and HIV services and support for discordant couples. The themes indicate there are plenty of gaps that need to be covered and have been ignored by current programs.

CONCLUSIONS: Our study has identified several gaps and suggested several interventions that should be tested before large scale implementation. The implementation of these programs should be adequately evaluated in order to provide field evidence of effectiveness and replicability in similar areas.

2. Conserve, D. F., et al. "**Systematic review of mobile health behavioural interventions to improve uptake of HIV testing for vulnerable and key populations.**" *J Telemed Telecare* 2016.

INTRODUCTION: This systematic narrative review examined the empirical evidence on the effectiveness of mobile health (mHealth) behavioural interventions designed to increase the uptake of HIV testing among vulnerable and key populations.

METHODS: MEDLINE/PubMed, Embase, Web of Science, and Global Health electronic databases were searched. Studies were eligible for inclusion if they were published between 2005 and 2015, evaluated an mHealth intervention, and reported an outcome relating to HIV testing. We also reviewed the bibliographies of retrieved studies for other relevant citations. The methodological rigor of selected articles was assessed, and narrative analyses were used to synthesize findings from mixed methodologies.

RESULTS: A total of seven articles met the inclusion criteria. Most mHealth interventions employed a text-messaging feature and were conducted in middle- and high-income countries. The methodological rigor was moderate among studies. The current literature suggests that mHealth interventions can have significant positive effects on HIV testing initiation among vulnerable and key populations, as well as the general public. In some cases, null results were observed. Qualitative themes relating to the use of mobile technologies to increase HIV testing included the benefits of having low-cost, confidential, and motivational communication. Reported barriers included cellular network restrictions, poor linkages with physical testing services, and limited knowledge of appropriate text-messaging dose.

DISCUSSION: MHealth interventions may prove beneficial in reducing the proportion of undiagnosed persons living with HIV, particularly among vulnerable and key populations. However, more rigorous and tailored interventions are needed to assess the effectiveness of widespread use.

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People Who Inject Drugs – 50

1. Dawson, L., et al. "**Addressing ethical challenges in HIV prevention research with people who inject drugs.**" *J Med Ethics* 2016.

Despite recent advances in HIV prevention and treatment, high HIV incidence persists among people who inject drugs (PWID). Difficult legal and political environments and lack of services for PWID likely contribute to high HIV incidence. Some advocates question whether any HIV prevention research is ethically justified in settings where healthcare system fails to provide basic services to PWID and where implementation of

research findings is fraught with political barriers. Ethical challenges in research with PWID include concern about whether research evidence will be translated into practice; concerns that research might exacerbate background risks; and ethical challenges regarding the standard of HIV prevention in research. While these questions arise in other research settings, for research with PWID, these questions are especially controversial. This paper analyses four ethical questions in determining whether research could be ethically acceptable: (1) Can researchers ensure that research does not add to the burden of social harms and poor health experienced by PWID? (2) Should research be conducted in settings where it is uncertain whether research findings will be translated into practice? (3) When best practices in prevention and care are not locally available, what standard of care and prevention is ethically appropriate? (4) Does the conduct of research in settings with oppressive policies constitute complicity? We outline specific criteria to address these four ethical challenges. We also urge researchers to join the call to action for policy change to provide proven safe and effective HIV prevention and harm reduction interventions for PWID around the world.

2. Kerridge, B. T., et al. "**Armed Conflict, Substance Use and HIV: A Global Analysis.**" *AIDS Behav* 2016 20(3): 473-83.

Armed conflict is frequently assumed to be a contributor to the global HIV epidemic, but existing evidence is sparse. We examined the relationship between armed conflict between 2002 and 2008 and HIV disability life years (DALYs) in 2010 among WHO Member States. Using partial least squares analysis we also examined moderation of the armed conflict-HIV link by two susceptibility constructs (background risk, substance use) and one vulnerability mediator (numbers of refugees, people on ART, and total HIV spending). Background risk directly impacted HIV DALYs ($p < 0.05$), substance use moderated the conflict-HIV relationship ($p < 0.01$). The vulnerability construct mediated the conflict-HIV association ($p < 0.01$). Findings underscore the need to align HIV prevention/intervention efforts with pre-existing HIV burden and reduce the impact of natural disasters on the populace in conflict-affected states. Integration of substance prevention/harm reduction programs within national HIV responses, attention to most-at-risk populations and increased surveillance/treatment of drug resistant HIV and TB is warranted.

3. Rebeiro, P. F., et al. "**Assessing the HIV Care Continuum in Latin America: progress in clinical retention, cART use and viral suppression.**" *J Int AIDS Soc* 2016 19(1): 20636. Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4827101/pdf/JIAS-19-20636.pdf>.

INTRODUCTION: We assessed trends in HIV Care Continuum outcomes associated with delayed disease progression and reduced transmission within a large Latin American cohort over a decade: clinical retention, combination antiretroviral therapy (cART) use and viral suppression (VS).

METHODS: Adults from Caribbean, Central and South America network for HIV epidemiology clinical cohorts in seven countries contributed data between 2003 and 2012. Retention was defined as two or more HIV care visits annually, >90 days apart. cART was defined as prescription of three or more antiretroviral agents annually. VS was defined as HIV-1 RNA <200 copies/mL at last measurement annually. cART and VS denominators were subjects with at least one visit annually. Multivariable modified Poisson regression was used to assess temporal trends and examine associations between age, sex, HIV transmission mode, cohort, calendar year and time in care.

RESULTS: Among 18,799 individuals in retention analyses, 14,380 in cART analyses and 13,330 in VS analyses, differences existed between those meeting indicator definitions versus those not by most characteristics. Retention, cART and VS significantly improved from 2003 to 2012 (63 to 77%, 74 to 91% and 53 to 82%, respectively; $p < 0.05$, each). Female sex (risk ratio (RR)=0.97 vs. males) and injection drug use as HIV transmission mode (RR=0.83 vs. male sexual contact with males (MSM)) were significantly associated with lower retention, but unrelated with cART or VS. MSM (RR=0.96) significantly decreased the probability of cART compared with heterosexual transmission.

CONCLUSIONS: HIV Care Continuum outcomes improved over time in Latin America, though disparities for

vulnerable groups remain. Efforts must be made to increase retention, cART and VS, while engaging in additional research to sustain progress in these settings.

4. Mlunde, L. B., et al. "**Association of opioid agonist therapy with the initiation of antiretroviral therapy - a systematic review.**" *Int J Infect Dis* 2016 46: 27-33. Online at: http://ac.els-cdn.com/S1201971216310098/1-s2.0-S1201971216310098-main.pdf?_tid=2386b200-29ba-11e6-8dd5-00000aacb35e&acdnat=1464979191_2322abedc0de3be51241fe6668db9d1f

OBJECTIVES: People who inject drugs are at high risk of HIV infection but often face barriers in accessing medical care including access to antiretroviral therapy (ART). Evidence is available about the effectiveness of opioid agonist therapy on drug dependency and risk behaviors. However, it remains scattered regarding access to ART among HIV-positive people who inject drugs. We conducted a systematic review to examine the association of opioid agonist therapy with ART initiation among HIV-positive people who inject drugs.

METHODS: We searched the literature for evidence from seven databases. We conducted a narrative synthesis and meta-analysis to examine the association of opioid agonist therapy with ART initiation.

RESULTS: Five out of 2,901 identified studies met the inclusion criteria. Three out of five studies reported that, HIV-positive people receiving opioid agonist therapy initiated ART more than those not receiving opioid agonist therapy. In meta-analysis, opioid agonist therapy was associated with ART initiation among HIV positive people who inject drugs (pooled odds ratio: 1.68; 95% confidence interval: 1.03-2.73).

CONCLUSIONS: Opioid agonist therapy is positively associated with ART initiation among HIV-positive people who inject drugs. It is important to scale up opioid agonist therapy among people who inject drugs to improve their ART initiation.

5. Polonsky, M., et al. "**Attitudes Toward Addiction, Methadone Treatment, and Recovery Among HIV-Infected Ukrainian Prisoners Who Inject Drugs: Incarceration Effects and Exploration of Mediators.**" *AIDS Behav* 2016.

In this study, we use data from a survey conducted in Ukraine among 196 HIV-infected people who inject drugs, to explore attitudes toward drug addiction and methadone maintenance therapy (MMT), and intentions to change drug use during incarceration and after release from prison. Two groups were recruited: Group 1 (n = 99) was currently incarcerated and Group 2 (n = 97) had been recently released from prison. This paper's key finding is that MMT treatment and addiction recovery were predominantly viewed as mutually exclusive processes. Group comparisons showed that participants in Group 1 (pre-release) exhibited higher optimism about changing their drug use, were less likely to endorse methadone, and reported higher intention to recover from their addiction. Group 2 participants (post-release), however, reported higher rates of HIV stigma. Structural equation modeling revealed that in both groups, optimism about recovery and awareness of addiction mediated the effect of drug addiction severity on intentions to recover from their addiction.

6. Sabin, K., et al. "**Availability and Quality of Size Estimations of Female Sex Workers, Men Who Have Sex with Men, People Who Inject Drugs and Transgender Women in Low- and Middle-Income Countries.**" *PLoS One* 2016 11(5): e0155150. Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4862645/pdf/pone.0155150.pdf>

OBJECTIVE: To assess the availability and quality of population size estimations of female sex workers (FSW), men who have sex with men (MSM), people who inject drug (PWID) and transgender women.

METHODS: Size estimation data since 2010 were retrieved from global reporting databases, Global Fund grant application documents, and the peer-reviewed and grey literature. Overall quality and availability were assessed against a defined set of criteria, including estimation methods, geographic coverage, and extrapolation approaches. Estimates were compositely categorized into 'nationally adequate', 'nationally

inadequate but locally adequate', 'documented but inadequate methods', 'undocumented or untimely' and 'no data.'

FINDINGS: Of 140 countries assessed, 41 did not report any estimates since 2010. Among 99 countries with at least one estimate, 38 were categorized as having nationally adequate estimates and 30 as having nationally inadequate but locally adequate estimates. Multiplier, capture-recapture, census and enumeration, and programmatic mapping were the most commonly used methods. Most countries relied on only one estimate for a given population while about half of all reports included national estimates. A variety of approaches were applied to extrapolate from sites-level numbers to national estimates in two-thirds of countries.

CONCLUSIONS: Size estimates for FSW, MSM, PWID and transgender women are increasingly available but quality varies widely. The different approaches present challenges for data use in design, implementation and evaluation of programs for these populations in half of the countries assessed. Guidance should be further developed to recommend: a) applying multiple estimation methods; b) estimating size for a minimum number of sites; and, c) documenting extrapolation approaches.

7. Saleem, H. T., et al. **""Can't you initiate me here?": Challenges to timely initiation on antiretroviral therapy among methadone clients in Dar es Salaam, Tanzania.** *Int J Drug Policy* 2016 30: 59-65.

BACKGROUND: Despite dramatic improvement in antiretroviral therapy (ART) access globally, people living with HIV who inject drugs continue to face barriers that limit their access to treatment. This paper explores barriers and facilitators to ART initiation among clients attending a methadone clinic in Dar es Salaam, Tanzania.

METHODS: We interviewed 12 providers and 20 clients living with HIV at the Muhimbili National Hospital methadone clinic between January and February 2015. We purposively sampled clients based on sex and ART status and providers based on job function. To analyze interview transcripts, we adopted a content analysis approach.

RESULTS: Participants identified several factors that hindered timely ART initiation for clients at the methadone clinic. These included delays in CD4 testing and receiving CD4 test results; off-site HIV clinics; stigma operating at the individual, social and institutional levels; insufficient knowledge of the benefits of early ART initiation among clients; treatment breakdown at the clinic level possibly due to limited staff; and initiating ART only once one feels physically ill. Participants perceived social support as a buffer against stigma and facilitator of HIV treatment. Some clients also reported that persistent monitoring and follow-up on their HIV care and treatment by methadone clinic providers led them to initiate ART.

CONCLUSION: Health system factors, stigma and limited social support pose challenges for methadone clients living with HIV to initiate ART. Our findings suggest that on-site point-of-care CD4 testing, a peer support system, and trained HIV treatment specialists who are able to counsel HIV-positive clients and initiate them on ART at the methadone clinic could help reduce barriers to timely ART initiation for methadone clients.

8. Solomon, S. S., et al. **"Community viral load, antiretroviral therapy coverage, and HIV incidence in India: a cross-sectional, comparative study."** *Lancet HIV* 2016 3(4): e183-90.

BACKGROUND: HIV incidence is the best measure of treatment-programme effectiveness, but its measurement is difficult and expensive. The concept of community viral load as a modifiable driver of new HIV infections has attracted substantial attention. We set out to compare several measures of community viral load and antiretroviral therapy (ART) coverage as correlates of HIV incidence in high-risk populations.

METHODS: We analysed data from a sample of people who inject drugs and men who have sex with men, who were participants of the baseline assessment of a cluster-randomised trial in progress across 22 cities in

India (ClinicalTrials.gov number NCT01686750). We recruited the study population by use of respondent-driven sampling and did the baseline assessment at 27 community-based sites (12 for men who have sex with men and 15 for people who inject drugs). We estimated HIV incidence with a multiassay algorithm and calculated five community-based measures of HIV control: mean log₁₀ HIV RNA in participants with HIV in a community either engaged in care (in-care viral load), aware of their status but not necessarily in care (aware viral load), or all HIV-positive individuals whether they were aware, in care, or not (population viral load); participants with HIV in a community with HIV RNA more than 150 copies per mL (prevalence of viraemia); and the proportion of participants with HIV who self-reported ART use in the previous 30 days (population ART coverage). All participants were tested for HIV, with additional testing in HIV-positive individuals. We assessed correlations between the measures and HIV incidence with Spearman correlation coefficients and linear regression analysis.

FINDINGS: Between Oct 1, 2012, and Dec 19, 2013, we recruited 26 503 participants, 12 022 men who have sex with men and 14 481 people who inject drugs. Median incidence of HIV was 0.87% (IQR 0.40-1.17) in men who have sex with men and 1.43% (0.60-4.00) in people who inject drugs. Prevalence of viraemia was more strongly correlated with HIV incidence (correlation 0.81, 95% CI 0.62-0.91; $p < 0.0001$) than all other measures, although correlation was significant with aware viral load (0.59, 0.27-0.79; $p = 0.001$), population viral load (0.51, 0.16-0.74; $p = 0.007$), and population ART coverage (-0.54, -0.76 to -0.20; $p = 0.004$). In-care viral load was not correlated with HIV incidence (0.29, -0.10 to 0.60; $p = 0.14$). With regression analysis, we estimated that to reduce HIV incidence by 1 percentage point in a community, prevalence of viraemia would need to be reduced by 4.34%, and ART use in HIV-positive individuals would need to increase by 19.5%.

INTERPRETATION: Prevalence of viraemia had the strongest correlation with HIV incidence in this sample and might be a useful measure of the effectiveness of a treatment programme.

FUNDING: US National Institutes of Health, Elton John AIDS Foundation.

9. Culbert, G. J., et al. **"Confronting the HIV, Tuberculosis, Addiction, and Incarceration Syndemic in Southeast Asia: Lessons Learned from Malaysia."** *J Neuroimmune Pharmacol* 2016.

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.

10. Zhang, N., et al. **"Disparities in HIV Care Along the Path From Infection to Viral Suppression: A Cross-sectional Study of HIV/AIDS Patient Records in 2013, Shandong Province, China."** *Clin Infect Dis* 2016.

BACKGROUND: The 90-90-90 targets recommended by the Joint United Nations Programme on HIV/AIDS require strengthening human immunodeficiency virus (HIV) care, which includes diagnosis, linkage to and retention in care, assessment for treatment suitability, and optimization of HIV treatment. We sought to quantify patient engagement along the continuum, 10 years after introduction of Chinese HIV care policies.

METHODS: We included patients from Shandong, China, who were diagnosed with HIV from 1992 to 2013. Records were obtained from the HIV/AIDS Comprehensive Response Information Management System to populate a 7-step HIV care continuum. Pearson chi² test and multivariate logistic regression were used for analysis.

RESULTS: Of 6500 estimated HIV-infected persons, 60.1% were diagnosed, of whom 41.9% received highly active antiretroviral therapy (HAART). Only 59.6% of patients on HAART and 15% of all infected persons achieved viral suppression. Children infected by mother-to-child transmission (MTCT) and persons infected by intravenous drug use were less likely to be linked to and retained in care (odds ratio [OR], 0.33 [95% confidence interval [CI], .14-.80] and OR, 0.58 [95% CI, .40-.90], respectively). Persons tested in custodial institutions were substantially less likely to be on HAART (OR, 0.22 [95% CI, .09-.59]) compared with those tested in medical facilities. Patients on HAART infected by homosexual or heterosexual transmission and those infected by MTCT were less likely to achieve viral suppression (OR, 0.18 [95% CI, .09-.34]; OR, 0.12 [95% CI, .06-.22]; OR, 0.07 [95% CI, .02-.20], respectively).

CONCLUSIONS: Our report suggests, at the current rate, Shandong Province has to accelerate HIV care efforts to close disparities in HIV care and achieve the 90-90-90 goals equitably.

11. Hser, Y. I., et al. "**Drug Abuse, HIV, and HCV in Asian Countries.**" *J Neuroimmune Pharmacol* 2016.

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.

12. Tran, B. X., et al. "**Drug addiction stigma in relation to methadone maintenance treatment by different service delivery models in Vietnam.**" *BMC Public Health* 2016 16(1): 238. Online at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4784456/pdf/12889_2016_Article_2897.pdf

BACKGROUND: The rapid expansion of methadone maintenance treatment (MMT) services has significantly improved health status and quality of life of patients. However, little is known about its impacts on addiction-related stigma and associated factors.

METHODS: A cross-sectional survey was conducted in 2013 in Vietnam's capital, Hanoi, and Nam Dinh province among 1016 methadone maintenance patients; 26.6 % at provincial AIDS centers (PAC) and 73.4 % at district health centers (DHC), respectively. Drug addiction history and related stigma, health status, MMT-related covariates, and sociodemographic characteristics were interviewed.

RESULTS: More than one-sixth of the sample reported experiencing felt or enacted stigma, including Blame or Judgement (17.2 %), Shame (19.9 %), or Others' fear of HIV transmission (17.1 %). These proportions were higher in PACs than in DHCs, which are integrated with other HIV or general health care services. Very few patients reported being discriminated at the workplace (2.5 %) or at health care services (1.7 %); however, 15.6 % of patients at PACs and 10.6 % of patients at DHCs reported discrimination in their communities. Drug users taking MMT for longer periods were less likely to report felt stigma. Other factors associated with stigma against MMT patients included the lack of comprehensive services, higher education, presence of pain/discomfort, and anxiety/depression, self-reported HIV positive, and number of previous drug rehabilitation episodes.

CONCLUSION: The study shows a high level of stigma against MMT patients and emphasizes the necessity to integrate MMT with comprehensive health and support services. Mass communication campaigns to reduce stigma against people with drug addiction and HIV/AIDS, as well as vocational trainings and jobs referrals for MMT patients, are needed to maximize the benefits of MMT programs in Vietnam.

13. Aaraj, E., et al. "**Drug policy and harm reduction in the Middle East and North Africa: The role of civil society.**" *Int J Drug Policy* 2016 31: 168-71.

Civil society organizations (CSOs) in Middle East and North Africa (MENA) are the principal partners of government in scaling up the response to HIV and in implementing national policies. In return, CSOs expect endorsement of their work by the governments. Some CSOs face weaknesses and need capacity-building in order for them to reach the level of response required for reducing drug-related harm in this region. Substance use and the transmission of HIV are increasing in the MENA region. The limited data available on drug use show that there are approximately 630,000 people who inject drugs (PWID) across the region. The HIV epidemic remains concentrated among PWID and other key populations in the region. Comprehensive harm reduction programs which include prevention, care, and HIV treatment for PWID are being implemented by CSOs. This could not happen without the presence of a conducive environment which has been facilitated by the CSOs, and which aims to lead to a positive response in health policies, and thus to harm reduction programs in some countries in the region. However, based on the international data, antiretroviral therapy (ART) coverage remains low in these countries, even if the number of people living with HIV (PLHIV) receiving ART is increasing. This increase can sometimes mask important challenges in equity: in several countries PWID are the most likely to be infected with HIV while being the least likely to be receiving care and ART. Therefore, concentrated efforts need to continue toward the goal of having mainstream harm reduction approaches in region.

14. Ompad, D. C., et al. "**Drug use among HIV+ adults aged 50 and older: findings from the GOLD II study.**" *AIDS Care* 2016: 1-5.

Understanding the nexus of aging, HIV, and substance use is key to providing appropriate services and support for their aging, HIV seropositive patients. The proportion of PLWHA aged 50 and older is growing due to a variety of factors like decreases in mortality due to highly active retroviral therapy and non-negligible HIV incidence. We describe prevalence of alcohol, tobacco, and other drug use and participation in substance use treatment and 12-step programs among 95 HIV-positive patients aged 50 and older engaged in care. Most (73.7%) smoked cigarettes in their lifetime and 46.3% were current smokers. Most were at medium (81.1%) or high risk (13.7%) for an alcohol use disorder. With respect to illicit drug use, 48.4% had used marijuana, cocaine, crack, methamphetamines, heroin, and/or prescription opiates without a prescription in the last 12 months; 23.2% met criteria for drug dependence. Marijuana was the most commonly reported illicit drug (32.6%) followed by cocaine and crack (10.5% each), heroin and prescription opiates (7.4% each), and methamphetamines (6.3%). Among those who had not used drugs in the past 12 months, 36.7% had been in a substance use treatment program and 26.5% had participated in a 12-step program in their lifetime; 8.2% were currently in treatment and 16.3% were currently participating in a 12-step program. Among those who had used an illicit drug in the past 12 months, 37.0% had never been in treatment, 34.8% had been in treatment in their lifetime, and 28.3% were currently in treatment. With respect

to 12-step programs, 27.3% of those meeting dependence criteria had never participated, 45.5% had participated in their lifetimes, and 27.3% were currently participating. Our findings suggest that older adults in HIV care settings could benefit from Screening, Brief Intervention, and Referral to Treatment interventions and/or integrated services for substance abuse and medical treatment.

15. Liao, M., et al. "**Dual Epidemics of Drug Use and Syphilis Among Chinese Female Sex Workers: Results of Eight Consecutive Cross-Sectional Surveys from 2006 to 2013 in Qingdao, China.**" *AIDS Behav* 2016 20(3): 655-66.

Eight consecutive annual cross-sectional surveys were conducted to examine the trend of the prevalence of HIV, syphilis, drug use and their correlates among female sex workers (FSWs) in Qingdao, China. Among sampled FSWs over the 8 years, a higher proportion of older, married or cohabited, higher education levels and more on-call FSWs were observed in recent years. The syphilis prevalence increased significantly from 1.0 % in 2006 to 13.5 % in 2013, with illicit drug use rate ranging from 21.8 % in 2007 to 55.5 % in 2010. Multivariate logistic regression analyses showed that drug use, syphilis and unprotected vaginal sex predicted each other. The dual epidemics of illicit drug use and syphilis among FSWs underscore the urgency to implement a tailored intervention to curb the dual epidemics while also preventing an HIV epidemic in the context of diversified commercial sex dynamic.

16. Atluri, V. S. "**Editorial: HIV and Illicit Drugs of Abuse.**" *Front Microbiol* 2016 7: 221. Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4785150/pdf/fmicb-07-00221.pdf>

17. Smith, L. R., et al. "**Engagement in the HIV Care Continuum among Key Populations in Tijuana, Mexico.**" *AIDS Behav* 2016 20(5): 1017-25.

In Tijuana, Mexico, HIV is concentrated in sub-epidemics of key populations: persons who inject drugs (PWID), sex workers (SW), and men who have sex with men (MSM). To date, data on engagement in the HIV care continuum among these key populations, particularly in resource-constrained settings, are sparse. We pooled available epidemiological data from six studies (N = 3368) to examine HIV testing and treatment uptake in these key populations; finding an overall HIV prevalence of 5.7 %. Of the 191 identified HIV-positive persons, only 11.5 % knew their HIV-positive status and 3.7 % were on ART. Observed differences between these HIV-positive key populations suggest PWID (vs. non-PWID) were least likely to have previously tested or initiate HIV care. MSM (vs. non-MSM) were more likely to have previously tested but not more likely to know their HIV-positive status. Of persons aware of their HIV-positive status, SW (vs. non-SW) were more likely to initiate HIV care. Findings suggest engagement of key populations in HIV treatment is far below estimates observed for similarly resource-constrained generalized epidemics in sub-Saharan Africa. These data provide one of the first empirical-snapshots highlighting the extent of HIV treatment disparities in key populations.

18. Festinger, D. S., et al. "**Examining the efficacy of a computer facilitated HIV prevention tool in drug court.**" *Drug Alcohol Depend* 2016 162: 44-50.

BACKGROUND: Although they have demonstrated efficacy in reducing substance use and criminal recidivism, competing priorities and limited resources may preclude drug court programs from formally addressing HIV risk. This study examined the efficacy of a brief, three-session, computer-facilitated HIV prevention intervention in reducing HIV risk among adult felony drug court participants.

METHODS: Two hundred participants were randomly assigned to an HIV intervention (n=101) or attention control (n=99) group. All clients attended judicial status hearings approximately every six weeks. At the first three status hearings following study entry, clients in the intervention group completed the computerized, interactive HIV risk reduction sessions while those in the control group viewed a series of educational life-skill videos of matched length. Outcomes included the rate of independently obtained HIV testing, engagement in high risk HIV-related behaviors, and rate of condom procurement from the research site at each session.

RESULTS: Results indicated that participants who received the HIV intervention were significantly more likely to report having obtained HIV testing at some point during the study period than those in the control condition, although the effect was marginally significant when examined in a longitudinal model. In addition, they had higher rates of condom procurement. No group differences were found on rates of high-risk sexual behavior, and the low rate of injection drug reported precluded examination of high-risk drug-related behavior.

CONCLUSIONS: The study provides support for the feasibility and utility of delivering HIV prevention services to drug court clients using an efficient computer-facilitated program.

19. Shahid, S., et al. "**Expanding access to HIV testing and counseling and exploring vulnerabilities among spouses of HIV-positive men who inject drugs in Pakistan.**" *Curr Opin HIV AIDS* 2016 11(1 Suppl 1): S6-s12.

OBJECTIVES: To explore the utility of home and community-based HIV testing and counseling (HTC) to increase detection of undiagnosed HIV among female spouses and children of HIV-positive PWID in Punjab province, Pakistan.

DESIGN: Between March 2014 and March 2015, home-based HTC was provided by a local NGO to spouses of HIV-positive PWID in Lahore, Faisalabad, and Sargodha. Convenience sampling was used to identify 2400 married, HIV-positive men who inject drugs and who were currently registered and receiving harm reduction services from the NGO 'Roshan Rasta' and seek consent to approach their wives.

METHOD: Trained outreach teams conducted HTC and administered a short sociodemographic and behavioral questionnaire to consenting spouses in their homes. HIV-exposed children were also tested with parental consent.

RESULTS: of the 2400 married HIV positive male-injecting drug users, only 1959 spouses were approached and 1896 agreed to HTC (96.8%). HIV prevalence was 5.3% (n = 101) among spouses and they had very low level of HIV-related knowledge and protective behaviors.

CONCLUSION: Home and community-based HTC was effective in identifying undiagnosed HIV among spouses of PWID, the majority of whom reported low rates of prior HIV testing and low HIV-related knowledge. Expansion of HIV prevention services and linkages to treatment and care including PMTCT are urgently needed for this group.

20. Mukherjee, T. I., et al. "**Factors associated with interest in receiving prison-based methadone maintenance therapy in Malaysia.**" *Drug Alcohol Depend* 2016.

INTRODUCTION: Methadone maintenance therapy (MMT) is crucial for HIV prevention and treatment in people who inject opioids. In Malaysia, a large proportion of the prison population is affected by both HIV and opioid use disorders. This study assessed individual preferences and factors associated with interest in receiving MMT among male prisoners meeting criteria for opioid dependence in Malaysia.

METHODS: A convenience sample of 96 HIV-positive and 104 HIV-negative incarcerated men who met pre-incarceration criteria for opioid dependence was interviewed using a structured questionnaire to examine participant characteristics and attitudes toward MMT. Factors associated with interest in prison-based MMT initiation were identified using logistic regression analysis.

RESULTS: Among all participants, 85 (42.5%) were interested in receiving MMT within prison. Independent correlates of interest in prison-based MMT were being previously married (AOR=4.15, 95% CI: 1.15, 15.02), previously incarcerated (AOR=5.68, 95% CI: 1.54, 21.02), depression (AOR=3.66, 95% CI: 1.68, 7.98), daily heroin use in the 30days prior to incarceration (AOR=5.53, 95% CI: 1.65, 18.58), and more favorable attitudes toward MMT (AOR=19.82, 95% CI: 6.07, 64.74).

CONCLUSIONS: Overall, interest in receiving prison-based MMT was low, and was associated with adverse social, mental health, and drug use consequences. Incarceration provides a unique opportunity to initiate MMT for those who need it, however, optimal scale-up efforts must be systemic and address modifiable factors like improving attitudes toward and motivation for MMT. Informed or shared decision-making tools may be useful in improving expectations and acceptability of MMT.

21. Go, V. F., et al. "**Finding what works: identification of implementation strategies for the integration of methadone maintenance therapy and HIV services in Vietnam.**" *Implement Sci* 2016 11(1): 54. Online at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4837557/pdf/13012_2016_Article_420.pdf

BACKGROUND: Integration of methadone maintenance therapy (MMT) and HIV services is an evidence-based intervention (EBI) that benefits HIV care and reduces costs. While MMT/HIV integration is recommended by the World Health Organization and the Centers for Disease Control and Prevention, it is not widely implemented, due to organizational and operational barriers. Our study applied an innovative process to identify implementation strategies to address these barriers.

METHODS: Our process was adapted from the Expert Recommendations for Implementing Change (ERIC) protocol and consisted of two main phases. In Phase 1, we conducted 16 in-depth interviews with stakeholders and developed matrices to display barriers to integration. In Phase 2, we selected implementation strategies that addressed the barriers identified in Phase 1 and conducted a poll to vote on the most important and feasible strategies among a panel with expertise in cultural context and implementation science.

RESULTS: Barriers fell into two broad categories: policy and programmatic. At the policy level, barriers included lack of a national mandate, different structures (MMT vs. HIV clinic) for cost reimbursement and staff salaries, and resistance on the part of staff to take on additional tasks without compensation. Programmatic barriers included the need for cross-training in MMT and HIV tasks, staff accountability, and commitment from local leaders. In Phase 2, we focused on programmatic challenges. Based on voting results and iterative dialogue with our expert panel, we selected several implementation strategies in the domains of technical assistance, staff accountability, and local commitment that targeted these barriers.

CONCLUSIONS: Key programmatic barriers to MMT/HIV integration in Vietnam may be addressed through implementation strategies that focus on technical assistance, staff accountability, and local commitment. Our process of identifying implementation strategies was simple, low cost, and potentially replicable to other settings.

22. 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: 1-10.

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.

23. Akhtar, A., et al. "**HBV and HIV co-infection: Prevalence and clinical outcomes in tertiary care hospital Malaysia.**" *J Med Virol* 2016 88(3): 455-60.

According to WHO, Malaysia has been classified as a concentrated epidemic country due to progression of HIV infection in the population of injecting drug users. The main objectives of current study are to determine the prevalence of HBV among HIV-positive individuals in a tertiary care hospital of Malaysia and to assess the predictors involved in the outcomes of HIV-HBV co-infected patients. A retrospective, cross-sectional study is conducted at Hospital Palau Pinang, Malaysia. The collection of socio-demographic data as well as clinical data is done with the help of data collection form. Data were analyzed after putting the collected values of required data by using statistical software SPSS version 20.0 and $P > 0.05$ is considered as significant. Results show that the overall prevalence of HBV was 86 (13%) including 495 (74.5%) males and 169 (25.5%) females among a total of 664 HIV-infected patients. It was observed that there is a high prevalence of HIV-HBV co-infection in males 76 (11.4%) as compared to females 10 (1.5%) ($P = 0.002$). The median age of the study population was 39 years. The statistical significant risk factors involved in the outcomes of HIV-HBV co-infected patients were observed in the variables of gender, age groups, and injecting drug users. The findings of the present study shows that the prevalence of HBV infection among HIV-positive patients was 13% and the risk factors involved in the outcomes of HIV-HBV co-infected patients were gender, age, and intravenous drug users.

24. Lake, S., et al. "**Health outcomes associated with illicit prescription opioid injection: A systematic review.**" *J Addict Dis* 2016 35(2): 73-91.

Prescription opioid injection is a growing concern among people who use illicit drugs. Little is known about the potential health-related harms of injecting prescription opioids. Therefore, the authors undertook a systematic review to identify health outcomes associated with injecting prescription opioids. PubMed, Ovid MEDLINE(R), EMBASE, Journals@Ovid, CINAHL, PsycInfo, Web of Science(R) Core Collection, CAB Direct, and ERIC databases were searched to identify English articles published between January 1990 and February 2015 that matched the inclusion criteria. Potentially relevant articles were those examining a clinical health outcome among people who use illicit drugs, in which a sub-group injects prescription opioids. The International Classification of Diseases (ICD-10) was used to clinically classify health outcomes. In total, 31 studies that met the inclusion criteria were identified and summarized. A modified version of the Downs and Black checklist was used to assess individual study quality and identify sources of bias. Findings supported associations between prescription opioid injection and hepatitis C infection, substance dependence and other mental health indicators, and lower general health. Associations with human immunodeficiency virus, overdose, and cutaneous infection were less consistent and varied according to prescription opioid type(s). Several potential sources of bias were identified as well as a need for more longitudinal research and more rigorous confounding adjustment. The current findings highlight a need to consider the growing popularity of prescription opioid injection in efforts to reduce drug-related harm among people who inject drugs.

25. Melesse, D. Y., et al. "**Heterogeneity Among Sex Workers in Overlapping HIV Risk Interactions With People Who Inject Drugs: A Cross-Sectional Study From 8 Major Cities in Pakistan.**" *Medicine (Baltimore)* 2016 95(12): e3085.

Concerns remain regarding the heterogeneity in overlapping human immunodeficiency virus (HIV) risk behaviors among sex workers (SWs) in Pakistan; specifically, the degree to which SWs interact with people who inject drugs (PWID) through sex and/or needle sharing. Following an in-depth mapping performed in 2011 to determine the size and distribution of key populations at highest risk of HIV acquisition in Pakistan, a cross-sectional biological and behavioral survey was conducted among PWID, female (FSWs), male (MSWs), and hijra/transgender (HSWs) sex workers, and data from 8 major cities were used for analyses. Logistic regression was used to identify factors, including city of residence and mode of SW-client

solicitation, contributing to the overlapping risks of drug injection and sexual interaction with PWID. The study comprised 8483 SWs (34.5% FSWs, 32.4% HSWs, and 33.1% MSWs). Among SWs who had sex with PWID, HSWs were 2.61 (95% confidence interval [CI], 1.19-5.74) and 1.99 (95% CI, 0.94-4.22) times more likely to inject drugs than MSWs and FSWs, respectively. There was up to a 3-fold difference in drug injecting probability, dependent on where and/or how the SW solicited clients. Compared with SWs in Larkana, the highest likelihood of drug injection use was among SWs in Multan (OR = 4.52; 95% CI: 3.27-6.26), followed by those in Lahore, Quetta, and Faisalabad. Heterogeneity exists in the overlapping patterns of HIV risk behaviors of SWs. The risk of drug injection among SWs also varies by city. Some means of sexual client solicitation may be along the pathway to overlapping HIV risk vulnerability due to increased likelihood of drug injection among SWs. There is a need to closely monitor the mixing patterns between SWs and PWID and underlying structural factors, such as means of sexual client solicitation, that mediate HIV risk, and implement prevention programs customized to local subepidemics.

26. Kermode, M., et al. "**High burden of hepatitis C & HIV co-infection among people who inject drugs in Manipur, Northeast India.**" *Indian J Med Res* 2016 143(3): 348-56.

BACKGROUND & OBJECTIVES: It is well documented that the Northeast state of Manipur in India has been dealing with the dual problems of injecting drug use and HIV for the last two decades, but the hepatitis C problem has not been so well characterized. The aim of this study was to assess the prevalence of hepatitis C virus (HCV) infection and HCV/HIV co-infection among people who inject drugs (PWID) in Manipur, and identify factors associated with infection.

METHODS: Data were obtained from the Integrated Behavioural and Biological Assessment (2009-2010), a cross-sectional survey among 821 male PWID in two districts of Manipur (Churachandpur and Bishnupur). Information about drug use, sexual and injecting risk behaviours, and exposure to interventions was obtained, and biological specimens tested for HIV and HCV. Logistic regression analyses identified factors associated with HCV infection and HCV/HIV co-infection.

RESULTS: HCV prevalence was 74 per cent (91% Churachandpur, 56% Bishnupur), and HCV/HIV co-infection was 29 per cent (38% Churachandpur, 21% Bishnupur). Among the 31 per cent of HIV positive PWID, 95 per cent were co-infected. HCV infection was associated with district, longer duration of injecting, injecting at least once daily, generally injecting with a used needle and syringe, and having had an HIV test. HCV/HIV co-infection was associated with district, older age, being employed, being widowed/divorced, longer duration of injecting, and feeling at risk of HIV infection.

INTERPRETATION & CONCLUSIONS: The HCV/HIV co-infection among PWID in Manipur was very high, highlighting the urgent need for effective prevention, diagnosis and treatment.

27. Bagheri Amiri, F., et al. "**HIV, HBV and HCV Coinfection Prevalence in Iran - A Systematic Review and Meta-Analysis.**" *PLoS One* 2016 11(3): e0151946. Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4816272/pdf/pone.0151946.pdf>

BACKGROUND: worldwide, hepatitis C and B virus infections (HCV and HBV), are the two most common coinfections with human immunodeficiency virus (HIV) and has become a major threat to the survival of HIV-infected persons. The review aimed to estimate the prevalence of HIV, HBV, HCV, HIV/HCV and HIV/HBV and triple coinfections in different subpopulations in Iran.

METHOD: Following PRISMA guidelines, we conducted a systematic review and meta-analysis of reports on prevalence of HIV, HBV, HCV and HIV coinfections in different subpopulations in Iran. We systematically reviewed the literature to identify eligible studies from January 1996 to March 2012 in English or Persian/Farsi databases. We extracted the prevalence of HIV antibodies (diagnosed by Elisa confirmed with Western Blot test), HCV antibodies and HBsAg (with confirmatory laboratory test) as the main primary outcome. We reported the prevalence of the three infections and coinfections as point and 95% confidence intervals.

FINDINGS: HIV prevalence varied from %0.00 (95% CI: 0.00-0.003) in the general population to %17.25 (95% CI: 2.94-31.57) in people who inject drugs (PWID). HBV prevalence ranged from % 0.00 (95% CI: 0.00-7.87) in health care workers to % 30.9 (95% CI: 27.88-33.92) in PWID. HCV prevalence ranged from %0.19 (95% CI: 0.00-0.66) in health care workers to %51.46 (95% CI: 34.30-68.62) in PWID. The coinfection of HIV/HBV and also HIV/HCV in the general population and in health care workers was zero, while the most common coinfections were HIV/HCV (10.95%), HIV/HBV (1.88%) and triple infections (1.25%) in PWID.

CONCLUSIONS: We found that PWID are severely and disproportionately affected by HIV and the other two infections, HCV and HBV. Screenings of such coinfections need to be reinforced to prevent new infections and also reduce further transmission in their community and to others.

28. Paranjape, R. S., et al. "**HIV/AIDS in India: an overview of the Indian epidemic.**" *Oral Dis* 2016 22 Suppl 1: 10-4.

The first cases of HIV infection in India were detected in 1986 among female sex workers in Chennai. A rapid increase followed in many states. The current national prevalence is about 0.26% compared with a global average of 0.2%, but the figure in most high-risk groups including female sex workers is much higher (up to 7%). New HIV infections reached a peak in 1998 and have since declined by 60%, although the total number of HIV-positive persons remains stable at 2.1 million, largely probably due to the increased life expectancy following antiretroviral therapy. The Indian epidemic is characterized by low levels in the general population and elevated concentrations among high-risk groups. Transmission is mainly heterosexually driven, with differential burdens across the states. The four main drivers of HIV infection in India differ in order from those elsewhere in the world and are commercial sex work, general heterosexual intercourse, injecting drug use and unprotected anal sex between men who have sex with men. There are distinct differences from state to state in the prevalence of HIV, with some around the national norm of 0.21% but others with over 1% infected. India has embarked on a targeted HIV prevention strategy in recent years which is strongly associated with a fall in infection rate in both low- and high-risk groups.

29. King, E. J., et al. "**'If she is a good woman ...' and 'to be a real man ...': gender, risk and access to HIV services among key populations in Tajikistan.**" *Cult Health Sex* 2016 18(4): 422-34.

The HIV epidemic continues to grow in Tajikistan, especially among people who inject drugs, sex workers, men who have sex with men and incarcerated populations. Despite their susceptibility to HIV, members of these groups do not always have access to HIV prevention, testing and treatment. The purpose of this study was to identify and understand the gender constraints in accessing HIV services for key populations in Tajikistan. Using focus-group discussions and key-informant interviews the assessment team collected information from members of key populations and those who work with them. Several themes emerged from the data, including: low levels of HIV knowledge, gender constraints to condom use and safer drug use, gender constraints limit HIV testing opportunities, gender-based violence, stigma and discrimination, and the lack of female spaces in the HIV response. The results of this study show that there are well-defined gender norms in Tajikistan, and these gender norms influence key populations' access to HIV services. Addressing these gender constraints may offer opportunities for more equitable access to HIV services in Tajikistan.

30. Ubuguyu, O., et al. "**Improvements in health-related quality of life among methadone maintenance clients in Dar es Salaam, Tanzania.**" *Int J Drug Policy* 2016 30: 74-81.

BACKGROUND: Injection of heroin has become widespread in Dar es Salaam, Tanzania and is spreading throughout the country. To prevent potential bridging of HIV epidemics, the Tanzanian government established a methadone maintenance treatment (MMT) clinic in February 2011. We assess the effect of MMT on health-related quality of life (HRQOL) and examine factors, particularly HIV infection and methadone dose, associated with changes in HRQOL.

METHODS: This study utilized routine data on clients enrolling in methadone from February 2011 to April

2012 at Muhimbili National Hospital. Change in physical (PCS) and mental health (MCS) composite scores, as measured by the SF-12 tool, were the primary outcomes. Backward stepwise linear regression, with a criterion of $p < 0.2$ was used to identify baseline exposure variables for inclusion in multivariable models, while adjusting for baseline scores.

RESULTS: A total of 288 MMT clients received baseline and follow-up assessments. Mean methadone dose administered was 45mg (SD +/-25) and 76 (27%) were confirmed HIV-positive. Significant improvements were observed in PCS and MCS, with mean increases of 15.7 and 3.3, respectively. In multivariable models, clients who had previous poly-substance use with cocaine [$p=0.040$] had a significantly higher mean change in PCS. Clients who were living with HIV [$p=0.002$]; satisfied with current marital situation [$p=0.045$]; had a history of suicidal thoughts [$p=0.021$]; and previously experienced cognitive difficulties [$p=0.012$] had significantly lower mean change in PCS. Clients with shorter history of heroin use [$p=0.012$] and who received higher methadone doses [$p=0.028$] had significantly higher mean change in MCS, compared to their counterparts.

CONCLUSION: Aspects of mental and physical health, risk behaviors and quality of life among drug users are intertwined and complex. Our research revealed positive short-term effects of MMT on HRQOL and highlights the importance of sustained retention for optimal benefits. Comprehensive supportive services in addition to provision of methadone are needed to address the complex health needs of people who inject drugs.

31. Payday, K., et al. "**Impulsivity, Sensation Seeking, and Risk-Taking Behaviors among HIV-Positive and HIV-Negative Heroin Dependent Persons.**" *AIDS Res Treat* 2016 2016: 5323256. Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4802021/pdf/ART2016-5323256.pdf>

OBJECTIVE: The aim of this study was to compare impulsivity and risky decision making among HIV-positive and negative heroin dependent persons.

METHODS: We compared different dimensions of impulsivity and risky decision making in two groups of 60 HIV-positive and 60 HIV-negative male heroin dependent persons. Each group was comprised of equal numbers of current (treatment seeker) and former (abstinent) heroin addicts. Data collection tools included Balloon Analogue Risk Task (BART), Iowa Gambling Task (IGT), Barratt Impulsiveness Scale (BIS), and Zuckerman Sensation Seeking Scale (SSS).

RESULTS: In SSS, comprised of four subscales including thrill and adventure seeking (TAS), experience seeking (ES), disinhibition (DIS), and boredom susceptibility (BS), there was a borderline difference in DIS ($P = 0.08$) as HIV-positive group scored higher than HIV-negative group. Also, ES and total score were significantly higher among HIV-positive patients. In BART, HIV-positive subjects scored higher in risk taking than HIV-negative subjects as reflected in higher Average Number of puffs in Successful Balloons (ANSB). In BIS, HIV-positive group scored significantly higher in cognitive impulsivity (CI) ($P = 0.03$) and nonplanning impulsivity (NPI) ($P = 0.05$) in comparison to HIV-negative group. Also, current heroin addicts scored significantly higher in NPI compared to former addict HIV-negative participants ($P = 0.015$). IGT did not show any significant difference between groups.

CONCLUSION: Higher levels of impulsivity and risk taking behaviors among HIV-positive heroin addicts will increase serious concerns regarding HIV transmission from this group to other opiate dependents and healthy people.

32. Sawitri, A. A., et al. "**Injecting drug use, sexual risk, HIV knowledge and harm reduction uptake in a large prison in Bali, Indonesia.**" *Int J Prison Health* 2016 12(1): 27-38.

PURPOSE: The purpose of this paper is to describe HIV-related risk behavior and knowledge of HIV among inmates of Kerobokan prison Bali, Indonesia.

DESIGN/METHODOLOGY/APPROACH: A cross-sectional survey of inmates of using a structured questionnaire and sample framework to reflect narcotic use among inmates and the prison gender mix.

FINDINGS: Among 230 inmates recruited to the study self-reported prevalence of injecting drug use was 7.4 percent (95 percent CI 4.0-10.8percent). Respondents who participated in a prison based methadone treatment program were all still injecting drugs, these made up 13/17 of the IDU. In total, 47 percent (95 percent CIs 45-55 percent) of respondents who reported injecting also reported sharing needles within the last week. Sexual intercourse while in prison was reported by 3.0 percent (95 percent CI 0.82-5.26 percent) of study respondents. One-third of non-injectors were unaware of the preventative role of condom use. This study suggests that despite harm reduction initiatives within Kerobokan prison HIV risk behavior continues and there is a considerable lack of awareness of the importance of condom use in preventing HIV.

RESEARCH LIMITATIONS/IMPLICATIONS: The authors relied on self-reported risk behavior that may be subject to reporting bias. The sampling strategy may not reflect the true ratio inmates using or not using narcotics. *Practical implications:* The current harm reduction approach, including methadone substitution treatment should be optimized within the Indonesian prison setting.

ORIGINALITY/VALUE: This is the first study reporting HIV-related risk behavior from an Indonesian prison with an established methadone substitution program.

33. 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: 1-4.

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.

34. Jeong, S. J., et al. "**Late Presentation into Care of HIV Disease and Its Associated Factors in Asia: Results of TAHOD.**" *AIDS Res Hum Retroviruses* 2016 32(3): 255-61.

Many HIV-infected individuals do not enter health care until late in the infection course. Despite encouraging earlier testing, this situation has continued for several years. We investigated the prevalence of late presenters and factors associated with late presentation among HIV-infected patients in an Asian regional cohort. This cohort study included HIV-infected patients with their first positive HIV test during 2003-2012 and CD4 count and clinical status data within 3 months of that test. Factors associated with late presentation into care (CD4 count <200 cells/mul or an AIDS-defining event within +/-3 months of first positive HIV test) were analyzed in a random effects logistic regression model. Among 3,744 patients, 2,681

(72%) were late presenters. In the multivariable model, older patients were more likely to be late presenters than younger (≤ 30 years) patients [31-40, 41-50, and ≥ 51 years: odds ratio (OR) = 1.57, 95% confidence interval (CI) 1.31-1.88; OR = 2.01, 95% CI 1.58-2.56; and OR = 1.69, 95% CI 1.23-2.31, respectively; all $p \leq 0.001$]. Injecting drug users (IDU) were more likely (OR = 2.15, 95% CI 1.42-3.27, $p < 0.001$) and those with homosexual HIV exposure were less likely (OR = 0.45, 95% CI 0.35-0.58, $p < 0.001$) to be late presenters compared to those with heterosexual HIV exposure. Females were less likely to be late presenters (OR = 0.44, 95% CI 0.36-0.53, $p < 0.001$). The year of first positive HIV test was not associated with late presentation. Efforts to reduce the patients who first seek HIV care at the late stage are needed. The identified risk factors associated with late presentation should be utilized in formulating targeted public health intervention to improve earlier entry into HIV care.

35. Okal, J., et al. "Lessons learned from respondent-driven sampling recruitment in Nairobi: experiences from the field." *BMC Res Notes* 2016 9(1): 158. Online at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4788831/pdf/13104_2016_Article_1965.pdf

BACKGROUND: Respondent-driven sampling (RDS) is used in a variety of settings to study hard-to-reach populations at risk for HIV and sexually transmitted infections. However, practices leading to successful recruitment among diverse populations in low-resource settings are seldom reported. We implemented the first, integrated, bio-behavioural surveillance survey among men who have sex with men, female sex workers and people who injected drugs in Nairobi, Kenya.

METHODS: The survey period was June 2010 to March 2011, with a target sample size of 600 participants per key populations. Formative research was initially conducted to assess feasibility of the survey. Weekly monitoring reports of respondent characteristics and recruitment chain graphs from NetDraw illustrated patterns and helped to fill recruitment gaps.

RESULTS: RDS worked well with men who have sex with men and female sex workers with recruitment initiating at a desirable pace that was maintained throughout the survey. Networks of people who injected drugs were well-integrated, but recruitment was slower than the men who have sex with men and female sex workers surveys.

CONCLUSION: By closely monitoring RDS implementation and conducting formative research, RDS studies can effectively develop and adapt strategies to improve recruitment and improve adherence to the underlying RDS theory and assumptions.

36. Shokoohi, M., et al. "Low HIV testing rate and its correlates among men who inject drugs in Iran." *Int J Drug Policy* 2016.

BACKGROUND: Iran has a concentrated HIV epidemic among people who inject drugs (PWID). Low HIV testing uptake could contribute to the significant number HIV-infected PWID, who go undiagnosed. This study aims to assess HIV testing uptake and its correlates among PWID in Iran.

METHODS: Data were collected through a national cross-sectional bio-behavioral study in 2010. Adult male HIV-negative PWID were included in the current analysis. All estimates were adjusted for the clustering effect of the sampling sites. Multivariable logistic regression was used to examine the correlates of recent HIV testing and adjusted odds ratios (AOR) were reported.

RESULTS: Out of the 2146 eligible PWID for this study, 49.8% reported having ever tested for HIV. However, only 24.9% had tested in the previous year and received their test results. Around 65.2% of PWID knew an HIV testing site. In the multivariable analysis, knowing an HIV testing site (AOR=13.9; P -value <0.001), ≥ 24 years of age (AOR=3.30; P -value=0.027), and multiple incarcerations (AOR=1.71; P -value <0.001) were positively, and a monthly income of ≥ 65 US dollar (AOR=0.23; P -value=0.009) was negatively associated with having been tested and received the results.

CONCLUSION: Despite the availability of free HIV counselling and testing for PWID in Iran, only one-fourth of adult male PWID had been tested for HIV and received their results. Implementing policies and strategies to normalize routine HIV testing among PWID are crucial steps to help curb the epidemic among Iranian PWID.

37. Tran, B. X., et al. "**Methadone Maintenance Treatment Promotes Referral and Uptake of HIV Testing and Counselling Services amongst Drug Users and Their Partners.**" *PLoS One* 2016 11(4): e0152804. Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4821610/pdf/pone.0152804.pdf>

BACKGROUND: Methadone maintenance treatment (MMT) reduces HIV risk behaviors and improves access to HIV-related services among drug users. In this study, we assessed the uptake and willingness of MMT patients to refer HIV testing and counseling (HTC) service to their sexual partners and relatives.

METHODS: Health status, HIV-related risk behaviors, and HTC uptake and referrals of 1,016 MMT patients in Hanoi and Nam Dinh were investigated. Willingness to pay (WTP) for HTC was elicited using a contingent valuation technique. Interval and logistic regression models were employed to determine associated factors.

RESULTS: Most of the patients (94.2%) had received HTC, 6.6 times on average. The proportion of respondents willing to refer their partners, their relatives and to be voluntary peer educators was 45.7%, 35.3%, and 33.3%, respectively. Attending MMT integrated with HTC was a facilitative factor for HTC uptake, greater WTP, and volunteering as peer educators. Older age, higher education and income, and HIV positive status were positively related to willingness to refer partners or relatives, while having health problems (mobility, usual care, pain/discomfort) was associated with lower likelihood of referring others or being a volunteer. Over 90% patients were willing to pay an average of US \$17.9 for HTC service.

CONCLUSION: The results highlighted the potential role of MMT patients as referrers to HTC and voluntary peer educators. Integrating HIV testing with MMT services and applying users' fee are potential strategies to mobilize resources and encourage HIV testing among MMT patients and their partners.

38. Watt, M. H., et al. "**Nothing Is Free": A Qualitative Study of Sex Trading Among Methamphetamine Users in Cape Town, South Africa.**" *Arch Sex Behav* 2016 45(4): 923-33.

South Africa is facing an established epidemic of methamphetamine, known locally as "tik." Globally, methamphetamine has been linked to high rates of sexual risk behaviors, including sex trading. The goal of this study was to qualitatively examine the experiences of sex trading among methamphetamine users in Cape Town, South Africa. Individual in-depth interviews were conducted with 30 active methamphetamine users (17 men and 13 women) recruited from the community. Interviews were conducted in local languages using a semi-structured guide that included questions on sex trading experiences and perceptions of sex trading among methamphetamine users. Interviews were audio-recorded, transcribed, and analyzed using analytic memos and coding with constant comparison techniques. The data revealed that in a setting of high levels of addiction and poverty, sex was an important commodity for acquiring methamphetamine. Women were more likely to use sex to acquire methamphetamine, but men reported opportunistic cases of trading sex for methamphetamine. Four models of sex trading emerged: negotiated exchange, implicit exchange, relationships based on resources, and facilitating sex exchange for others. The expectation of sex trading created a context in which sexual violence against female methamphetamine users was common. Multiple sexual partners and inconsistent condom use in acts of sex trading put methamphetamine users at high risk of HIV. Interventions in this setting should address addiction, which is the primary driver of sex trading among methamphetamine users. Harm reduction interventions may include education about HIV and other sexually transmitted infections, availability of condoms and HIV testing, and sexual violence prevention.

39. Alexiev, I., et al. "**Origin and spread of HIV-1 in persons who inject drugs in Bulgaria.**" *Infect Genet Evol* 2016.

Increased HIV transmission in persons who inject drugs (PWIDs) has led to subepidemics and outbreaks in

several countries in Europe, including Bulgaria. In this study in Bulgaria, we investigate the origin and spatiotemporal evolutionary history of HIV-1 infections in PWIDs and the distribution of antiretroviral resistance mutations and hepatitis co-infections in these populations. We analyzed HIV-1 polymerase sequences available from 117 of 359 PWIDs diagnosed with HIV/AIDS from 1999 to 2011. Of these, 50 (42.7%) were classified as CRF02_AG, 41 (35.0%) CRF01_AE, 12 (10.3%) URFs, ten (8.5%) subtype B, two (1.7%) subtype F1 and two (1.7%) CRF14_BG. Most recent common ancestor dating suggests that CRF01_AE was likely first introduced from Southeast Asia into persons reporting heterosexual infection in Bulgaria in 1992 and spread subsequently to PWIDs in the capital city of Sofia around 2003. Conversely, CRF02_AG in Bulgaria was likely first introduced into PWID from Germany in 2000 and later entered heterosexual populations around 2009. The overall prevalence of resistance mutations was 6.8% (8/117), of which 5.1% (5/117) was observed in patients on antiretroviral therapy and 1.7% (2/117) was from transmitted drug resistance mutations in drug-naive individuals. 189/204 (92.6%) PWIDs were also co-infected with hepatitis C (HCV) and 31/183 (16.9%) were co-infected with hepatitis B (HBV). Our study provides valuable molecular epidemiological information on the introduction and distribution of the main HIV-1 subtypes, resistance mutations and hepatitis co-infections among PWIDs with HIV-1 in Bulgaria which can be used to target prevention efforts.

40. 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.
41. Abdool, R. **"Policy change towards implementing harm reduction in Sub-Saharan Africa."** *Int J Drug Policy* 2016 30: 140-2.
42. Martinello, M., et al. **"Prevalence and Disease Burden of HCV Coinfection in HIV Cohorts in the Asia Pacific Region: A Systematic Review and Meta-Analysis."** *AIDS Rev* 2016 18(2): 68-80.

BACKGROUND: Estimates of the prevalence and disease burden of HIV/HCV coinfection in the Asia Pacific Region are uncertain.

METHODS: A systematic review of indexed (PubMed, Embase and Web of Science) and non-indexed cross-sectional and cohort studies (2009-2015) reporting HCV seroprevalence in HIV-positive adults living in the Asia Pacific region was performed. Pooled prevalence estimates were calculated with a DerSimonian-Laird random-effects model.

RESULTS: 39 studies from 10 countries in the Asia Pacific region comprising 89,452 HIV-positive individuals were included. In the high-income Asia Pacific region, HCV coinfection prevalence was 3.8% (95% confidence interval (CI): 3.1-4.5) in Singapore. In East Asia, HCV coinfection prevalence was 8.0% (95% CI: 6.4-9.8) in Hong Kong and 25.5% (95% CI: 17.5-34.4) in general HIV cohorts in China. In South Asia, HCV coinfection prevalence was 4.1% (95% CI: 1.7-7.3) in India and 42.6% (95% CI: 38.7-46.5) in Nepal. In Southeast Asia, HCV coinfection prevalence was 5.5% (95% CI: 4.9-6.1) in Cambodia, 5.3% (95% CI: 4.9-5.7) in Myanmar, and 5.1% (95% CI: 2.7-8.2) in Thailand, but higher in Vietnam (42.5%; 95% CI: 40.8-44.2) and Indonesia (17.9%; 95% CI: 15.0-20.9). The prevalence of HCV coinfection was higher in subpopulations of people who inject drugs (China 81.6%; 95% CI: 74.1-88.0; Nepal 80.8%; 95% CI: 76.4-84.9; Indonesia 81.6%; 95% CI: 71.1-90.3), former blood donors (China 82.9%; 95% CI: 73.9-90.3), and blood transfusion recipients (China 51.0%; 95% CI: 41.7-60.2).

CONCLUSION: HCV coinfection prevalence within HIV populations is highly variable in the Asia Pacific region, between countries and at-risk populations. Enhanced epidemiological data is required to support scale-up of interferon-free HCV therapy.

43. Vallinoto, A. C., et al. **"Prevalence and Risk Behaviour for Human Immunodeficiency Virus 1 infection in Marajo Island, Northern Brazil."** *Ann Hum Biol* 2016: 1-29.

BACKGROUND: Human immunodeficiency virus 1 (HIV-1) infection is a global public health problem, but so

far, there is no published information regarding the epidemiology of HIV-1 in Marajo Archipelago (Para, Brazil), Aim: The present study reports the occurrence of infection by HIV-1 in four municipalities of the Marajo Island, Para, Brazil.

SUBJECTS AND METHODS: A total of 1,877 samples were collected from volunteer blood donors (1,296 women and 551 men) living in the municipalities of Anajas, Chaves, Portel and Sao Sebastiao da Boa Vista. Information about risk behaviour assessment was obtained from a questionnaire. Plasma samples were tested for the presence of anti-HIV antibodies using serological tests. The infection was confirmed by nucleic acid amplification assays.

RESULTS: Twelve samples were seropositive for HIV by ELISA. Western blot analysis showed four positive samples, eight indeterminate patterns and one found to be negative. Molecular analysis revealed three positive samples. Risk factors for HIV-1 infection included absence of condoms during sexual intercourse (41.3% - Sao Sebastiao da Boa Vista), use of illicit drugs (5.8% - Anajas), and early initiation of sexual activities, from 10 to 15 years (30.7%).

CONCLUSION: Although the study indicates a low HIV-1 prevalence in Marajo Island some factors may increase the risk for HIV-1 and these include early sexual initiation, unprotected sexual intercourse and the use of illicit drugs.

44. Bouscaillou, J., et al. "**Prevalence and risk factors associated with HIV and tuberculosis in people who use drugs in Abidjan, Ivory Coast.**" *Int J Drug Policy* 2016 30: 116-23.

BACKGROUND: The number of people who use drugs (PWUD) has dramatically increased in West Africa over the last 15 years, but targeted interventions are falling behind, notably because of the lack of awareness of the health needs of PWUD. We aimed to assess prevalence and factors associated with HIV and other infections in PWUD in Abidjan, Ivory Coast, one of the countries most affected by HIV in Western Africa.

METHODS: We used respondent-driven-sampling to obtain a representative sample of heroin or cocaine/crack users aged 18 years or more. Socio-behavioral data were obtained by face-to-face questionnaires. Blood samples were collected and tested for HIV. Two sputa were obtained in tuberculosis (TB) symptomatic participants for acid-fast-bacilli (AFB) smear testing. After a descriptive analysis, crude prevalence were calculated, then weighted to take account of the sampling method. Factors associated with HIV and TB were studied using adjusted log-binomial regression. Population size was estimated by capture-recapture.

RESULTS: 450 PWUD were recruited in May 2014. The mean age was 33.5 years; 10.9% were women. Smoking was the main mode of consumption, ever injecting was reported by 12.7% of the participants (3.6% in the past month). Sex work was reported by 15.8% of the PWUD (13.7% of the men), and 10.2% of the men reported sexual relationships with other men (MSM). We found a weighted prevalence of 9.5% for HIV. Women were 3.4 times more likely to be infected than men. Among men, being a sex worker (SW) (adjusted OR 2.9 [95CI 1.06-7.98]) or MSM (adjusted OR 11.5 [95CI 4.22-31.42]) were the main factors associated with HIV infection in adjusted analysis. Injection was not associated with HIV. TB weighted prevalence was 1.8%, associated with poor living arrangements in adjusted analysis. We estimated that 3521; 95CI 3049-3993 PWUD live in Abidjan.

CONCLUSION: PWUD in Abidjan are at high risk of HIV due to sexual transmission, especially in women, SW and MSM who also use drugs. Interventions should be developed to improve HIV prevention and linkage to care in these specific populations. More generally, improving the health of PWUD involves a broader reflection on the living environment and access to health care of slum residents in large African cities.

45. Norouzian, H., et al. "**Prevalence of HCV Infections and Co-Infection With HBV and HIV and Associated Risk Factors Among Addicts in Drug Treatment Centers, Lorestan Province, Iran.**" *Int J High Risk Behav*

Addict 2016 5(1): e25028. Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4859996/pdf/ijhrba-05-01-25028.pdf>

BACKGROUND: Hepatitis C is an infectious disease caused by blood-borne pathogen, hepatitis C virus (HCV).

OBJECTIVES: The purpose of this study was to investigate the prevalence of HCV infection and associated risk factors among addicts in drug treatment centers in Lorestan Province, Iran.

PATIENTS AND METHODS: A cross-sectional sero-behavioral survey was given to drug addicts in the drug treatment centers of Khorramabad, Lorestan Province, Iran during June 2012 - March 2013. Drug addicts were interviewed using a standard questionnaire including demographic, imprisonment history, and HCV-related risk behavior items. Thereafter, the sera drawn from the participants were tested for anti-HCV antibody (Ab), anti-human immunodeficiency virus (HIV) Ab, and hepatitis B surface antigen (HBsAg).

RESULTS: The mean age of the cohorts was 31.7. Up to 60.2% of drug users had educational levels less than high school, 67.5% were self-employed, and 32.5% were office workers. The mean duration of drug injection was 6.8 years. Statistical analyses indicated that the prevalence of HCV among drug addicts was positively associated with age, past incarceration, drug injection history, the duration of drug use, and tattooing. In addition, 16.23% of volunteers were HCV-positive. Of those infected with HCV, 1.10% was co-infected with HBV, 2.95% were positive for HIV, and 0.36% of HCV-positive cases were infected with all three viruses.

CONCLUSIONS: The high prevalence of HCV infection among this group implies a high rate of transmission and exposure to the risk of serious diseases. It is important that the high prevalence of HCV infection be taken into consideration to control further transmission of this infection.

46. Csete, J., et al. "**Public health and international drug policy.**" *Lancet* 2016 387(10026): 1427-80.

47. Latkin, C. A., et al. "**Roles and Functions of Social Networks Among Men Who Use Drugs in ART Initiation in Vietnam.**" *AIDS Behav* 2016.

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.

48. Nelwan, E. J., et al. "**Routine or targeted HIV screening of Indonesian prisoners.**" *Int J Prison Health* 2016 12(1): 17-26.

PURPOSE: Routine HIV screening of prisoners is generally recommended, but rarely implemented in low-resource settings. Targeted screening can be used as an alternative. Both strategies may provide an opportunity to start HIV treatment but no formal comparisons have been done of these two strategies. The paper aims to discuss these issues.

DESIGN/METHODOLOGY/APPROACH: The authors compared yield and costs of routine and targeted screening in a narcotic prison in Indonesia. Routine HIV screening was done for all incoming prisoners from August 2007-February 2009, after it was switched for budgetary reasons to targeted ("opt-out") HIV screening of inmates classified as people who inject drugs (PWIDs), and "opt-in" HIV testing for all non-

PWIDs.

FINDINGS: During routine screening 662 inmates were included. All 115 PWIDs and 93.2 percent of non-PWIDs agreed to be tested, 37.4 percent and 0.4 percent respectively were HIV-positive. During targeted screening (March 2009-October 2010), of 888 inmates who entered prison, 107 reported injecting drug use and were offered HIV testing, of whom 31 (29 percent) chose not to be tested and 25.0 percent of those tested were HIV-positive. Of 781 non-PWIDs, 187 (24 percent) came for testing (opt-in), and 2.1 percent were infected. During targeted screening fewer people admitted drug use (12.0 vs 17.4 percent). Routine screening yielded twice as many HIV-infected subjects (45 vs 23). The estimated cost per detected HIV infection was 338 USD for routine and 263 USD for targeted screening.

ORIGINALITY/VALUE: In a resource limited setting like Indonesia, routine HIV screening in prison is feasible and more effective than targeted screening, which may be stigmatizing. HIV infections that remain unrecognized can fuel ongoing transmission in prison and lead to unnecessary disease progression and deaths.

49. Martin, E., et al. "**Sex and HIV serostatus differences in decision making under risk among substance-dependent individuals.**" *J Clin Exp Neuropsychol* 2016 38(4): 404-15.

HIV+ individuals with and without substance use disorders make significantly poorer decisions when information about the probability and magnitude of wins and losses is not available. We administered the Game of Dice Task, a measure of decision making under risk that provides this information explicitly, to 92 HIV+ and 134 HIV- substance-dependent men and women. HIV+ participants made significantly poorer decisions than HIV- participants, but this deficit appeared more prominent among HIV+ women. These data indicate that decision making under risk is impaired among HIV+ substance-dependent individuals (SDIs). Potential factors for the HIV+ women's relatively greater impairment are discussed.

50. De Boni, R. B., et al. "**Substance Use and Adherence Among People Living with HIV/AIDS Receiving cART in Latin America.**" *AIDS Behav* 2016.

This cross-sectional study describes substance use prevalence and its association with combination antiretroviral therapy (cART) adherence among 3343 individuals receiving care at HIV clinics in Argentina, Brazil, Chile, Honduras, Mexico, and Peru. A rapid screening tool evaluated self-reported 7-day recall of alcohol, marijuana, cocaine, heroin, and methamphetamine use, and missed cART doses. Overall, 29.3 % individuals reported having ≥ 1 alcoholic drinks, 5.0 % reported any illicit drug use and 17.0 % reported missed cART doses. In the logistic regression model, compared to no substance use, alcohol use [adjusted odds ratio (AOR) = 2.46, 95 % confidence interval (CI): 1.99-3.05], illicit drug use (AOR = 3.57, 95 % CI: 2.02-6.30), and using both alcohol and illicit drugs (AOR = 4.98, 95 % CI: 3.19-7.79) were associated with missed cART doses. The associations between substance use and likelihood of missing cART doses point to the need of targeting alcohol and illicit drug use to improve adherence among people living with HIV in Latin America.

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Men who have Sex with Men - 69

1. Magidson, J. F., et al. "**Antiretroviral Medication Adherence and Amplified HIV Transmission Risk Among Sexually Active HIV-Infected Individuals in Three Diverse International Settings.**" *AIDS Behav* 2016 20(4): 699-709.

Successful biomedical prevention/treatment-as-prevention (TasP) requires identifying individuals at greatest risk for transmitting HIV, including those with antiretroviral therapy (ART) nonadherence and/or 'amplified HIV transmission risk,' defined as condomless sex with HIV-uninfected/unknown-status partners when infectious (i.e., with detectable viremia or STI diagnosis according to Swiss criteria for infectiousness). This study recruited sexually-active, HIV-infected patients in Brazil, Thailand, and Zambia to examine correlates of ART nonadherence and 'amplified HIV transmission risk'. Lower alcohol use (OR = .71, $p < .01$) and higher health-related quality of life (OR = 1.10, $p < .01$) were associated with greater odds of ART adherence over and above region. Of those with viral load data available (in Brazil and Thailand only), 40 % met Swiss criteria for infectiousness, and 29 % had 'amplified HIV transmission risk.' MSM had almost three-fold (OR = 2.89, $p < .001$) increased odds of 'amplified HIV transmission risk' (vs. heterosexual men) over and above region. TasP efforts should consider psychosocial and contextual needs, particularly among MSM with detectable viremia.

2. Rebeiro, P. F., et al. "**Assessing the HIV Care Continuum in Latin America: progress in clinical retention, cART use and viral suppression.**" *J Int AIDS Soc* 2016 19(1): 20636. Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4827101/pdf/JIAS-19-20636.pdf>

INTRODUCTION: We assessed trends in HIV Care Continuum outcomes associated with delayed disease progression and reduced transmission within a large Latin American cohort over a decade: clinical retention, combination antiretroviral therapy (cART) use and viral suppression (VS).

METHODS: Adults from Caribbean, Central and South America network for HIV epidemiology clinical cohorts in seven countries contributed data between 2003 and 2012. Retention was defined as two or more HIV care visits annually, >90 days apart. cART was defined as prescription of three or more antiretroviral agents annually. VS was defined as HIV-1 RNA <200 copies/mL at last measurement annually. cART and VS denominators were subjects with at least one visit annually. Multivariable modified Poisson regression was used to assess temporal trends and examine associations between age, sex, HIV transmission mode, cohort, calendar year and time in care.

RESULTS: Among 18,799 individuals in retention analyses, 14,380 in cART analyses and 13,330 in VS analyses, differences existed between those meeting indicator definitions versus those not by most characteristics. Retention, cART and VS significantly improved from 2003 to 2012 (63 to 77%, 74 to 91% and 53 to 82%, respectively; $p < 0.05$, each). Female sex (risk ratio (RR)=0.97 vs. males) and injection drug use as HIV transmission mode (RR=0.83 vs. male sexual contact with males (MSM)) were significantly associated with lower retention, but unrelated with cART or VS. MSM (RR=0.96) significantly decreased the probability of cART compared with heterosexual transmission.

CONCLUSIONS: HIV Care Continuum outcomes improved over time in Latin America, though disparities for vulnerable groups remain. Efforts must be made to increase retention, cART and VS, while engaging in additional research to sustain progress in these settings.

3. 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.

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.

4. 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: 1-6.

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.

5. Sabin, K., et al. **"Availability and Quality of Size Estimations of Female Sex Workers, Men Who Have Sex with Men, People Who Inject Drugs and Transgender Women in Low- and Middle-Income Countries."** *PLoS One* 2016 11(5): e0155150. Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4862645/pdf/pone.0155150.pdf>

OBJECTIVE: To assess the availability and quality of population size estimations of female sex workers (FSW), men who have sex with men (MSM), people who inject drug (PWID) and transgender women.

METHODS: Size estimation data since 2010 were retrieved from global reporting databases, Global Fund grant application documents, and the peer-reviewed and grey literature. Overall quality and availability were assessed against a defined set of criteria, including estimation methods, geographic coverage, and extrapolation approaches. Estimates were compositely categorized into 'nationally adequate', 'nationally inadequate but locally adequate', 'documented but inadequate methods', 'undocumented or untimely' and 'no data.'

FINDINGS: Of 140 countries assessed, 41 did not report any estimates since 2010. Among 99 countries with at least one estimate, 38 were categorized as having nationally adequate estimates and 30 as having nationally inadequate but locally adequate estimates. Multiplier, capture-recapture, census and enumeration, and programmatic mapping were the most commonly used methods. Most countries relied on only one estimate for a given population while about half of all reports included national estimates. A variety of approaches were applied to extrapolate from sites-level numbers to national estimates in two-thirds of countries.

CONCLUSIONS: Size estimates for FSW, MSM, PWID and transgender women are increasingly available but quality varies widely. The different approaches present challenges for data use in design, implementation and evaluation of programs for these populations in half of the countries assessed. Guidance should be further developed to recommend: a) applying multiple estimation methods; b) estimating size for a minimum number of sites; and, c) documenting extrapolation approaches.

6. Sargin, F., et al. **"Changes in HIV demographic patterns in a low prevalence population: no evidence of a shift towards men who have sex with men."** *Int J Infect Dis* 2016. Online at: http://ac.els-cdn.com/S1201971216310499/1-s2.0-S1201971216310499-main.pdf?_tid=9cf68686-29b7-11e6-b47f-00000aacb361&acdnat=1464978107_f6640e18f0a825453ef8c0ae6911759c

OBJECTIVES: This study aimed to examine the changes in HIV demographics over time in an exceptionally low prevalence population, with particular emphasis on men who have sex with men (MSM).

METHODS: A total of 1292 newly diagnosed HIV-positive patients registered in the ACTHIV-IST Study Group database between 2000 and 2014 were included. The changes occurring over time in the characteristics of patients at the time of initial admission were examined retrospectively.

RESULTS: A gradual increase in the total number of newly diagnosed patients was evident during the study period; however, it was not possible to show an increase in the proportion of MSM within the study population ($p=0.63$). There was a male predominance throughout the study (85% vs. 15%), with further increases in the proportion of males in recent years. The mean age was lower at the end of the study ($p<0.05$) and there was an increase in the number of unmarried patients ($p<0.05$).

CONCLUSIONS: Sexual preference patterns of HIV patients in extremely low prevalence populations may be different, possibly due to an early phase of the epidemic. Nevertheless, MSM still represent a target subgroup for interventions, since they account for a substantial proportion of cases and a resurgent epidemic may be expected among this group in later phases of the epidemic.

7. Zou, H., et al. **"Characteristics of Men Who Have Sex With Men Who Use Smartphone Geosocial Networking Applications and Implications for HIV Interventions: A Systematic Review and Meta-Analysis."** *Arch Sex Behav* 2016.

Men who have sex with men (MSM) are increasingly using geosocial networking (GSN) mobile applications (apps) designed for MSM to socialize and seek sex partners. We systematically reviewed studies on the characteristics of app-using MSM and the potential feasibility of app-based HIV interventions. Existing studies provided limited parameters to compare characteristics and sexual behaviors between app-using and non-app-using MSM. Available data showed that: compared to non-app-using MSM, app-using MSM tended to be younger, identified as White (in the US and Australia), have higher educational level, report higher incomes, and had a higher rate of engagement in risky sexual behaviors and STIs. Compared to non-app-using MSM, app-using MSM were more likely to have tested for HIV in lifetime (Pooled odds ratio = 2.1, 95 % confidence interval: 1.7-2.6) and have similar HIV prevalence. Up to 676 MSM were recruited in 1 day via apps. In the current literature, there was a lack of (1) comparable parameters to measure sexual risk; (2) large longitudinal studies to clarify behavioral changes and HIV/STI incidence over time, comparing app-using and non-app-using MSM; (3) studies to examine the feasibility and efficacy of using apps to promote HIV testing among MSM; and (4) studies on similar topics from countries other than the US, Australia, and China. MSM GSN apps should be utilized in future HIV prevention and control endeavors. Researchers and health providers should collaborate with GSN app developers on these endeavors.

8. Chuang, D. M., et al. **"Community engagement among men who have sex with men living with HIV/AIDS in Taiwan."** *AIDS Care* 2016 28(4): 445-9.

Community engagement was developed as a global principle in the provision of HIV/AIDS services, yet evidence-based research of implementation of the principle is lacking in Taiwan. This short report aims to

understand factors associated with engagement in two types of activities with varying levels of visibility: HIV-related community events and HIV-related community action, in Taiwanese men who have sex with men (MSM) living with HIV. A cross-sectional survey was distributed to a purposive sample of participants recruited from AIDS service organizations (ASOs). Among participants (n = 178), 63.6% were involved in HIV-related community events, while less than half (47.7%) were involved in HIV-related community action. In multivariable analysis, age, involvement in ASOs, and AIDS knowledge were positively associated with engagement in community events, and living in the north of Taiwan, years of infection, and self-stigma were negatively associated with this type of engagement. Few factors, with the exception of involvement in ASOs, were positively associated with engagement in HIV-related community action. To this end, ASOs appear to play a strong role in improving and organizing both types of community engagement in Taiwan. Future studies should evaluate tailored programs delivered through ASOs for strengthening community connectedness among younger, stigmatized, and longer diagnosed MSM living with HIV.

9. Solomon, S. S., et al. "**Community viral load, antiretroviral therapy coverage, and HIV incidence in India: a cross-sectional, comparative study.**" *Lancet HIV* 2016 3(4): e183-90.

BACKGROUND: HIV incidence is the best measure of treatment-programme effectiveness, but its measurement is difficult and expensive. The concept of community viral load as a modifiable driver of new HIV infections has attracted substantial attention. We set out to compare several measures of community viral load and antiretroviral therapy (ART) coverage as correlates of HIV incidence in high-risk populations.

METHODS: We analysed data from a sample of people who inject drugs and men who have sex with men, who were participants of the baseline assessment of a cluster-randomised trial in progress across 22 cities in India (ClinicalTrials.gov number NCT01686750). We recruited the study population by use of respondent-driven sampling and did the baseline assessment at 27 community-based sites (12 for men who have sex with men and 15 for people who inject drugs). We estimated HIV incidence with a multiassay algorithm and calculated five community-based measures of HIV control: mean log₁₀ HIV RNA in participants with HIV in a community either engaged in care (in-care viral load), aware of their status but not necessarily in care (aware viral load), or all HIV-positive individuals whether they were aware, in care, or not (population viral load); participants with HIV in a community with HIV RNA more than 150 copies per mL (prevalence of viraemia); and the proportion of participants with HIV who self-reported ART use in the previous 30 days (population ART coverage). All participants were tested for HIV, with additional testing in HIV-positive individuals. We assessed correlations between the measures and HIV incidence with Spearman correlation coefficients and linear regression analysis.

FINDINGS: Between Oct 1, 2012, and Dec 19, 2013, we recruited 26 503 participants, 12 022 men who have sex with men and 14 481 people who inject drugs. Median incidence of HIV was 0.87% (IQR 0.40-1.17) in men who have sex with men and 1.43% (0.60-4.00) in people who inject drugs. Prevalence of viraemia was more strongly correlated with HIV incidence (correlation 0.81, 95% CI 0.62-0.91; p<0.0001) than all other measures, although correlation was significant with aware viral load (0.59, 0.27-0.79; p=0.001), population viral load (0.51, 0.16-0.74; p=0.007), and population ART coverage (-0.54, -0.76 to -0.20; p=0.004). In-care viral load was not correlated with HIV incidence (0.29, -0.10 to 0.60; p=0.14). With regression analysis, we estimated that to reduce HIV incidence by 1 percentage point in a community, prevalence of viraemia would need to be reduced by 4.34%, and ART use in HIV-positive individuals would need to increase by 19.5%.

INTERPRETATION: Prevalence of viraemia had the strongest correlation with HIV incidence in this sample and might be a useful measure of the effectiveness of a treatment programme.

FUNDING: US National Institutes of Health, Elton John AIDS Foundation.

10. Shen, H., et al. "**Condomless Vaginal Intercourse and Its Associates among Men Who Have Sex with Men in China.**" *PLoS One* 2016 11(4): e0154132. Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4846008/pdf/pone.0154132.pdf>

BACKGROUND: HIV prevalence has increased rapidly among men who have sex with men (MSM) in China reaching alarmingly high levels in some cities. Bisexual MSM have potential to transmit HIV and syphilis to their female partners through condomless vaginal intercourse (CVI). Thus, estimation of the burden of CVI and identification of its associates seemed necessary to control this cross-gender transmission.

METHOD: In a cross-sectional study, using respondent-driven-sampling and snowball sampling, 2958 MSM were recruited from seven Chinese cities, interviewed and tested for HIV and syphilis. Descriptive analysis of the socio-demographic and behaviors followed by simple and multiple logistic regressions [adjusted for income, city, race and social network size to determine adjusted odds ratio (aOR)] were performed using SAS-9.1.

RESULTS: Among participating MSM, 19.03% were engaged in CVI. Prevalence of HIV and syphilis among participants involved in CVI were 5.86% and 14.74% respectively. MSM who were older [aOR for aged 40-49 = 2.60 (95% CI: 1.54-4.37)], married [aOR = 6.13 (4.95-7.58)], attended primary school or below [aOR = 3.86 (2.26-6.69)], met male partners at spa/bathhouse/sauna/massage parlor [aOR = 3.52 (2.62-4.72)] and had heterosexual orientation [aOR = 13.81 (7.14-26.70)] were more likely to have CVI. Furthermore, correct knowledge regarding HIV [aOR = 0.70 (0.55, 0.88)] and exposure to HIV prevention interventions [aOR = 0.67 (0.54, 0.82)] were negatively associated with CVI.

CONCLUSIONS: CVI was found to be common among MSM in China. To minimize the transmission of HIV and syphilis from bisexual MSM to their relatively female partners, targeted interventions should specifically focus on bisexual MSM especially the older and married subgroups.

11. Dangerfield, D. T., 2nd, et al. "**Correlates of anal sex roles among Malay and Chinese MSM in Kuala Lumpur, Malaysia.**" *Int J STD AIDS* 2016 27(4): 313-20.

Identifying roles for anal sex is an important issue for populations of MSM. We describe the prevalence of identifying as being 'top', 'bottom', 'versatile', or 'don't know/not applicable' among Malay and Chinese MSM in Kuala Lumpur, Malaysia, and behavioural outcomes according to these labels for sexual role identity. Data analysis was conducted on a survey administered during weekly outreach throughout Kuala Lumpur in 2012. Pearson's Chi square tests were used to compare demographic and behavioural characteristics of MSM who reported roles for anal sex. Binary logistic regression was used to explore the odds of behavioural outcomes among MSM who identified as 'bottom', 'versatile,' and 'don't know' compared to MSM who reported that 'top' was their sexual role. Labels for anal sex roles were significantly associated with condom use for last anal sex. Among MSM who used labels for anal sex roles, MSM who identified as 'bottom' had highest level of not using condoms for last anal sex (24.1%, $p = .045$). In binary logistic regression model, identifying as 'top' was significantly associated with reporting using a condom during last anal sex and reported consistent condom use for anal sex in the past six months ($p = .039$ and $.017$, respectively). With regard to sexual role identity, some MSM may be a part of a special subgroup of at-risk men to be targeted. Future research should evaluate the origins, meanings, and perceptions of these labels, and the developmental process of how these MSM identify with any of these categories. Research should also uncover condom use decision making with regard to these labels for sexual positioning.

12. Semple, S. J., et al. "**Correlates of Sexual Violence Among Men Who Have Sex With Men in Tijuana, Mexico.**" *Arch Sex Behav* 2016.

Sexual violence among men who have sex with men (MSM) is prevalent in developing countries and is associated with increased HIV/STI risk. Despite high HIV prevalence (20 %) among MSM in Tijuana, Mexico, little attention has been paid to the occurrence of sexual violence in this high-risk group. The present study used a syndemic conditions framework to examine correlates of sexual violence victimization in a sample of 201 MSM surveyed in Tijuana, Mexico during 2012 and 2013. Participants were recruited through respondent-driven sampling and underwent a 2-h baseline interview and testing for HIV and syphilis. Sexual violence was defined as any incident during the past year in which the participant had been raped, sexually molested, or sexually harassed. The majority of participants self-identified as gay or bisexual, had never

married, were employed, and had a high school education or greater. The average age was 29.7 years. Thirty-nine percent reported sexual violence in the past year. A hierarchical multiple linear regression model predicting more experiences of sexual violence was tested. In a final model, a higher number of experiences of sexual violence was associated with a history of childhood sexual abuse, more adult experiences of homophobia, more depression and hostility symptoms, and not living with a spouse or steady partner. The findings from this study support a model of co-occurring psychosocial factors that increase the likelihood of sexual violence experiences among MSM. Multi-level approaches to the prevention of childhood and adult experiences of sexual violence and homophobia are needed to avert the development of adverse mental and physical health outcomes associated with sexual violence victimization.

13. Tang, W., et al. "**Crowdsourcing HIV Test Promotion Videos: A Noninferiority Randomized Controlled Trial in China.**" *Clin Infect Dis* 2016 62(11): 1436-42.

BACKGROUND: Crowdsourcing, the process of shifting individual tasks to a large group, may enhance human immunodeficiency virus (HIV) testing interventions. We conducted a noninferiority, randomized controlled trial to compare first-time HIV testing rates among men who have sex with men (MSM) and transgender individuals who received a crowdsourced or a health marketing HIV test promotion video.

METHODS: Seven hundred twenty-one MSM and transgender participants (≥ 16 years old, never before tested for HIV) were recruited through 3 Chinese MSM Web portals and randomly assigned to 1 of 2 videos. The crowdsourced video was developed using an open contest and formal transparent judging while the evidence-based health marketing video was designed by experts. Study objectives were to measure HIV test uptake within 3 weeks of watching either HIV test promotion video and cost per new HIV test and diagnosis.

RESULTS: Overall, 624 of 721 (87%) participants from 31 provinces in 217 Chinese cities completed the study. HIV test uptake was similar between the crowdsourced arm (37% [114/307]) and the health marketing arm (35% [111/317]). The estimated difference between the interventions was 2.1% (95% confidence interval, -5.4% to 9.7%). Among those tested, 31% (69/225) reported a new HIV diagnosis. The crowdsourced intervention cost substantially less than the health marketing intervention per first-time HIV test (US\$131 vs US\$238 per person) and per new HIV diagnosis (US\$415 vs US\$799 per person).

CONCLUSIONS: Our nationwide study demonstrates that crowdsourcing may be an effective tool for improving HIV testing messaging campaigns and could increase community engagement in health campaigns.

CLINICAL TRIALS REGISTRATION: NCT02248558.

14. Ahaneku, H., et al. "**Depression and HIV risk among men who have sex with men in Tanzania.**" *AIDS Care* 2016 28 Suppl 1: 140-7.

Studies have shown high rates of depression among men who have sex with men (MSM) in developed countries. Studies have also shown association between depression and HIV risk among MSM. However, very little research has been done on depression among African MSM. We assessed depression and HIV risk among a sample of MSM in Tanzania. We reviewed data on 205 MSM who were recruited from two Tanzanian cities using the respondent driven sampling method. Demographic and behavioral data were collected using a structured questionnaire. HIV and sexually transmitted infections data were determined from biological tests. Depression scores were assessed using the Patient Health Questionnaire (PHQ-9). For the analysis, depression scores were dichotomized as depressed (PHQ > 4) and not depressed (PHQ ≤ 4). Bivariate and multivariable Poisson regression analyses were conducted to assess factors associated with depression. The prevalence of depression in the sample was 46.3%. The mean (\pm SD) age of the sample was 25 (± 5) years. In bivariate analysis, depression was associated with self-identifying as gay ($p = .001$), being HIV positive ($p < .001$: $< 8\%$ of MSM knew they were HIV infected) and having a high number of sexual partners in the last 6 months ($p = .001$). Depression was also associated with sexual ($p = .007$), physical ($p = .003$) and verbal ($p < .001$) abuse. In the Poisson regression analysis, depression was associated with verbal

abuse (APR = 1.91, CI = 1.30-2.81). Depression rates were high among MSM in Tanzania. It is also associated with abuse, HIV and HIV risk behaviors. Thus, reducing the risk of depression may be helpful in reducing the risk of HIV among MSM in Africa. We recommend the colocation of mental health and HIV preventive services as a cost-effective means of addressing both depression and HIV risk among MSM in Africa.

15. Shaw, S. Y., et al. "**Descriptive Epidemiology of Factors Associated with Human Immunodeficiency Virus Infections Among Men and Transgender Women Who Have Sex with Men in South India.**" *LGBT Health* 2016.

PURPOSE: Men and transgender women who have sex with men (MTWSM) continue to be an at-risk population for human immunodeficiency virus (HIV) infection in India. Identification of risk factors and determinants of HIV infection is urgently needed to inform prevention and intervention programming.

METHODS: Data were collected from cross-sectional biological and behavioral surveys from four districts in Karnataka, India. Multivariable logistic regression models were constructed to examine factors related to HIV infection. Sociodemographic, sexual history, sex work history, condom practices, and substance use covariates were included in regression models.

RESULTS: A total of 456 participants were included; HIV prevalence was 12.4%, with the highest prevalence (26%) among MTWSM from Bellary District. In bivariate analyses, district ($P = 0.002$), lack of a current regular female partner ($P = 0.022$), and reported consumption of an alcoholic drink in the last month ($P = 0.004$) were associated with HIV infection. In multivariable models, only alcohol use remained statistically significant (adjusted odds ratios: 2.6, 95% confidence intervals: 1.2-5.8; $P = 0.02$).

CONCLUSION: The prevalence of HIV continues to be high among MTWSM, with the highest prevalence found in Bellary district.

16. Zhang, N., et al. "**Disparities in HIV Care Along the Path From Infection to Viral Suppression: A Cross-sectional Study of HIV/AIDS Patient Records in 2013, Shandong Province, China.**" *Clin Infect Dis* 2016.

BACKGROUND: The 90-90-90 targets recommended by the Joint United Nations Programme on HIV/AIDS require strengthening human immunodeficiency virus (HIV) care, which includes diagnosis, linkage to and retention in care, assessment for treatment suitability, and optimization of HIV treatment. We sought to quantify patient engagement along the continuum, 10 years after introduction of Chinese HIV care policies.

METHODS: We included patients from Shandong, China, who were diagnosed with HIV from 1992 to 2013. Records were obtained from the HIV/AIDS Comprehensive Response Information Management System to populate a 7-step HIV care continuum. Pearson chi² test and multivariate logistic regression were used for analysis.

RESULTS: Of 6500 estimated HIV-infected persons, 60.1% were diagnosed, of whom 41.9% received highly active antiretroviral therapy (HAART). Only 59.6% of patients on HAART and 15% of all infected persons achieved viral suppression. Children infected by mother-to-child transmission (MTCT) and persons infected by intravenous drug use were less likely to be linked to and retained in care (odds ratio [OR], 0.33 [95% confidence interval [CI], .14-.80] and OR, 0.58 [95% CI, .40-.90], respectively). Persons tested in custodial institutions were substantially less likely to be on HAART (OR, 0.22 [95% CI, .09-.59]) compared with those tested in medical facilities. Patients on HAART infected by homosexual or heterosexual transmission and those infected by MTCT were less likely to achieve viral suppression (OR, 0.18 [95% CI, .09-.34]; OR, 0.12 [95% CI, .06-.22]; OR, 0.07 [95% CI, .02-.20], respectively).

CONCLUSIONS: Our report suggests, at the current rate, Shandong Province has to accelerate HIV care efforts to close disparities in HIV care and achieve the 90-90-90 goals equitably.

17. 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.

Drawing on seventeen months of ethnographic fieldwork (2007-2011), this article critically examines the consequences of two global health initiatives, 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 global health initiatives between 2008-2010 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 global health initiatives 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 global health initiatives. [global health initiatives, NGOs, gay men, HIV/AIDS, China] This article is protected by copyright. All rights reserved.

18. Mehrotra, M. L., et al. "**The Effect of Depressive Symptoms on Adherence to Daily Oral PrEP in Men who have Sex with Men and Transgender Women: A Marginal Structural Model Analysis of The iPrEx OLE Study.**" *AIDS Behav* 2016.

We assessed the role of depressive symptoms on adherence to daily oral FTC/TDF for HIV PrEP in cisgender men who have sex with men (MSM) and transgender women who have sex with men (TGW) using data from the iPrEx OLE study. A marginal structural logistic regression model was used to estimate the effect of time-varying CES-D scores on having protective levels of drug concentration, adjusting for confounding by sexual practices over time, prior adherence, and baseline demographic characteristics. We found a non-monotonic relationship between CES-D score and odds of protective FTC/TDF levels in MSM. We found evidence that the effect of depression on adherence varied between MSM and TGW, and that depressive symptoms did not contribute greatly to decreased adherence on a population scale. We recommend that depressive symptoms not preclude the prescription of PrEP, and that MSM and TGW be studied separately.

19. Smith, L. R., et al. "**Engagement in the HIV Care Continuum among Key Populations in Tijuana, Mexico.**" *AIDS Behav* 2016 20(5): 1017-25.

In Tijuana, Mexico, HIV is concentrated in sub-epidemics of key populations: persons who inject drugs (PWID), sex workers (SW), and men who have sex with men (MSM). To date, data on engagement in the HIV care continuum among these key populations, particularly in resource-constrained settings, are sparse. We pooled available epidemiological data from six studies (N = 3368) to examine HIV testing and treatment uptake in these key populations; finding an overall HIV prevalence of 5.7 %. Of the 191 identified HIV-positive persons, only 11.5 % knew their HIV-positive status and 3.7 % were on ART. Observed differences between these HIV-positive key populations suggest PWID (vs. non-PWID) were least likely to have previously tested or initiate HIV care. MSM (vs. non-MSM) were more likely to have previously tested but not more likely to know their HIV-positive status. Of persons aware of their HIV-positive status, SW (vs. non-SW) were more likely to initiate HIV care. Findings suggest engagement of key populations in HIV treatment is far below estimates observed for similarly resource-constrained generalized epidemics in sub-Saharan Africa. These data provide one of the first empirical-snapshots highlighting the extent of HIV treatment disparities in key populations.

20. Goodman, S. H., et al. "**Examining the Correlates of Sexually Transmitted Infection Testing Among Men Who Have Sex With Men in Ouagadougou and Bobo-Dioulasso, Burkina Faso.**" *Sex Transm Dis* 2016 43(5): 302-9.

BACKGROUND: Men who have sex with men (MSM) are a population at risk for HIV acquisition and transmission and other sexually transmitted infections (STIs). In Burkina Faso, the prevalence of HIV among MSM is higher than that of other reproductive-aged adults. Early and frequent STI testing and treatment can

help prevent HIV acquisition and transmission and may improve linkage to care.

METHODS: A cross-sectional study used respondent-driven sampling of MSM in the urban centers of Ouagadougou and Bobo-Dioulasso, Burkina Faso, to complete a questionnaire and HIV and syphilis testing. The binary-dependent variable in these analyses was self-reported prior STI testing in the past 12 months. Independent variables included sociodemographic characteristics, sexual behaviors, and psychosocial factors, selected according to the modified social ecological model. Bivariate associations at the $P < 0.05$ level were used to create a manual forward stepwise multivariable logistic regression.

RESULTS: Seventy-six percent of participants (511/672) did not test for STIs in the last 12 months. Testing for STIs was associated with STI symptoms (odds ratio [OR], 2.56; 95% confidence interval [95% CI], 1.39-4.76) and independently associated with depressive symptoms (adjusted OR, 1.49; 95% CI, 1.01-2.20) and discussing HIV and STIs with main male partners (adjusted OR, 1.73; 95% CI, 1.23-1.76).

CONCLUSIONS: These data suggest that periodic targeted STI screening for MSM in Burkina Faso may represent an important component of comprehensive HIV prevention programming. The relationship between depression and STI risks is well established, and these data further indicate that screening for depression may be warranted during these clinical encounters.

21. 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: 1-8.

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.

22. Shangani, S., et al. "**Factors associated with HIV testing among men who have sex with men in Western Kenya: a cross-sectional study.**" *Int J STD AIDS* 2016.

HIV diagnosis is an important step in the HIV cascade of prevention and treatment. However, men who have sex with men in low- and middle-income countries have limited access to HIV care services. We examined factors associated with prior HIV testing among men who have sex with men in western Kenya. We recruited 95 men who have sex with men aged 18 years and older, and who reported at least one sexual contact with a man in the past 6 months; however, this analysis is restricted to 89 participants who completed questions on HIV testing. Logistic regression model was used to determine factors associated with HIV testing in the past one year. Results indicate that 23 (26%) had not been tested in the past 12 months. Bivariate analyses demonstrated that condomless anal sex (odds ratio = 3.29, 95% confidence interval = 1.18-9.17) and comfort with healthcare providers (odds ratio = 1.15, 95 % CI = 1.05-1.26) were associated with higher odds of HIV

testing in the past 12 months. Experiencing social stigma was associated with lower odds of HIV testing in the last 12 months (odds ratio = 0.91, 95% confidence interval = 0.84-0.94). In multivariable models, social stigma remained significantly associated with lower odds of HIV testing in the last 12 months odds ratio = 0.90, 95% confidence interval = 0.82-0.99) after inclusion of sexual risk and individual level variables. Development of men who have sex with men-sensitive HIV-testing services, addressing stigma, and training healthcare workers to provide culturally sensitive services may assist in effectively engaging men who have sex with men in the HIV treatment cascade.

23. Khawcharoenporn, T., et al. **"Feasibility of HIV Universal Voluntary Counseling and Testing in a Thai General Practice Clinic."** *J Int Assoc Provid AIDS Care* 2016 15(3): 205-14.

An HIV transmission prevention program incorporating universal voluntary counseling and testing (UVCT) was conducted in a general practice (GP) clinic of a Thai hospital. Of the 494 participating patients, 356 (72%) accepted HIV-UVCT. Independent factors associated with HIV-UVCT acceptance included participating in the program after office hours (4-8 pm; $P < .001$), living with domestic partner with no marriage ($P = .01$), and having primary school education or less ($P = .02$). The main reasons for declining HIV-UVCT were time constraint (38%) and perceiving self as no risk (35%). Among the 356 patients undergoing HIV-UVCT, having moderate to high HIV risk ($P < .001$) and male sex ($P = .01$) were independently associated with low HIV risk perception. By HIV-UVCT, the rate of new HIV infection was 4 (1.1%) of 356 patients. Of these 4 newly diagnosed HIV-infected patients, 3 (75%) were homosexual men. The findings suggest feasibility of HIV-UVCT in our GP clinic and factors to be considered for improving the program.

24. Bristow, C. C., et al. **"Field evaluation of a dual rapid diagnostic test for HIV infection and syphilis in Lima, Peru."** *Sex Transm Infect* 2016 92(3): 182-5.

OBJECTIVES: Screening for HIV and syphilis in key populations is recommended by the WHO to reduce the morbidity, mortality and transmission associated with undiagnosed and untreated infections. Rapid point-of-care tests that can detect multiple infections with a single fingerprick whole blood specimen using a single device are gaining popularity. We evaluated the field performance of a rapid dual HIV and syphilis test in people at high risk of HIV and syphilis infections.

METHODS: Participants included men who have sex with men and transgender women recruited in Lima, Peru. Reference standard testing for detection of HIV and syphilis infections, conducted using blood samples from venipuncture, included *Treponema pallidum* particle agglutination and fourth-generation HIV enzyme immunoassay for which positive results had a confirmation HIV Western blot test. For the evaluation test, SD BIOLINE HIV/Syphilis Duo test (Standard Diagnostics, Korea), a fingerprick blood specimen was used. Sensitivity and specificity were calculated and the exact binomial method was used to determine 95% CIs.

RESULTS: A total of 415 participants were recruited for the study. The dual test sensitivity for detection of *T. pallidum* infection was 89.2% (95% CI 83.5% to 93.5%) and specificity 98.8% (95% CI 96.5% to 99.8%). For detection of HIV infection, the sensitivity of the dual test was 99.1% (95% CI 94.8% to 100%) and specificity 99.4% (95% CI 97.7% to 99.9%).

CONCLUSIONS: This high performing dual test should be considered for the use in clinical settings to increase uptake of simultaneous testing of HIV and syphilis and accelerate time to treatment for those who need it.

25. Liu, Y., et al. **"Frequent HIV Testing: Impact on HIV Risk Among Chinese Men Who Have Sex with Men."** *J Acquir Immune Defic Syndr* 2016.

BACKGROUND: The HIV epidemic continues to expand among men who have sex with men (MSM) in China. The NIMH Project Accept/HPTN 043 trial suggested a borderline significant trend towards HIV incidence reduction among persons with higher testing rates.

METHODS: We assessed HIV testing histories and infection status among a community-based Beijing MSM. HIV serostatus was lab-confirmed. We ascertained demographic/behavioral factors via questionnaire-based interviews. Associations of prior HIV testing with odds of current HIV infection were assessed, seeking improved like-with-like risk comparisons through multivariable logistic regression analysis with propensity score adjustment and restricted cubic spline modeling.

RESULTS: Among 3,588 participants, 12.7% were HIV-infected; 70.8% reported having ever tested for HIV. Compared to MSM who never tested, those ever testing had a 41% reduction in the odds of being HIV-positive (adjusted odds ratio [aOR], 0.59; 95% confidence interval [CI]: 0.48, 0.74). Higher HIV testing frequencies were associated with a decreasing trend in the odds of being infected with HIV vs. a referent group with no prior testing (>6 tests [aOR: 0.27; 95%CI: 0.18, 0.41]; 4-6 [aOR: 0.55; 95%CI: 0.39, 0.78]; 2-3 [aOR: 0.61; 95%CI: 0.45, 0.82]; P for trend <0.001). The multivariable adjusted model with restricted cubic spline of HIV testing frequency showed a higher frequency of prior HIV testing associated with lower odds of HIV infection, particularly among men with ≥ 10 lifetime male sexual partners.

CONCLUSIONS: Using risk probability adjustments to enable less biased comparisons, frequent HIV testing was associated with a lower HIV odds among Chinese MSM.

26. Sandfort, T., et al. **"Gender Nonconformity, Discrimination, and Mental Health Among Black South African Men Who Have Sex with Men: A Further Exploration of Unexpected Findings."** *Arch Sex Behav* 2016 45(3): 661-70.

Using data from a study about HIV risk among Black South African MSM, we aimed to ascertain whether unexpected findings about the relationship between gender nonconformity, discrimination, and mental health in this population, as reported by Cook, Sandfort, Nel, and Rich (2013), could be replicated, and to explore more in-depth how gender nonconformity relates to health. Cook et al. found that feminine men were not more likely to be depressed despite the observation that they were more likely to be discriminated against and that discrimination increased the likelihood of depression. This is in contrast to what studies among gay and bisexual men in Western countries have consistently shown. In the current study, 196 Black South African MSM (ages between 18 and 40; M age, 26.65 years) were surveyed. Assessments included stressors (identity confusion, internalized homophobia, and sexual orientation-based discrimination) and resilience factors (openness about one's sexual orientation, social support, and identification with the gay community). We observed that gender-nonconforming men were not more likely to be depressed despite having experienced more discrimination, which was associated with depression. The same relationships were observed when considering anxiety as the mental health outcome. We found an indirect negative effect of gender nonconformity on depression through internalized homophobia, suggesting that, in this population, internalized homophobia masks the effect of discrimination on mental distress. Implications for the sexual minority stress model, used to guide our analyses, are discussed. Further research is needed to disentangle the complex relationship between gender nonconformity and mental health among MSM populations.

27. Konou, A. A., et al. **"Genetic diversity and transmission networks of HIV-1 strains among men having sex with men (MSM) in Lome, Togo."** *Infect Genet Evol* 2016.

Understanding the HIV epidemic in key populations is important. Today only scarce information is available on HIV-1 strains that circulate in men having sex with men (MSM) in sub-Saharan Africa. Here, we studied for the first time the genetic diversity of HIV-1 strains circulating in the MSM population in Lome, the capital city from Togo. The overall subtype/CRF distribution in pol (protease and/or partial reverse transcriptase (RT)) among the 79 HIV-1 strains from MSM was as follows: CRF02_AG (72%, n=57), subtype G (2.5%, n=2), sub-subtype A3 (1.3%, n=1), and unique recombinant forms (URF) (24%, n=19). Among the 19 URFs four different mosaic structures were observed, annotated as URF1 to URF4. Fifteen sequences (URF1) had the same mosaic structure in pol (G/CRF02_AG) and could represent a new circulating recombinant form (CRF). Phylogenetic analysis of the RT sequences showed that there were several introductions of CRF02_AG strains in the MSM population, however half of the CRF02_AG and all URF1 strains formed a separate, well-supported cluster suggesting one major introduction of CRF02_AG in the MSM population followed by

efficient transmission and emergence of a possible new CRF. At least 40% of the strains fell into recent transmission chains involving two to seven MSM. Comparison with more than 950 HIV-1 sequences from previous studies in Togo showed intermixing of the HIV-1 epidemics between MSM and the general population. Moreover, an HIV-1 strain from a recently HIV-1 infected male patient from Germany, fell within a cluster of HIV-1 strains from MSM from Togo, illustrating recent exchange between MSM from Africa and people from other geographic regions. With growing evidence of the importance of MSM in the dynamic of the HIV epidemic in Africa there is an urgent need for appropriate interventions to limit HIV transmission in this population group.

28. 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: 1-10.

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.

29. Chonwattana, W., et al. "**Hepatitis B vaccination uptake and correlates of serologic response among HIV-infected and uninfected men who have sex with men (MSM) in Bangkok, Thailand.**" *Vaccine* 2016 34(17): 2044-50.

BACKGROUND: Vaccination against hepatitis B virus (HBV) is recommended for all HBV-susceptible men who have sex with men (MSM). There is limited information on correlates of immunity to HBV vaccination in this group. We present serologic response rates to hepatitis B vaccine and identify factors associated with impaired response among HIV-uninfected and HIV-infected Thai MSM.

METHODOLOGY: HBV-susceptible volunteers were offered hepatitis B vaccination at months zero, one, and six. We measured baseline (pre-vaccination) total serum IgG and IgG subclasses (all participants), baseline CD4 count, and plasma HIV-1 viral load (PVL) (HIV+ participants). HBV serologies were retested at 12 months. Serologic responses were compared between all groups in men receiving three vaccine doses.

RESULTS: 511/651 HIV-negative and 64/84 HIV-positive participants completed the three-dose series. Response rates in HIV-uninfected and -infected participants were 90.1% vs. 50.0% ($p < 0.0001$). Median pre-vaccination IgG was higher among non-responders than responders overall (1238.9.0 vs. 1057.0mg/dL, $p = 0.003$) and among HIV-infected participants (1534.0 vs. 1244.5mg/dL, $p = 0.005$), but not significantly among HIV-uninfected participants (1105.5 vs. 1054.3mg/dL, $p = 0.96$). Pre-vaccination IgG1 and IgG3 levels were higher among HIV-positive than HIV-negative participants (median 866.0 vs. 520.3, and 105.8 vs. 83.1mg/dL, respectively, $p < 0.0001$). Among HIV-infected participants, median CD4 count in non-responders was 378 cells/ μ L vs. 431 cells/ μ L in responders ($p = 0.20$). Median PVL in non-responders was 64,800 copies/mL vs. 15500 copies/mL in responders ($p = 0.04$). Participants with pre-vaccination plasma IgG

>1550mg/dL and PVL >10,000 copies/mL were almost always non-responsive ($p < 0.01$).

CONCLUSIONS: HIV infection was associated with poor vaccine responses. High plasma viral load, elevated pre-vaccination total serum IgG and elevated pre-vaccination IgG1 are associated with poorer response to vaccination among HIV-infected MSM. In this group, the combination of high PVL and pre-vaccination total IgG is highly predictive of vaccine failure.

30. Mi, G., et al. "**Hidden and Mobile: A Web-based Study of Migration Patterns of Men Who Have Sex With Men in China.**" *Clin Infect Dis* 2016 62(11): 1443-7.

BACKGROUND: Men who have sex with men (MSM) are highly vulnerable to human immunodeficiency virus (HIV) infection and more likely to migrate due to widespread stigma and discrimination in China. Their mobility complicates estimation of local MSM population sizes and the provision of HIV services, and may also contribute to the spread of HIV.

METHODS: Between 1 January 2008 and 31 December 2012, the visits of all individuals to the largest Chinese MSM dating website were recorded. After a predesigned de-identification procedure by the website, we analyzed Internet Protocol addresses for migration patterns. Migrants were defined as individuals who were away from their registered residence for >6 months in the last 12 months.

RESULTS: The website contained data on 794 912 MSM eligible for the study, of which 34.5% were migrants. The median age was 26 years (range, 18-61 years), and 85.5% were unmarried. Compared with nonmigrant MSM, migrants were less likely to be married to a woman (8.6% vs 13.5%; $P < .001$). The 5 provinces with the highest migrant inflow ratios were Guangdong, Shanghai, Beijing, Tianjin, and Zhejiang. Eastern coastal cities were the primary destination of MSM from southwestern China.

CONCLUSIONS: Preferential MSM migration may influence MSM population sizes in both originating and destination provinces, particularly for provinces with uneven inflow and outflow. MSM migration from southwestern China, which has the highest HIV prevalence in this population, to coastal cities with lower prevalence may have implications for the spread of the HIV epidemic as well as HIV care services.

31. Nadol, P., et al. "**High hepatitis C virus (HCV) prevalence among men who have sex with men (MSM) in Vietnam and associated risk factors: 2010 Vietnam Integrated Behavioural and Biologic Cross-Sectional Survey.**" *Sex Transm Infect* 2016.

BACKGROUND: Hepatitis C virus (HCV) is an increasing health issue among key populations such as men who have sex with men (MSM). We sought to assess the burden of and risk factors for HCV among MSM in Vietnam.

METHODS: We analysed behavioural and demographic data and stored specimens from MSM surveyed in four provinces through Vietnam's 2009-2010 Integrated Biologic and Behavioural Survey, which used probability-based, respondent-driven sampling. Commercial hepatitis B surface antigen (HBsAg) and HCV/antibody (HCV Ag/Ab) testing were performed on archived sera with follow-up PCR for HCV RNA and genotype determination.

RESULTS: Among the 1588 MSM surveyed, the median (range) frequency, by province, of HCV Ag/Ab detection was 28.4% (13.7%-38.8%); 84.5% (83.1%-100%) among HIV-infected and 21.9% (8.9%-28.2%) among HIV-uninfected. HCV prevalence was higher in northern Hanoi and Hai Phong provinces than in southern Ho Chi Minh City and Chan Tho provinces. Among a convenience sample of 67 HCV Ag/Ab+ MSM, 67.2% were HCV RNA+; of 41 genotyped, 73.2% were genotype 1. HBsAg prevalence varied from 8.5% to 27.4%. In the multivariable logistic regression analysis, being HIV-infected (adjusted OR (aOR) 19.0; 7.0-51.9), ever having used injected drugs (aOR 4.4; 1.6-12.4) and age >25 years were significant risk factors for testing HCV Ag/Ab+.

CONCLUSIONS: HCV infection in Vietnam appears to be high among MSM, particularly among HIV-infected MSM, with a north-south gradient. Given overlapping risk behaviours and associations between HCV and HIV, integrating HIV and HCV programme services to prevent both HIV and HCV transmission among MSM is indicated.

32. Barrington, C., et al. **"HIV and work don't go together': Employment as a social determinant of HIV outcomes among men who have sex with men and transgender women in the Dominican Republic."** *Glob Public Health* 2016: 1-16.

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

33. Spinner, C. D., et al. **"HIV pre-exposure prophylaxis (PrEP): a review of current knowledge of oral systemic HIV PrEP in humans."** *Infection* 2016 44(2): 151-8.

PURPOSE: Despite established HIV prevention strategies and broadly available diagnostic strategies in developed western countries, rates of HIV new infections remain high. Alternative strategies for HIV prevention, particularly among men who have sex with men (MSM), are crucial. HIV pre-exposure prophylaxis (PrEP) has been discussed as one additional option that this review seeks to explore.

METHODS: An online search identifying PrEP-relevant literature from 1st January 2010 to 1st August, 2015 was performed.

RESULTS: The iPrEx study, first published in 2010, demonstrated a reduction in relative risk (RRR) of HIV seroconversion of 44 % for continuous PrEP with tenofovir disoproxil fumarate (TDF) and emtricitabine (FTC) in MSM. The efficacy of PrEP has been confirmed for continuous PrEP in the PROUD study and for intermittent PrEP in the IPERGAY study (RRR = 86 % in both studies). The PrEP was well tolerated in all studies, and the evolution of HIV resistance has been low. Compensatory increased sexual risk behavior was not observed in recent studies. In contrast to the high efficacy of risk reduction for HIV transmission in MSM, the results of TDF PrEP and TDF/FTC PrEP studies using microbicidal agents or pills among heterosexual women were different (RRR 6-75 %).

CONCLUSIONS: Continuous and intermittent PrEP demonstrated high efficacy in preventing HIV seroconversion, notably among MSM. PrEP was well tolerated. Adherence was critical for high efficacy in all studies. Further studies to evaluate implementation strategies and cost-effectiveness in different risk populations are needed as well as drug approval in Europe.

34. 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: 1-5.

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.

35. Oldenburg, C. E., et al. "**HIV testing practices and the potential role of HIV self-testing among men who have sex with men in Mexico.**" *Int J STD AIDS* 2016.

The objective of this study was to characterize HIV testing practices among men who have sex with men in Mexico and intention to use HIV self-testing. In 2012, members of one of the largest social/sexual networking websites for men who have sex with men in Latin America completed an anonymous online survey. This analysis was restricted to HIV-uninfected men who have sex with men residing in Mexico. Multivariable logistic regression models were fit to assess factors associated with HIV testing and intention to use a HIV self-test. Of 4537 respondents, 70.9% reported ever having a HIV test, of whom 75.5% reported testing at least yearly. The majority (94.3%) indicated that they would use a HIV home self-test if it were available. Participants identifying as bisexual less often reported ever HIV testing compared to those identifying as gay/homosexual (adjusted odds ratio = 0.52, 95% confidence interval: 0.44-0.62). Having a physical exam in the past year was associated with increased ever HIV testing (adjusted odds ratio = 4.35, 95% confidence interval: 3.73-5.07), but associated with decreased interest in HIV self-testing (adjusted odds ratio = 0.66, 95% confidence interval: 0.48-0.89). The high intention to use HIV home self-testing supports the use of this method as an acceptable alternative to clinic- or hospital-based HIV testing.

36. Paranjape, R. S., et al. "**HIV/AIDS in India: an overview of the Indian epidemic.**" *Oral Dis* 2016 22 Suppl 1: 10-4.

The first cases of HIV infection in India were detected in 1986 among female sex workers in Chennai. A rapid increase followed in many states. The current national prevalence is about 0.26% compared with a global average of 0.2%, but the figure in most high-risk groups including female sex workers is much higher (up to 7%). New HIV infections reached a peak in 1998 and have since declined by 60%, although the total number of HIV-positive persons remains stable at 2.1 million, largely probably due to the increased life expectancy following antiretroviral therapy. The Indian epidemic is characterized by low levels in the general population and elevated concentrations among high-risk groups. Transmission is mainly heterosexually driven, with differential burdens across the states. The four main drivers of HIV infection in India differ in order from those elsewhere in the world and are commercial sex work, general heterosexual intercourse, injecting drug use and unprotected anal sex between men who have sex with men. There are distinct differences from state to state in the prevalence of HIV, with some around the national norm of 0.21% but others with over 1% infected. India has embarked on a targeted HIV prevention strategy in recent years which is strongly associated with a fall in infection rate in both low- and high-risk groups.

37. Karuga, R. N., et al. ""**How I Wish This Thing Was Initiated 100 Years Ago!**" **Willingness to Take Daily Oral Pre-Exposure Prophylaxis among Men Who Have Sex with Men in Kenya.**" *PLoS One* 2016 11(4): e0151716. Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4830617/pdf/pone.0151716.pdf>

BACKGROUND: The MSM population in Kenya contributes to 15% of HIV incidence. This calls for innovative

HIV prevention interventions. Pre-exposure prophylaxis (PrEP) has been efficacious in preventing HIV among MSM in trials. There is limited data on the willingness to take daily oral PrEP in sub-Saharan Africa. PrEP has not been approved for routine use in most countries globally. This study aimed to document the willingness to take PrEP and barriers to uptake and adherence to PrEP in Kenya. The findings will inform the design of a PrEP delivery program as part of the routine HIV combination prevention.

METHODS: Eighty MSM were recruited in 2 Counties in December 2013. Quantitative data on sexual behaviour and willingness to take PrEP were collected using semi-structured interviews and analysed using SPSS. Qualitative data on knowledge of PrEP, motivators and barriers to uptake and adherence to PrEP were collected using in-depth interviews and FGDs and analysed using Nvivo. Analysis of data in willingness to take PrEP was conducted on the HIV negative participants (n = 55).

RESULTS: 83% of MSM were willing to take daily oral HIV PrEP. Willingness to take PrEP was higher among the bi-sexual and younger men. Motivators for taking PrEP were the need to stay HIV negative and to protect their partners. History of poor medication adherence, fear of side effects and HIV stigma were identified as potential barriers to adherence. Participants were willing to buy PrEP at a subsidized price.

CONCLUSIONS: There is willingness to take PrEP among MSM in Kenya and there is need to invest in targeted education and messaging on PrEP to enhance adherence, proper use and reduce stigma in the general population and among policy makers.

38. Oldenburg, C. E., et al. "**Human rights protections and HIV prevalence among MSM who sell sex: Cross-country comparisons from a systematic review and meta-analysis.**" *Glob Public Health* 2016: 1-12.

Laws and policies can affect the HIV risk of key populations through a number of direct and indirect pathways. We investigated the association between HIV prevalence among men who engage in transactional sex and language in the penal code protecting sexual minorities, including men who have sex with men (MSM), and sex workers. HIV prevalence among men who engage in transactional sex was assessed through meta-analysis of published literature and country surveillance reports. Meta-regression was used to determine the association between HIV prevalence and protective laws for sexual minorities and sex workers. Sixty-six reports representing 28 countries and 31,924 individuals were included in the meta-analysis. Controlling for multiple study- and country-level variables, legal protection for sexual minorities was associated with a 10.9% (95% CI: 3.8-18.0%) and sex workers associated with a 7.0% (95% CI: 1.3-12.8%) decrease in country-level HIV prevalence among men who engage in transactional sex. Laws that seek to actively protect sex workers and MSM may be necessary to decrease HIV risk for this key population.

39. King, E. J., et al. "'If she is a good woman ...' and 'to be a real man ...': gender, risk and access to HIV services among key populations in Tajikistan." *Cult Health Sex* 2016 18(4): 422-34.

The HIV epidemic continues to grow in Tajikistan, especially among people who inject drugs, sex workers, men who have sex with men and incarcerated populations. Despite their susceptibility to HIV, members of these groups do not always have access to HIV prevention, testing and treatment. The purpose of this study was to identify and understand the gender constraints in accessing HIV services for key populations in Tajikistan. Using focus-group discussions and key-informant interviews the assessment team collected information from members of key populations and those who work with them. Several themes emerged from the data, including: low levels of HIV knowledge, gender constraints to condom use and safer drug use, gender constraints limit HIV testing opportunities, gender-based violence, stigma and discrimination, and the lack of female spaces in the HIV response. The results of this study show that there are well-defined gender norms in Tajikistan, and these gender norms influence key populations' access to HIV services. Addressing these gender constraints may offer opportunities for more equitable access to HIV services in Tajikistan.

40. Ubrihien, A., et al. "**Is cost a structural barrier preventing men who have sex with men accessing condoms? A systematic review.**" *AIDS Care* 2016: 1-8.

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.

41. Okal, J., et al. "**Lessons learned from respondent-driven sampling recruitment in Nairobi: experiences from the field.**" *BMC Res Notes* 2016 9(1): 158. Online at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4788831/pdf/13104_2016_Article_1965.pdf

BACKGROUND: Respondent-driven sampling (RDS) is used in a variety of settings to study hard-to-reach populations at risk for HIV and sexually transmitted infections. However, practices leading to successful recruitment among diverse populations in low-resource settings are seldom reported. We implemented the first, integrated, bio-behavioural surveillance survey among men who have sex with men, female sex workers and people who injected drugs in Nairobi, Kenya.

METHODS: The survey period was June 2010 to March 2011, with a target sample size of 600 participants per key populations. Formative research was initially conducted to assess feasibility of the survey. Weekly monitoring reports of respondent characteristics and recruitment chain graphs from NetDraw illustrated patterns and helped to fill recruitment gaps.

RESULTS: RDS worked well with men who have sex with men and female sex workers with recruitment initiating at a desirable pace that was maintained throughout the survey. Networks of people who injected drugs were well-integrated, but recruitment was slower than the men who have sex with men and female sex workers surveys.

CONCLUSION: By closely monitoring RDS implementation and conducting formative research, RDS studies can effectively develop and adapt strategies to improve recruitment and improve adherence to the underlying RDS theory and assumptions.

42. Pattanasin, S., et al. "**Loss to follow-up and bias assessment among a cohort of Thai men who have sex with men in Bangkok, Thailand.**" *Int J STD AIDS* 2016 27(3): 196-206.

Minimising loss to follow-up is essential to obtain unbiased results. This study aimed to assess factors associated with loss to follow-up and effects on biasing exposure-outcome associations in a cohort of men who have sex with men in Bangkok. We enrolled sexually-active Thai men who have sex with men, at least 18 years old, in a study with four-monthly follow-up visits. At each visit, men answered HIV risk behaviour questions using audio computer-assisted self-interview. Logistic regression was used to evaluate factors associated with loss to follow-up and bias between exposures and prevalent HIV infection were estimated using adjusted relative odds ratios. From 2006 to 2010, we enrolled 1744 men who have sex with men; as of April, 2014, 1256 (72%) had completed at least the month-36 visit; loss to follow-up was 9.6%. Factors independently associated with loss to follow-up were age (18-21 years), education (primary level or less, secondary or vocational education), living outside Bangkok and vicinity, sexual orientation (bisexual, heterosexual), previous HIV testing, HIV infection, and behaviour in the past 4 months (recreational drug use,

reporting group sex). An effect of loss to follow-up on factors of prevalent HIV infection was found by sexual orientation (transgender) and unprotected anal intercourse (receptive/insertive). These findings highlight the need to strengthen post-HIV test counselling. Directed counselling for HIV care should be given to young men who have sex with men and recreational drug users.

43. Qian, H. Z., et al. "**Lower HIV Risk Among Circumcised Men Who Have Sex With Men in China: Interaction With Anal Sex Role in a Cross-Sectional Study.**" *J Acquir Immune Defic Syndr* 2016 71(4): 444-51.

BACKGROUND: Voluntary medical male circumcision reduces the risk of HIV heterosexual transmission in men, but its effect on male-to-male sexual transmission is uncertain.

METHODS: Circumcision status of men who have sex with men (MSM) in China was evaluated by genital examination and self-report; anal sexual role was assessed by questionnaire interview. Serostatus for HIV and syphilis was confirmed.

RESULTS: Among 1155 participants (242 were seropositive and 913 with unknown HIV status at enrollment), the circumcision rate by self-report (10.4%) was higher than confirmed by genital examination (8.2%). Male circumcision (by examination) was associated with 47% lower odds of being HIV seropositive [adjusted odds ratio (aOR): 0.53; 95% confidence interval (CI): 0.27 to 1.02] after adjusting for demographic covariates, number of lifetime male sexual partners, and anal sex role. Among MSM who predominantly practiced insertive anal sex, circumcised men had 62% lower odds of HIV infection than those who were uncircumcised (aOR: 0.38; 95% CI: 0.09 to 1.64). Among those whose anal sex position was predominantly receptive or versatile, circumcised men have 46% lower odds of HIV infection than did men who were not circumcised (aOR: 0.54; 95% CI: 0.25 to 1.14). Compared to uncircumcised men reporting versatile or predominantly receptive anal sex positioning, those who were circumcised and reported practicing insertive sex had an 85% lower risk (aOR: 0.15; 95% CI: 0.04 to 0.65). Circumcision was not associated clearly with lower syphilis risk (aOR: 0.91; 95% CI: 0.51 to 1.61).

CONCLUSIONS: Circumcised MSM were less likely to have acquired HIV, most pronounced among men predominantly practicing insertive anal intercourse. A clinical trial is needed.

44. Yi, S., et al. "**Mental health among men who have sex with men in Cambodia: Implications for integration of mental health services within HIV programmes.**" *Int J Equity Health* 2016 15(1): 53. Online at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4806506/pdf/12939_2016_Article_342.pdf

BACKGROUND: Poor mental health contributes to poor HIV prevention, treatment and care outcomes. This paper documents factors associated with psychological distress among men who have sex with men (MSM) in Cambodia and discusses potential ways in which routine mental health management could be integrated into HIV services.

METHODS: A cross-sectional study was conducted in 2014 among 394 MSM randomly selected from two provinces using a two-stage cluster sampling method. A structured questionnaire was used to assess psychological distress, sexual behaviors, substance use, adverse childhood experiences and family dysfunction. Multivariate logistic regression analysis was performed to explore factors associated with levels of psychological distress.

RESULTS: In total, 10.7 % of the respondents reported having suicidal thoughts and 6.6 % reported having attempted to commit suicide in the past three months, while 38.8 % had a higher level of psychological distress (GHQ-12 > 3), which indicates poor mental health. Higher levels of psychological distress were independently associated with older age (AOR = 1.09, 95 % CI 1.03-1.14), alcohol use (AOR = 3.3, 95 % CI 1.36-7.83), illicit drug use (AOR = 3.53, 95 % CI 1.12-11.18), poor self-reported quality of life (AOR = 7.45, 95 % CI 1.79-3.04), and reduced condom use at last sex (AOR = 0.40, 95 % CI 0.21-0.73). MSM with higher levels of psychological distress were significantly more likely to report that a family member said hurtful things to

them (AOR = 1.80, 95 % CI 1.10-2.97), a parent or guardian had been physically abused (AOR = 3.51, 95 % CI 1.86-6.62), and a family member had been mentally ill (AOR = 4.01, 95 % CI 2.06-7.81) when they were growing up.

CONCLUSIONS: In order to mitigate psychological distress among MSM in Cambodia, integration of mental health interventions within HIV programmes should be strengthened. To achieve optimal impact, these interventions should also address alcohol and other substance use, and low condom use among distressed MSM. In addition, training of clinical and non-clinical HIV service providers to screen for mental health symptoms, and subsequent provision of peer-based outreach and social support for MSM identified with psychological distress is required.

45. Garcia, M. C., et al. "**Multiple and concurrent sexual partnerships among men who have sex with men in Viet Nam: results from a National Internet-based Cross-sectional Survey.**" *Health Promot Int* 2016 31(1): 133-43.

Men who have sex with men (MSM) are one of the largest HIV risk groups in Viet Nam and have been understudied. Sexual concurrency and multiple sex partnerships may contribute to high HIV incidence among MSM in Viet Nam. Limited information is available on concurrency and multiple sexual partnerships among MSM in Viet Nam or on the extent to which this population engages in concurrent and multiple unprotected anal intercourse. Data are from a self-administered Internet-based survey of Vietnamese MSM aged 18 years or older, having sex with male partner(s) in the last 12 months and recruited from social networking MSM-specific websites in Viet Nam. Multiple partnerships and concurrency were measured using the UNAIDS-recommended sexual partner matrix, a key component in the questionnaire. Concurrent and multiple sexual partnerships were analyzed at the individual level. Logistic regression analyses were conducted to assess the demographic characteristics and behaviors associated with multiple sexual partnerships. A total of 1695 MSM reported on multiple sexual partnerships; 69.5% indicated multiple sexual partnerships in the last 6 months. A total of 257 MSM reported on concurrent sexual partnerships, with 51.0% reporting penetrative sex with concurrent partners in the last 6 months. Respondents were more likely to engage in multiple sexual partnerships if they were no longer a student, consumed alcohol before and/or during sex, used the Internet to meet casual sex partners and had never participated in a behavioral HIV intervention. Multiple sexual partnerships in the previous 6 months were common among MSM surveyed, as was sexual concurrency. High levels of multiple and concurrent sexual partnerships may be catalyzing the transmission of HIV among MSM in Viet Nam. Given the high prevalence of this high-risk sexual behavior, our findings underscore the urgent need for targeted prevention efforts, focusing on the reduction of multiple and concurrent sexual partners among this key population.

46. Stahlman, S., et al. "**Online Sex-Seeking Among Men who have Sex with Men in Nigeria: Implications for Online Intervention.**" *AIDS Behav* 2016.

The TRUST/RV368 project was undertaken to apply innovative strategies to engage Nigerian MSM into HIV care. In this analysis we evaluate characteristics of online sex-seekers from the TRUST/RV368 cohort of 1370 MSM in Abuja and Lagos. Logistic regression and generalized estimating equation models were used to assess associations with online sex-seeking. Online sex-seeking (n = 843, 61.5 %) was associated with participation in MSM community activities, larger social and sexual networks, and higher levels of sexual behavior stigma. In addition, online sex-seeking was associated with testing positive for HIV at a follow-up visit [adjusted odds ratio (aOR) = 2.02, 95 % confidence interval (CI) = 1.37, 2.98] among those who were unaware of or not living with HIV at baseline. Across visits, online sex-seekers were marginally more likely to test positive for chlamydia/gonorrhea (aOR 1.28, 95 % CI 0.99, 1.64). Online sex-seekers in Nigeria are at increased risk for HIV/STIs but may not be benefiting from Internet-based risk reduction opportunities.

47. 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.

The HIV epidemic in Peru is concentrated in men who have sex with men and transgender women, 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, taking antiretroviral therapy, 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 antiretroviral therapy, 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.

48. Nowak, R. G., et al. "**Prevalence of Anal High-Risk Human Papillomavirus Infections Among HIV-Positive and HIV-Negative Men Who Have Sex With Men in Nigeria.**" *Sex Transm Dis* 2016 43(4): 243-8.

BACKGROUND: Prevalence estimates of anal high-risk human papillomavirus (HR-HPV) are needed in sub-Saharan Africa where HIV is endemic. This study evaluated anal HR-HPV in Nigeria among HIV-positive and HIV-negative men who have sex with men (MSM) for future immunization recommendations.

METHODS: We conducted a cross-sectional study to compare the prevalence of anal HR-HPV infections between 64 HIV-negative and 90 HIV-positive MSM. Multivariate Poisson regression analyses were used to examine demographic and behavioral risk factors associated with any HR-HPV infections.

RESULTS: The median age of the 154 participants was 25 years (interquartile range, 22-28 years; range, 16-38 years), and the median age at initiation of anal sex with another man was 16 years (interquartile range, 13-18 years; range, 7-29 years). The prevalence of anal HR-HPV was higher among HIV-positive than HIV-negative MSM (91.1% vs. 40.6%, $P < 0.001$). In the multivariate analysis, HIV infection (adjusted prevalence ratio [aPR], 2.02; 95% confidence interval [CI], 1.49-2.72), 10 years or more since anal sexual debut (aPR, 1.26; 95% CI, 1.07-1.49), and concurrent relationships with men (aPR, 1.32; 95% CI, 1.04-1.67) were associated with increased anal HR-HPV prevalence.

CONCLUSIONS: Anal HR-HPV infection is high for young Nigerian MSM, and rates are amplified in those coinfecting with HIV. Providing universal coverage as well as catch-up immunization for young MSM may be an effective anal cancer prevention strategy in Nigeria.

49. Hernandez, A. L., et al. "**Prevalence of Anal HPV Infection Among HIV-Positive Men Who Have Sex With Men in India.**" *J Acquir Immune Defic Syndr* 2016 71(4): 437-43.

BACKGROUND: India has a large population of HIV-positive individuals, including men who have sex with men (MSM), and the incidence of human papillomavirus (HPV)-related cancers is high. In developed countries, HIV-positive MSM exhibit the highest prevalence of anal HPV infection and incidence of anal cancer. Little is known about anal HPV infection in HIV-positive Indian MSM.

METHODS: We evaluated 300 HIV-positive MSM from 2 cities in India. Men were tested for anal HPV infection using L1-HPV DNA polymerase chain reaction with probes specific for 29 types and a mixture of 10 additional types. CD4 level and plasma HIV viral load were measured. Participants completed an interviewer-administered questionnaire including a sexual history.

RESULTS: The prevalence of anal HPV was 95% (95% confidence interval: 91% to 97%). The 3 most common types were HPV 35 (20%), HPV 16 (13%), and HPV 6/11 (13%). History of taking antiretroviral medications decreased risk of anal HPV 16 infection [relative risk (RR): 0.6 (0.4-1.0)]. Having an increased number of vaginal sex partners lowered risk of any anal HPV infection. Ever having receptive sex increased risk of any anal HPV [RR: 1.2 (1.1-1.4)] and anal HPV 16 [RR: 6.5 (1.8-107)].

CONCLUSIONS: Almost all Indian HIV-positive MSM had anal HPV infection. The prevalence of HPV 16 was lower and the prevalence of other oncogenic HPV types was higher than in similar populations in North America and Europe. Vaccine-based prevention strategies for HPV infection in India should consider potential differences in HPV type distribution among HIV-infected MSM when designing interventions.

50. Cahu, G. G., et al. "**Prevalence of Human herpesvirus 8 infection in people living with HIV/AIDS in Pernambuco, Brazil.**" *J Med Virol* 2016.

This cross-sectional study aimed to estimate the seroprevalence and risk factors for Human herpesvirus 8 (HHV-8) infection among people living with HIV/AIDS in Recife, Pernambuco, Brazil. A total of 500 individuals were tested for antibodies against HHV-8 using the whole-virus ELISA. The prevalence of anti-HHV-8 was 28.6% and the frequency among 140 men who have sex with men (MSM) was 38.6%. In the univariate model, there were significant associations with male gender, detectable HIV load, travel abroad, bisexual and homosexual orientation. The first HHV-8 seroepidemiologic study, in northeast Brazil, documents a highly prevalent HHV-8 infection among MSM living with HIV/AIDS. This article is protected by copyright. All rights reserved.

51. Cheng, W., et al. "**Providing HIV-related services in China for men who have sex with men.**" *Bull World Health Organ* 2016 94(3): 222-7. Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4773928/pdf/BLT.15.156406.pdf>

PROBLEM: In China, human immunodeficiency virus (HIV) care provided by community-based organizations and the public sector are not well integrated.

APPROACH: A community-based organization and experts from the Guangzhou Center for Disease Control and Prevention developed internet-based services for men who have sex with men, in Guangzhou, China. The internet services were linked to clinical services offering HIV testing and care.

LOCAL SETTING: The expanding HIV epidemic among men who have sex with men is a public health problem in China. HIV control and prevention measures are implemented primarily through the public system. Only a limited number of community organizations are involved in providing HIV services.

RELEVANT CHANGES: The programme integrated community and public sector HIV services including health education, online HIV risk assessment, on-site HIV counselling and testing, partner notification, psychosocial care and support, counting of CD4+ T-lymphocytes and treatment guidance.

LESSONS LEARNT: The internet can facilitate HIV prevention among a subset of men who have sex with men by enhancing awareness, service uptake, retention in care and adherence to treatment. Collaboration between the public sector and the community group promoted acceptance by the target population. Task sharing by community groups can increase access of this high-risk group to available HIV-related services.

52. Sekoni, A. O., et al. "**Provision of Healthcare Services to Men Who Have Sex with Men in Nigeria: Students' Attitudes Following the Passage of the Same-Sex Marriage Prohibition Law.**" *LGBT Health* 2016.

PURPOSE: After signing of the Same-Sex Marriage (Prohibition) Act 2013 in Nigeria, media reports portray widespread societal intolerance toward the lesbian, gay, and bisexual population. This study was conducted to assess the attitudes of university undergraduates in Lagos state, Nigeria, toward provision of healthcare services for men who have sex with men (MSM), because the 2014 same-sex marriage prohibition law stipulates a jail sentence for organizations providing services to MSM.

METHODS: A cross-sectional descriptive study was conducted by using self-administered questionnaires to collect information, including homophobic attitudes and views on access to healthcare from 4000 undergraduates in 10 randomly selected faculties in two universities. During analysis, inter-university and

inter-faculty comparison was carried out between medical and nonmedical students.

RESULTS: Outright denial of healthcare services to MSM was supported by 37.6% of the 3537 undergraduates who responded, whereas denial of HIV prevention services was supported by 32.5%. However, compared with 38.7% and 34.1% of undergraduates from other faculties, 23.7% and 18.2% of medical students agreed that healthcare providers should not provide services to MSM and that MSM should not have access to HIV prevention services, respectively (P = 0.000). Although a significant proportion of the medical students supported the statement that doctors and other healthcare workers should be compelled to give priority to other groups before MSM (29.4% of medical vs. 47.2% of students from other faculties), a statistically significant difference was observed between the two groups of students. The homophobic statement with the highest support was that doctors and healthcare workers should be compelled to report MSM who come to access treatment (48.1% of medical vs. 57.4% of students from other faculties).

CONCLUSION: A very high proportion of the undergraduate students had a negative attitude toward provision of healthcare services to MSM in Nigeria; the medical students were, however, less homophobic than their nonmedical counterparts. If attitudes translate to a lack of healthcare service provision to MSM, with the high burden of HIV among MSM in Nigeria, it is unlikely that the country will achieve the UNAIDS 90-90-90 target of 90% of the population knowing their HIV status, 90% of people living with HIV receiving sustained antiretroviral medication, and 90% of those receiving antiretroviral medication having viral suppression by 2020.

53. Molyneux, S., et al. "**Public/community engagement in health research with men who have sex with men in sub-Saharan Africa: challenges and opportunities.**" *Health Res Policy Syst* 2016 14(1): 40. Online at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4884401/pdf/12961_2016_Article_106.pdf

BACKGROUND: Community engagement, incorporating elements of the broader concepts of public and stakeholder engagement, is increasingly promoted globally, including for health research conducted in developing countries. In sub-Saharan Africa, community engagement needs and challenges are arguably intensified for studies involving gay, bisexual and other men who have sex with men, where male same-sex sexual interactions are often highly stigmatised and even illegal. This paper contextualises, describes and interprets the discussions and outcomes of an international meeting held at the Kenya Medical Research Institute-Wellcome Trust in Kilifi, Kenya, in November 2013, to critically examine the experiences with community engagement for studies involving men who have sex with men.

DISCUSSION: We discuss the ethically charged nature of the language used for men who have sex with men, and of working with 'representatives' of these communities, as well as the complementarity and tensions between a broadly public health approach to community engagement, and a more rights based approach. We highlight the importance of researchers carefully considering which communities to engage with, and the goals, activities, and indicators of success and potential challenges for each. We suggest that, given the unintended harms that can emerge from community engagement (including through labelling, breaches in confidentiality, increased visibility and stigma, and threats to safety), representatives of same-sex populations should be consulted from the earliest possible stage, and that engagement activities should be continuously revised in response to unfolding realities. Engagement should also include less vocal and visible men who have sex with men, and members of other communities with influence on the research, and on research participants and their families and friends. Broader ethics support, advice and research into studies involving men who have sex with men is needed to ensure that ethical challenges - including but not limited to those related to community engagement - are identified and addressed. Underlying challenges and dilemmas linked to stigma and discrimination of men who have sex with men in Africa raise special responsibilities for researchers. Community engagement is an important way of identifying responses to these challenges and responsibilities but itself presents important ethical challenges.

54. Santos, G. M., et al. "**Reductions in access to HIV prevention and care services are associated with arrest and convictions in a global survey of men who have sex with men.**" *Sex Transm Infect* 2016.

OBJECTIVES: Men who have sex with men (MSM) are disproportionately impacted by HIV. Criminalisation of homosexuality may impede access to HIV services. We evaluated the effect of the enforcement of laws criminalising homosexuality on access to services.

METHODS: Using data from a 2012 global online survey that was published in a prior paper, we conducted a secondary analysis evaluating differences in perceived accessibility to health services (ie, 'how accessible are ___' services) between MSM who responded 'yes'/'no' to: 'have you ever been arrested or convicted for being gay/MSM?'

RESULTS: Of the 4020 participants who completed the study and were included in the analysis, 8% reported ever being arrested or convicted under laws relevant to being MSM. Arrests and convictions were most common in sub-Saharan Africa (23.6% (58/246)), Eastern Europe/Central Asia (18.1% (123/680)), the Caribbean (15% (15/100)), Middle East/North Africa (13.2% (10/76)) and Latin America (9.7% (58/599)). Those arrested or convicted had significantly lower access to sexually transmitted infection treatment (adjusted OR (aOR)=0.81; 95% CI 0.67 to 0.97), condoms (aOR=0.77; 95% CI 0.61 to 0.99) and medical care (aOR=0.70; 95% CI 0.54 to 0.90), compared with other MSM, while accounting for clustering by country and adjusting for age, HIV status, education and country-level income.

CONCLUSIONS: Arrests and convictions under laws relevant to being MSM have a strong negative association with access to HIV prevention and care services. Creating an enabling legal and policy environment, and increasing efforts to mitigate antihomosexuality stigma to ensure equitable access to HIV services are needed, along with decriminalisation of homosexuality, to effectively address the public health needs of this population.

55. 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.

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.

56. Hernandez, I., et al. "**Risk Factors Associated With HIV Among Men Who Have Sex With Men (MSM) in Ecuador.**" *Am J Mens Health* 2016.

The Joint United Nations Program on HIV/AIDS estimates that between 0.3% and 0.7% of adults aged 15 to 49 years were living with HIV in Ecuador in 2013. However, very little is known about the HIV prevalence rate among men who have sex with men (MSM) in that country. A cross-sectional survey was conducted to investigate the knowledge, attitudes, and practices regarding HIV/AIDS as well as to estimate the prevalence of HIV among MSM in one of the cities with high HIV prevalence rates in Ecuador. In this study, questionnaires were administered to 307 adult MSM. An HIV prevalence of 10% was observed. Knowledge about HIV was high; 91% of participants could identify how HIV is transmitted. Although consistent condom use for anal sex was relatively high (89%) among participants who reported having pay-for-service clients, only 64% reported using a condom during oral sex with a client. Participants who had multiple male sexual partners (i.e., their stable male partners plus other partner[s]) had 3.7 times higher odds of testing positive for HIV compared with those who did not. They also had reduced odds of condom use. Participants who were forced to have anal receptive sex had 3 times higher odds of testing positive for HIV. Despite the finding that participants exhibited high knowledge about HIV/AIDS, a high prevalence rate of HIV was

observed, which warrants targeted behavioral interventions. These data are consistent with MSM being one of the highest at-risk population groups for HIV in this region of Ecuador.

57. 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.

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.

58. Lampe, F. **"Sexual behaviour among people with HIV according to self-reported antiretroviral and viral load status. Results from the ASTRA study."** *AIDS* 2016.

OBJECTIVE: To assess, among people with HIV, the association of self-reported antiretroviral treatment and viral load status (ART/VL-SR) with condomless sex with HIV-serodifferent partner (s) (CLS-D).

DESIGN: Cross-sectional study of UK HIV-diagnosed adults, 2011-2012.

METHODS: CLS-D in the past three months and ART/VL-SR were ascertained by questionnaire. Clinic-recorded VL was documented. HIV-transmission risk sex (CLS-D-HIV-risk) was defined as CLS-D plus not on ART or clinic-recorded VL > 50 c/mL.

RESULTS: Of 3178 participants diagnosed >3 months, 2746 (87.9%) were on ART, of whom VL-SR was '<=50 c/mL/undetectable' for 78.4%; '>50 c/mL/detectable' for 8.3%; 'don't know/missing' for 13.3%. CLS-D prevalence was 14.9%(326/2189), 6.4%(23/360) and 10.7%(67/629) among men who have sex with men (MSM), heterosexual men, and women, respectively. Among MSM, CLS-D prevalence was 18.8% among those not on ART; 15.2% among those on ART with undetectable VL-SR; 9.8% among those on ART without undetectable VL-SR. Compared to 'on ART with undetectable VL-SR', prevalence ratios (PR;95% confidence interval) adjusted for demographic/HIV-factors were: 0.66 (0.45,0.95) for 'on ART without undetectable VL-SR', and 1.08 (0.78,1.49) for 'not on ART' (global p = 0.021). Among heterosexual men and women (combined), ART/VL-SR was not associated with CLS-D [corresponding adjusted PR: 1.14 (0.73,1.79) for 'on ART without undetectable VL-SR'; 0.88 (0.44,1.77) for 'not on ART', p = 0.77]. CLS-D-HIV-risk prevalence was 3.2% among all participants; 16.1% for 'not on ART'; 0.6% for 'on ART with undetectable VL-SR'; 4.2% for 'on ART without undetectable VL-SR'.

CONCLUSION: Use of ART was not associated with increased prevalence of CLS-D, and was associated with greatly reduced prevalence of HIV-transmission risk sex.

59. Dangerfield, D. T., 2nd, et al. **"Sexual Positioning Among Men Who Have Sex With Men: A Narrative Review."** *Arch Sex Behav* 2016.

Sexual positioning practices among men who have sex with men (MSM) have not received a thorough discussion in the MSM and HIV literature, given that risks for acquiring or transmitting HIV and STIs via condomless anal sex vary according to sexual positioning. MSM bear a disproportionate burden of HIV compared to the general population in the United States; surveillance efforts suggest that HIV and STIs are increasing among domestic and international populations of MSM. We conducted a narrative review, using a targeted literature search strategy, as an initial effort to explore processes through which sexual positioning

practices may contribute to HIV/STI transmission. Peer-reviewed articles were eligible for inclusion if they contained a measure of sexual positioning identity and/or behavior (i.e., "top", "bottom," etc.) or sexual positioning behavior (receptive anal intercourse or insertive anal intercourse), or assessed the relationship between sexual positioning identity with HIV risk, anal sex practice, masculinity, power, partner type, or HIV status. A total of 23 articles met our inclusion criteria. This review highlights dynamic psychosocial processes likely underlying sexual decision making related to sexual positioning identity and practices among MSM and MSM who have sex with women (MSMW), and ways these contexts may influence HIV/STI risk. Despite limited focus in the extant literature, this review notes the important role the contextual factors (masculinity stereotypes, power, partner type, and HIV status) likely to play in influencing sexual positioning identity and practices. Through this review we offer an initial synthesis of the literature describing sexual positioning identities and practices and conceptual model to provide insight into important areas of study through future research.

60. Kim, E. J., et al. **"Sexually transmitted infections associated with alcohol use and HIV infection among men who have sex with men in Kampala, Uganda."** *Sex Transm Infect* 2016 92(3): 240-5.

OBJECTIVES: Few studies have been conducted in Africa to assess prevalence of sexually transmitted infections (STIs) and risk factors among men who have sex with men (MSM). We report findings from the first behavioural survey to include STI testing among MSM in Kampala, Uganda.

METHODS: Respondent-driven sampling (RDS) was used to recruit MSM for a biobehavioural survey. Eligible participants were men who reported anal sex with another man in the previous 3 months, were 18 years or older, and resided in Kampala. Information was collected on demographics, sexual behaviour, alcohol and drug use, and STI symptoms. Blood, urine and rectal specimens were tested for syphilis, HIV, rectal and urethral gonorrhoea, and chlamydia. Analyses weighted for RDS were conducted to assess associations with STI diagnosis.

RESULTS: A total of 295 MSM participated in the survey. Almost half (weighted percentage: 47.3%) reported STI symptoms in the last 6 months and 12.9% tested HIV-positive. Prevalence of non-HIV STI was 13.5%; syphilis prevalence was 9.0%. Adjusting for age and education, STI was associated with HIV (adjusted OR (AOR)=3.46, 95% CI 1.03 to 11.64), alcohol use before sex (AOR=4.99, 95% CI 1.86 to 13.38) and having sold sex in the last 3 months (AOR=3.17, 95% CI 1.25 to 8.07), and inversely associated with having anonymous sex partners (AOR=0.20, 95% CI 0.07 to 0.61).

CONCLUSIONS: We observed high levels of self-reported STI symptoms and STI prevalence associated with alcohol use and HIV among MSM in Kampala. Public health interventions supporting MSM are needed to address STI risk and facilitate access to diagnosis and treatment services.

61. de Voux, A., et al. **"A social network typology and sexual risk-taking among men who have sex with men in Cape Town and Port Elizabeth, South Africa."** *Cult Health Sex* 2016 18(5): 509-23.

Despite the high prevalence of HIV among men who have sex with men in South Africa, very little is known about their lived realities, including their social and sexual networks. Given the influence of social network structure on sexual risk behaviours, a better understanding of the social contexts of men who have sex with men is essential for informing the design of HIV programming and messaging. This study explored social network connectivity, an understudied network attribute, examining self-reported connectivity between friends, family and sex partners. Data were collected in Cape Town and Port Elizabeth, South Africa, from 78 men who have sex with men who participated in in-depth interviews that included a social network mapping component. Five social network types emerged from the content analysis of these social network maps based on the level of connectivity between family, friends and sex partners, and ranged from disconnected to densely connected networks. The ways in which participants reported sexual risk-taking differed across the five network types, revealing diversity in social network profiles. HIV programming and messaging for this population can greatly benefit from recognising the diversity in lived realities and social connections between men who have sex with men.

62. Jin, H., et al. **"Suboptimal HIV Testing Uptake Among Men Who Engage in Commercial Sex Work with Men in Asia."** *LGBT Health* 2016.

PURPOSE: Men who have sex with men and are sex workers (MSMSW) are disproportionately affected by the growing and emerging HIV epidemic. As sex work and same-sex behavior are heavily stigmatized and often illegal in most Asian countries, HIV research focusing on MSMSW has been limited. The goal of this analysis is to examine HIV testing practices and identify correlates of HIV testing among MSMSW in Asia.

METHODS: The Asia Internet MSM Sex Survey, an online cross-sectional survey of 10,861 men who have sex with men (MSM), was conducted in 2010. Data on sociodemographic characteristics, HIV testing behaviors, and sexual behaviors were collected. Five hundred seventy-four HIV-negative/unknown respondents reported receiving payment for sex with men at least once in the past 6 months and were included for analysis. Multivariable logistic regression was conducted to identify independent correlates of HIV testing in the past year.

RESULTS: About half (48.6%) of the participants have been tested for HIV at least once within the past year, and 30.5% have never been tested. We also found that MSMSW participants who engaged in risky behaviors were less likely to be tested.

CONCLUSION: While one might expect a high HIV testing rate among MSMSW due to the risks associated with engaging in sex work, we found that HIV testing uptake is suboptimal among MSMSW in Asia. These results suggest that targeted HIV prevention and testing promotion among MSMSW are needed.

63. Chen, G., et al. **"Syphilis incidence among men who have sex with men in China: results from a meta-analysis."** *Int J STD AIDS* 2016.

The recent upsurge of syphilis infections among men who have sex with men (MSM) is one of the major challenges facing China. However, the overall burden is still not clear. This study aims to summarize the incidence of syphilis among MSM in China by using meta-analysis. We comprehensively searched PubMed-MEDLINE, China National Knowledge Infrastructure and Chinese Wanfang databases. Articles published between December 2009 and March 2015 that met the inclusion criteria were considerably involved in this meta-analysis. Two reviewers performed a quality assessment of the studies and extracted data for estimating the overall syphilis incidence. STATA 12.0 was used to summarize the overall incidence of syphilis. In all, 14 studies from 13 papers were included in this study. Follow-up duration of these studies ranged from six to 36 months, while drop-out rates ranged from 11.9% to 83.6%. The individual incidence rates of the included studies varied from 3.1/100 person-years (95% CI, 0.8-5.3/100 person-years) to 38.5/100 person-years (95% CI, 28.9-48.1/100 person-years), with a pooled incidence of 9.6/100 person-years (95% CI, 7.0-12.2/100 person-years). The subgroup meta-analysis revealed that incidence estimates were 38.5/100 person-years (95% CI, 28.9-48.1/100 person-years), 12.1/100 person-years (95% CI, 7.0-17.2/100 person-years), 11.2/100 person-years (95% CI, 0.7-23.1/100 person-years), 8.9/100 person-years (95% CI, 6.5-11.2/100 person-years), 5.7/100 person-years (95% CI, 3.4-8.0/100 person-years) and 3.1/100 person-years (95% CI, 0.8-5.3/100 person-years) in Northeast, North, Southwest, East, South and Northwest China, respectively. Syphilis incidence among Chinese MSM is high, and this may increase the spread of other sexually transmitted infections, including human immunodeficiency virus. It is essential to integrate syphilis control programs with HIV control programs. This can be achieved by establishing public health response systems to monitor and control the epidemic of syphilis and HIV together in China.

64. Perez-Brumer, A. G., et al. **"Towards 'reflexive epidemiology': Conflation of cisgender male and transgender women sex workers and implications for global understandings of HIV prevalence."** *Glob Public Health* 2016: 1-17.

The HIV epidemic has had a widespread impact on global scientific and cultural discourses related to gender, sexuality, and identity. 'Male sex workers' have been identified as a 'key population' in the global HIV

epidemic; however, there are methodological and conceptual challenges for defining inclusion and exclusion of transgender women within this group. To assess these potential implications, this study employs self-critique and reflection to grapple with the empiric and conceptual implications of shifting understandings of sexuality and gender within the externally re-created etic category of 'MSM' and 'transgender women' in epidemiologic HIV research. We conducted a sensitivity analysis of our previously published meta-analysis which aimed to identify the scope of peer-reviewed articles assessing HIV prevalence among male sex workers globally between 2004 and 2013. The inclusion of four studies previously excluded due to non-differentiation of cisgender male from transgender women participants (studies from Spain, Thailand, India, and Brazil: 421 total participants) increased the overall estimate of global HIV prevalence among 'men' who engage in sex work from 10.5% (95% CI 9.4-11.5%) to 10.8% (95% CI 9.8-11.8%). The combination of social science critique with empiric epidemiologic analysis represents a first step in defining and operationalising 'reflexive epidemiology'. Grounded in the context of sex work and HIV prevention, this paper highlights the multiplicity of genders and sexualities across a range of social and cultural settings, limitations of existing categories (i.e. 'MSM', 'transgender'), and their global implications for epidemiologic estimates of HIV prevalence.

65. Parker, R., et al. **"The trouble with 'Categories': Rethinking men who have sex with men, transgender and their equivalents in HIV prevention and health promotion."** *Glob Public Health* 2016: 1-5.

This double Special Issue of *Global Public Health* presents a collection of articles that seek more adequately to represent sexual and gender diversities and to begin to rethink the relationship to HIV prevention and health promotion - in both the resource rich nations of the global North, as well as in the more resource constrained nations of the global South. Reckoning with the reality that today the global response to HIV has failed to respond to the needs of gay, bisexual and other men who have sex with men, and transgender persons, we turn our attention to processes and practices of categorisation and classification, and the entanglement of the multiple social worlds that constitute our understanding of each of these categories and people within the categories. Jointly, these articles provide critical perspectives on how defining and redefining categories may impact the conceptual frameworks and empirical evidence that inform global understandings of HIV infection, those communities most vulnerable, and our collective response to the evolving HIV epidemic.

66. Tang, E. C., et al. **"Using conjoint analysis to determine the impact of product and user characteristics on acceptability of rectal microbicides for HIV prevention among Peruvian men who have sex with men."** *Sex Transm Infect* 2016 92(3): 200-5.

OBJECTIVES: Men who have sex with men (MSM) are in need of novel and acceptable HIV prevention interventions. In Peru, a Phase II clinical trial was recently completed evaluating rectally applied tenofovir gel among Peruvian MSM and transgender women. If deemed safe and acceptable, the product could move into efficacy testing, but acceptability data for similar products are needed now in order to prepare for future implementation. Peru is in need of expanded, national acceptability data among likely users.

METHODS: Using conjoint analysis of an online cross-sectional survey taken by 1008 Peruvian MSM and transgender women, we tested the acceptability of eight hypothetical rectal microbicide (RM) products comprising six, dual-value attributes. We also assessed the relationship of select product attributes with sample characteristics.

RESULTS: Highest acceptability was found for a RM that was 90% effective, used before and after sex, without side effects, costing approximately \$0.30, had no prescription requirement and had a single-use applicator. Product effectiveness and presence of side effects were the factors most likely to drive RM acceptance and use. Education, sexual orientation, sexual role and concern for HIV infection were also related to aspects of RM acceptability.

CONCLUSION: RM acceptability was high, confirming the results of earlier, smaller studies and placing confidence in the acceptability of RMs. Analysis of the relationships with product attributes and sample

characteristics underscore the need to consider the impact of factors such as sexual orientation, sexual role, level of education and concern for HIV acquisition on RM acceptability.

67. Goldenberg, T., et al. **"Using participant-empowered visual relationship timelines in a qualitative study of sexual behaviour."** *Glob Public Health* 2016 11(5-6): 699-718.

This study examines how the use of participant-empowered visual relationship timelines adds to the quality of an ongoing qualitative data collection in a case study examining the influence of emotions on sexual risk-taking and perceptions of HIV risk among men who have sex with men. Gay and bisexual men (n = 25) participated in a 10-week, three-phase study. During a baseline in-depth interview, participants created a visual timeline using labelled stickers to retrospectively examine their dating/sexual histories. Participants then completed three web-based quantitative personal relationship diaries, tracking sexual experiences during follow-up. These data were extracted and discussed in a timeline-based debrief interview. The visual cues assisted with data collection by prompting discussion through the immediate identification of patterns, opportunities for self-reflection, and rapport-building. The use of flexible data collection tools also allowed for a participant-empowered approach in which the participant controlled the interview process. Through this process, we learned strategies for improving a participant-empowered approach to qualitative research, including: allowing visual activities to drive the interview, using flexible guidelines to prompt activities, and using discrete imagery to increase participant comfort. It is important that qualitative data collection utilise more participatory approaches for gains in data quality and participant comfort.

68. Le, T. M., et al. **"What are the risk factors for HIV in men who have sex with men in Ho Chi Minh City, Vietnam?- A cross-sectional study."** *BMC Public Health* 2016 16(1): 406. Online at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4867509/pdf/12889_2016_Article_3088.pdf

BACKGROUND: The number of people living with HIV (PLWH) in Vietnam was estimated to rise from 156,802 in 2009 to 256,000 in 2014. Although the number of new HIV reported cases has decreased by roughly 14,000 cases per year from 2010 to 2013 a concerning increase in HIV prevalence has been identified among men who have sex with men (MSM) from 1.7 % in 2005 to 2.4 % in 2013. There are signs of increased HIV (+) prevalence among MSM in a number of cities/provinces, especially in the two largest cities, Ho Chi Minh City (HCMC) and Hanoi. HCMC is the country's major "hot spot" for HIV/AIDS, with over a third of the total national AIDS patients. This paper is based on a secondary analysis of Integrated Biological and Behavioural Surveillance (IBBS) data collected in Vietnam in 2009 to examine the research question "Do behavioural risk factors contribute to HIV infection among the MSM population in HCMC?".

METHODS: A cross-sectional design was employed to sample males aged over 15 from communities in HCMC, who reported having any types of sex with another man at least once during the last 12 months. Participants (399) were recruited using the respondent driven sampling (RDS) method and provided both biological data (specimens) and behavioural data collected through a questionnaire survey.

RESULTS: The study found high HIV prevalence (14.8 %) among the MSM sample from HCMC. Multivariate analysis found age and level of formal education completed, to be significantly associated with HIV infection. MSM aged over 25 were more likely to be HIV (+) than the younger group (OR = 7.82, 95 %CI = 3.37-18.16, p < 0.001); as were participants who had low educational (OR = 2.74, p < 0.05) and medium educational levels (OR = 2.68, p < 0.05). In addition, those participants who had anal sex with male partners (OR = 2.7, p < 0.05) and whose sexual partners injected drugs (OR = 2.24, p < 0.05) and who felt at risk of HIV infection (OR = 2.42, p < 0.01) had a higher risk of HIV infection.

CONCLUSIONS: The high proportion of HIV (+) MSM in our sample from HCMC indicates that we need a better understanding of MSM behaviour patterns, risk practices and social networks as well as improved HIV prevention and control measures. More targeted and relevant HIV prevention programs for older and less educated MSM are urgently needed to address the key risk factors we have identified. MSM engaging in drug-related risk behaviours require multi-strategy HIV interventions relating to both sex and drug behaviour among MSM and their partners who engage in drug use. Further work is needed to identify

locations and strategies where these high-risk individuals can be accessed as well as to reduce barriers related to social discrimination and stigma. Targeting high risk individuals and groups should supplement existing efforts aimed at the MSM population in HCMC.

69. Thomann, M. "**Zones of Difference, Boundaries of Access: Moral Geography and Community Mapping in Abidjan, Cote d'Ivoire.**" *J Homosex* 2016 63(3): 426-36.

In Abidjan, Cote d'Ivoire, 18% of men who have sex with men (MSM) are HIV-positive. Based on ethnographic research conducted among HIV peer educators and activists in Abidjan, I examine their narratives and hand-drawn maps of city space. I draw on a methodological process of map-making to examine research participants' evaluations of neighborhoods and link these evaluations to debates over national and cultural belonging in Cote d'Ivoire. I suggest a moral geography emerges from the maps and narratives and ask what the bioethical implications of moral geography are in the context of service delivery and activism among sexual minorities.

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Sex Workers - 56

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.

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. Dworkin, M. S., et al. "**Adherence to highly active antiretroviral therapy in Hyderabad, India: barriers, facilitators and identification of target groups.**" *Int J STD AIDS* 2016 27(3): 186-95.

We assessed the barriers and facilitators to highly active antiretroviral therapy adherence and determined their prevalence among HIV/AIDS patients in Hyderabad, India. We conducted a cross-sectional study among HIV-infected adults prescribed highly active antiretroviral therapy and receiving care from nine clinics. Depression was screened using Patient Health Questionnaire 9 and facilitators of HIV medication adherence were assessed using an 11-item scale which yielded a total positive attitude to disease score. Prevalence ratios of non-adherence between different categories of potential risk factors were calculated. We compared mean 'facilitators to adherence' scores between the adherent and non-adherent population. Multivariable Poisson regression with robust variance was used to identify independent risk factors. Among the 211 respondents, nearly 20% were non-adherent, approximately 8% had either moderately severe or severe depression and mean score for combined facilitators to medication adherence was 33.35 (+/-7.88) out of a possible 44 points. Factors significantly associated with non-adherence included older age, female sex worker, moderate-to-severe depression and the combined facilitators to medication adherence score.

These data from a broad range of clinical settings in Hyderabad reveal that key groups to focus on for adherence intervention are female sex workers, older persons and those with depression.

3. Brody, C., et al. "**Are Text Messages a Feasible and Acceptable Way to Reach Female Entertainment Workers in Cambodia with Health Messages? A Cross-Sectional Phone Survey.**" *JMIR Mhealth Uhealth* 2016 4(2): e52.

BACKGROUND: Despite great achievements in reducing the prevalence of HIV, eliminating new HIV infections remains a challenge in Cambodia. Entertainment venues such as restaurants, karaoke bars, beer gardens, cafes, pubs, and massage parlors are now considered important venues for HIV prevention efforts and other health outreach interventions.

OBJECTIVE: The purpose of this study was to explore phone use and texting practices of female entertainment workers (FEWs) in order to determine if text messaging is a feasible and acceptable way to link FEWs to health services.

METHODS: This cross-sectional phone survey was conducted in May 2015 with 97 FEWs aged 18-35 years and currently working at an entertainment venue in Phnom Penh.

RESULTS: Of the 96 respondents, 51% reported sending text messages daily; of them, 47% used Khmer script and 45% used Romanized Khmer. Younger FEWs were more likely to report daily texting ($P < .001$). Most FEWs (98%) in this study reported feeling comfortable receiving private health messages despite the fact that 39% were sharing their phone with others. Younger FEWs were less likely to share their phone with others ($P = .02$). Of all of the FEWs, 47% reported owning a smartphone, and younger women were more likely to own a smartphone than were older women ($P = .08$).

CONCLUSIONS: The findings from this study support the development of mHealth interventions targeting high-risk groups in urban areas of Cambodia. Our data suggest that mHealth interventions using texting may be a feasible way of reaching FEWs in Phnom Penh.

4. Sabin, K., et al. "**Availability and Quality of Size Estimations of Female Sex Workers, Men Who Have Sex with Men, People Who Inject Drugs and Transgender Women in Low- and Middle-Income Countries.**" *PLoS One* 2016 11(5): e0155150. Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4862645/pdf/pone.0155150.pdf>

OBJECTIVE: To assess the availability and quality of population size estimations of female sex workers (FSW), men who have sex with men (MSM), people who inject drug (PWID) and transgender women.

METHODS: Size estimation data since 2010 were retrieved from global reporting databases, Global Fund grant application documents, and the peer-reviewed and grey literature. Overall quality and availability were assessed against a defined set of criteria, including estimation methods, geographic coverage, and extrapolation approaches. Estimates were compositely categorized into 'nationally adequate', 'nationally inadequate but locally adequate', 'documented but inadequate methods', 'undocumented or untimely' and 'no data.'

FINDINGS: Of 140 countries assessed, 41 did not report any estimates since 2010. Among 99 countries with at least one estimate, 38 were categorized as having nationally adequate estimates and 30 as having nationally inadequate but locally adequate estimates. Multiplier, capture-recapture, census and enumeration, and programmatic mapping were the most commonly used methods. Most countries relied on only one estimate for a given population while about half of all reports included national estimates. A variety of approaches were applied to extrapolate from sites-level numbers to national estimates in two-thirds of countries.

CONCLUSIONS: Size estimates for FSW, MSM, PWID and transgender women are increasingly available but

quality varies widely. The different approaches present challenges for data use in design, implementation and evaluation of programs for these populations in half of the countries assessed. Guidance should be further developed to recommend: a) applying multiple estimation methods; b) estimating size for a minimum number of sites; and, c) documenting extrapolation approaches.

5. Vejella, S., et al. "**Community Collectivization and Consistent Condom Use Among Female Sex Workers in Southern India: Evidence from Two Rounds of Behavioral Tracking Surveys.**" *AIDS Behav* 2016 20(4): 776-87.

Community collectivization is an integral part of condom use and HIV risk reduction interventions among key population. This study assesses community collectivization among female sex workers (FSWs), and explores its relationship with sex workers' consistent condom use (CCU) with different partners considering the interaction effect of time and collectivization. Data were drawn from two rounds of cross-sectional surveys collected during 2010 (N1 = 1986) and 2012 (N2 = 1973) among FSWs in Andhra Pradesh, India. Results of the multiple logistic regression analysis show that, CCU with regular and occasional clients increased over the inter-survey period among FSWs with a high collective efficacy (AOR 2.9 and 6.1) and collective agency (AOR 14.4 and 19.0) respectively. The association of high levels of collectivization with CCU and self-efficacy for condom use are central to improve the usefulness and sustainability of HIV prevention programs worldwide.

6. Johnson, L. F., et al. "**A Comparison of Two Mathematical Modeling Frameworks for Evaluating Sexually Transmitted Infection Epidemiology.**" *Sex Transm Dis* 2016 43(3): 139-46.

BACKGROUND: Different models of sexually transmitted infections (STIs) can yield substantially different conclusions about STI epidemiology, and it is important to understand how and why models differ. Frequency-dependent models make the simplifying assumption that STI incidence is proportional to STI prevalence in the population, whereas network models calculate STI incidence more realistically by classifying individuals according to their partners' STI status.

METHODS: We assessed a deterministic frequency-dependent model approximation to a microsimulation network model of STIs in South Africa. Sexual behavior and demographic parameters were identical in the 2 models. Six STIs were simulated using each model: HIV, herpes, syphilis, gonorrhea, chlamydia, and trichomoniasis.

RESULTS: For all 6 STIs, the frequency-dependent model estimated a higher STI prevalence than the network model, with the difference between the 2 models being relatively large for the curable STIs. When the 2 models were fitted to the same STI prevalence data, the best-fitting parameters differed substantially between models, with the frequency-dependent model suggesting more immunity and lower transmission probabilities. The fitted frequency-dependent model estimated that the effects of a hypothetical elimination of concurrent partnerships and a reduction in commercial sex were both smaller than estimated by the fitted network model, whereas the latter model estimated a smaller impact of a reduction in unprotected sex in spousal relationships.

CONCLUSIONS: The frequency-dependent assumption is problematic when modeling short-term STIs. Frequency-dependent models tend to underestimate the importance of high-risk groups in sustaining STI epidemics, while overestimating the importance of long-term partnerships and low-risk groups.

7. 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.

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.

8. Yu, Y. J., et al. **"Demographic and behavioral correlates of HIV/STI among Vietnamese female sex workers in southwest China."** *AIDS Care* 2016: 1-6.

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.

9. Rael, C. T., et al. **"Depression and key associated factors in female sex workers and women living with HIV/AIDS in the Dominican Republic."** *Int J STD AIDS* 2016.

Little is known about the mental health of female sex workers and women living with HIV/AIDS in the Dominican Republic, which impedes HIV prevention, testing, and treatment. This project estimates the prevalence of depression and identifies key contributing factors to this outcome in female sex workers, women living with HIV/AIDS, and a comparison group. Participants were female sex workers (N = 349), women living with HIV/AIDS (N = 213), and a comparison group of HIV-negative women who were not sex workers (N = 314) from the Dominican Republic. Participants completed questionnaires assessing demographic characteristics and depression. Female sex workers and women living with HIV/AIDS completed additional questionnaires ascertaining HIV or sex work-related internalized stigma. Depression was prevalent among female sex workers (70.2%), women living with HIV/AIDS (81.1%), and the comparison group (52.2%). Adjusted logistic regressions showed that internalized stigma was associated with depression for female sex workers (OR = 2.73; 95% CI = 1.95-3.84) and women living with HIV/AIDS (OR = 3.06; 95% CI = 1.86-5.05). Permanent income was associated with this outcome for female sex workers (OR = 0.08; 95% CI = 0.01-0.80) and the comparison group (OR = 0.04; 95% CI = 0.00-0.45).

10. Liao, M., et al. **"Dual Epidemics of Drug Use and Syphilis Among Chinese Female Sex Workers: Results of Eight Consecutive Cross-Sectional Surveys from 2006 to 2013 in Qingdao, China."** *AIDS Behav* 2016 20(3): 655-66.

Eight consecutive annual cross-sectional surveys were conducted to examine the trend of the prevalence of HIV, syphilis, drug use and their correlates among female sex workers (FSWs) in Qingdao, China. Among sampled FSWs over the 8 years, a higher proportion of older, married or cohabited, higher education levels and more on-call FSWs were observed in recent years. The syphilis prevalence increased significantly from

1.0 % in 2006 to 13.5 % in 2013, with illicit drug use rate ranging from 21.8 % in 2007 to 55.5 % in 2010. Multivariate logistic regression analyses showed that drug use, syphilis and unprotected vaginal sex predicted each other. The dual epidemics of illicit drug use and syphilis among FSWs underscore the urgency to implement a tailored intervention to curb the dual epidemics while also preventing an HIV epidemic in the context of diversified commercial sex dynamic.

11. Prakash, R., et al. "**Effect of Physical Violence on Sexually Transmitted Infections and Treatment Seeking Behaviour among Female Sex Workers in Thane District, Maharashtra, India.**" *PLoS One* 2016 11(3): e0150347. Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4774990/pdf/pone.0150347.pdf>

BACKGROUND: Violence against sex workers can heighten their vulnerability to HIV and other sexually transmitted infections (STIs). Evidence suggests the risk of acquiring STI/HIV infections among female sex workers (FSWs) who have experienced violence to be almost three-times higher than FSWs, who have not experienced violence. Moreover, an experience of physical and sexual violence makes it difficult for them to negotiate safer sex with their partners and often act as a barrier to utilization of prevention services.

METHODS: This study utilizes data from 2785 FSWs aged 18 years and above who participated in a cross-sectional behavioural study conducted during 2013-14 in Thane district, Maharashtra. A probability-based two-stage cluster sampling method was used for data collection. This study assesses the effect of physical violence on self-reported STI symptoms (any STI and multiple STIs) and treatment seeking for the last STI symptom using propensity score matching method.

RESULTS: About 18% of sampled FSWs reported physical violence at the time of the survey. The likelihood of experiencing such violence was significantly higher among FSWs who solicited clients at public places, engaged in other economic activities apart from sex work, had savings, and reported high client volume per week. FSWs experiencing violence were also inconsistent condom users while engaging in sex with regular partners and clients. The average adjusted effect of violence clearly depicted an increase in the risk of any STI (11%, $p < 0.05$) and multiple STIs (8%, $p < 0.10$) and reduction in treatment seeking (10%, $p < 0.05$).

CONCLUSIONS: This study demonstrates a significant effect of physical violence on reporting of any STI symptom and treatment seeking. Findings call for the immediate inclusion of strategies aimed to address violence related challenges in HIV prevention program currently being provided at Thane district. Such strategies would further help in enhancing the access to tailored STI prevention and care services among FSWs in the district.

12. Mugo, P. M., et al. "**Effect of Text Message, Phone Call, and In-Person Appointment Reminders on Uptake of Repeat HIV Testing among Outpatients Screened for Acute HIV Infection in Kenya: A Randomized Controlled Trial.**" *PLoS One* 2016 11(4): e0153612. Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4831710/pdf/pone.0153612.pdf>

BACKGROUND: Following HIV-1 acquisition, many individuals develop an acute retroviral syndrome and a majority seek care. Available antibody testing cannot detect an acute HIV infection, but repeat testing after 2-4 weeks may detect seroconversion. We assessed the effect of appointment reminders on attendance for repeat HIV testing.

METHODS: We enrolled, in a randomized controlled trial, 18-29 year old patients evaluated for acute HIV infection at five sites in Coastal Kenya (ClinicalTrials.gov NCT01876199). Participants were allocated 1:1 to either standard appointment (a dated appointment card) or enhanced appointment (a dated appointment card plus SMS and phone call reminders, or in-person reminders for participants without a phone). The primary outcome was visit attendance, i.e., the proportion of participants attending the repeat test visit. Factors associated with attendance were examined by bivariable and multivariable logistic regression.

PRINCIPAL FINDINGS: Between April and July 2013, 410 participants were randomized. Attendance was 41% (85/207) for the standard group and 59% (117/199) for the enhanced group, for a relative risk of 1.4

[95% Confidence Interval, CI, 1.2-1.7]. Higher attendance was independently associated with older age, study site, and report of transactional sex in past month. Lower attendance was associated with reporting multiple partners in the past two months.

CONCLUSIONS: Appointment reminders through SMS, phone calls and in-person reminders increased the uptake of repeat HIV test by forty percent. This low-cost intervention could facilitate detection of acute HIV infections and uptake of recommended repeat testing.

TRIAL REGISTRATION: Clinicaltrials.gov NCT01876199.

13. Smith, L. R., et al. "**Engagement in the HIV Care Continuum among Key Populations in Tijuana, Mexico.**" *AIDS Behav* 2016 20(5): 1017-25.

In Tijuana, Mexico, HIV is concentrated in sub-epidemics of key populations: persons who inject drugs (PWID), sex workers (SW), and men who have sex with men (MSM). To date, data on engagement in the HIV care continuum among these key populations, particularly in resource-constrained settings, are sparse. We pooled available epidemiological data from six studies (N = 3368) to examine HIV testing and treatment uptake in these key populations; finding an overall HIV prevalence of 5.7 %. Of the 191 identified HIV-positive persons, only 11.5 % knew their HIV-positive status and 3.7 % were on ART. Observed differences between these HIV-positive key populations suggest PWID (vs. non-PWID) were least likely to have previously tested or initiate HIV care. MSM (vs. non-MSM) were more likely to have previously tested but not more likely to know their HIV-positive status. Of persons aware of their HIV-positive status, SW (vs. non-SW) were more likely to initiate HIV care. Findings suggest engagement of key populations in HIV treatment is far below estimates observed for similarly resource-constrained generalized epidemics in sub-Saharan Africa. These data provide one of the first empirical-snapshots highlighting the extent of HIV treatment disparities in key populations.

14. Goldenberg, S. M., et al. "**Enhancing the Ethical Conduct of HIV Research with Migrant Sex Workers: Human Rights, Policy, and Social Contextual Influences.**" *PLoS One* 2016 11(5): e0155048. Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4861265/pdf/pone.0155048.pdf>

BACKGROUND: Migrant sex workers are often highly marginalized and disproportionately experience health and social inequities, including high prevalence of HIV, sexually transmitted infections, and human rights violations. In recent years, research involving migrant sex workers has increased, yet many knowledge gaps remain regarding how best to protect research participant rights and welfare. Our objective was to identify key challenges and opportunities related to the responsible conduct of HIV research with migrant sex workers.

METHODS: Focus groups and interviews conducted with 33 female sex workers ≥ 18 years old at the Guatemala-Mexico border from June 2013-February 2014 were analyzed. Participants were recruited through community outreach by a local HIV prevention organization to sex work establishments such as bars, hotels, street corners, and truck stops.

RESULTS: Key themes influencing research engagement for migrant sex workers included researcher mistrust and fear related to research participation, rooted in the social isolation frequently faced by recent migrants; intersecting concerns related to immigration status, fear of criminalization, and compliance with sex work regulations; and perceived benefits and risks of HIV/STI testing for migrants (e.g., immigration implications, stigma) represent potential barriers and opportunities for the responsible conduct of research involving migrant sex workers.

CONCLUSIONS: Results highlight the intersection between the human rights vulnerabilities of migrant sex workers and barriers to research participation, including social isolation of migrants and policy/legal barriers related to immigration and sex work. Findings illustrate the need for researchers to develop population-tailored procedures to address fears related to immigration and criminalization, and to reinforce positive and

non-stigmatizing relationships with migrant sex workers. Community-led efforts to reduce stigma and foster community organization and supports for migrant sex workers are recommended, as are broader policy shifts that move away from punitive legal approaches towards approaches that safeguard and prioritize the human rights of migrant sex workers.

15. Nemoto, T., et al. "**Examining the Sociocultural Context of HIV-related Risk Behaviors Among Kathoey (Male-to-female Transgender Women) Sex Workers in Bangkok, Thailand.**" *J Assoc Nurses AIDS Care* 2016 27(2): 153-65.

Kathoey (male-to-female transgender) sex workers (KSW) in Thailand are at high risk for sexually transmitted infections; however, few qualitative studies have been conducted to understand the sociocultural context of engaging in HIV risk behaviors. A total of 24 participants were purposively sampled in Bangkok based on KSW work venues and substance use. Results revealed the importance of participants' understanding of the self in relation to establishing economic independence through sex work, which could then be used to re-establish support from family, who often have not accepted a son's gender transition. Participants linked being kathoey to a belief in fate but did not view engagement in sex work in the same way. Different sex work venues exposed KSW to different risky situations. HIV prevention programs for kathoey must address the importance of economic security and its relation to social support and gender transition within a cultural- and work-environment-specific framework.

16. Rocha-Jimenez, T., et al. "**Exploring the Context and Implementation of Public Health Regulations Governing Sex Work: A Qualitative Study with Migrant Sex Workers in Guatemala.**" *J Immigr Minor Health* 2016.

Public health regulations practices surrounding sex work and their enforcement can have unintended consequences for HIV and sexually transmitted infection (STI) prevention and care among sex workers. This analysis was based on qualitative in-depth (n = 33) and focus groups interviews (n = 20) conducted with migrant female sex workers in Tecun Uman and Quetzaltenango, Guatemala, and explored the implementation of sex work regulations and related consequences for HIV prevention and care among migrant sex workers. Sex work regulations were found to have health-related benefits (e.g., access to HIV/STI testing) as well as negative impacts, such as abuse by police and harassment, detention/deportation of migrant sex workers. Whereas public health regulations may improve access to HIV/STI testing, their implementation may inadvertently jeopardize sex workers' health through unintended negative consequences. Non-coercive, evidence-based public health and sex work policies and programs are needed to expand access to HIV/STI prevention and care among migrant sex workers, while protecting their dignity and human rights.

17. Cernigliaro, D., et al. "**Factors Related to Pregnancy Among Female Sex Workers Living with HIV in the Dominican Republic.**" *AIDS Behav* 2016.

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.

18. Fielding-Miller, R., et al. "**The feminine ideal and transactional sex: Navigating respectability and risk in Swaziland.**" *Soc Sci Med* 2016 158: 24-33.

Women who engage in transactional sex are not only at increased risk of HIV and intimate partner violence, but also face social risks including gossip and ostracism. These social and physical risks may be dependent on both what a woman expects and needs from her partner and how her community perceives the relationship. Gender theory suggests that some of these social risks may hinge on whether or not a woman's relationship threatens dominant masculinity. We conducted a qualitative study in Swaziland from September 2013 to October 2014 to explore transactional sex and respectable femininity through the lens of hegemonic gender theory. Using cultural consensus modeling, we identified cultural models of transactional sex and conducted 16 in-depth interviews with model key informants and 3 focus group discussions, for a total of 41 participants. We identified 4 main models of transactional relationships: One typified by marriage and high social respectability, a second in which women aspire towards marriage, a third particular to University students, and a fourth "sugar daddy" model. Women in all models expected and received significant financial support from their male partners. However, women in less respectable relationships risked social censure and stigma if they were discovered, in part because aspects of their relationship threatened hegemonic masculinity. Conversely, women who received male support in respectable relationships had to carefully select HIV risk reduction strategies that did not threaten their relationship and associated social status. Research and programming efforts typically focus only on the less socially respectable forms of transactional sex. This risks reinforcing stigma for women in relationships that are already considered socially unacceptable while ignoring the unique HIV risks faced by women in more respectable relationships.

19. Beyrer, C., et al. "**Field evaluation of Standard Diagnostics' Bioline HIV/Syphilis Duo test among female sex workers in Johannesburg, South Africa.**" *Sex Transm Infect* 2016.

BACKGROUND: Point-of-care tests provide immediate results with the opportunity for same-day interventions with improved public health outcomes. A dual HIV/syphilis test enables early treatment of both diseases.

METHODS: We conducted a field evaluation of the Standard Diagnostics' SD Bioline HIV/Syphilis Duo test (SD Bioline) among female sex workers. SD Bioline was conducted on finger-prick blood according to manufacturer's instructions and compared with (i) Genscreen HIV1/2 (third generation) and Vironostika Ag/Ab (fourth generation) assays for HIV, and (ii) Treponema pallidum particle agglutination (TPPA) and rapid plasma reagin (RPR) assays for syphilis. A negative TPPA test was considered negative, a TPPA-confirmed RPR titre $\leq 1:4$ as past infection and a TPPA-confirmed RPR titre $\geq 1:8$ as active syphilis. Sensitivity, specificity, positive and negative predictive values were calculated.

RESULTS: Of 263 women recruited, 14 (5.3%) declined an HIV test. Among the remaining 249 women, 187 (75.1%) were HIV positive, 51 (20.5%) had syphilis antibodies with seven (2.8%) active infections. For HIV, the sensitivity and specificity were 98.9% (95% CI 95.8% to 99.8%) and 100% (95% CI 92.7% to 100%). For syphilis, the sensitivity and specificity were 66.7% (95% CI 52.0% to 78.9%) and 98.0% (95% CI 94.5% to 99.3%). Sera with high TPPA titres were more likely to test positive.

CONCLUSIONS: In field conditions, while the SD Bioline test has high sensitivity and specificity for HIV and high specificity for syphilis, the test has lower sensitivity for syphilis than reported from laboratory evaluations. As the dual test detects only two thirds of syphilis cases, it should only be used in areas with weak screening programmes.

20. Bailey, A., et al. "**A Framework for Sexual Decision-Making Among Female Sex Workers in Jamaica.**" *Arch Sex Behav* 2016 45(4): 911-21.

The Jamaican government has provided targeted HIV and sexually transmitted infection prevention, treatment, and other services for female sex workers (FSW) since 1989. HIV prevalence among FSW declined from 20 to 12 % between 1989 and 1994, then to 9 % in 2005, 5 % in 2008, and 4.1 % in 2011. This article distills the literature and two decades of experience working with FSW in Jamaica. Drawing on the constant comparative method, we put forward an innovative conceptual framework for explaining sexual decision-making and risk behaviors within both transactional and relational sexual situations. This framework helps fill

the gaps in existing models that focus on individual behaviors. The model identifies interactions between environmental and structural elements of sex work, and three individual-level factors: risk perception, perceived relationship intimacy, and perceived control, as the four primary mediating factors influencing sexual decision-making among FSW. We propose that other factors such as violence, socioeconomic vulnerability, and policy/legal frameworks influence sexual decision-making through these primary mediating factors. This conceptual model may offer a useful framework for planning and evaluating prevention interventions among sex workers. However, it remains to be tested in order to establish its value.

21. Mastin, T., et al. "**Having Their Say: Sex Workers Discuss Their Needs and Resources.**" *Health Care Women Int* 2016 37(3): 341-61.

In many countries where HIV/AIDS is prevalent, social, cultural, and economic factors often mitigate the adoption of healthy reproductive behaviors and practices. One group that is particularly susceptible to mitigating influences is women who work in the sex trade. In this article, we utilize a culture-centered approach to determine how a population of sex workers in Nairobi, Kenya, perceives their individual, social, and structural needs and resources in relation to the public, their families, friends, and peers. We conclude the article with next steps regarding collaboration with media representatives and policymakers.

22. Melesse, D. Y., et al. "**Heterogeneity Among Sex Workers in Overlapping HIV Risk Interactions With People Who Inject Drugs: A Cross-Sectional Study From 8 Major Cities in Pakistan.**" *Medicine (Baltimore)* 2016 95(12): e3085.

Concerns remain regarding the heterogeneity in overlapping human immunodeficiency virus (HIV) risk behaviors among sex workers (SWs) in Pakistan; specifically, the degree to which SWs interact with people who inject drugs (PWID) through sex and/or needle sharing. Following an in-depth mapping performed in 2011 to determine the size and distribution of key populations at highest risk of HIV acquisition in Pakistan, a cross-sectional biological and behavioral survey was conducted among PWID, female (FSWs), male (MSWs), and hijra/transgender (HSWs) sex workers, and data from 8 major cities were used for analyses. Logistic regression was used to identify factors, including city of residence and mode of SW-client solicitation, contributing to the overlapping risks of drug injection and sexual interaction with PWID. The study comprised 8483 SWs (34.5% FSWs, 32.4% HSWs, and 33.1% MSWs). Among SWs who had sex with PWID, HSWs were 2.61 (95% confidence interval [CI], 1.19-5.74) and 1.99 (95% CI, 0.94-4.22) times more likely to inject drugs than MSWs and FSWs, respectively. There was up to a 3-fold difference in drug injecting probability, dependent on where and/or how the SW solicited clients. Compared with SWs in Larkana, the highest likelihood of drug injection use was among SWs in Multan (OR = 4.52; 95% CI: 3.27-6.26), followed by those in Lahore, Quetta, and Faisalabad. Heterogeneity exists in the overlapping patterns of HIV risk behaviors of SWs. The risk of drug injection among SWs also varies by city. Some means of sexual client solicitation may be along the pathway to overlapping HIV risk vulnerability due to increased likelihood of drug injection among SWs. There is a need to closely monitor the mixing patterns between SWs and PWID and underlying structural factors, such as means of sexual client solicitation, that mediate HIV risk, and implement prevention programs customized to local subepidemics.

23. Augusto Ado, R., et al. "**High Burden of HIV Infection and Risk Behaviors Among Female Sex Workers in Three Main Urban Areas of Mozambique.**" *AIDS Behav* 2016 20(4): 799-810.

This is the first integrated biological and behavioral survey among female sex workers (FSW) in Mozambique. Using respondent-driven sampling, 400, 411 and 429 FSW were enrolled respectively in Maputo, Beira and Nampula in 2011-2012. Estimates were produced using RDSAT 7.1. HIV prevalence was 31.2, 23.6, and 17.8 % in each location respectively. Among HIV-positive FSW, 48.1, 79.8 and 89.6 % in each city, were unaware of their serostatus. Condom use at last sex with a client was 85.8, 73.4 and 62.8 % among FSW, respectively. HIV was associated with current age, age of first sex for money, low educational level, and having had a genital ulcer in the last 6 months. Results suggest the urgent need to increase behavioral and structural interventions in this key population.

24. Fleming, P. J., et al. **"HIV testing, care, and treatment experiences among the steady male partners of female sex workers living with HIV in the Dominican Republic."** *AIDS Care* 2016 28(6): 699-704.

Male steady partners of female sex workers (FSW) living with human immunodeficiency virus (HIV) represent a key population for treatment as prevention and/or pre-exposure prophylaxis interventions. This study uses data collected from male steady partners who were referred by FSW living with HIV participating in a multi-level HIV prevention and care intervention in Santo Domingo, Dominican Republic. We conducted a socio-behavioral survey and HIV testing with all men (n = 64) and 16 in-depth interviews with a sub-sample to obtain more depth. Thirty-five of the 64 participants were living with HIV; 27 were previously diagnosed and 8 were diagnosed during our study. As a result, 45% of men were members of sero-discordant sexual partnerships. Of men with no previous HIV diagnosis (n = 37), 15 had never been tested for HIV and nine had not been tested in the past two years. Ninety-three percent of men previously diagnosed with HIV reported receiving HIV care in the past 6 months and 78% were taking anti-retrovirals. Low HIV testing was partly due to men not feeling at risk for HIV, despite having an HIV-infected partner. Additionally, a lack of tailored care inhibited engagement in anti-retroviral treatment for those infected. HIV testing was low, highlighting a need for test-and-treat strategies. Men not living with HIV would benefit from regular testing and would be good candidates for pre-exposure prophylaxis. While almost all men who had been diagnosed with HIV were engaged in care and adherent to anti-retroviral therapy, future research should assess whether they are achieving optimal HIV outcomes for their health and prevention of ongoing transmission.

25. Moayedi-Nia, S., et al. **"HIV, HCV, HBV, HSV, and syphilis prevalence among female sex workers in Tehran, Iran, by using respondent-driven sampling."** *AIDS Care* 2016 28(4): 487-90.

To find out the prevalence of HIV, HCV, HBV, HSV, and syphilis infections among female sex workers (FSWs) in Tehran, a cross-sectional study by using respondent-driven sampling (RDS) method was conducted. From December 2012 to April 2013 FSWs in Tehran were recruited. Inclusion criteria consisted of trading sex during the 12 months prior to this study and selling sex for at least 6 months in participants' lifetime. Among 161 consenting participants, 5% were infected with HIV. Moreover, 8.1% of FSWs were HCV positive, 37.9% were of HSV type1/type2, 1.2% of participants were infected with HBV, and none of the participants were infected with syphilis. HIV-positive participants were significantly more likely to be co-infected with HSV type1/type2, be younger, have more sexual partners and especially more clients during seven days prior to this study and report more history of having at least one of sexually transmitted infections symptoms in 12 months prior the study. In the multiple logistic regression analysis, being infected with HSV and also being under 25 years of age were found to be independently associated with HIV infection. Compared with the prevalence of HIV among general population of Tehran, relatively high prevalence of HIV and other viral infections among FSWs should be considered. All in all, it is critical to commence effective counter-measures for this high-risk group if the aim is to prevent spreading of these viruses to general population.

26. Colby, D. J., et al. **"HIV, Hepatitis C, and Other Sexually Transmitted Infections Among Male Sex Workers in Ho Chi Minh City, Vietnam."** *AIDS Behav* 2016 20(4): 768-75.

There is little data on the burden of HIV and other infections that affect male sex workers (MSW) in Vietnam. We conducted behavioral and biological sexual health surveys with 300 MSW in Ho Chi Minh City. Generalized estimating equation models were built to assess factors associated with HIV, hepatitis C, and other sexually transmitted infections (STI). Of 300 MSW, 19 (6.3 %) were diagnosed seropositive for HIV, 11 (3.7 %) had hepatitis C, and 26 (8.7 %) had at least one prevalent STI. In a multivariable model, opiate use was significantly associated with HIV infection (aOR 6.46, 95 % CI 1.28-32.7) and hepatitis C (aOR = 19.6, 95 % CI 2.35-163.6). Alcohol dependency was associated with increased odds of hepatitis C (aOR = 4.79, 95 % CI 1.02-22.5) and decreased odds of other STI (aOR = 0.30, 95 % CI 0.10-0.97). These findings suggest that MSW in Vietnam would benefit from regular HIV and STI testing, as well as linkage to care and substance use rehabilitation services.

27. Paranjape, R. S., et al. **"HIV/AIDS in India: an overview of the Indian epidemic."** *Oral Dis* 2016 22 Suppl 1: 10-4.

The first cases of HIV infection in India were detected in 1986 among female sex workers in Chennai. A rapid increase followed in many states. The current national prevalence is about 0.26% compared with a global average of 0.2%, but the figure in most high-risk groups including female sex workers is much higher (up to 7%). New HIV infections reached a peak in 1998 and have since declined by 60%, although the total number of HIV-positive persons remains stable at 2.1 million, largely probably due to the increased life expectancy following antiretroviral therapy. The Indian epidemic is characterized by low levels in the general population and elevated concentrations among high-risk groups. Transmission is mainly heterosexually driven, with differential burdens across the states. The four main drivers of HIV infection in India differ in order from those elsewhere in the world and are commercial sex work, general heterosexual intercourse, injecting drug use and unprotected anal sex between men who have sex with men. There are distinct differences from state to state in the prevalence of HIV, with some around the national norm of 0.21% but others with over 1% infected. India has embarked on a targeted HIV prevention strategy in recent years which is strongly associated with a fall in infection rate in both low- and high-risk groups.

28. Oldenburg, C. E., et al. "**Human rights protections and HIV prevalence among MSM who sell sex: Cross-country comparisons from a systematic review and meta-analysis.**" *Glob Public Health* 2016: 1-12.

Laws and policies can affect the HIV risk of key populations through a number of direct and indirect pathways. We investigated the association between HIV prevalence among men who engage in transactional sex and language in the penal code protecting sexual minorities, including men who have sex with men (MSM), and sex workers. HIV prevalence among men who engage in transactional sex was assessed through meta-analysis of published literature and country surveillance reports. Meta-regression was used to determine the association between HIV prevalence and protective laws for sexual minorities and sex workers. Sixty-six reports representing 28 countries and 31,924 individuals were included in the meta-analysis. Controlling for multiple study- and country-level variables, legal protection for sexual minorities was associated with a 10.9% (95% CI: 3.8-18.0%) and sex workers associated with a 7.0% (95% CI: 1.3-12.8%) decrease in country-level HIV prevalence among men who engage in transactional sex. Laws that seek to actively protect sex workers and MSM may be necessary to decrease HIV risk for this key population.

29. King, E. J., et al. "'If she is a good woman ...' and 'to be a real man ...': gender, risk and access to HIV services among key populations in Tajikistan." *Cult Health Sex* 2016 18(4): 422-34.

The HIV epidemic continues to grow in Tajikistan, especially among people who inject drugs, sex workers, men who have sex with men and incarcerated populations. Despite their susceptibility to HIV, members of these groups do not always have access to HIV prevention, testing and treatment. The purpose of this study was to identify and understand the gender constraints in accessing HIV services for key populations in Tajikistan. Using focus-group discussions and key-informant interviews the assessment team collected information from members of key populations and those who work with them. Several themes emerged from the data, including: low levels of HIV knowledge, gender constraints to condom use and safer drug use, gender constraints limit HIV testing opportunities, gender-based violence, stigma and discrimination, and the lack of female spaces in the HIV response. The results of this study show that there are well-defined gender norms in Tajikistan, and these gender norms influence key populations' access to HIV services. Addressing these gender constraints may offer opportunities for more equitable access to HIV services in Tajikistan.

30. Hargreaves, J. R., et al. "**Implementation and Operational Research: Cohort Analysis of Program Data to Estimate HIV Incidence and Uptake of HIV-Related Services Among Female Sex Workers in Zimbabwe, 2009-2014.**" *J Acquir Immune Defic Syndr* 2016 72(1): e1-8.

BACKGROUND: HIV epidemiology and intervention uptake among female sex workers (FSW) in sub-Saharan Africa remain poorly understood. Data from outreach programs are a neglected resource.

METHODS: Analysis of data from FSW consultations with Zimbabwe's National Sex Work program, 2009-2014. At each visit, data were collected on sociodemographic characteristics, HIV testing history, HIV tests

conducted by the program and antiretroviral (ARV) history. Characteristics at first visit and longitudinal data on program engagement, repeat HIV testing, and HIV seroconversion were analyzed using a cohort approach.

RESULTS: Data were available for 13,360 women, 31,389 visits, 14,579 reported HIV tests, 2750 tests undertaken by the program, and 2387 reported ARV treatment initiations. At first visit, 72% of FSW had tested for HIV; 50% of these reported being HIV positive. Among HIV-positive women, 41% reported being on ARV. 56% of FSW attended the program only once. FSW who had not previously had an HIV-positive test had been tested within the last 6 months 27% of the time during follow-up. After testing HIV positive, women started on ARV at a rate of 23/100 person years of follow-up. Among those with 2 or more HIV tests, the HIV seroconversion rate was 9.8/100 person years of follow-up (95% confidence interval: 7.1 to 15.9).

CONCLUSIONS: Individual-level outreach program data can be used to estimate HIV incidence and intervention uptake among FSW in Zimbabwe. Current data suggest very high HIV prevalence and incidence among this group and help identify areas for program improvement. Further methodological validation is required.

31. Lajoie, J., et al. "**Improving Adherence to Post-Cervical Biopsy Sexual Abstinence in Kenyan Female Sex Workers.**" *Am J Reprod Immunol* 2016.

PROBLEM: Cervical biopsies offer a unique opportunity for studying local immune response. To investigate hormonally induced immune fluctuations in cervical tissues of Kenyan female sex workers, we improved biopsy sampling protocol safety. Here, we report on steps taken to minimize exposure to HIV following two cervical biopsies.

METHODS OF STUDY: Women were asked to abstain from vaginal intercourse to limit HIV exposure during wound healing with financial compensation. A comprehension tool for informed consent, on-site detection of prostate-specific antigens indicating unprotected intercourse within 48 hr, and bi-weekly text message reminders were implemented.

RESULTS: The implemented methods improved compliance with post-procedure abstinence by two times ($P = 0.013$). Fourteen days following a cervical biopsy, no sign of genital inflammation or change in HIV T-cell target proportion were observed.

CONCLUSIONS: This study provides new tools for limiting HIV exposure in studies requiring biopsy sampling among women at risk of acquiring HIV.

32. Allman, D., et al. "**Introduction to the Culture, Health & Sexuality Virtual Special Issue on sex, sexuality and sex work.**" *Cult Health Sex* 2016: 1-8.

This article provides an editorial introduction to a virtual special issue on sex work and prostitution. It offers a brief history of sex work studies as published in the journal *Culture, Health & Sexuality*; reflects on the breadth and scope of papers the journal has published; considers the contribution of the journal's papers to the wellbeing and sexuality of people who sell sex; and envisions future areas of inquiry for sex work studies. As authors, we identify major themes within the journal's archive, including activism, agency, context, discourse, hazard, health, legalisation, love, place, power, race, relationships, stigma and vulnerabilities. In particular, we reflect on how HIV has created an environment in which issues of culture, health and sexuality have come to be disentangled from the moral agendas of earlier years. As a venue for the dissemination of a reinvigorated scholarship, *Culture, Health & Sexuality* provides a platform for a community of often like-minded, rigorous thinkers, to provide new and established perspectives, methods and voices and to present important developments in studies of sex, sexuality and sex work.

33. Jakubowski, A., et al. "Large Price Premiums for Unprotected Sex Among Female Sex Workers in Kenya: A Potential Challenge for Behavioral HIV Prevention Interventions." *J Acquir Immune Defic Syndr* 2016 72(1): e20-2.

34. Okal, J., et al. "Lessons learned from respondent-driven sampling recruitment in Nairobi: experiences from the field." *BMC Res Notes* 2016 9(1): 158. Online at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4788831/pdf/13104_2016_Article_1965.pdf

BACKGROUND: Respondent-driven sampling (RDS) is used in a variety of settings to study hard-to-reach populations at risk for HIV and sexually transmitted infections. However, practices leading to successful recruitment among diverse populations in low-resource settings are seldom reported. We implemented the first, integrated, bio-behavioural surveillance survey among men who have sex with men, female sex workers and people who injected drugs in Nairobi, Kenya.

METHODS: The survey period was June 2010 to March 2011, with a target sample size of 600 participants per key populations. Formative research was initially conducted to assess feasibility of the survey. Weekly monitoring reports of respondent characteristics and recruitment chain graphs from NetDraw illustrated patterns and helped to fill recruitment gaps.

RESULTS: RDS worked well with men who have sex with men and female sex workers with recruitment initiating at a desirable pace that was maintained throughout the survey. Networks of people who injected drugs were well-integrated, but recruitment was slower than the men who have sex with men and female sex workers surveys.

CONCLUSION: By closely monitoring RDS implementation and conducting formative research, RDS studies can effectively develop and adapt strategies to improve recruitment and improve adherence to the underlying RDS theory and assumptions.

35. Chen, L., et al. "Male Clients of Male Sex Workers in China: An Ignored High-Risk Population." *J Acquir Immune Defic Syndr* 2016 71(3): 316-22.

BACKGROUND: There is a high prevalence of HIV/syphilis among male sex workers, but no formal study has ever been conducted focusing on male clients of male sex workers (MCM). A detailed investigation was thus called for, to determine the burden and sociobehavioral determinants of HIV and syphilis among these MCM in China.

METHODS: As part of a multicenter cross-sectional study, using respondent-driven and snowball sampling, 2958 consenting adult men who have sex with men (MSM) were recruited, interviewed, and tested for HIV and syphilis between 2008 and 2009. The distributions of sociodemographic characteristics, risk behaviors, and HIV/syphilis prevalence were determined and compared between MCM and other MSM.

RESULTS: Among recruited MSM, 5.0% (n = 148) were MCM. HIV prevalences for MCM and other MSM were 7.4% and 7.7%, whereas 18.9% and 14.0% were positive for syphilis, respectively. Condomless anal intercourse (CAI) was reported by 59.5% of MCM and 48.2% of MSM. Multiple logistic regression revealed that compared with other MSM, MCM were more likely to have less education [for \leq elementary level, adjusted odds ratio (aOR) = 3.13, 95% confidence interval (95% CI): 1.42 to 6.90], higher income (for >500 US Dollars per month, aOR = 2.97, 95% CI: 1.53 to 5.77), more often found partners at parks/restrooms (aOR = 4.01, 95% CI: 2.34 to 6.85), reported CAI (aOR = 1.49, 95% CI: 1.05 to 2.10), reported a larger sexual network (for \geq 10, aOR = 2.70, 95% CI: 1.44 to 5.07), and higher odds of syphilis (aOR = 1.54, 95% CI: 1.00 to 2.38).

CONCLUSIONS: The greater frequency of risk behaviors and high prevalence of HIV and syphilis indicated that HIV/syphilis prevention programs in China need to pay special attention to MCM as a distinct subgroup, which was completely ignored until date.

36. Johnson, L. C. **"Men at risk': sex work, tourism, and STI/HIV risk in Jamaica."** *Cult Health Sex* 2016: 1-14.

Female sex tourism has become an accepted income generator for many underemployed men in Jamaica who seek to reap economic benefits from relationships with visiting tourist women. This issue provides contexts to explore the numerous ways in which health intersects with issues of masculinity, sexuality and marginality. Based on ethnographic fieldwork in a popular Jamaican resort town, this paper examines the health implications of female sex tourism for the local population and tourist visitors. Data from this project indicate the need for improved sexually transmitted infection education and HIV outreach work towards men who are involved in transactional sex with tourist women. Due to prevalent perceptions of masculinity and gendered notions of sexuality, men who engage in sex tourism constitute a population that rarely receives the attention of local and national health authorities. Data from this qualitative study suggest that engaging this particular vulnerable population could potentially decrease the risk of STI and HIV infection in the country's most popular resort areas. Research of this kind is urgently needed to better understand the risk factors and challenges for Caribbean populations, as well as to inform future prevention efforts in the region.

37. Chevrier, C., et al. **"No one was there to care for us': Ashodaya Samithi's community-led care and support for people living with HIV in Mysore, India."** *Glob Public Health* 2016 11(4): 423-36.

Under the umbrella of the Bill and Melinda Gates-funded HIV initiative in India, the Mysore-based sex workers' (SWs) collective Ashodaya Samithi focused on improving its members' living and working conditions through community-led structural interventions, including community mobilisation, advocacy, peer-led support, and health promotional activities. Based on four months of ethnographic fieldwork, this article examines the care and support activities of one of its sub-wings, Ashraya, which specifically focuses on people living with HIV and AIDS (PLHIV). We first discuss the stigma-related perceptions and experiences of participants in relation to health-care settings and work environment, families and communities, and within varied HIV support networks. We then explore how Ashraya's community-led interventions attempt to challenge the structural forces feeding on and creating stigma. We argue that the current policy focus on the involvement of SWs' collectives in sexually transmitted infection (STI) prevention in India is rather limited and should be expanded along the continuum of care and support offered to PLHIV. As suggested in this paper, SWs' organisations may have greater potential to contribute to more than STI prevention work, both within and outside their communities, than currently recognised.

38. Lee, S. J., et al. **"No sex for fish: empowering women to promote health and economic opportunity in a localized place in Kenya."** *J Korean Med Sci* 2016.

A pervasive cultural practice called 'jaboya' or women trading sex for fish exists at Nyamware Beach, on Lake Victoria in Kenya, where the fishing industry is the primary source of income. This case study describes how an innovative market-based solution succeeded in changing the gender dynamics on Nyamware beach and empowering women with the means of production in the industry. Over the course of 6 months, three boats were built for women to own and manage, and 29 women and 20 men received business skills training while establishing local community savings and loans associations. This project succeeded in quickly adjusting the economic imbalance that previously left women few options but to exchange sex to purchase the best fish for food and for distribution. Participating women applied resulting increased income to school fees for children and toward their households and businesses. Women owning businesses, earning income and gaining a voice in the community has changed the gender dynamics of men working on the boats for women and has positively altered the perception of women in the community. Additionally, this project offers potential health benefits such as a reduction in the transmission of HIV/AIDS and other sexually transmitted infections due to reduced rates of transactional sex, and reduced rates of depression, alcohol abuse and post-traumatic stress disorder from transactional sex, which can be traumatic. The success of this project demonstrates that small and innovative approaches addressing root causes of economic and social inequality can improve health and promote sustainable economic development.

39. Watt, M. H., et al. **"Nothing Is Free": A Qualitative Study of Sex Trading Among Methamphetamine Users in Cape Town, South Africa."** *Arch Sex Behav* 2016 45(4): 923-33.

South Africa is facing an established epidemic of methamphetamine, known locally as "tik." Globally, methamphetamine has been linked to high rates of sexual risk behaviors, including sex trading. The goal of this study was to qualitatively examine the experiences of sex trading among methamphetamine users in Cape Town, South Africa. Individual in-depth interviews were conducted with 30 active methamphetamine users (17 men and 13 women) recruited from the community. Interviews were conducted in local languages using a semi-structured guide that included questions on sex trading experiences and perceptions of sex trading among methamphetamine users. Interviews were audio-recorded, transcribed, and analyzed using analytic memos and coding with constant comparison techniques. The data revealed that in a setting of high levels of addiction and poverty, sex was an important commodity for acquiring methamphetamine. Women were more likely to use sex to acquire methamphetamine, but men reported opportunistic cases of trading sex for methamphetamine. Four models of sex trading emerged: negotiated exchange, implicit exchange, relationships based on resources, and facilitating sex exchange for others. The expectation of sex trading created a context in which sexual violence against female methamphetamine users was common. Multiple sexual partners and inconsistent condom use in acts of sex trading put methamphetamine users at high risk of HIV. Interventions in this setting should address addiction, which is the primary driver of sex trading among methamphetamine users. Harm reduction interventions may include education about HIV and other sexually transmitted infections, availability of condoms and HIV testing, and sexual violence prevention.

40. Bradley, J., et al. "**Pornography, Sexual Enhancement Products, and Sexual Risk of Female Sex Workers and their Clients in Southern India.**" *Arch Sex Behav* 2016 45(4): 945-54.

Despite their large numbers, and important role in the HIV epidemic in India, male clients of female sex workers (FSWs) are a difficult to reach population and little is known about their sexual behaviors. Using data from an integrated behavioral and biological assessment of 684 clients in Bangalore in 2012, we examined factors associated with their reports of having sex with three or more different female sex workers in the last month, and anal sex with sex workers. We included sociodemographic and sexual behavior factors and, for the first time in client studies in India, included data on the use of pornography and sexual enhancement products (SEPs) such as pills, oils, and sprays, in our multivariable analyses of client risk. Seventy-eight percent of clients had seen pornographic material and 8 % reported ever having used SEPs. The profiles of men practicing the two risk behaviors examined were quite different. Travel in the past year, drunkenness in the past month, young age at first commercial sex, non-use of condoms at last sex, and finding sex workers in public places (but not use of pornography and SEPs) were independently associated with multiple partnering. Sex with a man or transsexual, being a white collar worker, seeking out FSWs at home, pornography and SEP use, and condom use at last FSW sex, were all independently associated with anal sex with an FSW. More research is needed to better understand the links between pornography and SEPs, and HIV risk behaviors, and HIV prevention programs need to be cognizant of the importance of ensuring that condom use is adequately promoted and supported in the context of anal sex in female sex worker-client interactions.

41. Thirumurthy, H., et al. "**Promoting male partner HIV testing and safer sexual decision making through secondary distribution of self-tests by HIV-negative female sex workers and women receiving antenatal and post-partum care in Kenya: a cohort study.**" *Lancet HIV* 2016 3(6): e266-74.

BACKGROUND: Increased uptake of HIV testing by men in sub-Saharan Africa is essential for the success of combination prevention. Self-testing is an emerging approach with high acceptability, but little evidence exists on the best strategies for test distribution. We assessed an approach of providing multiple self-tests to women at high risk of HIV acquisition to promote partner HIV testing and to facilitate safer sexual decision making.

METHODS: In this cohort study, HIV-negative women aged 18-39 years were recruited at two sites in Kisumu, Kenya: a health facility with antenatal and post-partum clinics and a drop-in centre for female sex workers. Participants gave informed consent and were instructed on use of oral fluid based rapid HIV tests. Participants enrolled at the health facility received three self-tests and those at the drop-in centre received five self-tests. Structured interviews were conducted with participants at enrolment and over 3 months to

determine how self-tests were used. Outcomes included the number of self-tests distributed by participants, the proportion of participants whose sexual partners used a self-test, couples testing, and sexual behaviour after self-testing.

FINDINGS: Between Jan 14, 2015, and March 13, 2015, 280 participants were enrolled (61 in antenatal care, 117 in post-partum care, and 102 female sex workers); follow-up interviews were completed for 265 (96%). Most participants with primary sexual partners distributed self-tests to partners: 53 (91%) of 58 participants in antenatal care, 91 (86%) of 106 in post-partum care, and 64 (75%) of 85 female sex workers. 82 (81%) of 101 female sex workers distributed more than one self-test to commercial sex clients. Among self-tests distributed to and used by primary sexual partners of participants, couples testing occurred in 27 (51%) of 53 in antenatal care, 62 (68%) of 91 from post-partum care, and 53 (83%) of 64 female sex workers. Among tests received by primary and non-primary sexual partners, two (4%) of 53 tests from participants in antenatal care, two (2%) of 91 in post-partum care, and 41 (14%) of 298 from female sex workers had positive results. Participants reported sexual intercourse with 235 (62%) of 380 sexual partners who tested HIV-negative, compared with eight (18%) of 45 who tested HIV-positive ($p < 0.0001$); condoms were used in all eight intercourse events after positive results compared with 104 (44%) after of negative results ($p < 0.0018$). Four participants reported intimate partner violence as a result of self-test distribution: two in the post-partum care group and two female sex workers. No other adverse events were reported.

INTERPRETATION: Provision of multiple HIV self-tests to women at high risk of HIV infection was successful in promoting HIV testing among their sexual partners and in facilitating safer sexual decisions. This novel strategy warrants further consideration as countries develop self-testing policies and programmes.

FUNDING: Bill & Melinda Gates Foundation.

42. 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.

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.

43. 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.

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.

44. Page, K., et al. "**Protocol of a cluster randomised stepped-wedge trial of behavioural interventions targeting amphetamine-type stimulant use and sexual risk among female entertainment and sex workers in Cambodia.**" *BMJ Open* 2016 6(5): e010854. Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4874136/pdf/bmjopen-2015-010854.pdf>

INTRODUCTION: HIV risk among female entertainment and sex workers (FESW) remains high and use of amphetamine-type stimulants (ATS) significantly increases this risk. We designed a cluster randomised stepped wedge trial (The Cambodia Integrated HIV and Drug Prevention Implementation (CIPI) study) to test sequentially delivered behavioural interventions targeting ATS use.

METHODS AND ANALYSIS: The trial combines a 12-week Conditional Cash Transfer (CCT) intervention with 4 weeks of cognitive-behavioural group aftercare (AC) among FESW who use ATS. The primary goal is to reduce ATS use and unprotected sex among FESW. The CCT+AC intervention is being implemented in 10 provinces where order of delivery was randomised. Outcome assessments (OEs) including biomarkers and self-reported measures of recent sexual and drug use behaviours are conducted prior to implementation, and at three 6-month intervals after completion. Consultation with multiple groups and stakeholders on implementation factors facilitated acceptance and operationalisation of the trial. Statistical power and sample size calculations were based on expected changes in ATS use and unprotected sex at the population level as well as within subjects.

ETHICS AND DISSEMINATION: Ethical approvals were granted by the Cambodia National Ethics Committee; University of New Mexico; University of California, San Francisco; and FHI360. The trial is registered with ClinicalTrials.gov. Dissemination of process indicators during the multiyear trial is carried out through annual in-country Stakeholder Meetings. Provincial 'Close-Out' forums are held at the conclusion of data collection in each province. When analysis is completed, dissemination meetings will be held in Cambodia with stakeholders, including community-based discussion sessions, policy briefs and results published and presented in the HIV prevention scientific journals and conferences.

CONCLUSIONS: CIPI is the first trial of an intervention to reduce ATS use and HIV risk among FESW in Cambodia.

RESULTS: Will inform both CCT+AC implementation in low and middle-income countries and programmes designed to reach FESW.

TRIAL REGISTRATION NUMBER: NCT01835574; Pre-results.

45. Patel, S. K., et al. "**Relationship between Community Collectivization and Financial Vulnerability of Female Sex Workers in Southern India.**" *PLoS One* 2016 11(5): e0156060. Online at: <http://journals.plos.org/plosone/article/asset?id=10.1371/journal.pone.0156060.PDF>

INTRODUCTION: Studies exploring the linkages between financial vulnerabilities and community collectivization of female sex workers (FSWs) are scarce in India despite having potential policy implications. To fill this gap in the literature, this study attempts to understand the financial vulnerabilities among FSWs and assess the relationship between community collectivization and financial vulnerabilities in southern India.

DATA AND METHODS: Data were drawn from a cross-sectional, behavioral tracking survey (BTS)-2014, conducted among FSWs (N = 2400) in Andhra Pradesh, a southern state of India under the Avahan-India AIDS initiative program. Adjusted odds ratios (AOR) and their 95% confidence intervals (CI) were estimated through multivariate logistic regression, to assess the independent relationships of the degree of community collectivization indicators with financial vulnerability indicators, adjusting for socio-demographic characteristics.

RESULTS: Most FSWs (87%) reported having either one or more financial vulnerability and nearly one-fifth

had a high financial vulnerability. The risk of facing financial vulnerability was significantly lower among FSWs with a high degree of perceived collective efficacy (15% vs 31%; AOR: 0.4; 95% CI: 0.3-0.5) and collective agency (4% vs 21%; AOR: 0.2; 95% CI: 0.1-0.3) as compared to their respective counterparts, after controlling for their individual socio-demographic characteristics. FSWs with a high degree of collective efficacy are also less likely to report different components of financial vulnerability (e.g. income, saving, expenditure, and debt).

CONCLUSION: This study finding suggests that community-led interventions such as improving collectivization are promising strategies to address financial vulnerabilities and a path to a sustainable reduction of HIV risk. This study calls for further evidence-based research and measurement of the effects of community-led approaches in addressing the financial vulnerabilities of the key population at risk for HIV.

46. Conroy, A. A., et al. **"Relationship Power and Sexual Violence Among HIV-Positive Women in Rural Uganda."** *AIDS Behav* 2016.

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.

47. Smolak, A., et al. **"Sex workers, condoms, and mobility among men in Uzbekistan: implications for HIV transmission."** *Int J STD AIDS* 2016 27(4): 268-72.

Uzbekistan has one of the fastest growing HIV epidemics in the world. In this study, men who reported mobility were compared to non-mobile men in regard to paying for sex and condom use during paid sex. The sample included 2333 men between the ages of 15 and 59 in Uzbekistan. Generalised linear models were used to assess the relationship between mobility, paid sex, and condom use while adjusting for possible confounders. Of the total sample, 103 (4.4%) reported engaging in paid sex and 43 (42%) reported using condoms while engaging in paid sex. Mobile men were found to have more than three times the odds of paid sex than non-mobile men (OR: 3.209; 95% CI: 2.481, 4.150; p < 0.001). Mobile men were not significantly different from non-mobile men in terms of condom use; however, unmarried men were found to have six times the odds of not using a condom when compared to married men during paid sex (OR: 6.411; 95% CI: 2.502, 16.425; p = 0.004). Only one of the men who reported paid sex also reported using a condom with their spouses at last intercourse. The findings contribute to understanding mobility and HIV risk, and have important implications for HIV prevention interventions.

48. Kohler, P. K., et al. **"Sexually transmitted infection screening uptake and knowledge of sexually transmitted infection symptoms among female sex workers participating in a community randomised trial in Peru."** *Int J STD AIDS* 2016 27(5): 402-10.

This study aims to evaluate condom use, sexually transmitted infection (STI) screening, and knowledge of STI symptoms among female sex workers in Peru associated with sex work venues and a community randomised trial of STI control. One component of the Peru PREVEN intervention conducted mobile-team outreach to female sex workers to reduce STIs and increase condom use and access to government clinics for STI screening and evaluation. Prevalence ratios were calculated using multivariate Poisson regression models

with robust standard errors, clustering by city. As-treated analyses were conducted to assess outcomes associated with reported exposure to the intervention. Care-seeking was more frequent in intervention communities, but differences were not statistically significant. Female sex workers reporting exposure to the intervention had a significantly higher likelihood of condom use, STI screening at public health clinics, and symptom recognition compared to those not exposed. Compared with street- or bar-based female sex workers, brothel-based female sex workers reported significantly higher rates of condom use with last client, recent screening exams for STIs, and HIV testing. Brothel-based female sex workers also more often reported knowledge of STIs and recognition of STI symptoms in women and in men. Interventions to promote STI detection and prevention among female sex workers in Peru should consider structural or regulatory factors related to sex work venues.

49. Jin, H., et al. "**Suboptimal HIV Testing Uptake Among Men Who Engage in Commercial Sex Work with Men in Asia.**" *LGBT Health* 2016.

PURPOSE: Men who have sex with men and are sex workers (MSMSW) are disproportionately affected by the growing and emerging HIV epidemic. As sex work and same-sex behavior are heavily stigmatized and often illegal in most Asian countries, HIV research focusing on MSMSW has been limited. The goal of this analysis is to examine HIV testing practices and identify correlates of HIV testing among MSMSW in Asia.

METHODS: The Asia Internet MSM Sex Survey, an online cross-sectional survey of 10,861 men who have sex with men (MSM), was conducted in 2010. Data on sociodemographic characteristics, HIV testing behaviors, and sexual behaviors were collected. Five hundred seventy-four HIV-negative/unknown respondents reported receiving payment for sex with men at least once in the past 6 months and were included for analysis. Multivariable logistic regression was conducted to identify independent correlates of HIV testing in the past year.

RESULTS: About half (48.6%) of the participants have been tested for HIV at least once within the past year, and 30.5% have never been tested. We also found that MSMSW participants who engaged in risky behaviors were less likely to be tested.

CONCLUSION: While one might expect a high HIV testing rate among MSMSW due to the risks associated with engaging in sex work, we found that HIV testing uptake is suboptimal among MSMSW in Asia. These results suggest that targeted HIV prevention and testing promotion among MSMSW are needed.

50. Lancaster, K. E., et al. "**Substance use and HIV infection awareness among HIV-infected female sex workers in Lilongwe, Malawi.**" *Int J Drug Policy* 2016 30: 124-31.

BACKGROUND: HIV diagnosis, the first step in HIV care and treatment engagement, may be inhibited by substance use among female sex workers (FSW). We assessed the relationship between alcohol and cannabis use and lack of HIV infection awareness among HIV-infected FSW in Lilongwe, Malawi.

METHODS: From July to September, 2014, 200 FSW aged ≥ 18 years were enrolled using venue-based sampling to examine substance use, HIV testing history, and serostatus ascertained by HIV rapid test. We used Poisson regression with robust variance estimates to estimate the associations of alcohol and cannabis use and lack of HIV infection awareness.

RESULTS: Of the 138 HIV-infected FSW, 20% were unaware of their HIV infection, with 70% not testing within 6 months prior. According to the Alcohol Use Disorder Identification Tests (AUDIT), 55% of FSW unaware of their HIV infection reported hazardous, harmful, or dependent alcohol consumption. We observed a dose-response relationship between alcohol use and lack of HIV infection awareness, with alcohol dependency significantly associated with lack of HIV infection awareness (adjusted prevalence ratio: 3.0, 95% CI: 1.3, 6.8). Current cannabis use was uncommon (26%) among unaware HIV-infected FSW and weakly associated with lack of HIV infection awareness adjusted prevalence ratio: 1.1, 95% CI: 0.5, 2.5).

CONCLUSION: Increased levels of alcohol use is associated with lack of HIV infection awareness among HIV-infected FSW in Malawi. Frequent, consistent HIV testing integrated with alcohol reduction strategies could improve the health and infection awareness of substance-using FSW.

51. Sileo, K. M., et al. **""Such Behaviors Are Not in My Home Village, I Got Them Here": A Qualitative Study of the Influence of Contextual Factors on Alcohol and HIV Risk Behaviors in a Fishing Community on Lake Victoria, Uganda.**" *AIDS Behav* 2016 20(3): 537-47.

In Uganda, elevated HIV prevalence in fishing communities along Lake Victoria have been attributed in part to heavy alcohol use, but qualitative research is needed to understand the contextual factors influencing alcohol and sexual risk. Eight focus group discussions were conducted (n = 50; 23 male, 27 female) in Gerenge, Uganda with five occupational groups: fishermen, fishmongers, alcohol-sellers, commercial sex workers, and restaurant owners. Data was analyzed using content analysis. Alcohol use was prevalent and said to influence risky sex. Sex-related alcohol expectancies and occupational factors influenced individuals to drink during sex and structural factors related to the built environment, economy, and policy were identified as key contributors to both alcohol use and sexual risk in general. The findings highlight alcohol reduction as an important component of HIV/AIDS prevention and suggest structural interventions should be prioritized in this context.

52. Liu, H., et al. **"Syphilis among middle-aged female sex workers in China: a three-site cross-sectional study."** *BMJ Open* 2016 6(5): e010420. Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4874114/pdf/bmjopen-2015-010420.pdf>

OBJECTIVES: This study addresses the lack of empirical studies about the epidemic of syphilis among middle-aged female sex workers (FSWs). The objectives of this study were to investigate prevalence of syphilis, and its potential risk factors among middle-aged FSWs in China.

DESIGN: A cross-sectional study with respondent-driven sampling (RDS).

SETTING: A multisite study conducted at three Chinese cities (Nanning, Hefei, and Qingdao) with different levels of sexually transmitted diseases in 2014.

PARTICIPANTS: 1245 middle-aged female sex workers who were over 35 years old (about 400 per study site).

MAIN OUTCOME MEASURES: Unprotected commercial sex, and syphilis and HIV infection were biologically tested and measured.

RESULTS: The RDS-adjusted prevalence of active syphilis was 17.3% in Hefei, 9.9% in Qingdao, and 5.4% in Nanning. The RDS-adjusted prevalence of prevalent syphilis was between 6.8% and 33.6% in the three cities. The proportion of unprotected sex in the past 48 h verified by the prostate-specific antigen test (PSA) was between 27.8% and 42.4%. Multiple log-binomial regression analyses indicate that middle-aged FSWs who had 5 or more clients in the past week prior to interviews and engaged in unprotected sex were more likely to be active syphilitic cases. Middle-aged FSWs who had rural residency were less likely to be active syphilitic cases.

CONCLUSIONS: In contrast with previous studies that reported low prevalence of syphilis and high prevalence of protected sex among FSWs in China, both the prevalence of syphilis and unprotected sex were high among middle-aged FSWs. Evidence-based intervention programmes should be developed and evaluated among this vulnerable population in China and other countries with similar settings.

53. Perez-Brumer, A. G., et al. **"Towards 'reflexive epidemiology': Conflation of cisgender male and transgender women sex workers and implications for global understandings of HIV prevalence."** *Glob Public Health* 2016: 1-17.

The HIV epidemic has had a widespread impact on global scientific and cultural discourses related to gender, sexuality, and identity. 'Male sex workers' have been identified as a 'key population' in the global HIV epidemic; however, there are methodological and conceptual challenges for defining inclusion and exclusion of transgender women within this group. To assess these potential implications, this study employs self-critique and reflection to grapple with the empiric and conceptual implications of shifting understandings of sexuality and gender within the externally re-created etic category of 'MSM' and 'transgender women' in epidemiologic HIV research. We conducted a sensitivity analysis of our previously published meta-analysis which aimed to identify the scope of peer-reviewed articles assessing HIV prevalence among male sex workers globally between 2004 and 2013. The inclusion of four studies previously excluded due to non-differentiation of cisgender male from transgender women participants (studies from Spain, Thailand, India, and Brazil: 421 total participants) increased the overall estimate of global HIV prevalence among 'men' who engage in sex work from 10.5% (95% CI 9.4-11.5%) to 10.8% (95% CI 9.8-11.8%). The combination of social science critique with empiric epidemiologic analysis represents a first step in defining and operationalising 'reflexive epidemiology'. Grounded in the context of sex work and HIV prevention, this paper highlights the multiplicity of genders and sexualities across a range of social and cultural settings, limitations of existing categories (i.e. 'MSM', 'transgender'), and their global implications for epidemiologic estimates of HIV prevalence.

54. 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.

OBJECTIVE: Sex workers 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 sex workers in sub-Saharan Africa, particularly within conflict-affected settings, we examined the relationship between structural determinants (e.g., war-related abduction, incarceration) and HIV infection among conflict-affected sex workers in Northern Uganda.

DESIGN: Cross-sectional community-based research study among female sex workers 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 2011-2012. HIV prevalence was calculated, and bivariable and multivariable logistic regression was used to identify independent associations with HIV seroprevalence.

RESULTS: Of 400 sex workers, 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 (AOR): 1.93, 95% Confidence Interval (CI): 1.17-3.20) was independently associated with HIV seroprevalence, and history of wartime abduction (AOR: 1.62, 95% CI: 1.00-2.63) was marginally associated (p=0.051).

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

55. Bowring, A. L., et al. **"We Might Get Some Free Beers": Experience and Motivation for Transactional Sex Among Behaviorally Bisexual Men in Vientiane, Laos."** *Arch Sex Behav* 2016.

People engaging in transactional sex are considered a key population for HIV prevention. Prior quantitative surveys demonstrated that behaviorally bisexual men in Vientiane, Laos commonly transact sex. In 2013, we

conducted a qualitative study to explore behaviorally bisexual men's experience, motivations, and perceptions related to transactional sex in Vientiane. Behaviorally bisexual men were recruited from bars, nightclubs, and dormitories for five focus group discussions (FGDs) and 11 in-depth interviews (n = 31). Additionally, young women were recruited from a university, garment factory, and nightclub for four FGDs (n = 22). Transcripts were translated and thematically coded. Bisexual male participants most commonly described being paid for sex by male-to-female transgender people and buying sex from women. Both male and female participants reported that older, single women pay younger men for sex. Negotiation and direction of sexual transactions are influenced by age, attraction, and wealth. Common motivations for selling sex included the need for money to support family or fund school fees, material gain, or physical pleasure. Transactional sex was often opportunistic. Some behaviorally bisexual men reported selling sex in order to pay another more desirable sex partner or to buy gifts for their regular sex partner. Participants perceived high risk associated with intercourse with female sex workers but not with other transactional sex partners. Health interventions are needed to improve knowledge, risk perception, and health behaviors, but must recognize the diversity of transactional sex in Vientiane. Both physical and virtual settings may be appropriate for reaching behaviorally bisexual men and their partners.

56. Fagbamigbe, A. F., et al. **"Women marital status and HIV prevalence in Nigeria: Ingredients for evidence-based programming."** *Int J Infect Dis* 2016. Online at: http://ac.els-cdn.com/S1201971216310451/1-s2.0-S1201971216310451-main.pdf?_tid=fc6061d6-29b8-11e6-85f2-00000aab0f6c&acdnat=1464978696_964e10797e1d9f0b81b61c6217911e9c

OBJECTIVE: To assess the influence of marital status and other correlates on HIV infection among women in Nigeria.

METHODS: Data were extracted from the 2012 Nigerian population-based HIV/AIDS and reproductive health survey. The survey determined the HIV status of consenting women using standard procedures. Data were weighted and analyzed using descriptive statistics and logistic regression at the 5% significance level.

RESULTS: HIV prevalence among currently married and never married women was 3.4%, but was 5.9% among formerly married women. The odds of HIV infection were found to be 1.8 times higher among formerly married women compared with currently married women (odds ratio (OR) 1.8, 95% confidence interval (CI) 1.3-2.5) and never married women (OR 1.8, 95% CI 1.2-2.6). Also, the odds of HIV infection were 1.5 times higher among women who had made their sexual debut before the age of 15 years (adjusted OR 1.5, 95% CI 1.1-2.1) compared with women who delayed it. The odds of HIV infection were 1.4 times higher among women who had recently had transactional sex (adjusted OR 1.4, 95% CI 1.1-2.0) compared with others.

CONCLUSION: Being formerly married, under 15 years of age at first sex, and having engaged in transactional sex were found to be the strongest HIV risk factors among women. Besides empowering formerly married women and providing better social security, these women should be targeted in HIV programming and policies.

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Transgender People - 21

1. Sabin, K., et al. **"Availability and Quality of Size Estimations of Female Sex Workers, Men Who Have Sex with Men, People Who Inject Drugs and Transgender Women in Low- and Middle-Income Countries."**

PLoS One 2016 11(5): e0155150. Online at:
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4862645/pdf/pone.0155150.pdf>

OBJECTIVE: To assess the availability and quality of population size estimations of female sex workers (FSW), men who have sex with men (MSM), people who inject drug (PWID) and transgender women.

METHODS: Size estimation data since 2010 were retrieved from global reporting databases, Global Fund grant application documents, and the peer-reviewed and grey literature. Overall quality and availability were assessed against a defined set of criteria, including estimation methods, geographic coverage, and extrapolation approaches. Estimates were compositely categorized into 'nationally adequate', 'nationally inadequate but locally adequate', 'documented but inadequate methods', 'undocumented or untimely' and 'no data.'

FINDINGS: Of 140 countries assessed, 41 did not report any estimates since 2010. Among 99 countries with at least one estimate, 38 were categorized as having nationally adequate estimates and 30 as having nationally inadequate but locally adequate estimates. Multiplier, capture-recapture, census and enumeration, and programmatic mapping were the most commonly used methods. Most countries relied on only one estimate for a given population while about half of all reports included national estimates. A variety of approaches were applied to extrapolate from sites-level numbers to national estimates in two-thirds of countries.

CONCLUSIONS: Size estimates for FSW, MSM, PWID and transgender women are increasingly available but quality varies widely. The different approaches present challenges for data use in design, implementation and evaluation of programs for these populations in half of the countries assessed. Guidance should be further developed to recommend: a) applying multiple estimation methods; b) estimating size for a minimum number of sites; and, c) documenting extrapolation approaches.

2. Shaw, S. Y., et al. "**Descriptive Epidemiology of Factors Associated with Human Immunodeficiency Virus Infections Among Men and Transgender Women Who Have Sex with Men in South India.**" *LGBT Health* 2016.

PURPOSE: Men and transgender women who have sex with men (MTWSM) continue to be an at-risk population for human immunodeficiency virus (HIV) infection in India. Identification of risk factors and determinants of HIV infection is urgently needed to inform prevention and intervention programming.

METHODS: Data were collected from cross-sectional biological and behavioral surveys from four districts in Karnataka, India. Multivariable logistic regression models were constructed to examine factors related to HIV infection. Sociodemographic, sexual history, sex work history, condom practices, and substance use covariates were included in regression models.

RESULTS: A total of 456 participants were included; HIV prevalence was 12.4%, with the highest prevalence (26%) among MTWSM from Bellary District. In bivariate analyses, district ($P = 0.002$), lack of a current regular female partner ($P = 0.022$), and reported consumption of an alcoholic drink in the last month ($P = 0.004$) were associated with HIV infection. In multivariable models, only alcohol use remained statistically significant (adjusted odds ratios: 2.6, 95% confidence intervals: 1.2-5.8; $P = 0.02$).

CONCLUSION: The prevalence of HIV continues to be high among MTWSM, with the highest prevalence found in Bellary district.

3. Mehrotra, M. L., et al. "**The Effect of Depressive Symptoms on Adherence to Daily Oral PrEP in Men who have Sex with Men and Transgender Women: A Marginal Structural Model Analysis of The iPrEx OLE Study.**" *AIDS Behav* 2016.

We assessed the role of depressive symptoms on adherence to daily oral FTC/TDF for HIV PrEP in cisgender

men who have sex with men (MSM) and transgender women who have sex with men (TGW) using data from the iPrEx OLE study. A marginal structural logistic regression model was used to estimate the effect of time-varying CES-D scores on having protective levels of drug concentration, adjusting for confounding by sexual practices over time, prior adherence, and baseline demographic characteristics. We found a non-monotonic relationship between CES-D score and odds of protective FTC/TDF levels in MSM. We found evidence that the effect of depression on adherence varied between MSM and TGW, and that depressive symptoms did not contribute greatly to decreased adherence on a population scale. We recommend that depressive symptoms not preclude the prescription of PrEP, and that MSM and TGW be studied separately.

4. Nemoto, T., et al. "**Examining the Sociocultural Context of HIV-related Risk Behaviors Among Kathoey (Male-to-female Transgender Women) Sex Workers in Bangkok, Thailand.**" *J Assoc Nurses AIDS Care* 2016 27(2): 153-65.

Kathoey (male-to-female transgender) sex workers (KSW) in Thailand are at high risk for sexually transmitted infections; however, few qualitative studies have been conducted to understand the sociocultural context of engaging in HIV risk behaviors. A total of 24 participants were purposively sampled in Bangkok based on KSW work venues and substance use. Results revealed the importance of participants' understanding of the self in relation to establishing economic independence through sex work, which could then be used to re-establish support from family, who often have not accepted a son's gender transition. Participants linked being kathoey to a belief in fate but did not view engagement in sex work in the same way. Different sex work venues exposed KSW to different risky situations. HIV prevention programs for kathoey must address the importance of economic security and its relation to social support and gender transition within a cultural- and work-environment-specific framework.

5. Bristow, C. C., et al. "**Field evaluation of a dual rapid diagnostic test for HIV infection and syphilis in Lima, Peru.**" *Sex Transm Infect* 2016 92(3): 182-5.

OBJECTIVES: Screening for HIV and syphilis in key populations is recommended by the WHO to reduce the morbidity, mortality and transmission associated with undiagnosed and untreated infections. Rapid point-of-care tests that can detect multiple infections with a single fingerprick whole blood specimen using a single device are gaining popularity. We evaluated the field performance of a rapid dual HIV and syphilis test in people at high risk of HIV and syphilis infections.

METHODS: Participants included men who have sex with men and transgender women recruited in Lima, Peru. Reference standard testing for detection of HIV and syphilis infections, conducted using blood samples from venipuncture, included *Treponema pallidum* particle agglutination and fourth-generation HIV enzyme immunoassay for which positive results had a confirmation HIV Western blot test. For the evaluation test, SD BIOLINE HIV/Syphilis Duo test (Standard Diagnostics, Korea), a fingerprick blood specimen was used. Sensitivity and specificity were calculated and the exact binomial method was used to determine 95% CIs.

RESULTS: A total of 415 participants were recruited for the study. The dual test sensitivity for detection of *T. pallidum* infection was 89.2% (95% CI 83.5% to 93.5%) and specificity 98.8% (95% CI 96.5% to 99.8%). For detection of HIV infection, the sensitivity of the dual test was 99.1% (95% CI 94.8% to 100%) and specificity 99.4% (95% CI 97.7% to 99.9%).

CONCLUSIONS: This high performing dual test should be considered for the use in clinical settings to increase uptake of simultaneous testing of HIV and syphilis and accelerate time to treatment for those who need it.

6. Hadikusumo, A. A., et al. "**High Rates of Hepatitis B, Hepatitis C and Human Immunodeficiency Virus (HBV, HCV, HIV) Infections and Their Uncommon HBV Genotype/Subtype and HCV Subtype Distributions among Transgender Individuals in Surabaya, Indonesia.**" *Jpn J Infect Dis* 2016.

Transgender people are at high risk of 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 a rapid epidemic growth of HIV. Because hepatitis C virus (HCV) can co-occur with HBV and HIV, it was also evaluated in this study. Ten of 107 individuals (9.3%) were Hepatitis B surface antigen (HBsAg) positive and/or HBV DNA positive, whereas nineteen of 101 individuals (18.8%) with negative HBsAg were Hepatitis B core antibody (anti-HBc)-positive. Seven of 107 individuals (6.5%) were anti-HCV positive, and sixteen of 100 tested samples (16%) were HIV positive. Genotype and subtype analyses of all ten HBV DNA (six HBsAg positive and four anti-HBc positive) strains showed that three were HBV genotype/HBsAg subtype C/adrq+, one was C/adw2, and five were B/adw2. The HCV subtype distribution showed that 33.3% were HCV-1b, and 66.7% were HCV-3k (n=6). These distributions differed from those found in the general population of Surabaya, Indonesia. The HIV subtype analysis showed that, interestingly, a high prevalence of HIV, with possible recombinants of CRF01_AE and subtype B, were found.

7. Barrington, C., et al. **"HIV and work don't go together': Employment as a social determinant of HIV outcomes among men who have sex with men and transgender women in the Dominican Republic."** *Glob Public Health* 2016: 1-16.

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

8. Weissman, A., et al. **"HIV Prevalence and Risks Associated with HIV Infection among Transgender Individuals in Cambodia."** *PLoS One* 2016 11(4): e0152906. Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4829243/pdf/pone.0152906.pdf>

INTRODUCTION: Recognizing transgender individuals have a high risk of HIV acquisition, and to inform policies and programming, we conducted an HIV prevalence and risk behaviors survey among transgender individuals in Cambodia.

METHODS: Cross-sectional survey using a respondent driven sampling method with self-administered audio-computer assisted interviews. HIV testing was performed prior to the questionnaire with results available immediately after. Eligible participants were ≥ 18 years, identified as male at birth and self-identified/expressed as a different gender, and reported having sex with at least one male partner in past year. From six major urban centers of Cambodia, 891 transgender individuals were recruited.

RESULTS: The majority of the 891 participants self-identified as third gender or female (94.5%), were young (median age 23, IQR [20-27]), had secondary education or higher (80.5%), not married (89.7%), and employed (90.2%). The majority had first sex before 18 years (66.8%), with a male (79.9%), 37.9% having been paid or paying for this first sex. The rate of HIV positivity among participants was found to be 4.15%. Consistent condom use with male and female partners was low with all partner types, but particularly low with male partners when paying for sex (20.3%). The majority of participants reported having experienced discrimination in their lifetime (54.8%) and 30.3% had been assaulted. Multivariate analysis revealed that older age (adjusted OR = 14.73 [4.20, 51.67] for age 35-44 and adjusted OR = 7.63 [2.55, 22.81] for age 30-34), only having a primary school education or no schooling at all (adjusted OR = 2.62 [1.18, 5.80]), being a

resident of Siem Reap (adjusted OR = 7.44 [2.37,23.29], receiving payment at first sex (adjusted OR = 2.26 [1.00, 5.11], having sex during/after using drugs (adjusted OR = 2.90 [1.09,7.73]), inconsistent condom use during last anal sex (adjusted OR = 3.84 [1.58, 9.33]), and reporting low self-esteem (adjusted OR = 3.25 [1.35,7.85]) were independently associated with HIV infection.

CONCLUSIONS: This study confirms transgender individuals as one of the highest-risk groups for HIV infection in Cambodia. It suggests the need for programmatic strategies that mitigate identified associated risks and facilitate access to HIV care for this population.

9. Sevelius, J. M., et al. **"I am not a man': Trans-specific barriers and facilitators to PrEP acceptability among transgender women."** *Glob Public Health* 2016: 1-16.

The frequent conflation of transgender ('trans') women with 'men who have sex with men (MSM)' in HIV prevention obscures trans women's unique gender identities, social and behavioural vulnerabilities, and their disproportionately high rates of HIV infection. Pre-exposure prophylaxis (PrEP) is an efficacious biomedical HIV prevention approach. However, trans women are underrepresented in PrEP research, and are often aggregated with MSM without consideration for their unique positions within sociocultural contexts. This study examined PrEP acceptability among trans women via three focus groups and nine individual interviews (total N = 30) in San Francisco. While knowledge of PrEP was low, interest was relatively high once participants were informed. Due to past negative healthcare experiences, ability to obtain PrEP from a trans-competent provider was cited as essential to PrEP uptake and adherence. Participants noted that PrEP could address situations in which trans women experience reduced power to negotiate safer sex, including sex work. Trans-specific barriers included lack of trans-inclusive marketing of PrEP, prioritisation of hormone use, and medical mistrust due to transphobia. Findings underscore the importance of disaggregating trans women from MSM in HIV prevention strategies to mitigate disparate risk among this highly vulnerable population.

10. Ramos-Pibernus, A. G., et al. **"Intersections and evolution of 'Butch-trans' categories in Puerto Rico: Needs and barriers of an invisible population."** *Glob Public Health* 2016: 1-15.

Public health research among transgender populations globally has primarily focused on HIV/AIDS. However, trans men remain outside of this conceptual framework, with distinct but overlapping social contexts and needs. In Puerto Rico (PR), the trans men population has remained largely hidden within the 'butch' lesbian community. The objective of this article is to document the identity construction of trans men and 'buchas' (local term to refer to butch lesbians) in PR and its relation to their bodily practices and overall health. We conducted an exploratory qualitative study with 29 trans men and buchas based on ethnographic observation, focus groups, audio-recorded in-depth interviews, and critical discourse analysis. Findings emphasise two domains to be addressed by health policies and initiatives: (1) bodily representations and gender performance, and (2) the meanings of female biological processes. This small-scale ethnographic study represents an initial step towards understanding the social context of this 'invisible' community and significant implications for their health and well-being. We provide several recommendations to address public health concerns of this understudied, marginalised community.

11. Muller, A., et al. **"Making the invisible visible: a systematic review of sexual minority women's health in Southern Africa."** *BMC Public Health* 2016 16(1): 307. Online at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4827176/pdf/12889_2016_Article_2980.pdf

BACKGROUND: Over the past two decades research on sexual and gender minority (lesbian, gay, bisexual and transgender; LGBT) health has highlighted substantial health disparities based on sexual orientation and gender identity in many parts of the world. We systematically reviewed the literature on sexual minority women's (SMW) health in Southern Africa, with the objective of identifying existing evidence and pointing out knowledge gaps around the health of this vulnerable group in this region.

METHODS: A systematic review of publications in English, French, Portuguese or German, indexed in

PubMed or MEDLINE between the years 2000 and 2015, following PRISMA guidelines. Additional studies were identified by searching bibliographies of identified studies. Search terms included (Lesbian OR bisexual OR "women who have sex with women"), (HIV OR depression OR "substance use" OR "substance abuse" OR "mental health" OR suicide OR anxiety OR cancer), and geographical specification. All empirical studies that used quantitative or qualitative methods, which contributed to evidence for SMW's health in one, a few or all of the countries, were included. Theoretical and review articles were excluded. Data were extracted independently by 2 researchers using predefined data fields, which included a risk of bias/quality assessment.

RESULTS: Of 315 hits, 9 articles were selected for review and a further 6 were identified through bibliography searches. Most studies were conducted with small sample sizes in South Africa and focused on sexual health. SMW included in the studies were racially and socio-economically heterogeneous. Studies focused predominately on young populations, and highlighted substance use and violence as key health issues for SMW in Southern Africa.

CONCLUSIONS: Although there are large gaps in the literature, the review highlighted substantial sexual-orientation-related health disparities among women in Southern Africa. The findings have important implications for public health policy and research, highlighting the lack of population-level evidence on the one hand, and the impact of criminalizing laws around homosexuality on the other hand.

12. Kaewpoowat, Q., et al. **"Overview of the University of Pittsburgh/amfAR Training Program in HIV Prevention Research for MSM and Male-to-Female Transgender Populations in Low- and Middle-Income Countries."** *PLoS One* 2016. Online at: <http://journals.plos.org/plosone/article/asset?id=10.1371/journal.pone.0156280.PDF>

Gay men, other men who have sex with men and transgender (GMT) populations suffer a disproportionate burden of HIV disease around the globe, which is directly attributable to the virulently homophobic environments in which many GMT people live. In addition to the direct effects of homophobia on GMT individuals, the ongoing marginalization of GMT people has meant that there is limited social capital on which effective HIV prevention and care programs can be built in many low- and middle-income countries (LMIC). Thus, meaningful responses meant to address the dire situation of GMT populations in LMIC settings must include a combination of bold and innovative approaches if efforts to end the epidemic are to have any chance of making a real difference. The HIV Scholars Program at the University of Pittsburgh's Center for LGBT Health Research is a prime example of a creative and dynamic approach to raising the expertise needed within GMT populations to respond to the global HIV/AIDS pandemic.

13. 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.

The HIV epidemic in Peru is concentrated in men who have sex with men and transgender women, 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, taking antiretroviral therapy, 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 antiretroviral therapy, 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.

14. Wilson, E. C., et al. **"PrEP adherence among trans women in Brazil-access needed for this key population."** *Lancet HIV* 2016 3(5): e200.

15. Sevelius, J., et al. "**PrEP adherence among trans women in Brazil-access needed for this key population - Authors' reply.**" *Lancet HIV* 2016 3(5): e200-1.
16. Yang, X., et al. "**Quality of Life of Transgender Women From China and Associated Factors: A Cross-Sectional Study.**" *J Sex Med* 2016 13(6): 977-87.

INTRODUCTION: Transgender women are exposed to stressful situations such as gender transition and transition-related discrimination because of their limited acceptance by the general population and inadequate government-supplied resources, which can compromise their quality of life (QOL). However, there is a paucity of research on the QOL of transgender women from China. AIMS: To assess the QOL of transgender women from China and explore its associated factors.

METHODS: A cross-sectional study was performed by convenience sampling in Shenyang, China from January 2014 to July 2014. This sample consisted of 209 transgender women. The women were interviewed face-to-face to assess their QOL and related factors using the 36-item Short-Form Health Survey, the Adult Dispositional (Trait) Hope Scale, and the EGO Resilience Scale.

MAIN OUTCOME MEASURES: Response scores were calculated based on a questionnaire design. Hierarchical multiple regression analysis was performed to explore factors associated with QOL.

RESULTS: Transgender women who used hormone therapy reported significantly lower levels of the physical component summary (PCS) and the mental component summary (MCS) compared with those who did not ($P < .05$). Hierarchical multiple regression analysis showed that of the 23 independent variables, 8 were significantly associated with the PCS and 9 were significantly associated with the MCS. The PCS was significantly and negatively associated with age and being chased or insulted by law enforcement officials. The PCS was positively associated with not using hormone therapy, having no casual partners, less discrimination from friends, knowledge of HIV prevention, hope, and resilience. Educational level and being chased or insulted by law enforcement officials were negatively associated with the MCS, whereas not using hormone therapy, having no regular partners or casual partners, less discrimination from friends, less social discrimination, knowledge of HIV prevention, and hope were positively associated with the MCS.

CONCLUSION: Chinese transgender women reported high levels of physical QOL but low levels of mental QOL. Their mental QOL was more pronounced than their physical QOL. Transition status and sexual partnership played the most important roles in physical and mental health. Furthermore, mental QOL was best predicted by assessing positive capabilities, such as levels of hope. Future interventions should focus on recognizing transition status and identifying risky sexual partnerships, especially for the casual partners involved in these partnerships. In addition, positive capabilities are needed to ameliorate the negative impact of transition on QOL in Chinese transgender women.

17. Perez-Brumer, A. G., et al. "**Towards 'reflexive epidemiology': Conflation of cisgender male and transgender women sex workers and implications for global understandings of HIV prevalence.**" *Glob Public Health* 2016: 1-17.

The HIV epidemic has had a widespread impact on global scientific and cultural discourses related to gender, sexuality, and identity. 'Male sex workers' have been identified as a 'key population' in the global HIV epidemic; however, there are methodological and conceptual challenges for defining inclusion and exclusion of transgender women within this group. To assess these potential implications, this study employs self-critique and reflection to grapple with the empiric and conceptual implications of shifting understandings of sexuality and gender within the externally re-created etic category of 'MSM' and 'transgender women' in epidemiologic HIV research. We conducted a sensitivity analysis of our previously published meta-analysis which aimed to identify the scope of peer-reviewed articles assessing HIV prevalence among male sex workers globally between 2004 and 2013. The inclusion of four studies previously excluded due to non-differentiation of cisgender male from transgender women participants (studies from Spain, Thailand, India,

and Brazil: 421 total participants) increased the overall estimate of global HIV prevalence among 'men' who engage in sex work from 10.5% (95% CI 9.4-11.5%) to 10.8% (95% CI 9.8-11.8%). The combination of social science critique with empiric epidemiologic analysis represents a first step in defining and operationalising 'reflexive epidemiology'. Grounded in the context of sex work and HIV prevention, this paper highlights the multiplicity of genders and sexualities across a range of social and cultural settings, limitations of existing categories (i.e. 'MSM', 'transgender'), and their global implications for epidemiologic estimates of HIV prevalence.

18. Zhang, Y., et al. "**Transgender sexual health in China: a cross-sectional online survey in China.**" *Sex Transm Infect* 2016.

OBJECTIVE: Transgender individuals are at increased risk for HIV infection around the world, yet few studies have focused on transgender individuals in China. We conducted an online cross-sectional survey of men who have sex with men (MSM) and transgender individuals to examine sociodemographics, intimate partner violence (IPV) and sexual behaviours in China.

METHODS: We recruited participants (born biologically male, ≥ 16 years old, ever engaged in anal sex with men and agreed to provide cell phone number) from three web platforms in 2014. Data on sociodemographics, IPV and sexual behaviours were collected. Logistic regressions were performed to compare the differences between transgender individuals and non-transgender MSM.

RESULTS: Overall, 1424 eligible participants completed our online survey. Of these participants, 61 (4.3%) were transgender individuals, including 28 (2.0%) identifying as women and 33 (2.3%) identifying as transgender. Compared with MSM, transgender individuals were more likely to have experienced IPV and sexual violence (economic abuse, physical abuse, threat to harm loved ones, threat to 'out', forced sex). In addition, transgender individuals were more likely to have engaged in commercial sex (21.3% vs 5.1%, aOR 4.80, 95% CI 2.43 to 9.51) and group sex (26.2% vs 9.2%, aOR 3.47, 95% CI 1.58 to 6.48) in the last 12 months.

CONCLUSIONS: Our study is consistent with the emerging literature demonstrating increased sexual risk behaviours and high levels of IPV among transgender individuals. Future research should further investigate transgender individuals' experiences of IPV and explore ways to promote disclosure of gender identity to healthcare providers. Furthermore, transgender research in China should be expanded independently of MSM research.

19. Parker, R., et al. "**The trouble with 'Categories': Rethinking men who have sex with men, transgender and their equivalents in HIV prevention and health promotion.**" *Glob Public Health* 2016: 1-5.

This double Special Issue of Global Public Health presents a collection of articles that seek more adequately to represent sexual and gender diversities and to begin to rethink the relationship to HIV prevention and health promotion - in both the resource rich nations of the global North, as well as in the more resource constrained nations of the global South. Reckoning with the reality that today the global response to HIV has failed to respond to the needs of gay, bisexual and other men who have sex with men, and transgender persons, we turn our attention to processes and practices of categorisation and classification, and the entanglement of the multiple social worlds that constitute our understanding of each of these categories and people within the categories. Jointly, these articles provide critical perspectives on how defining and redefining categories may impact the conceptual frameworks and empirical evidence that inform global understandings of HIV infection, those communities most vulnerable, and our collective response to the evolving HIV epidemic.

20. Oyewale, T. O., et al. "**The use of vouchers in HIV prevention, referral treatment, and care for young MSM and young transgender people in Dhaka, Bangladesh: experience from 'HIM' initiative.**" *Curr Opin HIV AIDS* 2016 11(1 Suppl 1): S37-45.

INTRODUCTION: The study described the effectiveness of a voucher scheme to access sexual and

reproductive health and HIV services among young MSM and transgender people aged 15-24 years in Dhaka, Bangladesh, a country with HIV prevalence of less than 0.1%.

METHODS: Descriptive and analytical methods were used to assess the net effects of biodemographic factors of the respondents on the voucher scheme. Effectiveness of the scheme was contextualized as target population coverage, and turnaround time of voucher redemption to access services.

RESULTS AND DISCUSSION: A total of 210 (87.9%) out of the 239 vouchers distributed were redeemed. The mean age of the identified young people was 19.6 years (SD = +2.6 years). The coverage of the scheme against the target population of 200 young MSM and 936 young transgender people was 88% (n = 175) and 4% (n = 35) respectively, with $P < 0.001$. The median turnaround time for voucher redemption was 7 days. The predictors of voucher turnaround time were age, education, and population group ($P < 0.001$). HIV testing and counselling was accessed by 160 (76%) respondents, one was positive and linked to antiretroviral treatment and 110 (52%) were diagnosed and treated for sexually transmitted infections.

CONCLUSION: The voucher scheme was effective in linking young MSM with sexual and reproductive health and HIV services in Dhaka, Bangladesh. The findings are consistent with the low HIV prevalence in the country. The scheme is, however, not optimal for linking young transgender people with services.

21. Pollock, L., et al. **"You should build yourself up as a whole product': Transgender female identity in Lima, Peru."** *Glob Public Health* 2016: 1-13.

Transgender women in Lima, Peru have, until recently, been grouped together with gay and bisexual men in the category MSM, or men who have sex with men, with little consideration of their unique situation and needs. Transgender women, self-identified in Peru as travesti, are a socially vulnerable population with many unmet health needs, including an HIV prevalence of 30%. Understanding specific transgender identities and their contexts will contribute to the improvement and development of HIV prevention programs. Through qualitative open-ended interviews with trans-identified women in Lima, Peru, this study found that the non-normative travesti identity is constructed within a conservative homophobic and heteronormative social context. Participants strive towards appearances and relationships perceived as feminine, seeking out silicone injections and abusive men as social markers of this femininity. Sex work is the primary economic activity available and travestis are often alienated from their families and communities. Work is needed to increase self-esteem and decrease violence, stigma, and discrimination. There is a need for multilevel HIV prevention campaigns prioritising travesti in Lima, utilising a human rights framework.

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Young Key Populations - 9

1. Folayan, M. O., et al. **"Associations between Forced Sexual Initiation, HIV Status, Sexual Risk Behavior, Life Stressors, and Coping Strategies among Adolescents in Nigeria."** *PLoS One* 2016 11(5): e0155210. Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4862679/pdf/pone.0155210.pdf>

OBJECTIVES: Some individuals experience their first sexual intercourse through physically forced sex, which affects the way they experience and cope with stress. We examined differences in sexual risk behavior, experience of stressors, and use of stress-coping strategies among adolescents in Nigeria based on their history of forced sexual initiation and HIV status.

METHODS: We analyzed data from 436 sexually active 10-19-year-old adolescents recruited through a population-based survey from 12 Nigerian states. Using Lazarus and Folkman's conceptual framework of

stress and coping, we assessed if adolescents who reported forced sexual initiation were more likely to report HIV sexual risk practices, to report as stressors events related to social expectations, medical care and body images, and loss and grief, and to use more avoidance than adaptive coping strategies to manage stress. We also assessed if HIV status affected experience of stressors and use of coping strategies.

RESULTS: Eighty-one adolescents (18.6%) reported a history of forced sexual initiation; these participants were significantly more likely to report anal sex practices (OR: 5.04; 95% CI: 2.14-11.87), and transactional sex (OR: 2.80; 95% CI: 1.56-4.95). Adolescents with no history of forced sexual initiation were more likely to identify as stressors, life events related to social expectations (OR: 1.03; 95% CI: 0.96-1.11) and loss and grief (OR: 1.34; 95% CI: 0.73-2.65), but not those related to medical care and body images (OR: 0.63; 95% CI: 0.34-1.18). They were also more likely to use adaptive responses (OR: 1.48; 95% CI: 0.62-3.50) than avoidance responses (OR: 0.90; 95% CI: 0.49-1.64) to cope with stress, though these differences were not significant. More adolescents with a history of forced sexual initiation who were HIV positive identified as stressors, life events related to medical care and body images ($p = 0.03$) and loss and grief ($p = 0.009$). Adolescents reporting forced sexual initiation and HIV-negative status were significantly less likely to use religion as a coping strategy (OR: 0.28; 95% CI: 0.09-0.83).

CONCLUSION: History of forced sexual initiation and HIV status affected perception of events as stressors and use of specific coping strategies. Our study findings could inform best practice interventions and policies to prevent and address forced sexual initiation among adolescents in Nigeria and other countries.

2. Parcesepe, A. M., et al. "**Early sex work initiation and condom use among alcohol-using female sex workers in Mombasa, Kenya: a cross-sectional analysis.**" *Sex Transm Infect* 2016.

OBJECTIVES: Early initiation of sex work is prevalent among female sex workers (FSWs) worldwide. The objectives of this study were to investigate if early initiation of sex work was associated with: (1) consistent condom use, (2) condom negotiation self-efficacy or (3) condom use norms among alcohol-using FSWs in Mombasa, Kenya.

METHODS: In-person interviews were conducted with 816 FSWs in Mombasa, Kenya. Sample participants were: recruited from HIV prevention drop-in centres, 18 years or older and moderate risk drinkers. Early initiation was defined as first engaging in sex work at 17 years or younger. Logistic regression modelled outcomes as a function of early initiation, adjusting for drop-in centre, years in sex work, supporting others and HIV status.

RESULTS: FSWs who initiated sex work early were significantly less likely to report consistent condom use with paying sex partners compared with those who initiated sex work in adulthood. There was no significant difference between groups in consistent condom use with non-paying sex partners. FSWs who initiated sex work early endorsed less condom negotiation self-efficacy with paying sex partners compared with FSWs who did not initiate sex work early.

CONCLUSIONS: Findings highlight a need for early intervention for at-risk youth and adolescent FSWs, particularly in relation to HIV sexual risk behaviours. Evidence-based interventions for adolescent FSWs or adult FSWs who began sex work in adolescence should be developed, implemented and evaluated.

3. Brody, C., et al. "**Factors associated with sex work among at-risk female youth in Cambodia: a cross-sectional study.**" *AIDS Care* 2016 28(3): 339-46.

In Cambodia, despite great achievements in reducing the prevalence of HIV in the general population, reducing new HIV infections among young at-risk women remains a challenge. This study was designed to examine the prevalence of risky behaviors of sexually active female youth in Cambodia and to explore risk factors associated with engagement in transactional sex. We surveyed sexually active female youth aged 10-24 enrolled at risk "hotspots" in eight provinces in Cambodia. We collected data on demographic factors, sexual behavior, and factors hypothesized to be associated with transactional sex. Multivariable logistic

regression was used to identify associations between demographic and sexual behavior and transactional sex. Of the 280 respondents, the mean age was 21.2, and 48.1% had been paid for sex in the past year. After adjustment, at-risk females who were never have been married (adjusted odds ratio (AOR) 3.40, 95% confidence interval (CI) = 1.65-6.97), have completed less than 6 years of school (AOR 3.26, 95% CI = 1.60-6.66), have 1 or more parents who had died (AOR 4.34, 95% CI = 2.00-9.38), be a heavy alcohol drinker (AOR 3.58, 95% CI = 1.78-7.18), have used a condom with their boyfriend during last sexual encounter (AOR 3.50, 95% CI = 1.68-7.32), and have ever had an HIV test (AOR 3.51, 95% CI = 1.68-7.32) were more likely to engage in sex work. Our findings suggest that prevention strategies for female youth at risk of engagement in sex work should include upstream structural interventions that aim to encourage girls' education and empowerment. In addition, tailored sex education and behavior change messaging about the risks of heavy drinking, condom use with romantic partners, and the importance of frequent HIV testing for at-risk youth and sex workers should be designed and delivered to youth currently engaging in sex work.

4. Dayton, R., et al. **"How can we better serve adolescent key populations? Strategies to encourage and inform future data collection, analysis, and use."** *Glob Public Health* 2016: 1-13.

Young key populations (ages 10-24) (YKPs) are uniquely vulnerable to HIV infection. Yet they are often underserved, due in part to a limited understanding of their needs. Many successful approaches to understanding YKPs exist but are not widely used. To identify the most useful approaches and encourage their uptake, we reviewed strategic information on YKPs and experiences collecting, analysing, and utilising it from countries in Africa, Asia, and Central and Eastern Europe. As a result, we recommend one central guiding principle - any effort to understand and serve YKPs should include a specific focus on adolescent key populations (AKPs) (ages 10-19) - and three strategies to inform data collection, analysis, and use: tailor recruitment practices to ensure young people's representation, select indicators and research methods based on their ability to inform responsive programming for and give a voice to YKPs, and thoroughly disaggregate data. We demonstrate the utility of each strategy in YKP research and programmes, and in doing so note the particular importance for AKPs. We hope that this paper encourages additional research on YKPs and helps bridge the gap between research and effective programmes to serve the youngest and most vulnerable members of key populations.

5. de Lind van Wijngaarden, J. W., et al. **"Identity management and sense of belonging to gay community among young rural Thai same-sex attracted men: implications for HIV prevention and treatment."** *Cult Health Sex* 2016 18(4): 377-90.

Young Thai men who have sex with men continue to have high HIV prevalence and incidence in spite of much investment in community-based prevention approaches. To make HIV services more appropriate for same-sex attracted young men in Thailand, it needs to be considered how target groups view themselves and manage their identities. This paper derives from a qualitative study of 25 same-sex attracted rural young Thai men. It identifies five tactics men employed to manage the discrepancy between their preferences and parental/societal expectations regarding gender and sexuality, and discusses how the young men viewed themselves in the wider context of Thai society, including whether they felt part of a separate gay community. Participants usually did not adopt a gay social identity and were reluctant to join in gay community activities beyond dating. Hence, they would likely experience barriers in accessing gay community-based HIV services. HIV services targeting young same-sex attracted Thai men need to be diversified if they are to be more inclusive, appropriate and effective.

6. Myers, B., et al. **"Not on the agenda": A qualitative study of influences on health services use among poor young women who use drugs in Cape Town, South Africa."** *Int J Drug Policy* 2016 30: 52-8.

BACKGROUND: Poor young women who use alcohol and other drugs (AODs) in Cape Town, South Africa, need access to health services to prevent HIV. Efforts to link young women to services are hampered by limited information on what influences service initiation. We explored perceptions of factors that influence poor AOD-using young women's use of health services.

METHODS: We conducted four focus groups with young women (aged 16-21) who used AODs and were recruited from two township communities in Cape Town. We also conducted 14 in-depth interviews with health and social welfare service planners and providers. Discussion topics included young women's use of health services and perceived influences on service use. Qualitative data were analysed using a framework approach.

RESULTS: The findings highlighted structural, contextual, and systemic influences on the use of health services by young women who use AODs. First, young women were absent from the health agenda, which had an impact on the provision of women-specific services. Resource constraints and gender inequality were thought to contribute to this absence. Second, gender inequality and stigma toward young women who used AODs led to their social exclusion from education and employment opportunities and health care. Third, community poverty resulted in the emergence of perverse social capital and social disorder that limited social support for treatment. Fourth, the health care system was unresponsive to the multiple service needs of these young women.

CONCLUSION: To reach young women who use AODs, interventions need to take cognisance of young women's risk environment and health systems need to adapt to respond better to their needs. For these interventions to be effective, gender must be placed on the policy agenda.

7. Swahn, M. H., et al. "**Prevalence of HIV and Associated Risks of Sex Work among Youth in the Slums of Kampala.**" *AIDS Res Treat* 2016 2016: 5360180. Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4864562/pdf/ART2016-5360180.pdf>

PURPOSE: The purpose of this study is to examine the prevalence of and risk factors for engaging in sex work among youth living in Kampala, Uganda.

METHODS: Analyses are based on a cross-sectional study (N = 1,134) of youth aged 12-18 years, living in the slums of Kampala, conducted in Spring of 2014. The analytic sample consisted of only sexually active youth (n = 590). Youth who reported engaging in sex work were compared to youth who did not report sex work. Multivariable analyses were conducted to examine factors associated with sex work.

RESULTS: Among the youth who had ever had sexual intercourse (n = 590), 13.7% (n = 81) reported engaging in sex work. Self-reported HIV prevalence was 13.9% among the total sample (n = 81) and 22.5% (n = 18) among youth engaged in sex work. Engaging in sex work was associated with being female (AOR 10.4; 95% CI: 3.9, 27.4), being an orphan (AOR 3.8; 95% CI: 1.7, 8.4), ever drinking alcohol (AOR 8.3; 95% CI 3.7, 19.0), and experiencing any rape (AOR 5.3; 95% CI: 2.9, 9.5).

DISCUSSION: The reported prevalence of sex work is high among youth in the slums of Kampala and is associated with high HIV prevalence, ever drinking alcohol, previously being raped, and being an orphan.

8. Thepthien, B., et al. "**Substance abuse in early adolescents and HIV preventive behaviors: findings from a school-based cross-sectional survey for the period from 2009 to 2013, Bangkok Thailand.**" *AIDS Care* 2016: 1-5.

This study is first of its kind in Bangkok, and is a five-year (2009-2013) cross-sectional web-based survey to examine HIV preventive behaviors related to substance abuse among adolescents (N = 16,913). The questionnaire was self-administered. Logistic regression was used to analyze the data. The relationship between different types of substance abuse with risky and preventive behaviors was assessed. Male participants reported more substance abuse as compared to females. The risk behaviors observed among the substance abusers include increased sexual experience, multiple sex partners, no use of condoms, and injection drug use. The preventive behaviors include having a high self-risk assessment, going for HIV testing (highest in methamphetamine users), and screening for sexually transmitted infection. Logistic regression suggests that risky behaviors (e.g., sexual experience, injection drug use) are more common in substance abusers. Adolescents are clearly at a high risk. Behavioral preventive measures are needed to reduce or delay

premature substance exposure to prevent a wide range of health problems and risks such as HIV and AIDS, injection drug use and unprotected sex.

9. Oyewale, T. O., et al. "**The use of vouchers in HIV prevention, referral treatment, and care for young MSM and young transgender people in Dhaka, Bangladesh: experience from 'HIM' initiative.**" *Curr Opin HIV AIDS* 2016 11(1 Suppl 1): S37-45.

INTRODUCTION: The study described the effectiveness of a voucher scheme to access sexual and reproductive health and HIV services among young MSM and transgender people aged 15-24 years in Dhaka, Bangladesh, a country with HIV prevalence of less than 0.1%.

METHODS: Descriptive and analytical methods were used to assess the net effects of biodemographic factors of the respondents on the voucher scheme. Effectiveness of the scheme was contextualized as target population coverage, and turnaround time of voucher redemption to access services.

RESULTS AND DISCUSSION: A total of 210 (87.9%) out of the 239 vouchers distributed were redeemed. The mean age of the identified young people was 19.6 years (SD = +2.6 years). The coverage of the scheme against the target population of 200 young MSM and 936 young transgender people was 88% (n = 175) and 4% (n = 35) respectively, with $P < 0.001$. The median turnaround time for voucher redemption was 7 days. The predictors of voucher turnaround time were age, education, and population group ($P < 0.001$). HIV testing and counselling was accessed by 160 (76%) respondents, one was positive and linked to antiretroviral treatment and 110 (52%) were diagnosed and treated for sexually transmitted infections.

CONCLUSION: The voucher scheme was effective in linking young MSM with sexual and reproductive health and HIV services in Dhaka, Bangladesh. The findings are consistent with the low HIV prevalence in the country. The scheme is, however, not optimal for linking young transgender people with services.

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