



Quarterly Research Digest on HIV and Key Populations

June 2015

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 (men who have sex with men, people who inject drugs, sex workers, transgender people, and young key populations). This quarterly digest includes articles published between March 1, 2015 and June 1, 2015. For open access articles, we've included the link to the full text.

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Key Populations General - 11

1. Adebajo, S., et al. (2015). "**Evaluating the effect of HIV prevention strategies on uptake of HIV counselling and testing among male most-at-risk-populations in Nigeria; a cross-sectional analysis.**" [Sex Transm Infect.](#)

OBJECTIVE: The aim of this study was to evaluate the effects of three strategies in increasing uptake of HIV counselling and testing (HCT) among male most-at-risk-population (M-MARPs) using programmatic data. DESIGN: HIV prevention strategies were evaluated in a cross-sectional analysis. METHODS: Three HCT strategies were implemented between July 2009 and July 2012 among men who have sex with men (MSM) and people who inject drugs (PWIDs) in four states in Nigeria. The first strategy (S1), involved key opinion leaders (KOLs) who referred M-MARPs to health facilities for HCT. The second strategy (S2) involved KOLs referring M-MARPs to nearby mobile HCT teams while the third (S3) involved mobile M-MARPs peers conducting the HCT. chi2

statistics were used to test for differences in the distribution of categorical variables across groups while logistic regression was used to measure the effect of the different strategies while controlling for confounding factors. RESULTS: A total of 1988, 14 726 and 14 895 M-MARPs were offered HCT through S1, S2 and S3 strategies, respectively. Overall, S3 (13%) identified the highest proportion of HIV-positive M-MARPs compared with S1 (9%) and S2 (3%), $p \leq 0.001$. Also S3 (13%) identified the highest proportion of new HIV diagnosis compared with S1 (8%) and S2 (3%), respectively, $p \leq 0.001$. When controlled for age, marital status and occupation, MSM reached via S3 were 9 times (AOR: 9.21; 95% CI 5.57 to 15.23) more likely to uptake HCT when compared with S1 while PWIDs were 21 times (AOR: 20.90; 95% CI 17.33 to 25.21) more likely to uptake to HCT compared with those reached via S1. CONCLUSIONS: Peer-led HCT delivered by S3 had the highest impact on the total number of M-MARPs reached and in identifying HIV-positive M-MARPs and new testers. Training M-MARPs peers to provide HCT is a high impact approach in delivering HCT to M-MARPs.

2. Bao, L., et al. (2015). "**Estimating the Sizes of Populations At Risk of HIV Infection From Multiple Data Sources Using a Bayesian Hierarchical Model.**" *Stat Interface* 8(2): 125-136. Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4442027/pdf/nihms641098.pdf>

In most countries in the world outside of sub-Saharan Africa, HIV is largely concentrated in sub-populations whose behavior puts them at higher risk of contracting and transmitting HIV, such as people who inject drugs, sex workers and men who have sex with men. Estimating the size of these sub-populations is important for assessing overall HIV prevalence and designing effective interventions. We present a Bayesian hierarchical model for estimating the sizes of local and national HIV key affected populations. The model incorporates multiple commonly used data sources including mapping data, surveys, interventions, capture-recapture data, estimates or guesstimates from organizations, and expert opinion. The proposed model is used to estimate the numbers of people who inject drugs in Bangladesh.

3. Beanland, R. L., et al. (2015). "**End Users' Views and Preferences on Prescribing and Taking Postexposure Prophylaxis for Prevention of HIV: Methods to Support World Health Organization Guideline Development.**" *Clin Infect Dis* 60 Suppl 3: S191-195. Online at: http://cid.oxfordjournals.org/content/60/suppl_3/S191.full.pdf

The 2014 World Health Organization guidelines for human immunodeficiency virus postexposure prophylaxis (PEP) are the first to combine recommendations for all populations and exposures. To inform the development of these guidelines, we gathered views of end users on key aspects of PEP provision. A mixed-methods approach was used to gather views from the populations for whom the guideline will be of relevance. Data gathered from an online survey, focus group discussions, and previously collected data from in-depth interviews with key populations were used to inform the development of recommendations, in particular where there is a paucity of evidence to assess the benefits and harms of an intervention. This was a successful method to gather end users' views and preferences; however, limitations exist in the generalizability and reliability of the evidence. Future guideline development processes should consider methods to include the views of end users to guide the decision-making process.

4. Boily, M. C., et al. (2015). "**What really is a concentrated HIV epidemic and what does it mean for West and Central Africa? Insights from mathematical modeling.**" *J Acquir Immune Defic Syndr* 68 Suppl 2: S74-82.

BACKGROUND: HIV epidemics have traditionally been classified as "concentrated" among key populations if overall HIV prevalence was below 1% and as "generalized" otherwise. We aimed to objectively determine the utility of this classification by determining how high overall HIV prevalence can reach in epidemics driven by unprotected sex work (SW) and how estimates of the contribution of SW to HIV transmission changes over time in these epidemics. METHODS: We developed a deterministic model of HIV transmission specific to West and Central Africa to simulate 1000 synthetic HIV epidemics, where SW is the sole behavioral driver that sustains HIV in the population (ie, truly concentrated epidemics), and it is based on a systematic extraction of model parameters specific to West and Central Africa. We determined the range of plausible HIV prevalence in the total population over time and calculated the population attributable fraction (PAF) of SW over different time periods. RESULTS: In 1988 and 2008, HIV prevalence across the 1000 synthetic concentrated HIV epidemics ranged (5th-95th percentile) between 0.1%-4.2% and 0.1%-2.8%, respectively. The maximum HIV prevalence peaked at 12%. The PAF of SW measured from 2008 over 1 year was <5%-18% compared with 16%-59% over 20 years in these SW-driven epidemics. CONCLUSIONS: Even high HIV-prevalence epidemics can be driven by unprotected SW and therefore concentrated. Overall, HIV prevalence and the short-term PAF are poor markers of underlying transmission dynamics and underestimate the role of SW in HIV epidemics and thus should not be used alone to inform HIV programs.

5. Drame, F. M. and E. E. Foley (2015). "**HIV/AIDS in mid-sized cities in Senegal: From individual to place-based vulnerability.**" *Soc Sci Med* 133: 296-303.

In Senegal, recent data indicates that the HIV epidemic is increasingly driven by concurrent sexual partners among men and women in stable relationships. In order to respond to this changing epidemiological profile in Senegal, multi-lateral and national AIDS actors require information about these emerging trends in unstudied populations. To that end, this study has several objectives, first, to assess local dynamics of sexual behaviors among individuals at popular socializing venues in areas at increased risk of HIV transmission; and then to examine how particular venues may influence risks of HIV transmission. In 2013 we collected data at 314 venues in 10 cities in Senegal using PLACE methodology. These venues were listed with collaboration of 374 community informants. They are places where commercial sex workers, MSM, and individuals who are not part of any identified risk group socialize and meet new sexual partners. We conducted 2600 interviews at the 96 most popular venues. A significant portion of the sample reports buying or selling sex and the majority engaged in behavior considered high-risk for transmitting sexual infections. Almost a quarter of patrons interviewed in venues were young people aged 15-24 years. Types of venues described were very diverse. Half of them were venues (n = 156) where sex workers could be solicited and almost a third were venues where MSM could meet male partners (n = 90). The study showed existing pockets of vulnerability to HIV in Thies, Bignona or Saly that are not evident from aggregate HIV data. These early findings suggest links between risky behaviors and type of venue on the one hand and type of city on the other hand. Finally, these findings offer complementary insight to existing studies of HIV vulnerability in Senegal and support a case for venue-based interventions.

6. Lepine, A., et al. (2015). "**The determinants of technical efficiency of a large scale HIV prevention project: application of the DEA double bootstrap using panel data from the Indian Avahan.**" *Cost Eff Resour Alloc* 13: 5.
Online at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4389319/pdf/12962_2015_Article_31.pdf

BACKGROUND: In 2004, the largest HIV prevention project (Avahan) conducted globally was implemented in India. Avahan was implemented by NGOs supported by state lead partners in order to provide HIV prevention services to high-risk population groups. In 2007, most of the NGOs reached full coverage. **METHODS:** Using a panel data set of the NGOs that implemented Avahan, we investigate the level of technical efficiency as well as the drivers of technical inefficiency by using the double bootstrap procedure developed by Simar & Wilson (2007). Unlike the two-stage traditional method, this method allows valid inference in the presence of measurement error and serial correlation. **RESULTS:** We find that over the 4 years, Avahan NGOs could have reduced the level of inputs by 43% given the level of outputs reached. We find that efficiency of the project has increased over time. Results indicate that main drivers of inefficiency come from the characteristics of the state lead partner, the NGOs and the catchment area. **CONCLUSION:** These organisational factors are important to explicitly consider and assess when designing and implementing HIV prevention programmes and in setting benchmarks in order to optimise the use and allocation of resources. **JEL CLASSIFICATIONS:** C14, I1.

7. Lindan, C. P., et al. (2015). "**High-risk motorcycle taxi drivers in the HIV/AIDS era: a respondent-driven sampling survey in Kampala, Uganda.**" *Int J STD AIDS* 26(5): 336-345.

We evaluated motorcycle taxi ('boda-boda') drivers in Kampala for the prevalence of HIV/sexually transmitted infections. We used respondent-driven sampling to recruit a cross-sectional sample of boda-boda drivers. We collected data through audio computer-assisted self-administered interviews. Men were tested for HIV, syphilis serology using Rapid Plasma Reagin and enzyme immunoassay, and Chlamydia and gonorrhoea using urine polymerase chain reaction. We recruited 683 men. Median age was 26 years; 59.4% were single. The prevalence of HIV was 7.5% (95% CI 5.2-10.0), of positive syphilis serology was 6.1% (95% CI 4.3-8.1), of Chlamydia was 1.1% (95% CI 0.4-2.0), and of gonorrhoea was 1.2% (95% CI 0.1-1.2). Many men (67.8%) had both casual and regular partners, sex with other men (8.7%), and commercial sex (33.1%). Factors associated with having HIV included reporting a genital ulcer (odds ratio [OR] =2.4, 95% CI 1.4-4.4), drinking alcohol during last sex (OR 2.0, 95% CI 1.1-3.7), having 4-6 lifetime partners (OR 2.2, 95% CI 1.0-4.8), and having one's last female partner be >24 years of age (OR 2.8, 95% CI 1.2-6.6). Independent predictors of HIV included age ≥ 31 (adjusted OR (aOR) 5.8, 95% CI 1.5-48.5), having 4-6 partners (aOR 2.2, 95% CI 1.0-5.1), and self-report of a genital ulcer (OR 2.3, 95% CI 1.2-4.1). Only 39.2% of men were circumcised, and 36.9% had been HIV tested in the past. Male boda-boda drivers have a higher prevalence of HIV than the general population, and low frequency of preventive behaviours, such as circumcision and HIV testing. Targeted and intensified interventions for this group are warranted.

8. Merli, M. G., et al. (2015). "**Sexual Mixing in Shanghai: Are Heterosexual Contact Patterns Compatible With an HIV/AIDS Epidemic?**" *Demography*.

China's HIV prevalence is low, mainly concentrated among female sex workers (FSWs), their clients, men who have sex with men, and the stable partners of members of these high-risk groups. We evaluate the contribution to the spread of HIV of China's regime of heterosexual relations, of the structure of heterosexual networks, and of the attributes of key population groups with simulations driven by data from a cross-sectional survey of egocentric sexual networks of the general population of Shanghai and from a concurrent respondent-driven sample of FSWs. We find that the heterosexual network generated by our empirically calibrated

simulations has low levels of partner change, strong constraints on partner selection by age and education, and a very small connected core, mainly comprising FSWs and their clients and characterized by a fragile transmission structure. This network has a small HIV epidemic potential but is compatible with the transmission of bacterial sexually transmitted infections (STIs), such as syphilis, which are less susceptible to structural breaks in transmission of infection. Our results suggest that policies that force commercial sex underground could have an adverse effect on the spread of HIV and other STIs.

9. Peitzmeier, S. M., et al. (2015). "**Associations of stigma with negative health outcomes for people living with HIV in the Gambia: implications for key populations.**" J Acquir Immune Defic Syndr 68 Suppl 2: S146-153. Online at: <http://journals.lww.com/jaids/Fulltext/2015/03011/What Really Is a Concentrated HIV Epidemic and.2.aspx>

BACKGROUND: The HIV epidemic in the Gambia is concentrated among stigmatized key populations. This study explores the relationship between 3 types of HIV-related stigma and 3 health outcomes among people living with HIV (PLHIV) in the Gambia. **METHODS:** Three hundred seventeen PLHIV from PLHIV support groups in the Gambia were surveyed using the PLHIV Stigma Index. **RESULTS:** Enacted stigma in health care settings was significantly associated with avoiding or delaying seeking care [adjusted odds ratio (aOR) = 3.03, 95% confidence interval (CI) = 1.24 to 7.89]; enacted stigma in the household or community (aOR = 1.21, 95% CI = 0.98 to 1.49) and internal stigma (aOR = 1.47, 95% CI = 0.96 to 2.22) were marginally associated. Enacted stigma in health care settings was significantly associated with non-use of antiretroviral therapy (aOR = 0.52, 95% CI = 0.31 to 0.88), whereas internal stigma and enacted stigma in the household or community were not. Enacted stigma in the household or community (aOR = 0.75, 95% CI = 0.64 to 0.87) and internal stigma (aOR = 0.69, 95% CI = 0.50 to 0.93) were significantly associated with poorer self-reported health status, whereas enacted stigma in health care settings was not. **CONCLUSIONS:** PLHIV in the Gambia face stigma regardless of identity as members of key populations, who may face dual stigma. Stigma mitigation represents a potentially important component of a comprehensive package of services to improve the HIV care continuum in the Gambia. Targeted interventions that address stigma with health care workers could facilitate antiretroviral therapy use and timely care seeking for PLHIV. Interventions to address internal stigma and enacted stigma in the household and community may yield additional dividends for the overall health of PLHIV. Examining only 1 domain of stigma may not be sufficient to understand the effect of stigma on a specific health outcome.

10. Thyda, L., et al. (2015). "**Integration of family planning services in a peer-managed HIV care clinic serving most at risk populations in Phnom Penh, Cambodia.**" J Acquir Immune Defic Syndr.

OBJECTIVE: To assess contraceptive uptake and method choice among women living with HIV attending an HIV care clinic serving most at risk women in Phnom Penh Cambodia, before after the implementation of family planning (FP) services. **DESIGN AND METHODS:** Semi-structured questionnaires were administered to clients, before (July 2011) and after (July /2012) FP service implementation with provision of contraceptive methods (pills, injectables, implants, and IUDs). **RESULTS:** Among 250 and 249 clients interviewed before and after implementation respectively, 24.5% of women reported selling sex for money during the last 6 months before and 35.3% after implementation. Awareness about contraceptive methods significantly increased among clients

post-implementation. Among sexually active women, male condom remained the contraceptive method of choice with an overall condom use during the last six months at 91% post-implementation versus 95.6% pre-implementation ($p = 0.11$). While the use of non-condom FP methods increased but not significantly (16.4% before vs. 12.6% after implementation, $p=0.8$), the use of dual method (condom plus another method) remained low and did not significantly increase after implementation (14.8% after vs. 11.0% before, $p=0.28$). CONCLUSION: Our results show that FP practices of women living with HIV attending an HIV care clinic for most at risk populations did not significantly change after integration on-site provision of a wide range of FP methods. Innovative strategies and further research are needed to better understand how to promote the use of non-condom FP methods and prevent unwanted pregnancies and abortions among most at risk women and women living with HIV.

11. Wheeler, T., et al. (2015). "**Scaling-up HIV responses with key populations in West Africa.**" J Acquir Immune Defic Syndr 68 Suppl 2: S69-73. Online at: http://journals.lww.com/jaids/Fulltext/2015/03011/Scaling_Up_HIV_Responses_with_Key_Populations_in.1.aspx

BACKGROUND: Despite decades of HIV responses in pockets of West and Central Africa (WCA), the HIV response with key populations remains an understudied area. Recently, there has been a proliferation of studies highlighting epidemiologic and behavioral data that challenge attitudes of complacency among donors and country governments uncomfortable in addressing key populations. METHODS: The articles in this series highlight new studies that provide a better understanding of the epidemiologic and structural burden facing key populations in the WCA region and how to improve responses through more effective targeting. RESULTS: Key populations face pervasive structural barriers including institutional and sexual violence and an intersection of stigma, criminalization, and marginalization as sexual minorities. Despite decades of smaller interventions that have shown the importance of integrated services for key populations, there remains incongruent provision of outreach or testing or family planning pointing to sustained risk. There remains an incongruent resource provision for key populations where they shoulder the burden of HIV and their access to services alone could turn around HIV epidemics within the region. CONCLUSIONS: These proximal and distal determinants must be addressed in regional efforts, led by the community, and resourced for scale, targeting those most at risk for the acquisition and transmission of HIV. This special issue builds the knowledge base for the region focusing on interventions that remove barriers to service access including treatment uptake for those living with HIV. Better analysis and use of data for strategic planning are shown to lead to more effective targeting of prevention, care, and HIV treatment programs with key populations. These articles further demonstrate the immediate need for comprehensive action to address HIV among key populations throughout the WCA region.

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Men who have Sex with Men - 65

1. Amirkhaniyan, Y. A., et al. (2015). "**Effects of a social network HIV/STD prevention intervention for MSM in Russia and Hungary: a randomized controlled trial.**" Aids 29(5): 583-593.

OBJECTIVE: To test a novel social network HIV risk-reduction intervention for MSM in Russia and Hungary, where same-sex behavior is stigmatized and men may best be reached through their social network connections. **DESIGN:** A two-arm trial with 18 sociocentric networks of MSM randomized to the social network intervention or standard HIV/STD testing/counseling. **SETTING:** St. Petersburg, Russia and Budapest, Hungary. **PARTICIPANTS:** Eighteen 'seeds' from community venues invited the participation of their MSM friends who, in turn, invited their own MSM friends into the study, a process that continued outward until eighteen three-ring sociocentric networks (mean size = 35 members, n = 626) were recruited. **INTERVENTION:** Empirically identified network leaders were trained and guided to convey HIV prevention advice to other network members. **MAIN OUTCOME AND MEASURES:** Changes in sexual behavior from baseline to 3-month and 12-month follow-up, with composite HIV/STD incidence, measured at 12 months to corroborate behavior changes. **RESULTS:** There were significant reductions between baseline, first follow-up, and second follow-up in the intervention versus comparison arm for proportion of men engaging in any unprotected anal intercourse (UAI) (P = 0.04); UAI with a nonmain partner (P = 0.04); and UAI with multiple partners (P = 0.002). The mean percentage of unprotected anal intercourse acts significantly declined (P = 0.001), as well as the mean number of UAI acts among men who initially had multiple partners (P = 0.05). Biological HIV/STD incidence was 15% in comparison condition networks and 9% in intervention condition networks. **CONCLUSION:** Even where same-sex behavior is stigmatized, it is possible to reach MSM and deliver HIV prevention through their social networks.

2. Ananworanich, J., et al. (2015). "**High prevalence of transmitted drug resistance in acute HIV-infected Thai men who have sex with men.**" *J Acquir Immune Defic Syndr* 68(4): 481-485.

As use of antiretroviral therapy in Thailand increases, so does the potential for transmission of drug-resistant HIV. We describe the prevalence of WHO surveillance drug resistance mutations among 120 subjects who underwent genotypic testing during acute HIV infection in Bangkok, Thailand. In this cohort of predominantly men who have sex with men, we observed an overall transmitted drug resistance prevalence of 9.2%, including nucleoside/nucleotide analog reverse transcriptase inhibitor 5.0%, nonnucleoside analog reverse transcriptase inhibitor 3.4%, and protease inhibitor 3.4%. These prevalence estimates are higher than previous reports of transmitted drug resistance in Thailand. Baseline drug resistance testing may be warranted, particularly among men who have sex with men.

3. Arora, K. S. and C. G. Streed (2015). "**Ensuring the Ethical Implementation of the New World Health Organization Pre-Exposure Prophylaxis Recommendations for Men Who Have Sex with Men.**" *LGBT Health* 2(1): 11-13.

Abstract The World Health Organization's (WHO) new recommendation to encourage pre-exposure prophylaxis in men who have sex with men (MSM) is an important step towards eradicating the HIV epidemic. However, the ethical issues of stigma, privacy and confidentiality, and access must be addressed in order to ensure the optimal implementation of this important recommendation.

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4. Baral, S. D., et al. (2015). **"Evaluating respondent-driven sampling as an implementation tool for universal coverage of antiretroviral studies among men who have sex with men living with HIV."**

J Acquir Immune Defic Syndr 68 Suppl 2: S107-113. Online at:

http://journals.lww.com/jaids/Fulltext/2015/03011/Evaluating_Respondent_Driven_Sampling_as_a_n.6.aspx

INTRODUCTION: The TRUST model based on experimental and observational data posits that integration of HIV prevention and universal coverage of antiretroviral treatment at a trusted community venue provides a framework for achieving effective reduction in HIV-related morbidity and mortality among men who have sex with men (MSM) living with HIV, as well as reducing HIV incidence. The analyses presented here evaluate the utility of respondent-driven sampling as an implementation tool for engaging MSM in the TRUST intervention. METHODS: The TRUST integrated prevention and treatment model was established at a trusted community center serving MSM in Abuja, Nigeria. Five seeds have resulted in 3-26 waves of accrual between March 2013 and August 2014, with results presented here characterizing HIV burden and engagement in HIV care for 722 men across study recruitment waves. For analytic purposes, the waves were collapsed into 5 groups: 4 equally spaced (0-4, 5-9, 10-14, and 15-19) and 1 ranging from the 20th to the 26th wave with significance assessed using Pearson chi2 test. RESULTS: In earlier waves, MSM were more likely to have reported testing for HIV (82.9% in waves 0-4, 47.7% in waves 20-26; $P < 0.01$). In addition, biologically confirmed HIV prevalence decreased from an average of 59.1% to 42.9% ($P < 0.05$) in later waves. In earlier waves, about 80% of participants correctly reported their HIV status as compared with less than 25% in the later waves ($P < 0.01$). Finally, participants reporting being on ART decreased from 50% to 22.2% in later waves ($P < 0.01$). CONCLUSIONS: Implementation science studies focused on demonstrating impact of universal HIV treatment programs among people living with HIV necessitate different accrual methods than those focused on preventing HIV acquisition. Here, respondent-driven sampling was shown to be an efficient method for reaching marginalized populations of MSM living with HIV in Nigeria, and engaging them in universal HIV treatment services.

5. Biello, K. B., et al. (2015). **"Is Involvement in Sex Work Associated with Engagement in HIV-Related Medical Care in Latin American Men Who Have Sex with Men (MSM)? Results of a Large, Multinational Internet Survey."** LGBT Health.

ABSTRACT: Men who have sex with men (MSM) who engage in transactional sex are at increased HIV risk, and face complex barriers to care seeking. Among 2,035 men recruited through an MSM social/sexual networking website in Latin America and who reported being HIV-infected, 186 (9.1%) reported being paid for sex with another man in the past year. Engagement in transactional sex was associated with decreased odds of receiving medical care for HIV (AOR=0.57, 95% CI=0.37?0.85). No significant differences were seen in being on antiretroviral therapy (ART) or ART adherence once in care. Interventions in this population should focus on reducing barriers to engagement in care. Men who have sex with men (MSM) who engage in transactional sex are at increased HIV risk, and face complex barriers to care seeking. Among 2,035 men recruited through an MSM social/sexual networking website in Latin America and who reported being HIV-infected, 186 (9.1%) reported being paid for sex with another man in the past year. Engagement in transactional sex was associated with decreased odds of receiving medical care for HIV (AOR=0.57, 95% CI=0.37?0.85). No significant differences were seen in being on antiretroviral

therapy (ART) or ART adherence once in care. Interventions in this population should focus on reducing barriers to engagement in care.

6. Bien, C. H., et al. (2015). "**HIV and Syphilis Testing Preferences among Men Who Have Sex with Men in South China: A Qualitative Analysis to Inform Sexual Health Services.**" *PLoS One* 10(4): e0124161.
Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4395264/pdf/pone.0124161.pdf>

BACKGROUND: Health services for men who have sex with men (MSM) are inadequate in many areas around the world. HIV and syphilis test uptake remain suboptimal among MSM in China and many other regions. To inform the development of more comprehensive sexually transmitted disease (STD) testing programs among MSM, we collected descriptive data on MSM testing practices and preferences. **METHODS:** MSM in two large urban Chinese cities were recruited through community-based organizations and clinics to participate in semi-structured interviews. We purposively sampled MSM across a range of sociodemographic characteristics and testing history, and assessed preferences for HIV and syphilis testing in the context of facilitators and barriers to testing and previous testing experiences. Each interview transcript was coded and thematically analyzed using Atlas.ti 7.0. **RESULTS:** 35 MSM were interviewed. Confidentiality and privacy were the most important factors influencing participants' decisions about whether and where to get tested. Men preferred rapid testing (results available within 30 minutes) compared to conventional tests where results take several hours or days to return. Participants described concerns about quality and accuracy of rapid tests offered in non-clinical settings such as community-based organizations. Men preferred testing service providers who were MSM-friendly, non-discriminatory, and medically trained. Preferred service center environments included: convenient but discrete location, MSM-friendly atmosphere, and clean/standard medical facilities. **CONCLUSION:** Our data highlight the need for HIV/syphilis testing services that are confidential and inclusive of MSM. Rapid testing in decentralized (i.e. peripheral health facilities and community-level, non-clinical venues) settings provides an opportunity to reach individuals who have not been tested before, but must be accompanied by quality assurance systems and technical competence. Implementation research could further evaluate HIV/syphilis testing programs responsive to MSM preferences. **SHORT SUMMARY:** A qualitative study of MSM in South China found that men preferred rapid STD testing at MSM-focused test centers, but were concerned about test quality assurance and confidentiality.

7. Brito, M. O., et al. (2015). "**Risk behaviours and prevalence of sexually transmitted infections and HIV in a group of Dominican gay men, other men who have sex with men and transgender women.**" *BMJ Open* 5(4): e007747.
Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4420963/pdf/bmjopen-2015-007747.pdf>

OBJECTIVES: The objectives of this study were to estimate the point prevalence of sexually transmitted infection (STI) and to investigate the sexual practices and behaviours associated with STIs in a group of gay men, other men who have sex with men and transgender women (GMT) in the province of La Romana, Dominican Republic. **DESIGN:** A cross-sectional study of a convenience sample of GMT persons. **SETTING:** The study was conducted in the province of La Romana, Dominican Republic, in June-July 2013. **PARTICIPANTS:** Out of 117 GMT persons screened, a total of 100 completed the study. Participants had to be at least 18 years of age, reside in La Romana and have had sex with another man in the preceding 12 months. All participants were interviewed and tested for STI. **PRIMARY OUTCOME MEASURE:** The main

outcome of interest was the detection of any STI (HIV, herpes simplex virus type 2 (HSV-2), syphilis, hepatitis B or C) by serology. RESULTS: Among 100 participants, the median age was 22 years (range 18-65). One-third had consumed illicit drugs the preceding year and only 43% consistently used condoms. Prevalence was 38% for HSV-2, 5% for HIV and 13% for syphilis. There were no cases of hepatitis B or C. Factors associated with the odds of a STI were age >22 years (OR=11.1, 95% CI 3.6 to 34.5), receptive anal intercourse (OR=4.2, 95% CI 1.3 to 13.6) and having >/=2 male sexual partners during the preceding month (OR=4, 95% CI 1.3 to 12.5). CONCLUSIONS: In this group of GMT persons, seroprevalence of STI was high, and a number of risk behaviours were associated with STI. These preliminary data will help inform policy and programmes to prevent HIV/STI in GMT persons in the region.

8. Brown, B., et al. (2015). "**Sociodemographic and behavioral correlates of anogenital warts and human papillomavirus-related knowledge among men who have sex with men and transwomen in Lima, Peru.**" *Sex Transm Dis* 42(4): 198-201.

BACKGROUND: Human papilloma virus (HPV) is the most common sexually transmitted infection (STI) globally, with a high burden of anogenital warts (AGW) among men who have sex with men (MSM) and transwomen (TW). METHODS: Six-hundred HIV negative MSM and TW (300 with AGW, 300 without) were recruited for a prospective cohort study to examine HPV outcomes and HPV vaccine knowledge. Participants completed a self-administered online questionnaire. Logistic regression was used to assess the association between sociodemographic and behavioral characteristics with HPV vaccine knowledge. RESULTS: The average participant age was 25.5 years. Most (67%) were single and 41.2% self-reported STI symptoms. The average age of first anal intercourse was 17 years, with self-reported sexual role as active (36%), passive (36%), and both (27%). Three quarters (77%) of participants reported engaging in condomless anal or oral sex up to six months prior to the study. Less than half (48%) of participants had heard of HPV. Participants with AGW were more likely to report that condoms helped prevent HPV ($p=0.01$) and that the absence of genital warts does not mean the absence of HPV ($p < 0.01$). CONCLUSION: Study participants had low levels of HPV knowledge but likely high HPV exposure due to condomless anal sex. The HPV knowledge gap may be explained in part by the stigma of sex work, underreporting of STIs, the high cost of the HPV vaccine in Peru, and misinformation about HPV vaccine. More work is needed to educate MSM and TW on HPV and the HPV vaccine.

9. Brown, S. E., et al. (2015). "**Men Who Have Sex With Men in Peru: Acceptability of Medication-Assisted Therapy for Treating Alcohol Use Disorders.**" *Am J Mens Health*.

In Peru, the HIV epidemic is concentrated in men who have sex with men (MSM) and transgender women (TGW). Multiple studies correlate alcohol use disorders (AUDs) with risky sexual behaviors among Peruvian MSM. Qualitative research was used to inform a clinical trial on the acceptability of medication-assisted therapies to assist management of AUDs and improve antiretroviral therapy (ART) adherence among MSM/TGW in Peru. Three focus groups involving HIV-infected or HIV-uninfected MSM/TGW ($n = 26$) with AUDs (AUDIT ≥ 8) were transcribed, translated from Spanish into English, and analyzed using thematic content analysis. Despite having an AUD, participants considered themselves "social" drinkers, minimized their drinking behaviors, and differed about whether or not alcohol problems could be treated. Participants expressed skepticism about medication for treating AUDs. Three concepts emerged as necessary components of a treatment program for alcohol problems: cost, family support, and the potential to drink less alcohol without attaining total abstinence. This study reveals important areas of

education to increase potential acceptability of a medication for treating AUDs among MSM/TGW. Given the social conditions and knowledge base of the participants, medication-assisted therapies using naltrexone may be a beneficial strategy for MSM with AUDs.

10. Castillo, R., et al. (2015). "**Human Immunodeficiency Virus (HIV) and Sexually Transmitted Infection (STI) incidence and associated risk factors among high-risk MSM and male-to-female transgender women in Lima, Peru.**" *J Acquir Immune Defic Syndr*.

BACKGROUND: Men who have sex with men (MSM) and male-to-female transgender women (TW) are at increased risk of HIV and sexually transmitted infections (STIs). We evaluated factors associated with incidence of HIV, HSV-2, and chlamydia and gonorrhea (anal and pharyngeal). **METHODS:** We used data from the Comunidades Positivas trial with MSM/TW who have sex with men in Lima, Peru. Participants were asked about sexual risk behaviors and underwent HIV/STI testing at baseline and 9- and 18- month follow-ups. We used discrete time proportional hazards regression to calculate hazard ratios (HRs) for variables associated with incidence of each STI. **RESULTS:** Among 718 MSM/TW, HIV incidence was 3.6 cases per 100 person-years. HIV incidence was associated with having an incident STI (aHR 3.73). Unprotected receptive anal intercourse was associated with incident anal chlamydia (aHR 2.20). An increased number of sexual partners increased incident HSV-2 (aHR 3.15 for 6-14 partners and 3.97 for 15-46 partners compared to 0-2 partners). Risk of anal gonorrhea decreased with each sexually active year (aHR 0.94) and increased for unprotected compensated sex (aHR 2.36). Risk of pharyngeal gonorrhea also decreased with each year since sexual debut (aHR 0.95). Risk of anal chlamydia decreased with each sexually active year (aHR 0.96), risk increased with reports of unprotected sex work (aHR 1.61), and unprotected receptive anal sex (aHR 2.63). All aHRs have p-values < 0.05. **CONCLUSION:** MSM/TW experience high incidence of HIV. Up-to-date prevalence and incidence information and identifying factors associated with infection can help develop a more effective combination prevention response.

11. Charurat, M. E., et al. (2015). "**Uptake of treatment as prevention for HIV and continuum of care among HIV-positive men who have sex with men in Nigeria.**" *J Acquir Immune Defic Syndr* 68 Suppl 2: S114-123. Online at: http://journals.lww.com/jaids/Fulltext/2015/03011/Uptake_of_Treatment_as_Prevention_for_HIV_and_7.aspx

BACKGROUND: Experimental evidence has shown that treatment of HIV infection with antiretroviral therapy (ART) prevents heterosexual transmission of HIV to an uninfected partner. However, the "real-world" application of this strategy to key populations such as men who have sex with men (MSM) has been limited. We report findings on acceptability of a treatment as prevention (TasP) strategy among HIV-infected MSM at a Trusted Community Center providing comprehensive HIV prevention and treatment services to MSM in Abuja, Nigeria. **METHODS:** Using respondent-driven sampling (RDS), MSM who were 16 years and older and have engaged in either receptive or insertive anal intercourse within the previous 12 months were recruited into a prospective combination HIV prevention and treatment study (TRUST). Two weeks after enrollment, HIV testing and counseling was conducted. At each 3-month follow-up visits, HIV-infected individuals underwent clinical and laboratory evaluation, including CD4 count, plasma HIV viral load, immediate 3 weekly sessions of ART preparation, and then ART initiation per TasP strategy irrespective of CD4 count. Reasons for not engaging in pre-TasP preparation and TasP were documented. Characteristics associated with TasP engagement and loss to follow-up (LTFU)

were determined using logistic and Cox regression, respectively. RESULTS: Of 186 HIV-positive MSM enrolled, 58 (31.2%) were on ART at the time of recruitment, whereas 128 (68.8%) were ART-naive and provided opportunity for engaging TasP. Of these, 70 (54.7%) engaged in TasP. Compared with MSM who did not engage in TasP, those who engaged had significantly lower mean CD4 count ($P = 0.001$), were more likely to be Christian ($P = 0.01$), and had disclosed being MSM to family ($P = 0.02$) or health care providers ($P = 0.02$). In multivariate models, disclosure of being MSM to health care providers remained significantly associated with uptake of TasP. Among individuals engaged in TasP, 10% were LTFU in care at 18 months since enrollment. Being engaged in TasP (relative hazards = 0.08, $P < 0.001$) and on ART (relative hazards = 0.17, $P < 0.001$) were associated with decreased risk of LTFU. CONCLUSIONS: Although there was high acceptance of HIV testing and low LTFU among individuals who were already on ART or engaged in TasP, a higher than expected proportion did not engage in TasP, suggesting the need for customized treatment preparation and an increase in enabling environments to support HIV treatment access with this key population.

12. Clark, J. L., et al. (2015). **"Manejar la Situación": Partner Notification, Partner Management, and Conceptual Frameworks for HIV/STI Control Among MSM in Peru.** *AIDS Behav.*

Previous analyses of partner notification (PN) have addressed individual, interpersonal, social, and structural issues influencing PN outcomes but have paid less attention to the conceptual framework of PN itself. We conducted 18 individual interviews and 8 group discussions, in a two-stage qualitative research process, to explore the meanings and contexts of PN for sexually transmitted infections (STI) among men who have sex with men (MSM) and men who have sex with men and women (MSMW) in Lima, Peru. Participants described PN as the open disclosure of private, potentially stigmatizing information that could strengthen or disrupt a partnership, structured by the tension between concealment and revelation. In addition to informing partners of an STI diagnosis, the act of PN was believed to reveal other potentially stigmatizing information related to sexual identity and practices such as homosexuality, promiscuity, and HIV co-infection. In this context, the potential development of visible, biological STI symptoms represented a risk for disruption of the boundary between secrecy and disclosure that could result in involuntary disclosure of STI status. To address the conflict between concealment and disclosure, participants cited efforts to "manejar la situación" (manage the situation) by controlling the biological risks of STI exposure without openly disclosing STI status. We use this concept of "managing the situation" as a practical and theoretical framework for comprehensive Partner Management for HIV/STI control systems among MSM in Latin America.

13. Dangerfield, D. T., 2nd, et al. (2015). **"Correlates of anal sex roles among Malay and Chinese MSM in Kuala Lumpur, Malaysia."** *Int J STD AIDS.*

BACKGROUND: Identifying roles for anal sex is an important issue for populations of MSM; we described 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. METHODS: 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. RESULTS: 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). DISCUSSION: 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.

14. Das, A., et al. (2015). "**Factors associated with HIV and syphilis co-infection among men who have sex with men in seven Chinese cities.**" *Int J STD AIDS* 26(3): 145-155.

HIV-syphilis co-infection is often cited as a major reason behind recent resurgence in syphilis prevalence among men who have sex with men in China. Most published literatures explore factors associated with either HIV or syphilis, but not their co-infection. We analysed data from a cross-sectional survey on men who have sex with men in seven Chinese cities. Snowball sampling was used to recruit participants for the survey. Socio-demographic and behavioural predictors for HIV-syphilis mono/co-infection were examined using ordinal logistic regression. Factor scores were used to summarise (1) HIV-related knowledge and (2) access to HIV preventive services. Prevalence of HIV, syphilis, and their co-infection, among 2936 self-identified men who have sex with men, were 7.7%, 14.3%, and 2.6%, respectively. In the adjusted analysis, the significant positive correlates of poorer diagnoses (co-infection vs mono- and no infection or co- and mono-infection vs no infection) were: 30 to 39 years and ≥ 40 years age, education up to senior high school, unprotected anal intercourse, recent sexually transmitted infection symptoms, incorrect knowledge about routes of transmission, and access to preventive or counselling/testing services for HIV. For effective control of this dual epidemic, integrated HIV and syphilis surveillance and targeted intervention strategies for Chinese men who have sex with men are needed urgently.

15. Dijkstra, M., et al. (2015). "**Emerging themes for sensitivity training modules of African healthcare workers attending to men who have sex with men: a systematic review.**" *Int Health* 7(3): 151-162. Online at: <http://inthehealth.oxfordjournals.org/content/7/3/151.full.pdf>

Sensitivity training of front-line African health care workers (HCWs) attending to men who have sex with men (MSM) is actively promoted through national HIV prevention programming in Kenya. Over 970 Kenyan-based HCWs have completed an eight-modular online training free of charge (<http://www.marps-africa.org>) since its creation in 2011. Before updating these modules, we performed a systematic review of published literature of MSM studies conducted in sub-Saharan Africa (sSA) in the period 2011-2014, to investigate if recent studies provided: important new knowledge currently not addressed in existing online modules; contested information of existing module topics; or added depth to topics covered already. We used learning objectives of the eight existing modules to categorise data from the literature. If data could not be categorised, new modules were suggested. Our review identified 142 MSM studies with data from sSA, including 34 studies requiring module updates, one study contesting current content, and 107 studies reinforcing existing module content. ART adherence and community engagement were identified as new modules. Recent MSM studies conducted in sSA provided new knowledge, contested existing information, and identified new areas of MSM service needs currently unaddressed in the online training.

16. Duvall, S., et al. (2015). "**Assessment of policy and access to HIV prevention, care, and treatment services for men who have sex with men and for sex workers in Burkina Faso and Togo.**" *J Acquir Immune Defic Syndr* 68 Suppl 2: S189-197. Online at: http://journals.lww.com/jaids/Fulltext/2015/03011/Assessment_of_Policy_and_Access_to_HIV_Prevention,,16.aspx

BACKGROUND: In Burkina Faso and Togo, key populations of men who have sex with men (MSM) and sex workers (SW) have a disproportionately higher HIV prevalence. This study analyzed the 2 countries' policies impacting MSM and SW; to what extent the policies and programs have been implemented; and the role of the enabling environment, country leadership, and donor support. **METHODS:** The Health Policy Project's Policy Assessment and Advocacy Decision Model methodology was used to analyze policy and program documents related to key populations, conduct key informant interviews, and hold stakeholder meetings to validate the findings. **RESULTS:** Several policy barriers restrict MSM/SW from accessing services. Laws criminalizing MSM/SW, particularly anti-solicitation laws, result in harassment and arrests of even nonsoliciting MSM/SW. Policy gaps exist, including few MSM/SW-supportive policies and HIV prevention measures, e.g., lubricant not included in the essential medicines list. The needs of key populations are generally not met due to policy gaps around MSM/SW participation in decision-making and funding allocation for MSM/SW-specific programming. Misaligned policies, eg, contradictory informed consent laws and protocols, and uneven policy implementation, such as stockouts of sexually transmitted infection kits, HIV testing materials, and antiretrovirals, undermine evidence-based policies. Even in the presence of a supportive donor and political community, public stigma and discrimination (S&D) create a hostile enabling environment. **CONCLUSIONS:** Policies are needed to address S&D, particularly health care provider and law enforcement training, and to authorize, fund, guide, and monitor services for key populations. MSM/SW participation and development of operational guidelines can improve policy implementation and service uptake.

17. Fernandes, F. R., et al. (2015). "**Syphilis infection, sexual practices and bisexual behaviour among men who have sex with men and transgender women: a cross-sectional study.**" *91*(2): 142-149.

OBJECTIVES: Men who have sex with men (MSM) and transgender women (TW) are highly vulnerable groups to sexually transmitted infections (STIs). This study aims to assess the prevalence of syphilis infection, sexual behaviour and identify factors associated with syphilis in MSM and TW in Campo Grande, Central Brazil. METHODS: Between 2009 and 2011, 430 MSM/TW participants were interviewed and tested for syphilis. Univariable and multivariable regression analyses were done to assess associations with syphilis infection. RESULTS: A total of 430 MSM/TW (278 MSM and 152 TW) were included in the study. The overall prevalence of lifetime syphilis and active syphilis was 34.7% (26.3% among MSM; 50.0% among TW) and 17.5% (12.3% among MSM; 27.0% among TW), respectively ($p < 0.001$). In multivariable regression analysis, being 20-24 years and ≥ 30 years, having engaged in a variety of sexual practices and with a history of genital/anal ulcer in the last 12 months were associated with lifetime syphilis infection in the MSM group. Among TW participants, being ≥ 30 years of age, having more than 10 male sexual partners in last week and being infected with HIV were associated with lifetime syphilis. Factors associated with active syphilis among MSM were massage parlour/sauna recruitment and alcohol consumption at least once a week. Having sex with female partners in the past 12 months was predictive for active syphilis among TW. CONCLUSIONS: The prevalence of syphilis infection and risk sexual behaviour were high in the two samples, especially among TW. High levels of bisexual behaviours and low rates of consistent condom use indicate potential HIV/STIs transmission into the heterosexual population. This finding indicates the need and urgency for implementing more effective integrated programmes targeting MSM/TW for the prevention of syphilis and other STIs.

18. Fujimoto, K., et al. (2015). "**A network analysis of relationship dynamics in sexual dyads as correlates of HIV risk misperceptions among high-risk MSM.**" *Sex Transm Infect* *91*(2): 130-134.

OBJECTIVES: Relationship dynamics influence the perception of HIV risk in sexual dyads. The objective of this study was to examine the effect of relational dynamics on knowledge or perception of a partner's HIV status in a sample of most at-risk men who have sex with men (MSM): drug-using male sex workers. The study identified relationship dimensions and examined their association with misperceptions about a particular partner's HIV status. METHODS: The analytical sample for the study consisted of 168 sexual partnerships of 116 male sex workers and their associates. Exploratory factor analysis was conducted to identify dimensions of the interpersonal relationships in sexual partnerships that were then regressed on 'risky misperceptions' (misperceiving HIV negative when partner's self-report was positive or unknown). RESULTS: Six relationship dimensions of intimate, commitment, socialising, financial, trust and honesty were extracted. Commitment was found to be protective against misperception (adjusted OR (AOR)=0.45), while trust was not (AOR=2.78). Other factors also were found to be associated with misperception. HIV-negative MSM (AOR=7.69) and partners who were both self-identified as gay (AOR=3.57) were associated with misperception, while encounters identified as sex work (AOR=0.29), in which both partners were Caucasian (AOR=0.16), and involved with an older partner (AOR=0.90) were protective. CONCLUSIONS: Couple-based HIV intervention efforts among MSM should consider that less trust and more commitment are protective factors in sexual partnerships.

19. Galea, J. T., et al. (2015). "**Factors associated with visible anogenital warts among hiv-uninfected peruvian men who have sex with men and transwomen: a cross-sectional study.**" *Sex Transm Dis* **42**(4): 202-207.

BACKGROUND: Visible, anogenital warts may be associated with risk factors for HIV infection. This cross-sectional study examined the factors associated with visible anogenital warts among HIV-uninfected Peruvian men who have sex with men (MSM) and transwomen. METHODS: Six hundred HIV-uninfected MSM and transwomen were recruited from a community-based setting in metropolitan Lima, Peru, through outreach activities. Participants were tested for syphilis, completed a behavioral questionnaire, and were examined for visible anogenital warts. Logistic regression was used to assess the independent association between sample characteristics, HIV-related risk factors, and visible anogenital warts. RESULTS: A tertiary education versus a primary/secondary (adjusted odds ratio [AOR], 1.79; 95% confidence interval [CI], 1.07-2.99), a first experience of anal intercourse at age 20 years or older versus younger ages (AOR, 2.80; 95% CI, 1.45-5.38), and self-reporting of current sexually transmitted infection symptoms (AOR, 2.38; 95% CI, 1.61-3.52) were significant correlates of visible anogenital warts, whereas syphilis infection, transactional sex, receptive anal intercourse, and self-identifying as a transwoman were not. CONCLUSIONS: Although not associated with key risk factors for HIV infection in Peruvian MSM and transwomen, the presence of visible anogenital warts should prompt clinicians to consider the possibility of unreported same-sex sexual behaviors and other risk sexually transmitted infection/HIV risk factors.

20. Girault, P., et al. (2015). "**Piloting a Social Networks Strategy to Increase HIV Testing and Counseling Among Men Who Have Sex with Men in Greater Accra and Ashanti Region, Ghana.**" *AIDS Behav.*

The 2011 Ghana Men's Study identified a high prevalence of HIV among men who have sex with men (MSM) in Accra/Tema (34.4 %) and in Kumasi (13.6 %), whereas the HIV rate among MSM referred through peer educators (PEs) to HIV testing and counseling (HTC) services in these two sites was substantially lower (8.4 %). These findings raised questions about possible limitations of the peer-education strategy to reach high-risk MSM. Therefore, a pilot study was conducted to assess the feasibility of using a social network strategy (SNS) to identify and refer MSM to HTC services. Within 3 months, 166 MSM were reached and referred to HTC services: 62.7 % reported no recent exposure to PEs; 61.5 % were unaware of their recent HIV serostatus; and 32.9 % were newly diagnosed HIV positive. This pilot study suggests that an SNS could be an important strategy to reach MSM and to increase the uptake of HTC.

21. Guadamuz, T. E., et al. (2015). "**Young, Online and in the Dark: Scaling Up HIV Testing among MSM in ASEAN.**" *PLoS One* 10(5): e0126658.

Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4431680/pdf/pone.0126658.pdf>

BACKGROUND: Poor HIV testing uptake by MSM may be attributable to unique challenges that are localized in Southeast Asia. OBJECTIVE: To characterize MSM who never tested for HIV, to identify correlates of never testing, and to elucidate the perceived barriers to HIV testing. METHODS: The present study used data from the Asian Internet MSM Sex Survey (AIMSS) and restricted the analysis to 4,310 MSM from the ten member countries of the Association of South East Asian Nations (ASEAN). RESULTS: Among MSM participants from ASEAN in our sample, 1290

(29.9%) reported having never been tested for HIV, 471 (10.9%) tested for HIV more than 2 years ago, and 2186 (50.7%) reported their last test date was between 6 months and two years ago, with only 363 (8.4%) of these men having been tested in the past 6 months. In multivariable logistic regression, younger MSM (age 15-22 years old [AOR: 4.60, 95% CI: 3.04-6.96]), MSM with lower education (secondary school or lower [AOR: 1.37, 95% CI: 1.03-1.83]), MSM who identify as bisexual or heterosexual (compared to gay-identified) (AOR: 1.94, 95% CI: 1.60-2.35), and MSM who had never used a condom with male partners (AOR: 1.61, 95% CI: 1.32-1.97) had higher odds of never been HIV tested. Main reason for not being tested was a low risk perception of HIV exposure (n = 390, 30.2%). CONCLUSION: Current HIV prevention response must not leave MSM "in the dark," but instead meet them where they are by utilizing the Internet creatively through social media and smart phones. As ASEAN Economic Community (AEC) is quickly becoming a reality, so must there be an equally fast and united response to slowing down the HIV epidemics among MSM in ASEAN.

22. Guadamuz, T. E., et al. (2015). "**Consent Challenges for Participation of Young Men Who Have Sex With Men (YMSM) in HIV Prevention Research in Thailand.**" *Ethics Behav* 25(2): 180-195.

Young men who have sex with men (YMSM) under 18 years are often excluded from HIV prevention research in Thailand due to cultural attitudes toward youth sexuality, social stigma, and difficulties obtaining guardian permission. Culturally sensitive focus group discussions conducted with parents and YMSM in Bangkok, Thailand identified barriers and facilitators related to minors' participation in HIV prevention research. Although gender and class differences emerged, mothers and fathers were generally accepting of research to reduce HIV risk, but not in favor of waiver. Youth's positive attitude toward parental permission was tempered by concerns about harms posed by disclosing same-sex attraction through permission forms.

23. Hakim, A. J., et al. (2015). "**The Epidemiology of HIV and Prevention Needs of Men Who Have Sex with Men in Abidjan, Cote d'Ivoire.**" *PLoS One* 10(4): e0125218.
Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4409353/pdf/pone.0125218.pdf>

To determine HIV prevalence and associated risk factors among men who have sex with men (MSM) in Abidjan, Cote d'Ivoire. We conducted a cross-sectional RDS survey of MSM in Abidjan from October 2011 to February 2012. Eligibility criteria included age \geq 18 years and having had oral or anal sex with another man in the last 12 months. Weighted data analysis was conducted with RDSAT and SAS. We enrolled 603 participants, of whom 601 (99.7%) completed the questionnaire and 581 (96.7%) consented to HIV testing. HIV population prevalence was estimated as 18.0% (95% CI: 13.0-23.1); 86.4% (95% CI: 75.1-94.9) of HIV-positive MSM were unaware of their serostatus. In multivariable analysis, adjusting for age, education, and income, HIV infection was associated with unprotected sex at last sex with a woman, more than two male anal sex partners in last 12 months, inconsistent condom use during anal sex with a man, self-perceived risk of HIV, history of forced sex, history of physical abuse due to MSM status, and not receiving last HIV test result prior to study. HIV prevalence among MSM in Abidjan is more than four times as high as that of general population men. MSM engage in high-risk sexual behavior and most HIV-positive MSM are unaware of their serostatus. Greater access to HIV prevention, care, and treatment services targeted to MSM is necessary.

24. Holland, C. E., et al. (2015). "**Access to HIV Services at Non-Governmental and Community-Based Organizations among Men Who Have Sex with Men (MSM) in Cameroon: An Integrated Biological and Behavioral Surveillance Analysis.**" *PLoS One* 10(4): e0122881. Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4408025/pdf/pone.0122881.pdf>

BACKGROUND: Men who have sex with men (MSM) are more likely to be living with HIV than other adult men in low- and middle-income countries. MSM experience barriers to accessing HIV services including a lack of available specialized care, and community-level stigma and discrimination. This study aims to examine the uptake of HIV services at non-governmental and community-based organizations (NGOs/CBOs) to identify ways to improve coverage of HIV prevention and treatment among MSM. METHODS: An Integrated Biological and Behavioral Surveillance (IBBS) survey was conducted in Yaounde and Douala, Cameroon in 2011 using the respondent driven sampling (RDS) method to recruit and interview 239 MSM in Yaounde and 272 MSM in Douala. RESULTS: MSM in Yaounde were statistically significantly more likely to have accessed NGO/CBO services or been reached by an outreach worker in the past 12 months if they had any STI symptoms (aOR 2.17 CI 1.02-4.59. $p=0.04$), or if they had a larger MSM social network (aOR 1.02 CI 1.01-1.04. $p<0.01$). MSM in Douala were more likely to have accessed NGO/CBO services or been reached by an outreach worker in the past 12 months if they were living with HIV (aOR 3.60 CI 1.35-9.60. $p=0.01$), or if they reported higher numbers of male sexual partners (aOR 1.17 CI 1.00-1.36. $p=0.046$). Compared to men in Douala, MSM in Yaounde were significantly less likely to have accessed NGO/CBO services or been reached by an outreach worker in the past 12 months (aOR 0.22 CI 0.14-0.34. $p<0.01$). CONCLUSIONS: With appropriate funding and resources, community-based organizations that provide care specifically for MSM can improve access to HIV prevention, treatment, and care services. Additionally, using social networks to reach MSM can connect greater numbers of the population to effective HIV interventions, which will improve health outcomes and decrease onward transmission of HIV.

25. Holland, C. E., et al. (2015). "**Antiretroviral treatment coverage for men who have sex with men and female sex workers living with HIV in Cameroon.**" *J Acquir Immune Defic Syndr* 68 Suppl 2: S232-240. Online at: http://journals.lww.com/jaids/Fulltext/2015/03011/Antiretroviral_Treatment_Coverage_for_Men_Who_Have.21.aspx

BACKGROUND: Men who have sex with men (MSM) and female sex workers (FSW) are more likely to be living with HIV and experience difficulty accessing HIV health services due to stigma and discrimination. Antiretroviral treatment and sustained viral suppression among individuals living with HIV is the last step in the continuum of HIV care, which has been shown to improve health outcomes and decrease the risk of onward transmission of HIV. METHODS: To calculate the numerator and denominator for antiretroviral therapy (ART) coverage estimates among MSM and FSW living with HIV, the Priority Locations for AIDS Control Efforts methods were modified to include individual quantitative interviews, health service assessment and mapping, and size estimation in 7 cities in Cameroon. MSM and FSW were recruited using peer referral and venue-based sampling. The numerator was calculated from interviews with MSM and FSW. Population size estimation of MSM and FSW was used to determine the denominator. RESULTS: Antiretroviral coverage varied by site from 0% to 25% among HIV infected MSM and FSW. ART provision to the general population was reported at a significantly greater proportion of HIV health centers (56.5%) than ART provision to MSM and FSW populations (13.2%). CONCLUSIONS: The majority of MSM and FSW living with HIV and eligible for treatment in Cameroon are not connected to

ART care. Additionally, ART provision for MSM and FSW at HIV health centers is insufficient. Characterizing effective strategies to reach optimal levels of engagement in the continuum of HIV care among MSM and FSW is essential for an AIDS-free generation for Cameroon.

26. Horth, R. Z., et al. (2015). "**Correlates of HIV Testing Among Men Who have Sex with Men in Three Urban Areas of Mozambique: Missed Opportunities for Prevention.**" AIDS Behav.

This is the first study to identify levels of recent HIV testing and associated factors among men who have sex with men (MSM) in Mozambique. Using data from Maputo (n = 493), Beira (n = 572), and Nampula/Nacala (n = 347), collected via respondent-driven sampling in 2011, and excluding those with prior known infection, we found that 30.4 % [95 % confidence interval (CI) 25.0-36.3 %], 42.1 % (95 % CI 36.8-47.3 %) and 29.8 % (95 % CI 22.9-36.9 %), respectively, had recently tested for HIV (<=12 months), while between three and five out of 10 MSM had never tested. A range of factors was associated with recent HIV testing such as familiarity with the modes of transmission, knowledge of antiretroviral treatment for HIV, contact with peer educators and awareness of partner serostatus; yet, surprisingly recent healthcare utilization was not associated with recent testing. Findings provide evidence that structural and behavioral interventions among MSM may play an important role in increasing HIV testing.

27. Huan, X., et al. (2015). "**High prevalence of HIV and syphilis among men who have sex with men recruited by respondent-driven sampling in a city in Eastern China.**" Asia Pac J Public Health 27(2): Np854-865.

Increasing prevalence of sexually transmitted diseases (STD) was reported among men who have sex with men (MSM) in China. A total of 407 MSMs were recruited by respondent-driven sampling (RDS) from May to July 2008 in Nanjing, China. Face-to-face interviews were conducted to collect information on demographic and risk behaviors; blood samples were collected for HIV and syphilis antibodies testing. The adjusted HIV and syphilis prevalence were, respectively, 7.3% (confidence interval [CI] = 2.6%-10.2%) and 14.4% (95% CI = 9.3%-21.1%). Recruiting male sex partners mostly from saunas and receptive anal intercourse with men in the last 6 months were independently associated with positive HIV status. Risk factors for positive syphilis status included being older than 28 years, low level of HIV-related knowledge, having been a male sex worker, and having unprotected anal sex with casual male sex partners in the past 6 months. High HIV/STD prevalence was detected. HIV/STD prevention strategies are urgently warranted.

28. Lee, S. W., et al. (2015). "**A cross-sectional study of low HIV testing frequency and high-risk behaviour among men who have sex with men and transgender women in Lima, Peru.**" BMC Public Health 15(1): 408.

Online at:

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4407786/pdf/12889_2015_Article_1730.pdf

BACKGROUND: Increased HIV testing frequency among high-risk populations such as men who have sex with men (MSM) and male-to-female transgender women (TW) can lead to earlier treatment and potentially reduce HIV transmission. METHODS: We analyzed baseline survey data from 718 high-risk, young (median age 29 [interquartile range 23-35]) MSM/TW enrolled in a community-based HIV prevention trial between 2008-2009. Participants were recruited from 24 neighborhoods in and around Lima, Peru. We assessed HIV testing frequency, testing behaviour, and motivations and barriers to testing. Multivariate analysis identified correlates to prior HIV

testing. RESULTS: Overall, 79.6% reported HIV testing within their lifetimes, however, only 6.2% reported an average of two tests per year, as per Peruvian Ministry of Health guidelines. The most commonly reported motivators for testing were to check one's health (23.3%), lack of condom use (19.7%), and availability of free testing (14.0%), while low self-perceived risk for HIV (46.9%), fear of a positive result (42.0%), and lack of access to testing services (35.7%) were the most frequently reported barriers. In multivariate analysis, factors independently associated with HIV testing included age [adjusted prevalence ratio (APR) 1.00, 95% CI (1.00-1.01)], transgender-identification vs. gay-identification [APR 1.11, 95% CI (1.03-1.20)], history of transactional sex [APR 1.16, 95% CI (1.07-1.27)], and prior sexually transmitted infection diagnosis [APR 1.15, 95% CI (1.07-1.24)]. CONCLUSIONS: An overwhelming majority of participants did not meet the standard-of-care for testing frequency. The reported motivations and barriers to testing highlight issues of risk perception and accessibility. Our findings suggest utilizing non-traditional outreach methods and promoting HIV testing as a routine part of healthcare in Peru to encourage testing and knowledge of HIV serostatus.

29. Leelawiwat, W., et al. (2015). "**Increasing HIV-1 molecular complexity among men who have sex with men in Bangkok.**" *AIDS Res Hum Retroviruses* 31(4): 393-400.

In Thailand, new HIV-1 infections are largely concentrated in certain risk groups such as men who have sex with men (MSM), where annual incidence may be as high as 12% per year. The paucity of information on the molecular epidemiology of HIV-1 in Thai MSM limits progress in understanding the epidemic and developing new prevention methods. We evaluated HIV-1 subtypes in seroincident and seroprevalent HIV-1-infected men enrolled in the Bangkok MSM Cohort Study (BMCS) between 2006 and 2011. We characterized HIV-1 subtype in 231 seroprevalent and 194 seroincident subjects using the multihybridization assay (MHA). Apparent dual infections, recombinant strains, and isolates found to be nontypeable by MHA were further characterized by targeted genomic sequencing. Most subjects were infected with HIV-1 CRF01_AE (82%), followed by infections with recombinants (11%, primarily CRF01_AE/B recombinants), subtype B (5%), and dual infections (2%). More than 11 distinct chimeric patterns were observed among CRF01B_AE/B recombinants, most involving recombination within integrase. A significant increase in the proportion of nontypeable strains was observed among seroincident MSM between 2006 and 2011. CRF01_AE and subtype B were the most and least common infecting strains, respectively. The predominance of CRF01_AE among HIV-1 infections in Thai MSM participating in the BMCS parallels trends observed in Thai heterosexuals and injecting drug users. The presence of complex recombinants and a significant rise in nontypeable strains suggest ongoing changes in the genetic makeup of the HIV-1 epidemic in Thailand, which may pose challenges for HIV-1 prevention efforts and vaccine development.

30. Liang, J., et al. (2015). "**Community-Based HIV-1 Early Diagnosis and Risk Behavior Analysis of Men Having Sex with Men in Hong Kong.**" *PLoS One* 10(4): e0125715.
Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4410921/pdf/pone.0125715.pdf>

The increasing prevalence of HIV-1 among men having sex with men (MSM) calls for an investigation of HIV-1 prevalence and incidence in MSM by early diagnosis to assist with early preventive interventions in Hong Kong. The participants were recruited randomly from MSM communities within a one-year period. Rapid HIV Test (RHT) and real-time dried blood spot (DBS)-based quantitative polymerase chain reaction (DBS-qPCR) were used for the early diagnosis of 474 participants. Risk behavior analysis was performed by studying information obtained from

the participants during the study period. The HIV-1 prevalence and incident rates in the studied MSM population were 4.01% (19/474) and 1.47% (7/474), respectively. Three infected participants were found at the acute phase of infection by DBS-qPCR. Only 46.4% (220/474) MSM were using condoms regularly for anal sex. HIV infection significantly correlated with unprotected receptive anal sex and syphilis infection. An increased number of infections was found among foreign MSM in Hong Kong. This study is the first to use DBS-qPCR to identify acutely infected individuals in a community setting and to provide both the prevalence and incident rates of HIV-1 infection among MSM in Hong Kong. The risk analysis provided evidence that behavior intervention strengthening is necessary to fight against the increasing HIV-1 epidemic among MSM in Hong Kong and surrounding regions in Asia.

31. Lim, S. H., et al. (2015). "**Latent class analysis of substance use among men who have sex with men in Malaysia: Findings from the Asian Internet MSM Sex Survey.**" *Drug Alcohol Depend* 151: 31-37.

BACKGROUND: High prevalence of substance use among men who have sex with men (MSM) may drive the HIV epidemic in Malaysia but patterns of substance use among Malaysian MSM have not been examined. Our study investigated specific Malaysian MSM risk groups to determine the association between their substance use and sexual risk behaviors. **METHODS:** Data from Malaysian respondents (n=1235) in a large, multinational online survey of Asian MSM in 2010 were used to identify latent classes of substance use. Subsequent covariates were included in a joint model to predict class membership. **RESULTS:** The 3-class model was identified as the best fitting model, which included: (1) 'negligible substance use' for those reporting none or using any substance sparingly; (2) 'soft substance use' for those using poppers, ecstasy and drinking before sex; and (3) 'amphetamine-type stimulant (ATS) use' for those using stimulants (methamphetamine, ecstasy), erectile dysfunction drugs and recreational drug use before sex. Men in the 'ATS use' category were significantly less likely to not know their HIV status (AOR: 0.30, 95%CI: 0.14,0.66), more likely to have had more than 6 male sex partners (AOR: 4.83, 95% CI: 1.92-12.2), to have group sex (AOR:4.07, 95% CI: 2.31-7.15), to report inconsistent condom use (AOR:2.01, 95% CI: 1.12-3.60), to be HIV-infected (AOR:3.92, 95% CI: 1.63-8.42) and to have had any sexually transmitted infections (AOR:3.92, 95% CI:1.70, 9.08), compared to men in the 'negligible substance use' category. **CONCLUSIONS:** Our study identified subgroups of Malaysian MSM with distinct substance use patterns and HIV-related risk profiles, which provides implication for targeting HIV prevention in this subpopulation.

32. Lippman, S. A., et al. (2015). "**Client and provider perspectives on new HIV prevention tools for MSM in the Americas.**" *PLoS One* 10(3): e0121044.
Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4380356/pdf/pone.0121044.pdf>

Men who have sex with men (MSM) in the Americas require targeted, combination HIV prevention approaches. We solicited client and provider perspectives on emerging prevention interventions including HIV pre-exposure prophylaxis (PrEP) and HIV self-tests through focus groups and in-depth interviews with 130 MSM and 41 providers across four sites: New York, San Francisco, Lima, and Rio de Janeiro. Among the MSM participants, we identified three prevention typologies: non-condom users, inconsistent condom users, and consistent condom users. Northern and Southern MSM differed in the variety of harm reduction strategies utilized: where U.S. MSM relied on condom use as well as disclosure and seroadaptive behaviors for prevention, condom use without disclosure or serostatus discussions was the norm in South America. Interest in new prevention

technologies was shaped by the social context. U.S. MSM preferences differed by typology, such that non-condom users were interested in taking PrEP and using home HIV tests. MSM in Brazil, regardless of typology, were interested in exploring new prevention options. MSM in Peru demonstrated moderate interest but were less comfortable with adopting new strategies. MSM and providers' opinions differed substantially with respect to new prevention options. Across sites, most providers were reticent to engage with new prevention options, though some NGO-based providers were more supportive of exploring new prevention tools. Both clients and providers will need to be engaged in developing integrated prevention strategies for MSM.

33. Lu, J., et al. (2015). **"The proportion and trend of human immunodeficiency virus infections associated with men who have sex with men from Chinese voluntary blood donors: a systematic review and meta-analysis."** *Transfusion* 55(3): 576-585.

BACKGROUND: Human immunodeficiency virus (HIV)-positive cases associated with men who have sex with men (MSM) have rapidly increased over the past years. The objective of this study is to comprehensively evaluate the proportions, changing trends, and geographical distribution of MSM-associated HIV cases from Chinese voluntary blood donors by systematically reviewing the available literature. STUDY DESIGN AND METHODS: Major English and Chinese research databases were searched for studies reporting study locations, study years, the number of HIV infections among blood donors, and the number of HIV-positive donations associated with MSM in China. The proportion estimates were calculated; subgroup analyses and test for time trend were performed using software of comprehensive meta-analysis. RESULTS: Thirty-four studies met eligibility criteria. The pooled proportion of HIV-positive donations associated with MSM from 2001 to 2012 was 36.5% (95% confidence interval, 29.6%-44.1%). The epidemic was found to be more severe in northeast and north China compared to south China (59.6%; 55.0% vs. 3.8%, respectively). The proportion showed a significantly increasing trend over the study period (10.3% in 2001-2005; 38.6% in 2006-2009; and 47.6% in 2010-2012; trend test chi-square = 16.42, $p < 0.001$). CONCLUSION: The relatively high proportion of MSM-associated HIV-positive donors is of concern. Efficient and effective measures focused on public education and improving knowledge of blood safety are needed to prevent this at-risk population from seeking HIV testing through blood donation. It is also imperative to expand the scope of postdonation nucleic acid testing to shorten the window period to improve blood supply safety in China.

34. MacAllister, J., et al. (2015). **"A comprehensive review of available epidemiologic and HIV service data for female sex workers, men who have sex with men, and people who inject drugs in select West and Central African countries."** *J Acquir Immune Defic Syndr* 68 Suppl 2: S83-90. Online at: http://journals.lww.com/jaids/Fulltext/2015/03011/A_Comprehensive_Review_of_Available_Epidemiologic.3.aspx

OBJECTIVE: To identify gaps in epidemiologic and HIV service coverage data for key populations (KP), including men who have sex with men (MSM), female sex workers (FSW), people who inject drugs (PWID), and transgender persons, in 8 West and Central Africa countries: Cameroon, Chad, Cote d'Ivoire, Democratic Republic of Congo, Ghana, Guinea-Bissau, Niger, and Nigeria. METHODS: A comprehensive search of peer-reviewed literature was conducted using PubMed and MEDLINE. This search was supplemented by an additional search of relevant non-peer-reviewed, or gray, literature. Available data on HIV prevalence, KP size estimates, HIV prevention

service targets, and HIV prevention service coverage, including the availability of population-specific minimum packages of services, were included in the review. RESULTS: No data for transgender persons were found. HIV prevalence data and size estimates were more frequently available for FSW, followed by MSM. Only 2 countries (Ghana and Nigeria) had both KP size estimates and HIV prevalence data for PWID. The degree to which HIV prevention service targets were adopted was highly variable across the selected countries, and the collection of relevant HIV prevention service coverage data for those targets that were identified was inconsistent. Population-specific minimum packages of services were identified in 3 countries (Cote d'Ivoire, Ghana, and Nigeria), although only Ghana and Nigeria included services for PWID. CONCLUSIONS: Epidemiologic and HIV prevention service data for FSW, MSM, PWID, and transgender persons remain sparse, and these KP are inconsistently accounted for in-service delivery and nationally endorsed minimum packages of HIV services in West and Central Africa. The strengthening of data collection and reporting to consistently include KP and the inclusion of that data in national planning is imperative for effectively addressing the HIV epidemic.

35. Magidson, J. F., et al. (2015). "**Engagement in HIV care and sexual transmission risk behavior among men who have sex with men using online social/sexual networking in Latin America.**" *AIDS Care* 27(8): 1055-1062.

HIV/AIDS in Latin America is concentrated among men who have sex with men (MSM). However, accurate estimates of engagement in HIV care in this population can be difficult to ascertain because many do not self-identify as MSM. Given evidence of decreased HIV transmissibility in the context of antiretroviral therapy (ART) adherence, identifying individuals not in care who are engaging in HIV transmission risk behavior is crucial for secondary prevention. Primary aims of this study were to examine engagement in care from testing to ART adherence among MSM using online social/sexual networking across Latin America, and whether individuals not in care at each step reported greater sexual transmission risk behavior than those in care. In the overall sample (n = 28,779), approximately 75% reported ever being tested for HIV, and 9% reported having received an HIV diagnosis. Among known HIV-infected individuals, 20% reported not being in care, 30% reported not taking ART, and 55% reported less than 100% ART adherence. Over one-third of HIV-infected individuals reported sexual HIV transmission risk behavior, defined as unprotected anal intercourse (UAI) with a male partner of different/unknown HIV serostatus in the past three months. HIV-infected individuals not engaged in care more often reported UAI compared to those in care (OR = 1.29; 95% CI = 1.01-1.66). Although not statistically significant, HIV-infected individuals not on ART more often reported UAI compared to those on ART (OR = 1.18; 95% CI = 0.94-1.47). Individuals who reported less than 100% ART adherence more often reported UAI compared to individuals with 100% adherence (OR = 1.55; 95% CI = 1.26-1.90). Findings demonstrate that a substantial portion of HIV-infected MSM in Latin America who are likely not virologically suppressed from lack of ART use or adherence report sexual HIV transmission risk. Tailoring secondary HIV prevention for MSM in Latin America who are not in HIV care or adherent to ART may be warranted.

36. Mahapatra, T., et al. (2015). "**Burden and Correlates of HIV among Men Who Have Sex with Men in West Bengal, India: Analysis of Sentinel Surveillance Data.**" *PLoS One* 10(5): e0127232. Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4440763/pdf/pone.0127232.pdf>

BACKGROUND: Little is known about the socio-behavioral risk factors for HIV acquisition among hard-to-reach men who have sex with men (MSM) population in India, particularly from the

densely populated eastern part. Thus to measure the burden and correlates of HIV among MSM in West Bengal state of eastern India, a cross-sectional analysis of the national HIV Sentinel Surveillance (HSS) data was conducted. METHODS: In 2011, between July and September, involving all sentinel sites of the state, 1237 consenting MSM were anonymously interviewed and tested for HIV following national guidelines. Using a short, structured questionnaire, information was collected on socio-behavioral factors along with sexual practices and was analyzed to determine burden of HIV and the role of its socio-behavioral correlates on HIV acquisition. RESULTS: Among participants, mean age was 23.4 years, 44.55% were "Kothis" (usually receptive partner) and 25.1% admitted receiving money for sex with man. HIV sero-positivity was 5.09%. Using logistic regression method, for both bivariate and multivariate (with saturated model) analyses, transport-workers [adjusted odds ratio (AOR)=8.95, 95% confidence interval (95%CI): 1.09-73.71], large business-owners/self-employed (AOR=8.46, 95%CI: 1.25-57.49), small business-owners/cultivators (AOR=7.90, 95%CI: 1.67-37.38), those who visited the sentinel site for official purposes (AOR=7.60, 95%CI: 1.21-47.83) and paying money for having sex with men (AOR=3.03, 95%CI: 1.10-8.33) were strongly associated with higher HIV sero-positivity with than their counterparts. Using the parsimonious model for multivariate analysis, Kothis (AOR=4.64, 95%CI: 1.03-20.89), paying (AOR=2.96, 95%CI: 1.15-7.58) or receiving (AOR=2.06, 95%CI: 1.06-3.99) money for having sex with a man were associated with higher risk of HIV. CONCLUSIONS: Focused intervention targeting the high risk MSM subgroups including Kothis, transport-workers, business-owners/self-employed and those who exchanged money for having sex with men, seemed to be the need of the hour for preventing the spread of HIV infection within and from this understudied population.

37. Malta, M., et al. (2015). "**Improvement of HAART in Brazil, 1998-2008: a nationwide assessment of survival times after AIDS diagnosis among men who have sex with men.**" BMC Public Health 15: 226. Online at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4369842/pdf/12889_2015_Article_1530.pdf

BACKGROUND: In 1996, Brazil became the first developing country to provide free, universal access to HAART, laboratory monitoring, and clinical care to any eligible patient. As of June 2014, approximately 400,000 patients were under treatment, making it the most comprehensive HIV treatment initiative implemented thus far in a middle-income country, worldwide. The Brazilian epidemic is highly concentrated among men who have sex with men (MSM). METHODS: Four national information systems were combined and Cox regression was used to conduct retrospective cohort analysis of HAART availability/access on all-cause mortality among MSM diagnosed with AIDS reported to the information systems between 1998-2008, adjusting for demographic, clinical, and behavioral factors and controlling for spatially-correlated survival data by including a frailty effect. Multiple imputation by chained equations was used to handle missing data. RESULTS: Among 50,683 patients, 10,326 died during the 10 year of period. All-cause mortality rates declined following introduction of HAART, and were higher among non-white patients and those starting HAART with higher viral load and lower CD4 counts. In multivariable analysis adjusted for race, age at AIDS diagnosis, and baseline CD4 cell count, MSM diagnosed in latter periods had almost a 50% reduction in the risk of death, compared to those diagnosed between 1998-2001 (2002-2005 adjHR: 0.54, 95% CI:0.51-0.57; 2006-2008 adjHR: 0.51, 95% CI:0.48-0.55). After controlling for spatially correlated survival data, mortality remained higher among those diagnosed in the earliest diagnostic cohort and lower among non-white patients and those starting HAART with higher viral load and lower CD4 lymphocyte counts. CONCLUSIONS: Universal and free access to HAART has helped achieve impressive declines in

AIDS mortality in Brazil. However, after a 10-years follow-up, differential AIDS-related mortality continue to exist. Efforts are needed to identify and eliminate these health disparities, therefore improving the Brazilian response towards HIV/AIDS epidemic.

38. Meng, X., et al. (2015). "**Relative Risk for HIV Infection Among Men Who Have Sex with Men Engaging in Different Roles in Anal Sex: A Systematic Review and Meta-analysis on Global Data.**" *AIDS Behav* 19(5): 882-889.

We systematically reviewed and meta-analyzed global data on the relative risk for HIV infection among men who have sex with men (MSM) engaging in different roles in anal sex. MSM engaging in receptive anal sex only (MRAI) and MSM engaging in both insertive and receptive anal sex (MIRAI) were 6.9 (95 % CI 5.5-8.6) and 4.3 (95 % CI 3.6-5.3) times more likely to have prevalent HIV compared to MSM engaging in insertive anal sex only (MIAI) in 1981-1985. These figures were 1.8 (95 % CI 1.6-2.0) and 2.2 (95 % CI 2.0-2.4) in 1986-2010. Overall, MRAI and MIRAI were 6.2 (95 % CI 3.3-11.8) and 6.6 (95 % CI 3.8-11.7) times more likely to develop incident HIV infection compared to MIAI. MRAI are at higher risk for HIV infection compared to MIAI. HIV prevalence among men engaging in all roles in anal sex is high enough that all MSM should be aware of potential risk.

39. Mine, M., et al. (2015). "**Performance of rapid HIV testing by lay counselors in the field during the behavioral and biological surveillance survey among female sex workers and men who have sex with men in Botswana.**" *J Acquir Immune Defic Syndr* 68(3): 365-368.

The study assessed the performance of rapid HIV testing with whole blood using Kehua Bio-engineering HIV (1 + 2) and Uni-Gold HIV test kits by trained and certified lay counselors, offered to female sex workers and men who have sex with men during the 2012 survey fieldwork. The results of rapid HIV testing were compared with enzyme-linked immunosorbent assay testing performed in a parallel algorithm at the HIV Reference Laboratory. The sensitivity and the specificity of rapid HIV testing were high for men who have sex with men and female sex workers, with 98.1% and 100%, and 98.2% and 98.5%, respectively. Misclassifications occurred with rapid testing.

40. Muessig, K. E. and C. H. Bien (2015). "**A mixed-methods study on the acceptability of using eHealth for HIV prevention and sexual health care among men who have sex with men in China.**" 17(4): e100.

BACKGROUND: Human immunodeficiency virus (HIV) infection disproportionately affects men who have sex with men (MSM). Over half of all HIV-positive MSM in China may not know their HIV status. Mobile phones and Web interventions (eHealth) are underutilized resources that show promise for supporting HIV education, testing, and linkage to care. OBJECTIVE: This mixed-methods study among MSM in China assessed technology utilization and eHealth acceptability for sexual health care. METHODS: We conducted in-depth interviews and an online survey. Qualitative analyses informed the development of the Internet survey, which was administered through two popular MSM websites. Bivariate and multivariate analysis assessed characteristics of MSM interested in eHealth for sexual health care. RESULTS: The qualitative sample included MSM across a range of ages, education, marital status, sexuality, and HIV testing experience. Qualitative findings included the importance of the Internet as the primary source of information about sexual health, HIV and other sexually transmitted diseases (STDs), use of the Internet to enable

HIV testing opportunities by facilitating connections with both the gay community and health care providers, and mixed perceptions regarding the confidentiality of eHealth tools for sexual health. Among the Internet sample (N=1342), the average age was 30.6 years old, 82.81% (1098/1342) were single, and 53.42% (711/1331) had completed college. In the past 3 months, 38.66% (382/988) had condomless sex and 60.53% (805/1330) self-reported having ever tested for HIV. The majority of men owned computers (94.14%, 1220/1296) and mobile phones (92.32%, 1239/1342), which many had used to search for HIV/STD information and testing sites. In multivariate analysis, interest in using computers or mobile phones to support their sexual health care was associated with being a student, prior use of computers or mobile phones to search for general health information, prior use of computers or mobile phones to search for HIV/STD information, and confidentiality concerns. CONCLUSIONS: MSM in this sample had high utilization of technology and interest in eHealth despite confidentiality concerns. Future eHealth interventions can thoughtfully and creatively address these concerns as a priority for successful implementation.

41. Mugo, P. M., et al. (2015). "**Understanding Adherence to Daily and Intermittent Regimens of Oral HIV Pre-exposure Prophylaxis Among Men Who Have Sex with Men in Kenya.**" *AIDS Behav* 19(5): 794-801. Online at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4415948/pdf/10461_2014_Article_958.pdf

A qualitative assessment of Kenyan men who have sex with men taking daily and intermittent oral HIV pre-exposure prophylaxis (PrEP) found stigma, sex work, mobility, and alcohol impacted adherence. We analyzed quantitative data from the same cohort to explore different definitions of intermittent adherence. Volunteers were randomized to daily emtricitabine/tenofovir or placebo, or intermittent (prescription: Mondays/Fridays/after sex, maximum 1 dose/day) emtricitabine/tenofovir or placebo (2:1:2:1), and followed for 4 months. By electronic monitoring, median adherence for daily dosing was 80 %. Median adherence for intermittent dosing was 71 % per a "relaxed" definition (accounting for off-prescription dosing) and 40 % per a "strict" definition (limited to the prescription). Factors associated with lower adherence included travel, transactional sex, and longer follow-up; higher adherence was associated with daily dosing and an income. The definition of intermittent dosing strongly affects interpretation of adherence. These findings suggest interventions should address challenges of mobility, sex work, and long-term PrEP.

42. Mulongo, S., et al. (2015). "**Applying innovative approaches for reaching men who have sex with men and female sex workers in the Democratic Republic of Congo.**" *J Acquir Immune Defic Syndr* 68 Suppl 2: S248-251. Online at: http://journals.lww.com/jaids/Fulltext/2015/03011/Applying_Innovative_Approaches_for_Reaching_Men.23.aspx

BACKGROUND: In the Democratic Republic of Congo (DRC), men who have sex with men (MSM) and female sex workers (FSW) have the highest HIV prevalence but have the least access to services due to their marginalization within Congolese society. METHODS: The Projet Integre de VIH/SIDA au Congo (ProVIC) aims to reduce the risk and impact of HIV in the DRC through community- and facility-based prevention, counseling and testing, and treatment strategies aimed at high-risk populations, including MSM and FSW. To more effectively meet the needs of key populations, ProVIC tailored the existing interventions to better suit MSM and FSW by

offering mobile counseling and rapid HIV testing services at night in MSM and FSW "hotspots," targeting outreach to and mobilizing key populations through social networks of MSM and FSW peer educators and recruiters, and referring MSM and FSW who test HIV positive to "friendly" clinics. RESULTS: Through these approaches, ProVIC was able to reach 2,621 MSM and 12,746 FSW with targeted prevention messaging in 2013 and provide testing and counseling services to 4,366 MSM and 21,033 FSW from October 2012 to June 2014. CONCLUSIONS: By applying innovative adaptations geared toward key populations, ProVIC has been able to better reach MSM and FSW in the DRC. ProVIC's targeted interventions for MSM and FSW provide promising examples of programming that can be used to meet the HIV prevention and testing needs of key populations and improve referrals for care and treatment, particularly in complex and unstable settings similar to the DRC.

43. Nelson, L. E., et al. (2015). "**The Association of HIV Stigma and HIV/STD Knowledge With Sexual Risk Behaviors Among Adolescent and Adult Men Who Have Sex With Men in Ghana, West Africa.**" *Res Nurs Health* 38(3): 194-206.

Ghanaian men who have sex with men (MSM) have a high HIV seroprevalence, but despite a critical need to address this public health concern, research evidence has been extremely limited on influences on sexual risk behavior among MSM in Ghana. To investigate associations between HIV/STD knowledge, HIV stigma, and sexual behaviors in a sample of MSM in Ghana, we conducted a secondary data analysis of cross-sectional survey data from a non-probability sample of Ghanaian MSM (N = 137). Nearly all the men (93%) had more than one current sex partner (M = 5.11, SD = 7.4). Of those reported partners, the average number of current female sexual partners was 1.1 (SD = 2.6). Overall, knowledge levels about HIV and STDs were low, and HIV stigma was high. There was no age-related difference in HIV stigma. Younger MSM (<=25 years) used condoms less often for anal and vaginal sex than did those over 25. Relative frequency of condom use for oral sex was lower in younger men who had higher STD knowledge and also was lower in older men who reported high HIV stigma. Knowledge and stigma were not associated with condom use for anal or vaginal sex in either age group. These descriptive data highlight the need for the development of intervention programs that address HIV/STD prevention knowledge gaps and reduce HIV stigma in Ghanaian communities. Intervention research in Ghana should address age-group-specific HIV prevention needs of MSM youth. (c) 2015 Wiley Periodicals, Inc.

44. Oldenburg, C. E., et al. (2015). "**Transactional sex among men who have sex with men in Latin America: economic, sociodemographic, and psychosocial factors.**" *Am J Public Health* 105(5): e95-e102.

OBJECTIVES: We assessed factors associated with engagement in transactional sex among men who have sex with men recruited from one of the largest Internet sites for men seeking social or sexual interactions with other men in Latin America. METHODS: We constructed multilevel logistic regression models to analyze factors associated with engagement in transactional sex in 17 Latin American countries in 2012. RESULTS: Of 24 051 respondents, 1732 (7.2%) reported being paid for sexual intercourse in the past 12 months. In a multivariable model, higher country-level unemployment was associated with increased odds of transactional sex (adjusted odds ratio [AOR] = 1.07 per 1% increase in unemployment; 95% confidence interval [CI] = 1.00, 1.13). Individual or interpersonal factors associated with increased odds of engagement in transactional sex included self-reported HIV (AOR = 1.33; 95% CI = 1.04, 1.69) or sexually transmitted infection (AOR = 1.33; 95% CI = 1.11, 1.59), childhood sexual abuse history (AOR = 1.75; 95% CI = 1.48,

2.06), intimate partner violence (past 5 years, AOR = 1.68; 95% CI = 1.45, 1.95), and sexual compulsivity (AOR = 1.77; 95% CI = 1.49, 2.11). CONCLUSIONS: Structural-level economic interventions and those that address individual and interpersonal factors may improve HIV prevention efforts among men who have sex with men who engage in transactional sex.

45. Pattanasin, S., et al. (2015). "**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.

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 4-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.

46. Pham, Q. D., et al. (2015). "**Men who have sex with men in southern Vietnam report high levels of substance use and sexual risk behaviours but underutilise HIV testing services: a cross-sectional study.**" Sex Transm Infect 91(3): 178-182.

OBJECTIVES: This study aims to investigate the levels and correlates of unprotected anal intercourse (UAI), drug and alcohol use, and HIV testing among Vietnamese men who have sex with men (MSM). METHODS: A total of 381 MSM were recruited in a community-based cross-sectional survey in two towns (Long Xuyen and Chau Doc) in An Giang province in 2009 by using a two-stage cluster sampling. Face-to-face interviews were conducted to elicit respondents' characteristics. Regression analysis was used to determine the correlates of key behavioural outcomes. RESULTS: In the month before being interviewed, 19.9% respondents had used drugs (13.6% injected), 25.2% had consumed alcohol daily and 33.9% had a UAI with ≥ 2 male partners. Only 19.2% were tested for HIV in the 12 months before being interviewed. Injecting drug use was significantly associated with having sexual partners who also inject, whereas daily alcohol consumption was associated with an ever-married/cohabiting with women, being transgender and having had at least three male partners in the previous 3 months. Transactional sex, weekly alcohol use, early sexual debut and perception of being at higher risk of HIV infection were correlates of UAI in multiple partnerships. MSM who self-identified as not being gay and those who perceived themselves to be at low risk of HIV infection were less likely to test for HIV. CONCLUSIONS: Due to the scarcity of effective MSM-targeted prevention programmes, it is likely that substance use, risky sexual behaviours and low testing uptake may substantially contribute to

the spread of HIV among Vietnamese MSM sampled. Harm reduction programmes targeting MSM, and in particular injecting MSM, should be rolled-out in this province.

47. Phanuphak, N., et al. (2015). "**Anogenital HIV RNA in Thai men who have sex with men in Bangkok during acute HIV infection and after randomization to standard vs. intensified antiretroviral regimens.**" *J Int AIDS Soc* 18(1): 19470.

Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4425809/pdf/JIAS-18-19470.pdf>

INTRODUCTION: HIV transmission risk is highest during acute HIV infection (AHI). We evaluated HIV RNA in the anogenital compartment in men who have sex with men (MSM) during AHI and compared time to undetectable HIV RNA after three-drug versus five-drug antiretroviral therapy (ART) to understand risk for onward HIV transmission. METHODS: MSM with AHI (n=54) had blood, seminal plasma and anal lavage collected for HIV RNA at baseline, days 3 and 7, and weeks 2, 4, 12 and 24. Data were compared between AHI stages: 1 (fourth-generation antigen-antibody combo immunoassay [IA]-, third-generation IA-, n=15), 2 (fourth-generation IA+, third-generation IA-, n=9) and 3 (fourth-generation IA+, third-generation IA+, western blot-/indeterminate, n=30) by randomization to five-drug (tenofovir+emtricitabine+efavirenz+raltegravir+maraviroc, n=18) versus three-drug (tenofovir+emtricitabine+efavirenz, n=18) regimens. RESULTS: Mean age was 29 years and mean duration since HIV exposure was 15.4 days. Mean baseline HIV RNA was 5.5 in blood, 3.9 in seminal plasma and 2.6 log₁₀ copies/ml in anal lavage (p<0.001). Blood and seminal plasma HIV RNA were higher in AHI Stage 3 compared to Stage 1 (p<0.01). Median time from ART initiation to HIV RNA <50 copies/ml was 60 days in blood, 15 days in seminal plasma and three days in anal lavage. Compared with the three-drug ART, the five-drug ART had a shorter time to HIV RNA <1500 copies/ml in blood (15 vs. 29 days, p=0.005) and <50 copies/ml in seminal plasma (13 vs. 24 days, p=0.048). CONCLUSIONS: Among MSM with AHI, HIV RNA was highest in blood, followed by seminal plasma and anal lavage. ART rapidly reduced HIV RNA in all compartments, with regimen intensified by raltegravir and maraviroc showing faster HIV RNA reductions in blood and seminal plasma.

48. Ramakrishnan, L., et al. (2015). "**Comparison of Sexual Risk, HIV/STI Prevalence and Intervention Exposure Among Men Who Have Sex with Men and Women (MSMW) and Men Who Have Sex with Men Only (MSMO) in India: Implications for HIV Prevention.**" *AIDS Behav.*

Using data from a cross-sectional bio-behavioral survey conducted among men who have sex with men (n = 3833) in India, we examined differences related to HIV-related sexual risk, HIV/STI prevalence and intervention exposures between men who have sex with men and women (MSMW, 35 % of the sample) and men who have sex with men only (MSMO). Among MSMW, 93 % reported having female regular partners, 14 % had female paid partners, and all types of male partners (regular 55 %; casual 77.1 %; paying 47 %; paid 19 %). Logistic regression revealed that MSMW had higher odds of being aged 26 years and above (AOR 4.45, 95 % CI 3.66-5.42), lower odds of inconsistently using condoms with male partners (AOR 0.82, 95 % CI 0.67-0.98) and lower odds of having kothi (feminine/mostly receptive) identity (AOR 0.07, 95 % CI 0.06-0.09). HIV intervention exposure and HIV/STI prevalence did not differ significantly between MSMW and MSMO (HIV 13.1 vs. 12.2 %; active syphilis 3.5 vs. 3.1 %, respectively). Concurrent sexual partnerships with men and women pose risk of HIV transmission/acquisition for MSM and their male and female partners. All subgroups of MSM require tailored information and skills to consistently use condoms with different types of partners of either gender.

49. Ramesh, S., et al. (2015). "**Contributions of an intensive HIV prevention programme in increasing HIV testing among men who have sex with men in Andhra Pradesh, India.**" Glob Public Health 10(4): 474-484.

The objective of this study was to identify the factors associated with uptake of HIV testing and to assess their relative contributions in increasing HIV testing. Data are drawn from two rounds of cross-sectional Integrated Behavioural and Biological Assessment (IBBA) surveys of self-identified men who have sex with men (MSM) from Andhra Pradesh, India, recruited through probability-based sampling in 2005-2006 and 2009-2010 (IBBA1, n = 1621; IBBA2, n = 1608, respectively). Logistic regression model was used to assess the relationship between socio-demographic characteristics, sexual behaviours, programme exposure and HIV testing. Significant factors were further parsed using decomposition analysis to examine the contribution of different components of that factor towards the change in HIV testing. There was a significant increase in the proportion of MSM reporting HIV testing from IBBA1 to IBBA2. Higher literacy levels, being 25-34 years old, being a kothi (predominantly receptive), engaging in both commercial and non-commercial sexual relationships and intervention programme exposure contributed the most to the increase in HIV testing.

50. Ross, M. W., et al. (2015). "**Health care in a homophobic climate: the SPEND model for providing sexual health services to men who have sex with men where their health and human rights are compromised.**" Glob Health Action 8: 26096.
Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4365140/pdf/GHA-8-26096.pdf>

We present a model for developing health services for men who have sex with men (MSM) in sub-Saharan Africa and other places where MSM are heavily stigmatized and marginalized. The processes of the SPEND model include Safe treatment for sexually transmissible infections (STIs) and HIV; Pharmacy sites for treatment of STIs in countries where pharmacies and drug stores are the source of medical advice and treatment; Education in sexual health issues for health professionals to reduce discrimination against MSM patients; Navigation for patients who have HIV and are rejected or discriminated against for treatment; and Discrimination reduction through educating potential leaders in tertiary education in issues of human sexuality. Supporting empirical evidence from qualitative and quantitative studies is summarized, and barriers to implementation are discussed. Health care for MSM is one of the casualties of anti-homosexual social and legal climates. There is no amnesty for MSM in health care settings, where the stigma and discrimination that they face in the rest of society is replicated. Such conditions, however, make it necessary to consider ways of providing access to health care for MSM, especially where rates of HIV and STIs in MSM populations are high, and stigma and discrimination encourages high proportions of MSM to marry. This in itself enhances the status of MSM as an important bridge population for STIs including HIV. Where anti-homosexual laws encourage, or are believed to encourage, the reporting of MSM to authorities, health care may be seen as an agent of authority rather than an agency for care.

51. Sandfort, T. G., et al. (2015). "**HIV testing practices of South African township MSM in the era of expanded access to ART.**" AIDS Behav 19(3): 561-574.

While men who have sex with men (MSM) in Africa are at high risk for HIV infection, few of those already infected know their status. Effectively promoting frequent HIV testing-of increasing

importance with the expanding accessibility of antiretroviral treatment-requires an understanding of the testing practices in this population. To understand men's HIV testing practices, including their behavior, experiences, and perceptions, we conducted in-depth interviews with 81 black South African MSM (ages 20-39), purposively recruited from four townships. Many men in the sample had tested for HIV. While ever having tested seemed to facilitate repeat testing, men still expressed a high level of discomfort with testing. It was common to test after having engaged in risky behavior, thus increasing anxiety about testing that was already present. Fear that they might test HIV positive caused some men to avoid testing until they were clearly sick, and others to avoid testing completely. HIV testing may increase in this population if it becomes a routine practice, instead of being driven by anxiety-inducing incidents. Mobilization through social support might facilitate frequent testing while education about current treatment options is needed.

52. Sandfort, T. G., et al. (2015). "**Gender Expression and Risk of HIV Infection Among Black South African Men Who Have Sex with Men.**" *AIDS Behav.*

To explore demographic, behavioral and psychosocial risk factors for HIV infection in South African MSM we recruited 480 MSM (aged 18 and 44 years) using respondent-driven sampling. Data were collected through individual computer-assisted face-to-face interviews. Participants were tested for HIV. RDS-adjusted HIV prevalence is 30.1 % (unadjusted 35.6 %). Few participants had ever engaged in both receptive and insertive anal sex; sex with women was frequently reported. Independent demographic and behavioral correlates of HIV infection include age, education, number of male sexual partners, ever having been forced to have sex, and ever having engaged in transactional sex; engagement in sex with women was a protective factor. Psychosocial risk factors independently associated with HIV infection were feminine identification, internalized homophobia, and hazardous drinking. Our findings confirm what has been found in other studies, but also suggest that the dynamics and context of sexual transmission among MSM in South Africa differ from those among MSM in Western countries.

53. Solomon, S. S., et al. (2015). "**High HIV prevalence and incidence among MSM across 12 cities in India.**" *Aids* 29(6): 723-731.

OBJECTIVE: To characterize prevalence, incidence, and associated correlates of HIV infection among MSM in 12 cities across India. DESIGN: Cross-sectional sample using respondent-driven sampling from September 2012 to June 2013. METHODS: A total 12022 MSM (~1000/city) were recruited. Participants had to be at least 18 years, self-identify as male, and report oral/anal intercourse with a man in the prior year. HIV infection was diagnosed using three rapid tests. Cross-sectional HIV incidence was estimated using a multiassay algorithm. All estimates incorporate respondent-driven sampling-II weights. RESULTS: Median age was 25 years, 45% self-identified as 'panthi' (predominantly penetrative anal intercourse) and 30.6% reported being married to a woman. Weighted HIV prevalence was 7.0% (range: 1.7-13.1%). In multivariate analysis, significantly higher odds of HIV infection was observed among those who were older, had lower educational attainment, were practicing purely receptive anal sex or both receptive and penetrative sex, and those who were herpes simplex virus-2 positive. Of 1147 MSM who tested HIV positive, 53 were identified as recent HIV infections (annualized incidence = 0.87%; range = 0-2.2%). In multivariate analysis, injecting drugs in the prior 6 months, syphilis, and higher number of male partners and fewer female partners were significantly associated with recent HIV infection. CONCLUSION: We observed a high burden of HIV among MSM in India with tremendous diversity

in prevalence, incidence, and risk behaviors. In particular, we observed high incidence in areas with relatively low prevalence suggesting emerging epidemics in areas not previously recognized to have high HIV burden.

54. Stahlman, S. and A. Grosso (2015). "**Characteristics of men who have sex with men in southern Africa who seek sex online: a cross-sectional study.**" 17(5): e129.

BACKGROUND: Use of the Internet for finding sexual partners is increasing, particularly among men who have sex with men (MSM). In particular, MSM who seek sex online are an important group to target for human immunodeficiency virus (HIV)/sexually transmitted infection (STI) interventions because they tend to have elevated levels of sexual risk behavior and because the Internet itself may serve as a promising intervention delivery mechanism. However, few studies have examined the correlates of online sexual partner seeking among MSM in sub-Saharan Africa. **OBJECTIVE:** These analyses aim to describe the prevalence of using the Internet to find new male sexual partners among MSM in two southern African countries. In addition, these analyses examine the sociodemographic characteristics, experiences of discrimination and stigma, mental health and substance use characteristics, and HIV-related knowledge, attitudes, and behaviors among MSM associated with meeting sex partners online. **METHODS:** MSM were enrolled into a cross-sectional study across two sites in Lesotho (N=530), and one in Swaziland (N=322) using respondent-driven sampling. Participants completed a survey and HIV testing. Data were analyzed using bivariate and multivariable logistic regression models to determine which factors were associated with using the Internet to meet sex partners among MSM. **RESULTS:** The prevalence of online sex-seeking was high, with 39.4% (209/530) of MSM in Lesotho and 43.8% (141/322) of MSM in Swaziland reporting meeting a new male sexual partner online. In the multivariable analysis, younger age (adjusted odds ratio [aOR] 0.37, 95% confidence interval [CI] 0.27-0.50 per 5 years in Lesotho; aOR 0.68, 95% CI 0.49-0.93 in Swaziland), having more than a high school education (aOR 18.2, 95% CI 7.09-46.62 in Lesotho; aOR 4.23, 95% CI 2.07-8.63 in Swaziland), feeling scared to walk around in public places (aOR 1.89, 95% CI 1.00-3.56 in Lesotho; aOR 2.06, 95% CI 1.23-3.46 in Swaziland), and higher numbers of male anal sex partners within the past 12 months (aOR 1.27, 95% CI 1.01-1.59 per 5 partners in Lesotho; aOR 2.98, 95% CI 1.51-5.89 in Swaziland) were significantly associated with meeting sex partners online in both countries. Additional country-specific associations included increasing knowledge about HIV transmission, feeling afraid to seek health care services, thinking that family members gossiped, and having a prevalent HIV infection among MSM in Lesotho. **CONCLUSIONS:** Overall, a high proportion of MSM in Lesotho and Swaziland reported meeting male sex partners online, as in other parts of the world. The information in this study can be used to tailor interventions or to suggest modes of delivery of HIV prevention messaging to these MSM, who represent a young and highly stigmatized group. These data suggest that further research assessing the feasibility and acceptability of online interventions will be increasingly critical to addressing the HIV epidemic among MSM across sub-Saharan Africa.

55. Stahlman, S., et al. (2015). "**Depression and Social Stigma Among MSM in Lesotho: Implications for HIV and Sexually Transmitted Infection Prevention.**" *AIDS Behav.*

Social stigma is common among men who have sex with men (MSM) across Sub-Saharan Africa, and may influence risks for HIV and sexually transmitted infections (STIs) via its association with depression. We conducted a cross-sectional study of 530 MSM in Lesotho accrued via respondent-driven sampling. Using generalized structural equation models we examined

associations between stigma, social capital, and depression with condom use and testing positive for HIV/STIs. Depression was positively associated with social stigma experienced or perceived as a result of being MSM. In contrast, increasing levels of social cohesion were negatively associated with depression. Social stigma was associated with testing positive for HIV; however, this association did not appear to be mediated by depression or condom use. These data suggest a need for integrated HIV and mental health care that addresses stigma and discrimination and facilitates positive social support for MSM.

56. Supindham, T., et al. (2015). "**High Prevalence and Genotype Diversity of Anal HPV Infection among MSM in Northern Thailand.**" *PLoS One* 10(5): e0124499.
Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4416722/pdf/pone.0124499.pdf>

BACKGROUND: HPV infection is common and may cause cancer among men who have sex with men (MSM). Anal HPV infection (HPV+) was found in 85% of HIV-positive (HIV+) and 59% of HIV-negative (HIV-) MSM in Bangkok, central Thailand. As little is known about HPV in this group in northern Thailand, we studied MSM subgroups comprised of gay men (GM), bisexual men (BM), and transgender women (TGW). METHODS: From July 2012 through January 2013, 85 (42.5% of 200) GM, 30 (15%) BM, and 85 (42.5%) TGW who practiced receptive anal intercourse were recruited after informed consent, followed by self-assisted computer interview, HIV testing, and anal swabs for HPV genotyping. RESULTS: Of 197 adequate specimens, the overall prevalence of any HPV was 157 (80%). Prevalence was 89% (76/85) in GM, 48% (14/29) in BM, and 81% (67/83) in TGW. The most common high-risk types were HPV16 (27% of 197), HPV58 (23%), and HPV51 (18%). Prevalence of high-risk types was 74% in 85 GM, 35% in 29 BM, and 71% in 83 TGW. Prevalence of any HPV type, or high-risk type, was 100% and 94%, respectively, among 48 HIV+ MSM, 70% and 54% among 120 HIV- MSM. Of the 197 specimens, 36% (70) had HPV types 16 and/or 18 in the bivalent vaccine, compared to 48% (95) with ≥ 1 of types 16/18/06/11 in the quadrivalent, 56% (111) for 16/18/31/33/45/52/58 in the 7-valent, and 64% (126) for 16/18/31/33/45/52/58/06/11 in the 9-valent. HIV+, GM, and TGW were independently associated with HPV infection. CONCLUSIONS: We found higher rates of both any HPV and high-risk types than previous studies. Among the heretofore unstudied TGW, their equivalent HPV rates were comparable to GM. Current and investigational HPV vaccines could substantially protect GM, BM, and TGW from the serious consequences of HPV infection especially among HIV + MSM.

57. Tang, W., et al. (2015). "**Burden of HIV and Syphilis: A Comparative Evaluation between Male Sex Workers and Non-Sex-Worker Men Who Have Sex with Men in Urban China.**" *PLoS One* 10 (5): e0126604.
Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4427281/pdf/pone.0126604.pdf>

BACKGROUND: The increasing burden of sexually transmitted infections (STIs) including HIV and syphilis among male sex workers (MSWs) is a major global concern. The aim of our study was to evaluate the difference between MSWs and non-commercial MSMs in China. METHODS: During 2008-09, in a cross-sectional study, 2618 adult MSM were recruited through respondent-driven and snowball sampling from seven cities of China. Information regarding socio-demographics, risk behaviors, HIV-related knowledge and STI-related symptoms were collected and participants were tested for HIV and syphilis. RESULTS: Among 2618 participating MSM, 9.97% sold sex to males. HIV prevalence was 7.45% (6.13% among MSWs and 7.59% among non-MSW MSM) and syphilis prevalence was 14.32% (10.73% for MSWs and 14.72% for non-MSW MSM). Compared to non-MSW MSM, MSWs were more likely to be younger (adjusted odds ratio: aOR = 0.91, 95%

confidence interval: 95%CI=0.88-0.93), never married (aOR = 4.38, 95% CI = 2.38-6.80), less educated, heterosexual (aOR = 13.04, 95% CI = 6.08-27.95), less knowledgeable regarding HIV (aOR = 0.70, 95% CI=0.51-0.96), experiencing symptoms of STI (aOR = 2.16, 95% CI = 1.47-3.19), engaging in condomless vaginal intercourse (aOR = 2.16, 95% CI = 1.47-3.19) and less likely to engage in condomless anal intercourse (aOR = 0.62, 95% CI = 0.46-0.85). CONCLUSIONS: High HIV and syphilis prevalence warranted urgent intervention targeting MSWs as a separate sentinel group for efficient surveillance owing to their different distribution from non-MSW MSM. Although male sex workers and non-commercial homosexuals have similar rates of HIV and syphilis, MSWs have different characteristics which should be considered in designing intervention programs targeting them.

58. Tee, K. K., et al. (2015). "**Transmission networks of HIV-1 among men who have sex with men in east and southeast Asia.**" J Acquir Immune Defic Syndr.
59. Tucker, A., et al. (2015). "**How do community-based HIV prevention programmes for men who have sex with men 'travel'? Lessons from the Ukwazana/Zwakalani journey in South Africa.**" Cult Health Sex: 1-13.

Research reveals how homophobia and stigma link closely to HIV among men who have sex with men in sub-Saharan Africa. This paper considers the varying impact of homophobic stigma on HIV prevention programmes among men who have sex with men in South Africa. It explores how a community-based HIV prevention programme based in the peri-urban townships of Cape Town was 'translated' to peri-urban Johannesburg. Drawing on interviews with volunteers and programme facilitators in Johannesburg, it argues that an altered homophobic environment to that found in Cape Town gave different opportunities to engage both with other men who have sex with men and the broader community. It also argues that programme facilitators should be mindful of how varying degrees of homophobic stigma may relate to broader theoretical debates about sexual binary relationships, which can help us understand why particular programmes choose to focus on certain activities rather than others.

60. Volk, J. E., et al. (2015). "**Acceptability and feasibility of HIV self-testing among men who have sex with men in Peru and Brazil.**" Int J STD AIDS.

HIV self-testing has the potential to increase testing frequency and uptake. This pilot study assessed the feasibility and acceptability of HIV self-testing in a sample of sexually active men who have sex with men in Peru and Brazil. Participants were trained to use a whole blood rapid HIV self-test and instructed to use the self-test monthly during this three-month study. Test acceptability was measured with self-reported use of the test at the one-month and three-month study visits, and test feasibility was assessed by direct observation of self-test administration at the final three-month visit. A total of 103 participants (52 in Peru and 51 in Brazil) were enrolled, and 86% completed the three-month study. Nearly all participants reported use of the self-test (97% at one-month and 98% at three-month visit), and all participants correctly interpreted the self-administered test results when observed using the test at the final study visit. HIV self-testing with a blood-based assay was highly acceptable and feasible. HIV self-testing may have the potential to increase testing frequency and to reach high-risk men who have sex with men not currently accessing HIV-testing services.

61. Wirtz, A. L., et al. (2015). "**Feasibility of a combination HIV prevention program for men who have sex with men in Blantyre, Malawi.**" J Acquir Immune Defic Syndr.

INTRODUCTION: The use of combination HIV prevention interventions (CHPI) now represent the standard of care to minimize HIV acquisition risks among men who have sex with men (MSM). There has been limited evaluation of these approaches in generalized HIV epidemics and/or where MSM are stigmatized. A peer-based CHPI program to target individual, social, and structural risks for HIV was developed for MSM in Blantyre, Malawi. METHODS: To test the feasibility of CHPI, adult MSM were followed prospectively from January 2012-May 2013. Participants (N=103) completed sociobehavioral surveys and HIV testing at each of three follow-up study visits. RESULTS: Approximately 90% of participants attended each study visit and 93.2% (n=96) completed the final visit. Participants met with peer-educators a median of 3 times (range: 1-10) in follow-up visits 2 and 3. Condom use at last sex improved from baseline through follow-up visit 3 with main (Baseline:62.5%, Follow-up 3:77.0%, p=0.02) and casual male partners (Baseline:70.7%, Follow-up 3:86.3%, p=0.01). Disclosure of sexual behaviors/orientation to family increased from 25% in follow-up 1 to 55% in follow-up 3 (p<0.01). DISCUSSION: Participants maintained a high level of retention in the study highlighting the feasibility of leveraging community based organizations to recruit and retain MSM in HIV prevention and treatment interventions in stigmatizing settings. Group-level changes in sexual behavior and disclosure in safe settings for MSM were noted. CHPI may represent a useful model to providing access to other HIV prevention for MSM and aiding retention in care and treatment services for MSM living with HIV in challenging environments.

62. Wirtz, A. L., et al. (2015). "**Alcohol Use and Associated Sexual and Substance Use Behaviors Among Men Who Have Sex with Men in Moscow, Russia.**" AIDS Behav.

Alcohol use is a public health problem in the Russian Federation. This study explored relationships between alcohol use and behavioral risks for HIV transmission among men who have sex with men (MSM) in Moscow, Russia. Alcohol use disorder identification test (AUDIT) scores for 1367 MSM participating in a cross-sectional survey and HIV testing were categorized to: "abstinence/low use", "hazardous use", "harmful use/dependency". Multiple logistic regression models compared dependent variables for sexual and drug use behaviors across alcohol use strata. Hazardous and harmful/dependent alcohol use were significantly associated with high-risk sexual behaviors and drug use. Harmful use/dependency was associated with an increased odds of having more than five male sex partners (last 12 months; adjusted odds ratios-AOR 1.69; 95 % CI 1.25-2.27), inconsistent condom use during anal intercourse (AOR 2.19; 95 % CI 1.61-2.96) and, among those using recreational drugs, injection drug use (last month; AOR 4.38; 95 % CI 1.13-17.07) compared to abstinent/low-level users. Harmful/dependent use was marginally associated with HIV infection (AOR 1.48; 95 % CI 0.97-2.25). HIV prevention efforts for MSM in Moscow may benefit from addressing problem alcohol use to mitigate high-risk behaviors.

63. Yan, H., et al. (2015). "**Epidemiological and molecular characteristics of HIV infection among money boys and general men who have sex with men in Shanghai, China.**" Infect Genet Evol 31: 135-141.

To examine and compare the epidemiological and molecular characteristics of HIV infection between money boys (MBs) and general men who have sex with men (MSM) in Shanghai, China. Using a venue-based sampling strategy, a total of 535 MSM including 226 MBs and 309 general

MSM were recruited to participate in a cross-sectional survey including a face-to-face questionnaire interview and HIV testing. Genotyping of HIV-1 pol gene was performed for HIV-positive participants. Compared with general MSM, MBs reported more sexual partners, more alcohol and drug use and more sex after alcohol or drug use. HIV prevalence was 10.7% overall, 14.6% for MBs and 7.8% for general MSM ($p=0.011$). Two independent multiple logistic regression analyses indicated that HIV infection was positively associated with non-Han ethnicity (Odds Ratio [OR]=4.79, 95% Confidence Interval [CI]: 1.08-21.28) and sex after drug use in the past 6 months (OR=3.59, 95% CI: 1.50-8.61) among MBs, and with sex after drug use in the past 6 months (OR=3.38, 95% CI: 1.10-10.34) among general MSM as well. HIV-1 pol gene was successfully amplified and sequenced for 52 (91.2%) of HIV-positive participants. Of them, 53.8% were genotyped as CRF01_AE, 36.5% as CRF07_BC and 9.6% as subtype B. Two CRF01_AE subtype-infected participants (3.8%), a 50years old MB and a 24years old general MSM, harbored viruses with a M46L mutation conferring resistance to protease inhibitors (PI). MSM particularly MBs in Shanghai, China were at high risk of HIV infection, underscoring an urgent need for joint intervention efforts for drug use and sexual behaviors. HIV drug resistance surveillance is also warranted although the relatively low prevalence of HIV drug resistance implies the effectiveness of current antiretroviral treatment regimen.

64. Yang, C., et al. (2015). "**Factors Associated with Alcohol Use Before or During Sex Among Men Who Have Sex with Men in a Large Internet Sample from Asia.**" [LGBT Health](#).

ABSTRACT: We explored factors associated with alcohol use before or during sex among a sample of 10,861 men who have sex with men (MSM) in Asia who were recruited online for the study. Multinomial logistic regression analysis indicated that having sex under the influence of alcohol was associated with having multiple male partners, seeking partners primarily through gay bar/gym/dance party/friends, selling sex and using multiple drugs during the past 6 months, and unprotected anal sex. More efforts are needed to better assess alcohol use and misuse among MSM in Asia and understand contextual influences on alcohol use and HIV-related behaviors in order to implement culturally-specific interventions.

We explored factors associated with alcohol use before or during sex among a sample of 10,861 men who have sex with men (MSM) in Asia who were recruited online for the study. Multinomial logistic regression analysis indicated that having sex under the influence of alcohol was associated with having multiple male partners, seeking partners primarily through gay bar/gym/dance party/friends, selling sex and using multiple drugs during the past 6 months, and unprotected anal sex. More efforts are needed to better assess alcohol use and misuse among MSM in Asia and understand contextual influences on alcohol use and HIV-related behaviors in order to implement culturally-specific interventions.

65. Anderson, J. E. and S. Kanters (2014). "**Lack of Sexual Minorities' Rights as a Barrier to HIV Prevention Among Men Who Have Sex with Men and Transgender Women in Asia: A Systematic Review.**" [LGBT Health](#) 2(1): 16-26.

ABSTRACT: This study set out to assess the relationship between variation in human rights for sexual minorities in Asian countries and indicators of HIV prevention among men who have sex with men (MSM) and transgender women. To quantitatively measure the relationship between variation in HIV prevention and variation in human rights for sexual minorities, this study developed the Sexual Orientation and Gender Identity (SOGI) Human Rights Index (an original index with scores ranging from 0.0 to 1.0). Subsequently, this study collected 237 epidemiological

and behavioral studies from 22 Asian countries and performed a series of meta-analyses in order to calculate national averages for five indicators of HIV prevention: HIV prevalence, inconsistent condom use, recent HIV testing, adequate HIV knowledge, and exposure to HIV prevention services. A change of human rights for sexual minorities from a score of 0.0 to 1.0 as measured by the SOGI Human Rights Index was correlated with a decrease in unprotected anal intercourse by 25.5% ($p=0.075$), and increases in recent HIV testing by 42.9% ($p=0.011$), HIV knowledge by 29.5% ($p=0.032$), and exposure to HIV prevention services by 37.9% ($p=0.119$). The relationship between HIV prevalence and variation in human rights for sexual minorities was not statistically significant. Our study found correlations between human rights and indicators of HIV prevention, further supporting the need for increased rights among marginalized populations. The paucity of studies from many Asian countries as well as the disparity in how indicators of HIV prevention are measured reveals a need for increased coverage and standardization of MSM serological and behavioral data in order to better inform evidence-based policymaking.

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People Who Inject Drugs - 42

1. (2015). "**Promoting global health-treatment and prevention of substance abuse and HIV in Asia.**" *J Neuroimmune Pharmacol* 10 Suppl 1: 1-55.
2. Ananworanich, J., et al. (2015). "**High prevalence of transmitted drug resistance in acute HIV-infected Thai men who have sex with men.**" *J Acquir Immune Defic Syndr* 68(4): 481-485.

As use of antiretroviral therapy in Thailand increases, so does the potential for transmission of drug-resistant HIV. We describe the prevalence of WHO surveillance drug resistance mutations among 120 subjects who underwent genotypic testing during acute HIV infection in Bangkok, Thailand. In this cohort of predominantly men who have sex with men, we observed an overall transmitted drug resistance prevalence of 9.2%, including nucleoside/nucleotide analog reverse transcriptase inhibitor 5.0%, nonnucleoside analog reverse transcriptase inhibitor 3.4%, and protease inhibitor 3.4%. These prevalence estimates are higher than previous reports of transmitted drug resistance in Thailand. Baseline drug resistance testing may be warranted, particularly among men who have sex with men.

3. Armstrong, G., et al. (2015). "**Male-to-male sex among men who inject drugs in Delhi, India: overlapping HIV risk behaviours.**" *Int J Drug Policy* 26(4): 404-411.

BACKGROUND: HIV among people who inject drugs (PWID) is a major public health challenge in India. This paper examines PWID in Delhi who also have male-to-male sex with a focus on overlapping HIV risk behaviours and the psychosocial correlates of a history of male-to-male anal sex. METHODS: We analysed data collected in April-May of 2012 from a community-based sample of 420 male PWID in Delhi obtained using time location sampling. RESULTS: One third (37%) of the men reported a history of anal sex with men, among whom just 16% used a condom at last anal sex. Almost all (93%) participants who had a history of anal sex with men also had sex with women. Chi-square tests revealed that a history of anal sex with men was associated with a higher number of female sexual partners and sharing of needles and syringes. Additionally,

unprotected sex at last sex with a male partner was significantly associated with unprotected sex at last sex with regular and paid female partners. Multivariate binary logistic regression revealed that the psychosocial correlates of a history of anal sex with other men were: being aged 18-24 (OR = 2.4, p = 0.014), illiteracy (OR = 1.9, p = 0.033), having never been married (OR = 2.6, p = 0.007), a main source of income of crime/begging (OR = 3.1, p = 0.019), a duration of injecting drug use greater than 20 years (OR = 3.4, p = 0.035) and suicidal ideation (OR = 1.7, p = 0.048). CONCLUSION: Male-to-male sex was associated with psychosocial vulnerability, including a longer history of injecting drug use, suicidal ideation and socio-economic disadvantage. Given the extent of overlapping HIV risk behaviours, HIV programs for PWID would benefit from a strong focus on prevention of sexual HIV transmission, especially among male injectors who also have sex with other men.

4. Assari, S., et al. (2014). "**Socio-Economic Status Determines Risk of Receptive Syringe Sharing Behaviors among Iranian Drug Injectors; A National Study.**" *Front Psychiatry* 5: 194. Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4369970/pdf/fpsy-05-00194.pdf>

BACKGROUND: Although needle and syringe sharing is one of the main routes of transmission of HIV in several countries in the middle east, very little is known about how socio-economic status of injecting drug users (IDUs) is linked to the receptive syringe sharing behaviors in these countries. AIM: To study socio-economic correlates of receptive needle and syringe sharing among IDUs in Iran. METHODS: The study used data from the Unhide Risk Study, a national survey of IDUs. This study sampled 636 IDUs (91% male) via snowball sampling from eight provinces in Iran in 2009. Socio-demographic and drug use characteristics were collected. We used a logistic regression to determine factors associated with receptive needle and syringe sharing during the past 6 months. RESULTS: From 636 IDUs enrolled in this study, 68% (n = 434) reported receptive needle and syringe sharing behaviors in the past 6 months. Odds of receptive needle and syringe sharing in the past 6 months was lower among IDUs who were male [odds ratios (OR) = 0.29, 95% confidence interval (CI) = 0.12-0.70], had higher education (OR = 0.74, 95% CI = 0.64-0.86) but higher among those who were unemployed (OR = 4.05, 95% CI = 1.50-10.94), and were single (OR = 1.47, 95% CI = 1.02-2.11). CONCLUSION: This study presented factors associated with risk of receptive needle and syringe sharing among Iranian IDUs. This information may be used for HIV prevention and harm reduction purposes. Socio-economic status of Iranian IDUs may be closely linked to high-risk injecting behaviors among them.

5. Auerbach, J. D. and L. R. Smith (2015). "**Theoretical Foundations of Research Focused on HIV Prevention Among Substance-Involved Women: A Review of Observational and Intervention Studies.**" *JAIDS Journal of Acquired Immune Deficiency Syndromes* 69: S146-S154. Online at: http://journals.lww.com/jaids/Fulltext/2015/06011/Theoretical_Foundations_of_Research_Focused_on_HIV.10.aspx

ABSTRACT: Although substance use continues to be a significant component of HIV risk among women worldwide, to date, relatively little attention has been paid in research, services, or policy to substance-involved women (SIW). HIV acquisition for SIW stems from transmission risks directly related to substance use and risks associated with sexual activity in which power to negotiate risk and safety are influenced by dynamics of male partnerships, sex work, and criminalization (of both drug use and sex work), among other factors. As such, HIV risk for SIW resides as much in the environment—physical, social, cultural, economic, and political—in which

drug use occurs as it does from transmission-related behaviors of individual women. To reduce HIV infections among SIW, it is important to specify the interaction of individual- and environmental-level factors, including, but not limited to those related to women's own substance use, that can and ought to be changed. This involves theorizing about the interplay of gender, substance use, and HIV risk, and incorporating that theoretical understanding into intervention design and evaluation. A review of the published literature focused on HIV prevention among SIW revealed a general lack of theoretical and conceptual foundation specific to the gender-related and environmental drivers of HIV in this population. Greater theoretical linkages to intersectionality and syndemic approaches are recommended to better identify and target relevant mechanisms by which the interplay of gender dynamics and substance use potentiate the likelihood of HIV acquisition and transmission among SIW.

6. Burke, S. E., et al. (2015). "**A tale of two cities: stigma and health outcomes among people with HIV who inject drugs in St. Petersburg, Russia and Kohtla-Jarve, Estonia.**" *Soc Sci Med* 130: 154-161.

Experiences of stigma are often associated with negative mental and physical health outcomes. The present work tested the associations between stigma and health-related outcomes among people with HIV who inject drugs in Kohtla-Jarve, Estonia and St. Petersburg, Russia. These two cities share some of the highest rates of HIV outside of sub-Saharan Africa, largely driven by injection drug use, but Estonia has implemented harm reduction services more comprehensively. People who inject drugs were recruited using respondent-driven sampling; those who indicated being HIV-positive were included in the present sample (n = 381 in St. Petersburg; n = 288 in Kohtla-Jarve). Participants reported their health information and completed measures of internalized HIV stigma, anticipated HIV stigma, internalized drug stigma, and anticipated drug stigma. Participants in both locations indicated similarly high levels of all four forms of stigma. However, stigma variables were more strongly associated with health outcomes in Russia than in Estonia. The St. Petersburg results were consistent with prior work linking stigma and health. Lower barriers to care in Kohtla-Jarve may help explain why social stigma was not closely tied to negative health outcomes there. Implications for interventions and health policy are discussed.

7. Deshko, T. (2015). "**HIV Reduction Among Women Who Inject Drugs Can Be Achieved Through Women-Specific Programs and Global Targets: A Model From Ukraine.**" *JAIDS Journal of Acquired Immune Deficiency Syndromes* 69: S98-S99.
Online at:
http://journals.lww.com/jaids/Fulltext/2015/06011/HIV_Reduction_Among_Women_Who_Inject_Drugs_Can_Be.4.aspx
8. Dong, Y., et al. (2015). "**Hepatitis B virus and hepatitis C virus infection among HIV-1-infected injection drug users in Dali, China: prevalence and infection status in a cross-sectional study.**" *Arch Virol* 160(4): 929-936.

To assess the prevalence of hepatitis B virus (HBV) and hepatitis C virus (HCV) infection and to investigate their mutual influences on infection status among human immunodeficiency virus type 1 (HIV-1)-seropositive injection drug users (IDUs). A cross-sectional study was conducted among HIV infected IDUs in Dali, China. The participants were tested for serological markers of HBV and HCV infection, alanine transaminase (ALT) activity and CD4(+) T cell count. HCV genotype was

determined by sequencing. Of 529 patients, 498 (94.1 %) HIV infected IDUs agreed to participate. The overall prevalence of HCV infection (anti-HCV antibody positive) and spontaneous HCV clearance were 90.8 % (452/498) and 21.5 % (97/452), respectively. Of 411 subjects who had not received HBV vaccine, 296 (72.0 %) were positive for antibody against HBV core antigen (HBcAb), while 274 (66.7 %) were positive for both HCV antibody and HBcAb. HBV antigens were detected in 52 of the HBV-infected subjects (17.6 %). HCV clearance was associated with HBV antigenemia ($p = 0.0002$) and higher CD4(+) T cell count ($p = 0.0294$). Resolved HBV infection was associated with HCV genotype 3 ($p = 0.0365$). HBV and HCV infection are highly prevalent and mutually influence infection status in HIV-1 infected IDUs in Dali, China.

9. El-Bassel, N. and S. A. Strathdee (2015). "**Bringing Female Substance Users to the Center of the Global HIV Response.**" *JAIDS Journal of Acquired Immune Deficiency Syndromes* 69: S94-S95. Online at: http://journals.lww.com/jaids/Fulltext/2015/06011/Bringing_Female_Substance_Users_to_the_Center_of.2.aspx
10. El-Bassel, N. and S. A. Strathdee (2015). "**Women Who Use or Inject Drugs: An Action Agenda for Women-Specific, Multilevel, and Combination HIV Prevention and Research.**" *JAIDS Journal of Acquired Immune Deficiency Syndromes* 69: S182-S190. Online at: http://journals.lww.com/jaids/Fulltext/2015/06011/Women_Who_Use_or_Inject_Drugs_An_Action_Agenda.15.aspx

ABSTRACT: Women account for more than half of all individuals living with HIV globally. Despite increasing drug and HIV epidemics among women, women who use drugs are rarely found in research, harm reduction programs, or drug and HIV treatment and care. Women who use drugs continue to face challenges that increase their vulnerability to HIV and other comorbidities because of high rates of gender-based violence, human rights violations, incarceration, and institutional and societal stigmatization. This special issue emphasizes how the burdens of HIV, drug use, and their co-occurring epidemics affect women in a global context. Articles included focus on the epidemiologies of HIV and hepatitis C virus and other comorbidities; HIV treatment, prevention, and care; and policies affecting the lives of women who use drugs. This issue also highlights the state of the science of biomedical and behavioral research related to women who use drugs. The final article highlights the major findings of articles covered and presents a call to action regarding needed research, treatment, and preventive services for women who use drugs. To address these needs, we advocate for women-specific thinking and approaches that consider the social, micro, and macro contexts of women's lives. We present a women-specific risk environment framework that reflects the unique lives and contexts of women who use drugs and provides a call to action for intervention, prevention, and policies.

11. Feelemyer, J., et al. (2015). "**Adherence to antiretroviral medications among persons who inject drugs in transitional, low and middle income countries: an international systematic review.**" *AIDS Behav* 19(4): 575-583.

Adherence to antiretroviral (ART) medication is vital to reducing morbidity and mortality among HIV positive persons. People who inject drugs (PWID) are at high risk for HIV infection in transitional/low/middle income countries (TLMIC). We conducted a systematic review of studies

reporting adherence to ART among persons with active injection drug use and/or histories of injection drug use in TLMIC. Meta-regression was performed to examine relationships between location, adherence measurements, and follow-up period. Fifteen studies were included from seven countries. Adherence levels ranged from 33 to 97 %; mean weighted adherence was 72 %. ART adherence was associated with different methods of measuring adherence and studies conducted in Eastern Europe and East Asia. The great heterogeneity observed precludes generalization to TLMIC as a whole. Given the critical importance of ART adherence more research is needed on ART adherence among PWID in TLMIC, including the use of standardized methods for reporting adherence to ART.

12. Gilbert, L., et al. (2015). "**Targeting the SAVA (Substance Abuse, Violence, and AIDS) Syndemic Among Women and Girls: A Global Review of Epidemiology and Integrated Interventions.**" *J Acquir Immune Defic Syndr* 69 Suppl 1: S118-127.

Online at:

http://journals.lww.com/jaids/Fulltext/2015/06011/Targeting_the_SAVA_Substance_Abuse_Violence_and.7.aspx

OBJECTIVES: Multiple pathways link gender-based violence (GBV) to HIV and other sexually transmitted infections among women and girls who use or inject drugs. The aim of this article is to synthesize global literature that examines associations among the synergistic epidemics of substance abuse, violence, and HIV/AIDS, known as the SAVA syndemic. It also aims to identify a continuum of multilevel integrated interventions that target key SAVA syndemic mechanisms. **METHODS:** We conducted a selective search strategy, prioritizing use of meta-analytic epidemiological and intervention studies that address different aspects of the SAVA syndemic among women and girls who use drugs worldwide from 2000 to 2015 using PubMed, MEDLINE, and Google Scholar. **RESULTS:** Robust evidence from different countries suggests that GBV significantly increases the risk of HIV and other sexually transmitted infections among women and girls who use drugs. Multiple structural, biological, and behavioral mechanisms link GBV and HIV among women and girls. Emerging research has identified a continuum of brief and extended multilevel GBV prevention and treatment interventions that may be integrated into a continuum of HIV prevention, testing, and treatment interventions to target key SAVA syndemic mechanisms among women and girls who use drugs. **CONCLUSIONS:** There remain significant methodological and geographical gaps in epidemiological and intervention research on the SAVA syndemic, particularly in low- and middle-income countries. This global review underscores the need to advance a continuum of multilevel integrated interventions that target salient mechanisms of the SAVA syndemic, especially for adolescent girls, young women, and transgender women who use drugs.

13. Girchenko, P., et al. (2015). "**Association between Pregnancy and Active Injection Drug Use and Sex Work among Women Injection Drug Users in Saint Petersburg, Russia.**" *J Urban Health*.

Online at: <http://download.springer.com/static/pdf/782/art%253A10.1007%252Fs11524-015-9954-3.pdf?originUrl=http%3A%2F%2Flink.springer.com%2Farticle%2F10.1007%2Fs11524-015-9954-3&token2=exp=1433344304~acl=%2Fstatic%2Fpdf%2F782%2Fart%25253A10.1007%25252Fs11524-015-9954-3.pdf%3ForiginUrl%3Dhttp%253A%252F%252Flink.springer.com%252Farticle%252F10.1007%252F>

[s11524-015-9954-3*~hmac=de537084bef3574dd848f9ad6c7476613884082c6be38d005a3e1f80464de6a3](https://doi.org/10.1371/journal.pone.0125909)

Widespread use of unsafe sexual practices among women injecting drugs both practicing and not practicing sex work leads to high levels of unplanned pregnancies in this population. The goal of this study was to investigate the association between pregnancy and active drug use and sex work. Data were collected using a convenience sample of 500 women in Saint Petersburg, Russia, in 2013. All women had recent experience of drug use, of which 200 were pregnant at the time of the study. The study consisted of a structured interview followed by a rapid HIV test. Pregnancy was protective against both active drug use and sex work. For HIV-positive women, these associations were stronger than for HIV-negative women: drug use prevalence ratio (PR) was 0.59 vs 0.85; for sex work, the PRs were 0.36 vs 0.64. Higher levels of education were associated with a lower prevalence ratio for active drug use and sex work in all models. Having children was not associated with active drug use or sex work. Pregnancy might be an optimal time for conducting interventions aimed at cessation of drug use and sex work among women injecting drugs.

14. Go, V. F., et al. (2015). "**Efficacy of a Multi-level Intervention to Reduce Injecting and Sexual Risk Behaviors among HIV-Infected People Who Inject Drugs in Vietnam: A Four-Arm Randomized Controlled Trial.**" *PLoS One* 10(5): e0125909.

Online at:

<http://www.plosone.org/article/fetchObject.action?uri=info:doi/10.1371/journal.pone.0125909&representation=PDF>

INTRODUCTION: Injecting drug use is a primary driver of HIV epidemics in many countries. People who inject drugs (PWID) and are HIV infected are often doubly stigmatized and many encounter difficulties reducing risk behaviors. Prevention interventions for HIV-infected PWID that provide enhanced support at the individual, family, and community level to facilitate risk-reduction are needed. **METHODS:** 455 HIV-infected PWID and 355 of their HIV negative injecting network members living in 32 sub-districts in Thai Nguyen Province were enrolled. We conducted a two-stage randomization: First, sub-districts were randomized to either a community video screening and house-to-house visits or standard of care educational pamphlets. Second, within each sub-district, participants were randomized to receive either enhanced individual level post-test counseling and group support sessions or standard of care HIV testing and counseling. This resulted in four arms: 1) standard of care; 2) community level intervention; 3) individual level intervention; and 4) community plus individual intervention. Follow-up was conducted at 6, 12, 18, and 24 months. Primary outcomes were self-reported HIV injecting and sexual risk behaviors. Secondary outcomes included HIV incidence among HIV negative network members. **RESULTS:** Fewer participants reported sharing injecting equipment and unprotected sex from baseline to 24 months in all arms (77% to 4% and 24% to 5% respectively). There were no significant differences at the 24-month visit among the 4 arms (Wald = 3.40 (3 df); $p = 0.33$; Wald = 6.73 (3 df); $p = 0.08$). There were a total of 4 HIV seroconversions over 24 months with no significant difference between intervention and control arms. **DISCUSSION:** Understanding the mechanisms through which all arms, particularly the control arm, demonstrated both low risk behaviors and low HIV incidence has important implications for policy and prevention programming. **TRIAL REGISTRATION:** ClinicalTrials.gov NCT01689545.

15. Go, V. F., et al. (2015). "**Variations in the Role of Social Support on Disclosure Among Newly Diagnosed HIV-Infected People Who Inject Drugs in Vietnam.**" *AIDS Behav.*

Stigma and perceived social support can influence the decision to disclose HIV positive status, especially for people who inject drugs (PWID). In this analysis, the association between social support and HIV disclosure among 336 newly diagnosed HIV-infected PWID in Northern Vietnam was assessed. One month after diagnosis, 34.8 % of participants had not disclosed to anyone. Disclosure to anyone and to a family member specifically, was associated with baseline social support in the form of positive interactions and a history of incarceration. Disclosing to a family member was less likely among those who had unprotected sex in the previous 3 months. Disclosure to an injecting partner was more likely among those with a history of being in a drug treatment program, knowing someone on ART and believing that ART is safe. These data suggest that social support may facilitate disclosure among family members, including spouses, while disclosure to injecting partners is greater when PWID know that ART is a safe and viable option.

16. Goldsamt, L. A., et al. (2015). "**Injection and sexual risk practices among young heroin users in Hanoi, Vietnam.**" *Drugs (Abingdon Engl)* 22(2): 166-172.

Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4435536/pdf/nihms689184.pdf>

Epidemiological data in Vietnam shows high HIV prevalence rates among injection drug users, especially in urban centres. However, there are limited data on specific practices used to prepare and inject drugs or on sexual practices among Vietnamese injectors. A street-based cross-sectional interview was conducted with 862 heroin injectors in Hanoi, Vietnam, to collect such data. Variability was seen in both injection and sexual risk, with 12.9% of current injectors reporting at least one unsafe method of drug sharing and 57.1% reporting unsafe sex in the past 30 days. These risks were strongly associated with those who engaged in unsafe injection significantly more likely to engage in unsafe sex (69.4% vs. 55.3%) and those engaging in unsafe sex significantly more likely to engage in unsafe injection (15.7% vs. 9.2%). These findings highlight the overlap of injection and sexual risk practices among Vietnamese heroin users and suggest the need for strong, broadly targeted HIV prevention activities among this population.

17. Hammett, T. M., et al. (2015). "**Female sexual partners of male people who inject drugs in vietnam have poor knowledge of their male partners' HIV status.**" *J Acquir Immune Defic Syndr* 68(5): 562-567.

BACKGROUND: Vietnam's HIV epidemic is concentrated among male people who inject drugs (PWID), and their female sexual partners (SPs) may be at risk for infection. HIV prevention interventions for SPs were implemented in Hanoi, Dien Bien Province, and Ho Chi Minh City (HCMC), and data from linked surveys used to evaluate these interventions offered an unusual opportunity to assess knowledge of HIV status within couples. METHODS: Linked surveys (behavioral interviews and HIV testing) among 200 PWID-SP couples in Hanoi, 300 in Dien Bien, and 249 in HCMC. RESULTS: HIV prevalence among male PWID was 53% in Hanoi, 30% in Dien Bien, and 46% in HCMC, and lower among their SPs: 44%, 10%, and 37%, respectively. Comparison of SPs' beliefs regarding male PWID partners' HIV status with the PWIDs' actual test results revealed that 32% of SPs in Dien Bien and 44% in Hanoi and HCMC lacked correct knowledge of their male partners' status. This proportion was slightly lower (21%-33%) among SPs whose PWID partners reported having been previously tested and received HIV+ results. CONCLUSIONS: SP interventions reached HIV-negative women in serodiscordant relationships, and some improvements occurred in condom use and relationship characteristics. Nevertheless, our findings suggest that at least 11,000 SPs in Vietnam may be at high risk for HIV infection

because of incorrect knowledge of their partners' HIV status. Interventions should be strengthened in HIV testing, disclosure, and treatment, as well as empowerment of SPs as individuals, within couples, and as communities.

18. Hayashi, K., et al. (2015). "**Compulsory drug detention exposure is associated with not receiving antiretroviral treatment among people who inject drugs in Bangkok, Thailand: a cross-sectional study.**" *Subst Abuse Treat Prev Policy* 10(1): 16.
Online at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4435625/pdf/13011_2015_Article_13.pdf

BACKGROUND: Thailand has experienced a longstanding epidemic of HIV among people who inject drugs (PWID). However, antiretroviral treatment (ART) coverage among HIV-positive PWID has historically remained low. While ongoing drug law enforcement involving periodic police crackdowns is known to increase the risk of HIV transmission among Thai PWID, the impact of such drug policy approaches on the ART uptake has been understudied. Therefore, we sought to identify factors associated with not receiving ART among HIV-positive PWID in Bangkok, Thailand, with a focus on factors pertaining to drug law enforcement. METHODS: Data were collected from a community-recruited sample of HIV-positive PWID in Bangkok who participated in the Mitsampan Community Research Project between June 2009 and October 2011. We identified factors associated with not receiving ART at the time of interview using multivariate logistic regression. RESULTS: In total, 128 HIV-positive PWID participated in this study, with 58 (45.3%) reporting not receiving ART at the time of interview. In multivariate analyses, completing less than secondary education (adjusted odds ratio [AOR]: 3.32 ; 95% confidence interval [CI]: 1.48 - 7.45), daily midazolam injection (AOR: 3.22, 95% CI: 1.45 - 7.15) and exposure to compulsory drug detention (AOR: 3.36, 95% CI: 1.01 - 11.21) were independently and positively associated with not receiving ART. Accessing peer-based healthcare information or support services was independently and positively associated with receiving ART (AOR: 0.21, 95% CI: 0.05 - 0.84). CONCLUSIONS: Approximately half of our study group of HIV-positive PWID reported not receiving ART at the time of interview. Daily midazolam injectors, those with lower education attainment, and individuals who had been in compulsory drug detention were more likely to be non-recipients of ART whereas those who accessed peer-based healthcare-related services were more likely to receive ART. These findings suggest a potentially adverse impact of compulsory drug detention and highlight the need to expand interventions to facilitate access to ART among HIV-positive PWID in this setting.

19. Huong, N. T., et al. (2015). "**Social marketing of low dead space syringes in Vietnam: findings from a 1-year pilot program in Hanoi, Thai Nguyen, and Ho Chi Minh City.**" *Harm Reduct J* 12(1): 15.
Online at: <http://www.harmreductionjournal.com/content/pdf/s12954-015-0049-y.pdf>

BACKGROUND: Although a growing body of evidence suggests that low dead space syringes may reduce the risk of human immunodeficiency virus (HIV) and Hepatitis C virus infection associated with sharing syringes among people who inject drugs, there is little evidence of effective approaches to motivate people who inject drugs (PWID) to shift from high to low dead space syringes. METHODS: Using a mix of consumer and trade marketing approaches, informed by rapid assessments of both the syringe market and PWID preferences, practices, and behaviors in Hanoi and Ho Chi Minh City, Population Services International (PSI) Vietnam piloted an intervention to increase the use of low dead space syringes (LDSS) in the three provinces of Hanoi, Ho Chi Minh City, and Thai Nguyen, where an estimated 31 % of PWID are HIV positive and 58 % are living

with hepatitis C virus (HCV). RESULTS: This paper provides a summary of the social marketing activities implemented and results achieved by PSI Vietnam during an initial 1-year pilot period from December 2012 to December 2013 in these three provinces to explore their effectiveness in motivating PWID to use low dead space syringes. We found major increases in sales of LDSS accompanied by increases in reported use and consistent use of LDSS among PWID in the three provinces included in the pilot program and a positive and independent association (odds ratio (OR) 21.08; 95 % confidence interval (CI) 10.6-27.3) between LDSS use and exposure to social marketing activities. We also found that LDSS use had a stronger association with perceptions of LDSS product quality than with perceptions regarding LDSS potential to reduce HIV transmission risk and use. CONCLUSIONS: We conclude that social marketing interventions have an important role to play in widening access to and the use of LDSS for PWID, as they address the need for PWID to find LDSS when and where they need them and also promote the benefits of LDSS use to PWID. High coverage of these activities among PWID appears to be the key in achieving these successes.

20. Hussen, S. A., et al. (2015). "**Transition to adulthood and antiretroviral adherence among HIV-positive young Black men who have sex with men.**" *Am J Public Health* 105(4): 725-731.

OBJECTIVES: We conducted a qualitative study of HIV-positive young Black men who have sex with men (YBMSM) to explore their experiences of living with HIV and adhering to antiretroviral medications (ARVs) within the developmental context of their transition to adulthood. METHODS: We conducted life history interviews with 20 HIV-positive YBMSM in Atlanta, Georgia, engaged in outpatient HIV care. We addressed these questions: (1) How do YBMSM living with HIV experience the transition to adulthood? and (2) What are the important sociocontextual influences on ARV adherence for YBMSM? RESULTS: Successful transition to adulthood and optimal ARV adherence were inextricably linked. HIV's detrimental impact on development was moderated by the degree of physical illness at diagnosis. Many participants described resilient trajectories while coping with HIV. Adherence problems occurred primarily among participants who were not meeting their developmental goals. CONCLUSIONS: Our findings support the need for early diagnosis and linkage to care, as well as the need to develop holistic, resilience-based interventions focusing on transition to adulthood. These findings have implications for individual clinical outcomes as well as ARV-based prevention efforts among YBMSM.

21. Kader, R., et al. (2015). "**Understanding the Impact of Hazardous and Harmful Use of Alcohol and/or Other Drugs on ARV Adherence and Disease Progression.**" *PLoS One* 10(5): e0125088. Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4416796/pdf/pone.0125088.pdf>

The objective of this study was to understand the impact of hazardous and harmful use of alcohol and/or other drugs on ARV adherence and disease progression among HIV patients. A cross-sectional study design was used. A total of 1503 patients attending HIV clinics in Cape Town, South Africa were screened for problematic substance use. A sub-sample of 607 patients (303 patients who screened positive for problematic substance use and 304 who did not) participated in this study. Hazardous or harmful alcohol use and problematic drug use predicted missing and stopping ARVs which, in turn, was associated with a decrease in CD4 counts and more rapid HIV-disease progression and poorer health outcomes in people living with HIV/AIDS (PLWHA). The findings of this study underscore the need for an integrated approach to managing substance-use disorders in PLWHA.

22. Kermode, M., et al. (2015). "**Sexual behaviours of men who inject drugs in Northeast India.**" *Harm Reduct J* 12(1): 4.
Online at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4352564/pdf/12954_2015_Article_38.pdf

BACKGROUND: Promoting safer sex behaviours among people who inject drugs is important as drug-using populations with high HIV prevalence can contribute to transition from a concentrated to a generalised epidemic. This study describes the sexual behaviours of men who inject drugs in two Northeast Indian states (Manipur and Nagaland) where HIV prevalence is high, with a focus on the HIV risks for their regular female sexual partners. **METHODS:** Data were obtained from two cross-sectional surveys combined (N = 3,362)-both conducted in 2009 using respondent-driven sampling to recruit men who injected drugs. Both surveys asked about demographics, drug use, sexual and injecting risk behaviours, and interventions. One survey tested participants for HIV and syphilis. Statistical analyses included logistic regression modelling to predict inconsistent condom use with regular sexual partners. **RESULTS:** Two thirds of participants (68.2%) had a regular female sexual partner. Of these, 78.4% had sex with their regular partner in the last month, on average five times. Only 10.7% reported consistent condom use with regular partners. Unsafe injecting was common among men with regular partners, and 40.2% had more than one sexual partner in the last year. Half of those with regular partners (51.0%) had never had an HIV test, and 14.3% of those tested were HIV positive. After controlling for confounding, inconsistent condom use with regular partners was associated with being illiterate, married, sharing needle and syringe with others, never having had an HIV test and not receiving condoms from an NGO. **CONCLUSION:** The findings from this study among men who inject drugs in Manipur and Nagaland highlight the risk of HIV infection for their regular female sexual partners. Promoting better uptake of HIV testing among men who inject drugs will potentially benefit both them and their regular partners. While effectively reaching regular partners is challenging, a number of strategies for improving their situation in relation to HIV prevention are available.

23. Le, L. V., et al. (2015). "**Correlates of HIV infection among female sex workers in Vietnam: injection drug use remains a key risk factor.**" *Drug Alcohol Depend* 150: 46-53.

OBJECTIVE: Women who sell sex and use drugs have dual risks for HIV infection. Despite increasing reports of drug use among female sex workers (FSW) in Vietnam, FSW HIV interventions remain focused mainly on sexual risk reduction. We assessed the impact of drug use and inconsistent condom use on HIV infection among FSW in Vietnam, which few studies have quantified. **METHODS:** We surveyed 5298 women aged ≥ 18 years who had sold sex in the past month from ten geographically dispersed provinces. We performed multivariate logistic regression on data from provinces with high ($\geq 10\%$) or low ($< 10\%$) HIV prevalence among FSW. **RESULTS:** Compared to FSW who never used illicit drugs, the odds of HIV infection among FSW who had ever injected drugs and those who reported non-injection drug use were 3.44 (CI 2.32-5.09) and 1.76 (CI 1.14-2.71), respectively, in high-prevalence provinces. FSW who always used condoms with clients had lower odds of HIV infection than those who did not (AOR=0.71; CI 0.52-0.98). In low-prevalence provinces lifetime injection drug use (AOR 22.05, CI 12.00-40.49), but not non-injecting drug use or inconsistent condom use, was significantly associated with HIV infection. **CONCLUSIONS:** Because injection drug use and inconsistent condom use were key risk factors for HIV infection in high-prevalence provinces, drug injection risk reduction should be as much a focus of HIV prevention as sexual risk reduction. Where HIV prevalence remains low in FSW, a more general emphasis on harm reduction for all drug users will benefit FSW.

24. Lucas, G. M., et al. (2015). "**High HIV burden among people who inject drugs in 15 Indian cities.**" *Aids* 29(5): 619-628.

BACKGROUND: Injecting drug use has historically been the principal driver of the HIV epidemic in the northeast states of India. However, recent data indicate growing numbers of people who inject drugs (PWIDs) in north and central Indian cities. METHODS: We conducted face-to-face surveys among PWIDs in seven northeast and eight north/central Indian cities using respondent-driven sampling. We used a rapid HIV-testing protocol to identify seropositive individuals and multiassay algorithm to identify those with recent infection. We used multilevel regression models that incorporated sampling weights and had random intercepts for site to assess risk factors for prevalent and incident (recent) HIV infection. RESULTS: We surveyed 14 481 PWIDs from 15 Indian cities between January and December 2013. Participants reported high rates of needle/syringe sharing. The median (site range) estimated HIV prevalence and incidence were 18.1% (5.9, 44.9) and 2.9 per 100 person-years (0, 12.4), respectively. HIV prevalence was higher in northeast sites, whereas HIV incidence was higher in north/central sites. The odds of prevalent HIV were over three-fold higher in women than in men. Other factors associated with HIV prevalence or incidence included duration since first injection, injection of pharmaceutical drugs, and needle/syringe sharing. CONCLUSIONS: The burden of HIV infection is high among PWIDs in India, and may be increasing in cities where injecting drug use is emerging. Women who inject drugs were at substantially higher risk for HIV than men - a situation that may be mediated by dual injection-related and sexual risks.

25. MacAllister, J., et al. (2015). "**A comprehensive review of available epidemiologic and HIV service data for female sex workers, men who have sex with men, and people who inject drugs in select West and Central African countries.**" *J Acquir Immune Defic Syndr* 68 Suppl 2: S83-90. Online at: http://journals.lww.com/jaids/Fulltext/2015/03011/A_Comprehensive_Review_of_Available_Epidemiologic.3.aspx

OBJECTIVE: To identify gaps in epidemiologic and HIV service coverage data for key populations (KP), including men who have sex with men (MSM), female sex workers (FSW), people who inject drugs (PWID), and transgender persons, in 8 West and Central Africa countries: Cameroon, Chad, Cote d'Ivoire, Democratic Republic of Congo, Ghana, Guinea-Bissau, Niger, and Nigeria. METHODS: A comprehensive search of peer-reviewed literature was conducted using PubMed and MEDLINE. This search was supplemented by an additional search of relevant non-peer-reviewed, or gray, literature. Available data on HIV prevalence, KP size estimates, HIV prevention service targets, and HIV prevention service coverage, including the availability of population-specific minimum packages of services, were included in the review. RESULTS: No data for transgender persons were found. HIV prevalence data and size estimates were more frequently available for FSW, followed by MSM. Only 2 countries (Ghana and Nigeria) had both KP size estimates and HIV prevalence data for PWID. The degree to which HIV prevention service targets were adopted was highly variable across the selected countries, and the collection of relevant HIV prevention service coverage data for those targets that were identified was inconsistent. Population-specific minimum packages of services were identified in 3 countries (Cote d'Ivoire, Ghana, and Nigeria), although only Ghana and Nigeria included services for PWID. CONCLUSIONS: Epidemiologic and HIV prevention service data for FSW, MSM, PWID, and transgender persons remain sparse, and these KP are inconsistently accounted for in-service

delivery and nationally endorsed minimum packages of HIV services in West and Central Africa. The strengthening of data collection and reporting to consistently include KP and the inclusion of that data in national planning is imperative for effectively addressing the HIV epidemic.

26. Malekinejad, M., et al. (2015). "**High HIV prevalence in a respondent-driven sampling survey of injection drug users in Tehran, Iran.**" *AIDS Behav* 19(3): 440-449.

Iran is facing unprecedented dual drug use and HIV epidemics. We conducted a cross-sectional survey to obtain HIV prevalence and risk behavior data from injection drug users (IDU) in Tehran. We used respondent-driven sampling (RDS) to recruit IDU through successive waves starting with 24 "seeds," conducted anonymous face-to-face interviews and HIV testing and counseling, and used RDSAT to adjust data. During 44 weeks, 1,726 study referral coupons resulted in 645 (37 %) IDU referrals, of whom 548 (85 %) were enrolled. From those enrolled, 84 % were incarcerated, 47 % employed, 55 % single, 27 % under 30 years of age, and 26 % homeless. The adjusted HIV prevalence was 26.6 % (95 % confidence interval 21.3-32.1), and was higher among certain IDU subgroups (e.g., those who sharing injection paraphernalia). Our estimates of HIV prevalence were higher than some other estimates; however, repeated surveys using similar methodology are needed to monitor the trend of HIV epidemic over time.

27. Martin, M., et al. (2015). "**The impact of adherence to preexposure prophylaxis on the risk of HIV infection among people who inject drugs.**" *Aids* 29(7): 819-824.

OBJECTIVE: To describe participant adherence to daily oral tenofovir in an HIV preexposure prophylaxis (PrEP) trial, examine factors associated with adherence, and assess the impact of adherence on the risk of HIV infection. DESIGN: The Bangkok Tenofovir Study was a randomized, double-blind, placebo-controlled trial conducted among people who inject drugs, 2005-2012. METHODS: Participants chose daily visits or monthly visits. Study nurses observed participants swallow study drug and both initialed a diary. We assessed adherence using the diary. We examined adherence by age group and sex and used logistic regression to evaluate demographics and risk behaviors as predictors of adherence and Cox regression to assess the impact of adherence on the risk of HIV infection. RESULTS: A total of 2413 people enrolled and contributed 9665 person-years of follow-up (mean 4.0 years, maximum 6.9 years). The risk of HIV infection decreased as adherence improved, from 48.9% overall to 83.5% for those with at least 97.5% adherence. In multivariable analysis, men were less adherent than women ($P = 0.006$) and participants 20-29 years old ($P < 0.001$) and 30-39 years old ($P = 0.01$) were less adherent than older participants. Other factors associated with poor adherence included incarceration ($P = 0.02$) and injecting methamphetamine ($P = 0.04$). CONCLUSION: In this HIV PrEP trial among people who inject drugs, improved adherence to daily tenofovir was associated with a lower risk of HIV infection. This is consistent with trials among MSM and HIV-discordant heterosexual couples and suggests that HIV PrEP can provide a high level of protection from HIV infection.

28. Mastro, T. D., et al. (2015). "**The evolving HIV epidemic among people who inject drugs in India and the need for a heightened response.**" *Aids* 29(5): 629-631.

Online at:

<http://graphics.tx.ovid.com/ovftpdfs/FPDDNCIBGGDMFK00/fs046/ovft/live/gv023/00002030/00002030-201503130-00012.pdf>

29. Messersmith, L. J., et al. (2015). "**Drug use and sexual behavior: the multiple HIV vulnerabilities of men and women who inject drugs in Kumasi, Ghana.**" *J Acquir Immune Defic Syndr* 68 Suppl 2: S124-130. Online at: http://journals.lww.com/jaids/Fulltext/2015/03011/Drug_Use_and_Sexual_Behavior_The_Multiple_HIV.8.aspx

BACKGROUND: Recent evidence suggests that injecting drug use presents a new challenge to HIV prevention in West Africa. Very little is known about the HIV vulnerability of people who inject drugs (PWID) in Ghana, and no HIV prevention efforts are currently targeting PWID. METHODS: Purposive sampling was used to recruit 30 (20 men and 10 women) PWID to participate in in-depth interviews in Kumasi, Ghana. Transcripts were coded and analyzed by theme. RESULTS: Half the men and more than half the women in this study reported sharing needles/syringes (N/S); most shared a common mixing container; and all said they shared N/S with intimate partners. Some PWID who said that they do not share N/S with other PWID, also said they routinely use N/S that they find on the ground at injecting sites or in the hospital dumpster. Nearly, all the women (9/10) and more than half the men (12/20) were currently sexually active; most had more than 1 partner in the last 6 months, but very few reported condom use. Three women said they exchanged sex for money and 3 men reported buying sex in the last year. Several PWID had no knowledge of HIV transmission through injecting. CONCLUSIONS: PWID in Kumasi are highly vulnerable to HIV because of N/S sharing and reuse, lack of condom use, low knowledge of HIV transmission, and lack of services. Program and policy recommendations include N/S and condom distribution, peer education, opioid substitution therapy, and training of health providers, police, and pharmacy staff.

30. Metsch, L., et al. (2015). "**HIV Testing, Care, and Treatment Among Women Who Use Drugs From a Global Perspective: Progress and Challenges.**" *J Acquir Immune Defic Syndr* 69 Suppl 1: S162-168. Online at: http://journals.lww.com/jaids/Fulltext/2015/06011/HIV_Testing,_Care,_and_Treatment_Among_Women_Who.12.aspx

The article reviews data on HIV testing, treatment, and care outcomes for women who use drugs in 5 countries across 5 continents. We chose countries in which the HIV epidemic has, either currently or historically, been fueled by injection and non-injection drug use and that have considerable variation in social structural and drug policies: Argentina, Vietnam, Australia, Ukraine, and the United States. There is a dearth of available HIV care continuum outcome data [ie, testing, linkage, retention, antiretroviral therapy (ART) provision, viral suppression] among women drug users, particularly among noninjectors. Although some progress has been made in increasing HIV testing in this population, HIV-positive women drug users in 4 of the 5 countries have not fully benefitted from ART nor are they regularly engaged in HIV care. Issues such as the criminalization of drug users, HIV-specific criminal laws, and the lack of integration between substance use treatment and HIV primary care play a major role. Strategies that effectively address the pervasive factors that prevent women drug users from engaging in HIV care and benefitting from ART and other prevention services are critical. Future success in enhancing the HIV continuum for women drug users should consider structural and contextual level barriers and promote social, economic, and legal policies that overhaul the many years of discrimination and stigmatization faced by women drug users worldwide. Such efforts must emphasize the translation of policies into practice

and approaches to implementation that can help HIV-infected women who use drugs engage at all points of the HIV care continuum.

31. Metzger, D. S., et al. (2015). "**Expanding substance use treatment options for HIV prevention with buprenorphine-naloxone: HIV Prevention Trials Network 058.**" J Acquir Immune Defic Syndr 68(5): 554-561.

BACKGROUND: Injection opioid use plays a significant role in the transmission of HIV infection in many communities and several regions of the world. Access to evidence-based treatments for opioid use disorders is extremely limited. METHODS: HIV Prevention Trials Network 058 (HPTN 058) was a randomized controlled trial designed to compare the impact of 2 medication-assisted treatment (MAT) strategies on HIV incidence or death among opioid-dependent people who inject drugs (PWID). HIV-negative opioid-dependent PWID were recruited from 4 communities in Thailand and China with historically high prevalence of HIV among PWID. A total of 1251 participants were randomly assigned to either (1) a 1-year intervention consisting of 2 opportunities for a 15-day detoxification with buprenorphine/naloxone (BUP/NX) combined with up to 21 sessions of behavioral drug and risk counseling [short-term medication-assisted treatment (ST-MAT)] or (2) thrice-weekly dosing for 48 weeks with BUP/NX and up to 21 counseling sessions [long-term medication-assisted treatment (LT-MAT)] followed by dose tapering. All participants were followed for 52 weeks after treatment completion to assess durability of impact. RESULTS: Although the study was stopped early due to lower than expected occurrence of the primary end points, sufficient data were available to assess the impact of the interventions on drug use and injection-related risk behavior. At week 26, 22% of ST-MAT participants had negative urinalyses for opioids compared with 57% in the LT-MAT ($P < 0.001$). Differences disappeared in the year after treatment: at week 78, 35% in ST-MAT and 32% in the LT-MAT had negative urinalyses. Injection-related risk behaviors were significantly reduced in both groups after randomization. CONCLUSIONS: Participants receiving BUP/NX 3 times weekly were more likely to reduce opioid injection while on active treatment. Both treatment strategies were considered safe and associated with reductions in injection-related risk behavior. These data support the use of thrice-weekly BUP/NX as a way to reduce exposure to HIV risk. Continued access to BUP/NX may be required to sustain reductions in opioid use.

32. Oramasionwu, C. U., et al. (2015). "**Using Pharmacies in a Structural Intervention to Distribute Low Dead Space Syringes to Reduce HIV and HCV Transmission in People Who Inject Drugs.**" Am J Public Health 105(6): 1066-1071.

Ongoing injection drug use contributes to the HIV and HCV epidemics in people who inject drugs. In many places, pharmacies are the primary source of sterile syringes for people who inject drugs; thus, pharmacies provide a viable public health service that reduces blood-borne disease transmission. Replacing the supply of high dead space syringes with low dead space syringes could have far-reaching benefits that include further prevention of disease transmission in people who inject drugs and reductions in dosing inaccuracies, medication errors, and medication waste in patients who use syringes. We explored using pharmacies in a structural intervention to increase the uptake of low dead space syringes as part of a comprehensive strategy to reverse these epidemics.

33. Page, K., et al. (2015). "**Biomedical HIV Prevention Including Pre-exposure Prophylaxis and Opiate Agonist Therapy for Women Who Inject Drugs: State of Research and Future**

Directions. " *J AIDS Journal of Acquired Immune Deficiency Syndromes* 69: S169-S175. Online at: http://journals.lww.com/jaids/Fulltext/2015/06011/Biomedical_HIV_Prevention_Including_Pre_exposure.13.aspx

ABSTRACT: Women who inject drugs (WWID) are at higher risk of HIV compared with their male counterparts as a result of multiple factors, including biological, behavioral, and sociostructural factors, yet comparatively little effort has been invested in testing and delivering prevention methods that directly target this group. In this article, we discuss the need for expanded prevention interventions for WWID, focusing on 2 safe, effective, and approved, yet underutilized biomedical prevention methods: opiate agonist therapy (OAT) and oral pre-exposure prophylaxis (PrEP). Although both interventions are well researched, they have not been well examined in the context of gender. We discuss the drivers of women injectors' higher HIV risk, review the effectiveness of OAT and PrEP interventions among women, and explain why these new HIV prevention tools should be prioritized for WWID. There is substantial potential for impact of OAT and PrEP programs for WWID in the context of broader gender-responsive HIV prevention initiatives. Although awaiting efficacy data on other biomedical approaches in the HIV prevention research "pipeline," we propose that the scale-up and implementation of these proven, safe, and effective interventions are needed now.

34. Polonsky, M., et al. (2015). "**Challenges to implementing opioid substitution therapy in Ukrainian prisons: Personnel attitudes toward addiction, treatment, and people with HIV/AIDS.**" *Drug Alcohol Depend* 148: 47-55.

BACKGROUND: Ukraine is experiencing one of the most volatile HIV epidemics globally, fueled primarily by people who inject drugs (PWIDs), and a parallel incarceration epidemic. Opioid substitution therapy (OST) is internationally recognized as one of the most effective forms of treatment for opioid dependence and is among the most effective HIV prevention strategies available, yet efforts to adopt it in Ukraine's Criminal Justice System (CJS) have been thwarted. METHODS: To understand the reluctance of the Ukrainian CJS to adopt OST despite the overwhelming evidence pointing to its health benefits and improved criminal justice outcomes, we conducted the first survey of Ukrainian prison administrative, medical and custodial staff (N=243) attitudes towards addiction in general, OST, and people living with HIV/AIDS (PLWHA) in representative regions of Ukraine. RESULTS: Results revealed that Ukrainian CJS workers' attitudes toward OST, PLWHA, and drug addiction were universally negative, but differed substantially along geographic and occupational lines. Whereas geographic and cultural proximity to the European Union drove positive attitudes in the west, in the southern region we observed an identifiability effect, as workers who worked directly with prisoners held the most positive attitudes. We also found that knowledge mediated the effect of drug intolerance on OST attitudes. CONCLUSION: In Ukraine, adoption of OST is more influenced by myths, biases and ideological prejudices than by existing scientific evidence. By elucidating existing attitudes among CJS personnel, this study will help to direct subsequent interventions to address the barriers to implementing evidence-based HIV prevention treatments.

35. Prybylski, D., et al. (2015). "**Diverse HIV epidemics among people who inject drugs in Thailand: evidence from respondent-driven sampling surveys in Bangkok and Chiang Mai.**" *Drug Alcohol Depend* 148: 126-135.

BACKGROUND: Thailand's long-standing HIV sero-sentinel surveillance system for people who inject drugs (PWID) is confined to those in methadone-based drug treatment clinics and representative data are scarce, especially outside of Bangkok. **METHODS:** We conducted probability-based respondent-driven sampling (RDS) surveys in Bangkok (n=738) and Chiang Mai (n=309) to increase understanding of local HIV epidemics and to better inform the planning of evidence-based interventions. **RESULTS:** PWID had different epidemiological profiles in these two cities. Overall HIV prevalence was higher in Bangkok (23.6% vs. 10.9%, $p < 0.001$) but PWID in Bangkok are older and appear to have long-standing HIV infections. In Chiang Mai, HIV infections appear to be more recently acquired and PWID were younger and had higher levels of recent injecting and sexual risk behaviors with lower levels of intervention exposure. Methamphetamine was the predominant drug injected in both sites and polydrug use was common although levels and patterns of the specific drugs injected varied significantly between the sites. In multivariate analysis, recent midazolam injection was significantly associated with HIV infection in Chiang Mai (adjusted odds ratio=8.1; 95% confidence interval: 1.2-54.5) whereas in Bangkok HIV status was not associated with recent risk behaviors as infections had likely been acquired in the past. **CONCLUSION:** PWID epidemics in Thailand are heterogeneous and driven by local factors. There is a need to customize intervention strategies for PWID in different settings and to integrate population-based survey methods such as RDS into routine surveillance to monitor the national response.

36. Rhodes, T., et al. (2015). **"Is the promise of methadone Kenya's solution to managing HIV and addiction? A mixed-method mathematical modelling and qualitative study."** *BMJ Open* 5(3): e007198.
Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4360822/pdf/bmjopen-2014-007198.pdf>

BACKGROUND AND OBJECTIVES: Promoted globally as an evidence-based intervention in the prevention of HIV and treatment of heroin addiction among people who inject drugs (PWID), opioid substitution treatment (OST) can help control emerging HIV epidemics among PWID. With implementation in December 2014, Kenya is the third Sub-Saharan African country to have introduced OST. We combine dynamic mathematical modelling with qualitative sociological research to examine the 'promise of methadone' to Kenya. **METHODS, SETTING AND PARTICIPANTS:** We model the HIV prevention impact of OST in Nairobi, Kenya, at different levels of intervention coverage. We draw on thematic analyses of 109 qualitative interviews with PWID, and 43 with stakeholders, to chart their narratives of expectation in relation to the promise of methadone. **RESULTS:** The modelled impact of OST shows relatively slight reductions in HIV incidence (5-10%) and prevalence (2-4%) over 5 years at coverage levels (around 10%) anticipated in the planned roll-out of OST. However, there is a higher impact with increased coverage, with 40% coverage producing a 20% reduction in HIV incidence, even when accounting for relatively high sexual transmissions. Qualitative findings emphasise a culture of 'rationed expectation' in relation to access to care and a 'poverty of drug treatment opportunity'. In this context, the promise of methadone may be narrated as a symbol of hope-both for individuals and community-in relation to addiction recovery. **CONCLUSIONS:** Methadone offers HIV prevention potential, but there is a need to better model the effects of sexual HIV transmission in mediating the impact of OST among PWID in settings characterised by a combination of generalised and concentrated epidemics. We find that individual and community narratives of methadone as hope for recovery coexist with policy narratives positioning methadone primarily in relation to HIV prevention. Our analyses show the value of mixed methods approaches to investigating newly-introduced interventions.

37. Sharma, V., et al. (2015). "**Women at risk': the health and social vulnerabilities of the regular female partners of men who inject drugs in Delhi, India.**" *Cult Health Sex* 17(5): 623-637.

Needle and syringe sharing is common among people who inject drugs and so is unprotected sex, which consequently puts their sex partners at risk of sexually transmitted infections (STIs) including HIV and other blood-borne infections, like hepatitis. We undertook a nested study with the regular female partners of men who inject drugs participating in a longitudinal HIV incidence study in Delhi, India. In-depth interviews were conducted with female partners of 32 men. The interviews aimed to gather focused and contextual knowledge of determinants of safe sex and reproductive health needs of these women. Information obtained through interviews was triangulated and linked to the baseline behavioural data of their partner (index men who injected drugs). The study findings illustrate that women in monogamous relationships have a low perception of STI- and HIV-related risk. Additionally, lack of awareness about hepatitis B and C is a cause of concern. Findings also suggest impact of male drug use on the fertility of the female partner. It is critical to empower regular female partners to build their self-risk assessment skills and self-efficacy to negotiate condom use. Future work must explore the role of drug abuse among men who inject drugs in predicting fertility and reproductive morbidity among their female partners.

38. Springer, S. A., et al. (2015). "**Drug Treatment as HIV Prevention Among Women and Girls Who Inject Drugs From a Global Perspective: Progress, Gaps, and Future Directions.**" *JAIDS Journal of Acquired Immune Deficiency Syndromes* 69: S155-S161. Online at: http://journals.lww.com/jaids/Fulltext/2015/06011/Drug_Treatment_as_HIV_Prevention_Among_Women_and.11.aspx

ABSTRACT: Although there have been significant reductions in the number of new HIV infections globally from 2009 to 2013, incidence remains unacceptably high for persons who use drugs. In many settings, women and girls who inject drugs (WWID) with HIV/AIDS experience poor treatment access, including evidence-based practices like antiretroviral therapy and drug treatment. Medication-assisted therapies (MAT) for substance use disorders are especially inaccessible, which in their absence, increases HIV transmission risk. Irrespective of setting or culture, drug treatment using MAT is not only effective but also cost-effective at reducing opioid use and linked injection and sexual risks. Data presented here for WWID address their access to MAT for opioid addiction and to treatments being developed that address the relationship, family, and vocational needs of this group. The most glaring finding is that globally, WWID frequently are excluded in surveys or studies with an impressive lack of disaggregated data by gender when surveying access to MAT—even in wealthy countries. Despite this, there have been some striking improvements in implementing drug treatment as prevention, notably in Iran and China. Still, real barriers remain for women and girls to accessing drug treatment, other harm reduction services, and antiretroviral therapy. Development and/or implementation of interventions that facilitate women and girls engaging in drug treatment that address their roles within society, work, and family/relationships, and outcome evaluation of these interventions are crucial.

39. Syvertsen, J. L., et al. (2015). "**Evidence of injection drug use in Kisumu, Kenya: Implications for HIV prevention.**" *Drug Alcohol Depend* 151: 262-266.

BACKGROUND: Injection drug use is increasingly contributing to the HIV epidemic across sub-Saharan Africa. This paper provides the first descriptive analysis of injection drug use in western Kenya, where HIV prevalence is already highest in the nation at 15.1%. **METHODS:** We draw on quantitative data from a study of injection drug use in Kisumu, Kenya. We generated descriptive statistics on socio-demographics, sexual characteristics, and drug-related behaviors. Logistic regression models were adjusted for sex to identify correlates of self-reported HIV positive status. **RESULTS:** Of 151 participants, mean age was 28.8 years, 84% (n=127) were male, and overall self-reported HIV prevalence reached 19.4%. Women had greater than four times the odds of being HIV positive relative to men (Odds Ratio [OR] 4.5, CI: 1.7, 11.8, p=.003). Controlling for sex, ever experiencing STI symptoms (Adjusted Odds ratio [AOR] 4.6, 95% CI 1.7, 12.0, p=.002) and sharing needles or syringes due to lack of access (AOR 3.6, 95% CI 1.2, 10.5, p=.02) were significantly associated with HIV positive status. Lower education (AOR 2.3, 95% CI 0.9, 5.6, p=.08), trading sex for drugs (AOR 2.8, 95% CI 0.9, 8.8, p=.08), being injected by a peddler (AOR 2.9, 95% CI 1.0, 8.5, p=.05), and injecting heroin (AOR 2.3, 95% CI 1.0, 5.7, p=.06), were marginally associated with HIV. **CONCLUSIONS:** This exploratory study identified patterns of unsafe drug injection and concurrent sexual risk in western Kenya, yet few resources are currently available to address addiction or injection-related harm. Expanded research, surveillance, and gender sensitive programming are needed.

40. Tavitian-Exley, I., et al. (2015). **"Influence of different drugs on HIV risk in people who inject: systematic review and meta-analysis."** *Addiction* 110(4): 572-584.

AIMS: To assess systematically the risk of HIV acquisition by type of drug injected across different settings. **METHODS:** A systematic review and meta-analysis were conducted. Databases were searched for studies of HIV incidence in people who inject different drugs (PWID). Pooled HIV incidence rate ratio (IRR) was used to compare HIV risk between injecting and not-injecting a given drug, when possible, or otherwise with those reported not to have injected the substance. Pooled estimates of crude IRR were derived using random-effects models. Variations in IRR were assessed in subgroup analyses, by drug and geographical region. **RESULTS:** Of 5779 studies screened, 15 were included. HIV incidence was reported for people injecting cocaine (eight: North America, Europe), amphetamine-type stimulants (ATS) (four: Western and Eastern Europe, Asia), heroin (11: all settings), opiate-stimulants (four: North America, Western and Eastern Europe) and opiates-sedatives (five: Europe, Asia). HIV risk in cocaine injectors was 3.6 times 95% confidence interval (CI) = 2.8-4.7, I(2) = 0%; n = 4) that of non-injectors and 3.0 for ATS injectors (95% CI = 2.2-4.1, I(2) = 0%; n = 2). Higher sexual risk was reported in cohorts injecting stimulants. Compared to not-injecting, HIV IRR was 2.8 (95% CI = 1.7-4.7, I(2) = 77%; n=6) for all heroin injectors and 3.5 (95% CI = 2.3-5.2, I(2) = 40%; n=5) for heroin injectors in Asia and Europe. **CONCLUSION:** The risk of HIV acquisition in people who inject drugs appears to vary by drug type but differences are not statistically significant, precluding conclusive grading of risk.

41. Vanichseni, S., et al. (2015). **"High Mortality Among Non-HIV-Infected People Who Inject Drugs in Bangkok, Thailand, 2005-2012."** *Am J Public Health* 105(6): 1136-1141.

OBJECTIVES: We examined the causes of hospitalization and death of people who inject drugs participating in the Bangkok Tenofovir Study, an HIV preexposure prophylaxis trial. **METHODS:** The Bangkok Tenofovir Study was a randomized, double-blind, placebo-controlled trial conducted during 2005 to 2012 among 2413 people who inject drugs. We reviewed medical records to

define the causes of hospitalization and death, examined participant characteristics and risk behaviors to determine predictors of death, and compared the participant mortality rate with the rate of the general population of Bangkok, Thailand. RESULTS: Participants were followed an average of 4 years; 107 died: 22 (20.6%) from overdose, 13 (12.2%) from traffic accidents, and 12 (11.2%) from sepsis. In multivariable analysis, older age (40-59 years; $P = .001$), injecting drugs ($P = .03$), and injecting midazolam ($P < .001$) were associated with death. The standardized mortality ratio was 2.9. CONCLUSIONS: People who injected drugs were nearly 3 times as likely to die as were those in the general population of Bangkok and injecting midazolam was independently associated with death. Drug overdose and traffic accidents were the most common causes of death, and their prevention should be public health priorities.

42. Zhang, L., et al. (2015). "**Prevalence and correlates of HCV mono-infection and HIV and HCV coinfection among persons who inject drugs in Vietnam.**" *Eur J Gastroenterol Hepatol* 27(5): 550-556.

BACKGROUND: Vietnam bears a high burden of hepatitis C virus (HCV) and HIV infection among persons who inject drugs (PWID). The high prevalence of HCV and HIV occurs in a context of stigma and limited preventive interventions for PWID. OBJECTIVES: This study aims to estimate the prevalence of HCV, HIV, and HIV/HCV coinfection among PWID and to explore their associations with lifetime injection behaviors. METHODS: A total of 1434 PWID were recruited from the Thai Nguyen Province of Vietnam between 2005 and 2007. Participants responded to a structured questionnaire and provided blood samples at baseline. A cross-sectional analysis of data collected at baseline was carried out. Factors associated with HCV mono-infection and HIV/HCV coinfection were evaluated by multinomial logistic regression. RESULTS: The prevalences of HIV and HCV were 35.1 and 88.8%, respectively, and the prevalences of HIV/HCV coinfection and HCV mono-infection were 34.8 and 53.9%, respectively. After adjusting for confounders in multivariate analysis, ever reusing a syringe and needle was found to be significantly associated with HIV mono-infection [adjusted odds ratio (AOR), 3.13; 95% confidence interval (CI), 1.99-4.94] and HIV/HCV coinfection (AOR, 3.34; 95% CI, 2.02-5.51). Ever sharing diazepam or novocaine was also found to be significantly associated with HIV mono-infection (AOR, 2.14; 95% CI, 1.38-3.32) and HIV/HCV coinfection (AOR, 2.47; 95% CI, 1.57-3.90). CONCLUSION: Our findings demonstrate a high burden of HIV and HCV infection among PWID in Vietnam. Lifetime injection behaviors, including sharing of diazepam or novocaine, may account for the high prevalence of HIV and HCV. Improving prevention and ensuring access to care remain critically important for this vulnerable population.

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Sex Workers - 52

1. Bailey, A. and J. P. Figueroa (2015). "**A Framework for Sexual Decision-Making Among Female Sex Workers in Jamaica.**" *Arch Sex Behav*.

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.

2. Batona, G., et al. (2015). "**Understanding the intention to undergo regular HIV testing among female sex workers in Benin: a key issue for entry into HIV care.**" *J Acquir Immune Defic Syndr* 68 Suppl 2: S206-212. Online at: http://journals.lww.com/jaids/Fulltext/2015/03011/Understanding_the_Intention_to_Undergo_Reg_ular_HIV.18.aspx

BACKGROUND: HIV testing constitutes an entry point for HIV prevention and access to care. Although access to tests has increased in most low- and middle-income countries in recent years, regular HIV testing among high-risk populations remains a challenge. Understanding the determinants of regular HIV testing is the key to improving treatment-as-prevention programs and access to care. This study aimed to identify psychosocial factors associated with the intention to be HIV tested every 3 months among female sex workers (FSWs) in Benin. **METHODS:** We developed an interview questionnaire based on the Theory of Planned Behavior and other theoretical variables. We interviewed 450 FSWs in their work place. Using Amos software, we applied structural equation modeling to identify the determinants of intention. **RESULTS:** Previous testing was reported by 87% of FSWs, 40% of whom reported having been tested in the last 3 months. More than half of the FSWs (69%) showed a strong intention to be HIV tested during the next 3 months. The structural model indicates that 55% of the variance in intention is explained in descending order of importance (standardized coefficient weight, beta) by perceived control, descriptive norms, control beliefs, habits, attitude, risk perception, and normative beliefs. **CONCLUSIONS:** This is the first theoretically based study identifying determinants of intention to undergo regular HIV testing among FSWs in sub-Saharan Africa. The results can inform development of interventions to maintain and increase regular HIV testing among FSWs, thus reinforcing primary prevention and supporting early access to care.

3. Beattie, T. S., et al. (2015). "**Supporting adolescent girls to stay in school, reduce child marriage and reduce entry into sex work as HIV risk prevention in north Karnataka, India: protocol for a cluster randomised controlled trial.**" *BMC Public Health* 15: 292. Online at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4391662/pdf/12889_2015_Article_1623.pdf

BACKGROUND: Low caste adolescent girls living in rural northern Karnataka are at increased risk of school drop-out, child marriage, and entry into sex-work, which enhances their vulnerability to HIV, early pregnancy and adverse maternal and child health outcomes. This protocol describes the

evaluation of Samata, a comprehensive, multi-level intervention designed to address these structural drivers of HIV risk and vulnerability. **METHODS/DESIGN:** The Samata study is a cluster randomised controlled trial that will be conducted in eighty village clusters (40 intervention; 40 control) in Bijapur and Bagalkot districts in northern Karnataka. The intervention seeks to reach low caste girls and their families; adolescent boys; village communities; high school teachers and school governing committees; and local government officials. All low caste (scheduled caste/tribe) adolescent girls attending 7(th) standard (final year of primary school) will be recruited into the study in two consecutive waves, one year apart. Girls (n = 2100), their families (n = 2100) and school teachers (n = 650) will be interviewed at baseline and at endline. The study is designed to assess the impact of the intervention on four primary outcomes: the proportion of low caste girls who (i) enter into secondary school; (ii) complete secondary school; (iii) marry before age 15; and (iv) engage in sex before age 15. Observers assessing the outcomes will be blinded to group assignment. The primary outcome will be an adjusted, cluster-level intention to treat analysis, comparing outcomes in intervention and control villages at follow-up. We will also conduct survival analyses for the following secondary outcomes: marriage, sexual debut, pregnancy and entry into sex work. Complementary monitoring and evaluation, qualitative and economic research will be used to explore and describe intervention implementation, the pathways through which change occurs, and the cost-effectiveness of the intervention. **DISCUSSION:** This is an innovative trial of a comprehensive intervention to improve the quality of life and reduce HIV vulnerability among marginalised girls in northern Karnataka. The findings will be of interest to programme implementers, policy makers and evaluation researchers working in the development, education, and sexual and reproductive health fields. **TRIAL REGISTRATION:** ClinicalTrials.Gov NCT01996241 . 16(th) November 2013.

4. Bertolacci-Rocha, L. G., et al. (2015). **"STI/HIV test result disclosure between female sex workers and their primary, non-commercial male partners in two Mexico-US border cities: a prospective study."** *Sex Transm Infect* 91(3): 207-213.

OBJECTIVES: Disclosure of sexually transmitted infections (STI)/HIV diagnoses to sexual partners is not mandated by public health guidelines in Mexico. To assess the feasibility of couples-based STI/HIV testing with facilitated disclosure as a risk-reduction strategy within female sex workers' (FSW) primary partnerships, we examined STI/HIV test result disclosure patterns between FSWs and their primary, non-commercial male partners in two Mexico-US border cities. **METHODS:** From 2010 to 2013, 335 participants (181 FSWs and 154 primary male partners) were followed for 24 months. At semiannual visits, participants were tested for STIs/HIV and reported on their disclosure of test results from the previous visit. Multilevel logistic regression was used to identify individual-level and partnership-level predictors of cumulative (1) non-disclosure of ≥ 1 STI test result and (2) non-disclosure of ≥ 1 HIV test result within couples during follow-up. **RESULTS:** Eighty-seven percent of participants reported disclosing all STI/HIV test results to their primary partners. Non-disclosure of ≥ 1 STI test result was more common among participants who reported an STI diagnosis as part of the study (adjusted OR=3.05, 95% CI 1.13 to 8.25), while non-disclosure of ≥ 1 HIV test result was more common among participants in longer-duration partnerships (AOR=1.15 per year, 95% CI 1.03 to 1.28). Drug use before/during sex within partnerships was associated with non-disclosure of both STI (AOR=5.06, 95% CI 1.64 to 15.62) and HIV (AOR=4.51, 95% CI: 1.32 to 15.39) test results. **CONCLUSIONS:** STI/HIV test result disclosure was highly prevalent within FSWs' primary partnerships, suggesting couples-based STI/HIV testing with facilitated disclosure may be feasible for these and potentially other high-risk, socially marginalised couples.

5. Biello, K. B., et al. (2015). **"Is Involvement in Sex Work Associated with Engagement in HIV-Related Medical Care in Latin American Men Who Have Sex with Men (MSM)? Results of a Large, Multinational Internet Survey."** LGBT Health.

ABSTRACT: Men who have sex with men (MSM) who engage in transactional sex are at increased HIV risk, and face complex barriers to care seeking. Among 2,035 men recruited through an MSM social/sexual networking website in Latin America and who reported being HIV-infected, 186 (9.1%) reported being paid for sex with another man in the past year. Engagement in transactional sex was associated with decreased odds of receiving medical care for HIV (AOR=0.57, 95% CI=0.37-0.85). No significant differences were seen in being on antiretroviral therapy (ART) or ART adherence once in care. Interventions in this population should focus on reducing barriers to engagement in care. Men who have sex with men (MSM) who engage in transactional sex are at increased HIV risk, and face complex barriers to care seeking. Among 2,035 men recruited through an MSM social/sexual networking website in Latin America and who reported being HIV-infected, 186 (9.1%) reported being paid for sex with another man in the past year. Engagement in transactional sex was associated with decreased odds of receiving medical care for HIV (AOR=0.57, 95% CI=0.37-0.85). No significant differences were seen in being on antiretroviral therapy (ART) or ART adherence once in care. Interventions in this population should focus on reducing barriers to engagement in care.

6. Bradley, J., et al. (2015). **"Pornography, Sexual Enhancement Products, and Sexual Risk of Female Sex Workers and their Clients in Southern India."** Arch Sex Behav.

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.

7. Bui, T. C., et al. (2015). **"Douching practices among female sex workers in Phnom Penh, Cambodia."** Int J STD AIDS 26(4): 238-242.

Several studies indicate that douching has few benefits but numerous adverse health outcomes, including increased risk for sexually transmitted infections and HIV. No published study explores douching practices among Cambodian female sex workers. This report provides preliminary data about the prevalence and frequency of douching among female sex workers in Phnom Penh, Cambodia. Survey data were obtained from 81 female sex workers who were taken into custody due to engagement in commercial sex from March to June 2011. Results showed that 91% of participants douched. The mean numbers of times douched before sex and after sex per 10 sex episodes were 4.43 (SD = 3.87) and 4.63 (SD = 3.94), respectively. Half of the participants thought that douching could help to prevent sexually transmitted infections including HIV; 24% were unsure about this. Usually, douching after sex was associated with ever obtaining an HIV test ($p = .012$) and was marginally associated (although not statistically significant) with a higher average number of clients per week ($p = .063$) and consistent condom use with clients ($p = .053$). This suggests that these practices may be related to individual perceptions of sexually transmitted infections/HIV risk or susceptibility. Given the commonness of douching and related misperceptions among Cambodian female sex workers, future studies and interventions are needed to prevent adverse health problem.

8. Chiang, S. S., et al. (2015). "**Tuberculosis screening among Bolivian sex workers and their children.**" *J Epidemiol Glob Health* 5(2): 205-210.

Bolivian sex workers were more likely than other employed women to report tuberculosis screening only if they reported HIV screening. Of all women with household tuberculosis exposure, <40% reported screening for themselves or their children. Coupling tuberculosis screening with sex workers' mandatory HIV screenings may be a cost-efficient disease-control strategy.

9. Choudhry, V., et al. (2015). "**Transactional sex and HIV risks - evidence from a cross-sectional national survey among young people in Uganda.**" *Glob Health Action* 8: 27249.
Online at: <http://www.globalhealthaction.net/index.php/gha/article/download/27249/pdf/85>

BACKGROUND: Transactional sex is associated with the HIV epidemic among young people in Uganda. Few quantitative studies based on nationally representative survey data explored the relationship between sexual behaviors, HIV infection, and transactional sex. OBJECTIVE: This study aimed to determine the associations between risky sexual behaviors, participation in transactional sex, and HIV sero-status among men and women aged 15-24 in Uganda. DESIGN: The study uses data from the Uganda AIDS Indicator Survey, a cross-sectional national HIV serological study conducted in 2011. We analyzed data on 1,516 men and 2,824 women aged 15-24 who had been sexually active in the 12 months preceding the survey. Private, face-to-face interviews were also conducted to record the sociodemographics, sexual history, and experiences of sexual coercion. Logistic regression analysis was performed to measure associations between sexual behaviors and transactional sex, and associations between HIV sero-status and transactional sex. RESULTS: Among young people who had been sexually active in the 12 months prior to the survey, 5.2% of young men reported paying for sex while 3.7% of young women reported receiving gifts, favors, or money for sex. Lower educational attainment (ORadjusted 3.25, CI 1.10-9.60) and experience of sexual coercion (ORadjusted 2.83, CI 1.07-7.47) were significantly associated with paying for sex among men. Multiple concurrent sexual relationships were significantly associated with paying for sex among young men (ORadjusted 5.60, CI 2.08-14.95) and receiving something for sex among young women (ORadjusted 8.04, CI 2.55-25.37). Paying for sex among young men and having

three to five lifetime sexual partners among young women were associated with increased odds of testing positive for HIV. **CONCLUSIONS:** Transactional sex is associated with sexual coercion and HIV risk behaviors such as multiple concurrent sexual partnerships among young people in Uganda. In addition, transactional sex appears to place young men at increased risk for HIV in Uganda. Both sexes appear equally vulnerable to risks associated with transactional sex, and therefore should be targeted in intervention programs. In addition, strengthening universal education policy and improving school retention programs may be beneficial in reducing risky sexual behaviors and transactional sex.

10. Chow, E. P., et al. (2015). "**Risk Behaviours among Female Sex Workers in China: A Systematic Review and Data Synthesis.**" *PLoS One* 10(3): e0120595.

Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4376708/pdf/pone.0120595.pdf>

BACKGROUND: Commercial sex is one of the major modes of HIV transmission in China. Understanding HIV risk behaviours in female sex workers (FSW) is of great importance for prevention. This study aims to assess the magnitude and temporal changes of risk behaviours in Chinese FSW. **METHOD:** Five electronic databases were searched to identify peer-reviewed English and Chinese language articles published between January 2000 and December 2012 that reported risk behaviours among FSW in China, including condom use, HIV testing, and drug use. Linear regression and Spearman's rank correlation were used to examine temporal trends in these risk factors. The study followed PRISMA guidelines for meta-analyses and was registered in the PROSPERO database for systematic reviews. **RESULTS:** A total of 583 articles (44 English, 539 Chinese) investigating 594,583 Chinese FSW were included in this review. At last sex, condom use was highest with commercial partners (clients), increasing from 53.7% in 2000 to 84.9% in 2011. During this same time period, condom use increased with regular partners from 15.2% to 40.4% and with unspecified partners from 38.6% to 82.5%. Increasing trends were also found in the proportion of sampled FSW who reported testing for HIV in the past 12 months (from 3.2% in 2000 to 48.0% in 2011), while drug use behaviours decreased significantly from 10.9% to 2.6%. **CONCLUSION:** During the first decade of 2000, Chinese FSWs' self-reported risk behaviours have decreased significantly while HIV testing has increased. Further outreach and intervention efforts are needed to encourage condom use with regular partners, continue promotion of HIV testing, and provide resources for the most vulnerable FSW, particularly low tier FSW, who may have limited access to sexual health and prevention programs.

11. Closson, E. F., et al. (2015). "**The balancing act: Exploring stigma, economic need and disclosure among male sex workers in Ho Chi Minh City, Vietnam.**" *Glob Public Health* 10(4): 520-531.

In Vietnam, there is an emerging HIV epidemic among men who have sex with men (MSM). Male sex workers engage in high-risk sexual behaviours that make them particularly vulnerable to HIV infection. In 2010, 23 MSM in Ho Chi Minh City (HCMC) who recently received payment for sex with another man completed in-depth qualitative interviews exploring motivations for sex work, patterns of sex work disclosure and experiences of social stigma. Interviews were recorded, transcribed and translated into English and analysed using a qualitative descriptive approach. Low wages, unstable employment and family remittances were motivating factors for MSM in HCMC to sell sex. Participants described experiences of enacted and felt social stigma related to their involvement in sex work. In response, they utilised stigma management techniques aimed at concealment of involvement in sex work. Such strategies restricted sexual communication with

non-paying sex partners and potentially limited their ability to seek social support from family and friends. Departing from decontextualized depictions of sex work disclosure, our findings describe how decisions to reveal involvement in sex work are shaped by social and structural factors such as social stigma, techniques to minimise exposure to stigma, economic imperatives and familial responsibilities.

12. Duvall, S., et al. (2015). "**Assessment of policy and access to HIV prevention, care, and treatment services for men who have sex with men and for sex workers in Burkina Faso and Togo.**" J Acquir Immune Defic Syndr 68 Suppl 2: S189-197. Online at: http://journals.lww.com/jaids/Fulltext/2015/03011/Assessment_of_Policy_and_Access_to_HIV_Prevention,.16.aspx

BACKGROUND: In Burkina Faso and Togo, key populations of men who have sex with men (MSM) and sex workers (SW) have a disproportionately higher HIV prevalence. This study analyzed the 2 countries' policies impacting MSM and SW; to what extent the policies and programs have been implemented; and the role of the enabling environment, country leadership, and donor support. METHODS: The Health Policy Project's Policy Assessment and Advocacy Decision Model methodology was used to analyze policy and program documents related to key populations, conduct key informant interviews, and hold stakeholder meetings to validate the findings. RESULTS: Several policy barriers restrict MSM/SW from accessing services. Laws criminalizing MSM/SW, particularly anti-solicitation laws, result in harassment and arrests of even nonsoliciting MSM/SW. Policy gaps exist, including few MSM/SW-supportive policies and HIV prevention measures, e.g., lubricant not included in the essential medicines list. The needs of key populations are generally not met due to policy gaps around MSM/SW participation in decision-making and funding allocation for MSM/SW-specific programming. Misaligned policies, eg, contradictory informed consent laws and protocols, and uneven policy implementation, such as stockouts of sexually transmitted infection kits, HIV testing materials, and antiretrovirals, undermine evidence-based policies. Even in the presence of a supportive donor and political community, public stigma and discrimination (S&D) create a hostile enabling environment. CONCLUSIONS: Policies are needed to address S&D, particularly health care provider and law enforcement training, and to authorize, fund, guide, and monitor services for key populations. MSM/SW participation and development of operational guidelines can improve policy implementation and service uptake.

13. Fraser, N., et al. (2015). "**Reorienting the HIV response in Niger toward sex work interventions: from better evidence to targeted and expanded practice.**" J Acquir Immune Defic Syndr 68 Suppl 2: S213-220. Online at: http://journals.lww.com/jaids/Fulltext/2015/03011/Reorienting_the_HIV_Response_in_Niger_Toward_Sex.19.aspx

BACKGROUND: Niger's low-burden, sex-work-driven HIV epidemic is situated in a context of high economic and demographic growth. Resource availability of HIV/AIDS has been decreasing recently. In 2007-2012, only 1% of HIV expenditure was for sex work interventions, but an estimated 37% of HIV incidence was directly linked to sex work in 2012. The Government of Niger requested assistance to determine an efficient allocation of its HIV resources and to strengthen HIV programming for sex workers. METHODS: Optima, an integrated epidemiologic and optimization tool, was applied using local HIV epidemic, demographic, programmatic,

expenditure, and cost data. A mathematical optimization algorithm was used to determine the best resource allocation for minimizing HIV incidence and disability-adjusted life years (DALYs) over 10 years. RESULTS: Efficient allocation of the available HIV resources, to minimize incidence and DALYs, would increase expenditure for sex work interventions from 1% to 4%-5%, almost double expenditure for antiretroviral treatment and for the prevention of mother-to-child transmission, and reduce expenditure for HIV programs focusing on the general population. Such an investment could prevent an additional 12% of new infections despite a budget of less than half of the 2012 reference year. Most averted infections would arise from increased funding for sex work interventions. CONCLUSIONS: This allocative efficiency analysis makes the case for increased investment in sex work interventions to minimize future HIV incidence and DALYs. Optimal HIV resource allocation combined with improved program implementation could have even greater HIV impact. Technical assistance is being provided to make the money invested in sex work programs work better and help Niger to achieve a cost-effective and sustainable HIV response.

14. George, A. and K. M. Blankenship (2015). "**Peer Outreach Work as Economic Activity: Implications for HIV Prevention Interventions among Female Sex Workers.**" *PLoS One* 10(3): e0119729.
Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4361609/pdf/pone.0119729.pdf>

Female sex workers (FSWs) who work as peer outreach workers in HIV prevention programs are drawn from poor socio-economic groups and consider outreach work, among other things, as an economic activity. Yet, while successful HIV prevention outcomes by such programs are attributed in part to the work of peers who have dense relations with FSW communities, there is scant discussion of the economic implications for FSWs of their work as peers. Using observational data obtained from an HIV prevention intervention for FSWs in south India, we examined the economic benefits and costs to peers of doing outreach work and their implications for sex workers' economic security. We found that peers considered their payment incommensurate with their workload, experienced long delays receiving compensation, and at times had to advance money from their pockets to do their assigned peer outreach work. For the intervention these conditions resulted in peer attrition and difficulties in recruitment of new peer workers. We discuss the implications of these findings for uptake of services, and the possibility of reaching desired HIV outcomes. Inadequate and irregular compensation to peers and inadequate budgetary outlays to perform their community-based outreach work could weaken peers' relationships with FSW community members, undermine the effectiveness of peer-mediated HIV prevention programs and invalidate arguments for the use of peers.

15. Girchenko, P., et al. (2015). "**Association between Pregnancy and Active Injection Drug Use and Sex Work among Women Injection Drug Users in Saint Petersburg, Russia.**" *J Urban Health*.
Online at: http://download.springer.com/static/pdf/782/art%253A10.1007%252Fs11524-015-9954-3.pdf?originUrl=http%3A%2F%2Flink.springer.com%2Farticle%2F10.1007%2Fs11524-015-9954-3&token2=exp=1433174808~acl=%2Fstatic%2Fpdf%2F782%2Fart%25253A10.1007%25252Fs11524-015-9954-3.pdf%3ForiginUrl%3Dhttp%253A%252F%252Flink.springer.com%252Farticle%252F10.1007%252Fs11524-015-9954-3*~hmac=636098efbb4dbe7b055da8ba2660e44e0636028220a1a6ca28cddac8dc6917a9

Widespread use of unsafe sexual practices among women injecting drugs both practicing and not practicing sex work leads to high levels of unplanned pregnancies in this population. The goal of this study was to investigate the association between pregnancy and active drug use and sex work. Data were collected using a convenience sample of 500 women in Saint Petersburg, Russia, in 2013. All women had recent experience of drug use, of which 200 were pregnant at the time of the study. The study consisted of a structured interview followed by a rapid HIV test. Pregnancy was protective against both active drug use and sex work. For HIV-positive women, these associations were stronger than for HIV-negative women: drug use prevalence ratio (PR) was 0.59 vs 0.85; for sex work, the PRs were 0.36 vs 0.64. Higher levels of education were associated with a lower prevalence ratio for active drug use and sex work in all models. Having children was not associated with active drug use or sex work. Pregnancy might be an optimal time for conducting interventions aimed at cessation of drug use and sex work among women injecting drugs.

16. Holland, C. E., et al. (2015). "**Antiretroviral treatment coverage for men who have sex with men and female sex workers living with HIV in Cameroon.**" *J Acquir Immune Defic Syndr* 68 Suppl 2: S232-240. Online at: http://journals.lww.com/jaids/Fulltext/2015/03011/Antiretroviral_Treatment_Coverage_for_Men_Who_Have.21.aspx

BACKGROUND: Men who have sex with men (MSM) and female sex workers (FSW) are more likely to be living with HIV and experience difficulty accessing HIV health services due to stigma and discrimination. Antiretroviral treatment and sustained viral suppression among individuals living with HIV is the last step in the continuum of HIV care, which has been shown to improve health outcomes and decrease the risk of onward transmission of HIV. METHODS: To calculate the numerator and denominator for antiretroviral therapy (ART) coverage estimates among MSM and FSW living with HIV, the Priority Locations for AIDS Control Efforts methods were modified to include individual quantitative interviews, health service assessment and mapping, and size estimation in 7 cities in Cameroon. MSM and FSW were recruited using peer referral and venue-based sampling. The numerator was calculated from interviews with MSM and FSW. Population size estimation of MSM and FSW was used to determine the denominator. RESULTS: Antiretroviral coverage varied by site from 0% to 25% among HIV infected MSM and FSW. ART provision to the general population was reported at a significantly greater proportion of HIV health centers (56.5%) than ART provision to MSM and FSW populations (13.2%). CONCLUSIONS: The majority of MSM and FSW living with HIV and eligible for treatment in Cameroon are not connected to ART care. Additionally, ART provision for MSM and FSW at HIV health centers is insufficient. Characterizing effective strategies to reach optimal levels of engagement in the continuum of HIV care among MSM and FSW is essential for an AIDS-free generation for Cameroon

17. Huang, Y., et al. (2015). "**Unpacking the 'structural' in a structural approach for HIV prevention among female sex workers: A case study from China.**" *Glob Public Health*: 1-15.

Interventions for HIV prevention among female sex workers (FSWs) in China focus on HIV/sexually transmitted infection (STI) and individual behaviour change. An occupational health framework facilitates intervention across an array of health issues FSWs face including HIV/STI, violence, reproductive health, stigma and substance use. Through a case study of a community-based Jiaozhou (JZ) FSW programme, we developed a conceptual framework incorporating global discussions of structural approaches to HIV prevention with the specific social and structural

contexts identified among FSWs in China. Based on ethnographic fieldwork between August 2010 and May 2013, we describe the evolution of this programme to its current occupational health focus and unpack the intervention strategies. We describe the critical features of the programme that have fostered success among FSWs including high-quality clinical services provided within a welcoming setting, responsive outreach work through staff and trained FSW peers, interpersonal and community-level engagement aimed at changing the local social and structural environments of sex work and tailored health education materials. This intervention differs from other projects in China by adopting a more holistic approach to FSW health that incorporates social issues. It also demonstrates the feasibility of structural interventions among FSWs even within an environment that has strong anti-prostitution policies.

18. Inguane, C., et al. (2015). "**Socio-demographic, Behavioral and Health Characteristics of Underage Female Sex Workers in Mozambique: The Need to Protect a Generation from HIV Risk.**" *AIDS Behav.*

Characteristics, HIV risk, and program coverage for underage female sex workers (FSW) are rarely systematically described worldwide. We compared characteristics of underage (15-17 years old) and adult (≥ 18 years old) FSW in three main urban areas of Mozambique (Maputo, Beira and Nampula) using data from three respondent-driven sampling surveys implemented in 2011-2012. Among survey participants, 9.8 % (39/400) in Maputo, 17.0 % (70/411) in Beira and 25.6 % (110/429) in Nampula were underage. Over half reported performing sex work to afford daily living, and 29.7-50.0 % had unprotected sex with their last client. The proportion of underage FSW having accessed care and prevention services was lower compared to adult FSW. While HIV prevalence among underage FSW was lower than in adults, it increased markedly with age. Our results point to the urgency of expanding prevention and care programs geared towards underage FSW.

19. Isac, S., et al. (2015). "**Changes in HIV and syphilis prevalence among female sex workers from three serial cross-sectional surveys in Karnataka state, South India.**" 5(3): e007106. Online at: <http://bmjopen.bmj.com/content/5/3/e007106.full.pdf#page=1&view=FitH>

OBJECTIVES: This paper examined trends over time in condom use, and the prevalences of HIV and syphilis, among female sex workers (FSWs) in South India. **DESIGN:** Data from three rounds of cross-sectional surveys were analysed, with HIV and high-titre syphilis prevalence as outcome variables. Multivariable analysis was applied to examine changes in prevalence over time. **SETTING:** Five districts in Karnataka state, India. **PARTICIPANTS:** 7015 FSWs were interviewed over three rounds of surveys (round 1=2277; round 2=2387 and round 3=2351). Women who reported selling sex in exchange for money or gifts in the past month, and aged between 18 and 49 years, were included. **INTERVENTIONS:** The surveys were conducted to monitor a targeted HIV prevention programme during 2004-2012. The main interventions included peer-led community outreach, services for the treatment and prevention of sexually transmitted infections, and empowering FSWs through community mobilisation. **RESULTS:** HIV prevalence declined significantly from rounds 1 to 3, from 19.6% to 10.8% (adjusted OR (AOR)=0.48, $p < 0.001$); high-titre syphilis prevalence declined from 5.9% to 2.4% (AOR=0.50, $p < 0.001$). Reductions were observed in most substrata of FSWs, although reductions among new sex workers, and those soliciting clients using mobile phones or from home, were not statistically significant. Condom use 'always' with occasional clients increased from 73% to 91% (AOR=1.9, $p < 0.001$), with repeat clients from 52% to 86% (AOR=5.0, $p < 0.001$) and with regular partners from 12% to 30%

(AOR=4.2, $p < 0.001$). Increased condom use was associated with exposure to the programme. However, condom use with regular partners remained low. CONCLUSIONS: The prevalences of HIV infection and high-titre syphilis among FSWs have steadily declined with increased condom use. Further reductions in prevalence will require intensification of prevention efforts for new FSWs and those soliciting clients using mobile phones or from home, as well as increasing condom use in the context of regular partnerships.

20. Izulla, P., et al. (2015). "**Repeat Use of Post-exposure Prophylaxis for HIV Among Nairobi-Based Female Sex Workers Following Sexual Exposure.**" *AIDS Behav.*

As ART-based prevention becomes available, effectively targeting these interventions to key populations such as female sex workers (FSW) will be critical. In this study we analyze patterns of repeated post-exposure prophylaxis (PEP) access in the context of a large FSW program in Nairobi. During close to 6000 person-years of follow-up, 20 % of participants ($n = 1119$) requested PEP at least once and 3.7 % requested PEP more than once. Repeat PEP users were younger, had a higher casual partner volume, and were more likely to use condoms with casual and regular partners, have a regular partner, and test for HIV prior to enrolment. Barriers to PEP included stigma, side effects, and lack of knowledge, suggesting repeated promotion may be required for higher rates of uptake. A small subset of FSW, potentially those with heightened risk perception, showed a higher frequency of PEP use; these individuals may be most amenable to rollout of pre-exposure prophylaxis.

21. Kohler, P. K., et al. (2015). "**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.*

This study aims to evaluate condom use, sexually transmitted infection screening, and knowledge of sexually transmitted infection symptoms among female sex workers in Peru associated with sex work venue and a community randomised trial of sexually transmitted infection control. One component of the Peru PREVEN intervention conducted mobile-team outreach to female sex workers to reduce sexually transmitted infections and increase condom use and access to government clinics for sexually transmitted infection 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 significantly higher likelihood of condom use, sexually transmitted infection 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 sexually transmitted infections, and HIV testing. Brothel-based female sex workers also more often reported knowledge of sexually transmitted infections and recognition of sexually transmitted infection symptoms in women and in men. Interventions to promote sexually transmitted infection-detection and prevention among female sex workers in Peru should consider structural or regulatory factors related to sex work venue.

22. Kongelf, A., et al. (2015). **"Is scale-up of community mobilisation among sex workers really possible in complex urban environments? The case of Mumbai, India."** *PLoS One* 10(3): e0121014.
Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4374852/pdf/pone.0121014.pdf>

BACKGROUND: In the last decade, community mobilisation (CM) interventions targeting female sex workers (FSWs) have been scaled-up in India's national response to the HIV epidemic. This included the Bill and Melinda Gates Foundation's Avahan programme which adopted a business approach to plan and manage implementation at scale. With the focus of evaluation efforts on measuring effectiveness and health impacts there has been little analysis thus far of the interaction of the CM interventions with the sex work industry in complex urban environments. **METHODS AND FINDINGS:** Between March and July 2012 semi-structured, in-depth interviews and focus group discussions were conducted with 63 HIV intervention implementers, to explore challenges of HIV prevention among FSWs in Mumbai. A thematic analysis identified contextual factors that impact CM implementation. Large-scale interventions are not only impacted by, but were shown to shape the dynamic social context. Registration practices and programme monitoring were experienced as stigmatising, reflected in shifting client preferences towards women not disclosing as 'sex workers'. This combined with urban redevelopment and gentrification of traditional red light areas, forcing dispersal and more 'hidden' ways of solicitation, further challenging outreach and collectivisation. Participants reported that brothel owners and 'pimps' continued to restrict access to sex workers and the heterogeneous 'community' of FSWs remains fragmented with high levels of mobility. Stakeholder engagement was poor and mobilising around HIV prevention not compelling. Interventions largely failed to respond to community needs as strong target-orientation skewed activities towards those most easily measured and reported. **CONCLUSION:** Large-scale interventions have been impacted by and contributed to an increasingly complex sex work environment in Mumbai, challenging outreach and mobilisation efforts. Sex workers remain a vulnerable and disempowered group needing continued support and more comprehensive services

23. Le, L. V., et al. (2015). **"Correlates of HIV infection among female sex workers in Vietnam: injection drug use remains a key risk factor."** *Drug Alcohol Depend* 150: 46-53.

OBJECTIVE: Women who sell sex and use drugs have dual risks for HIV infection. Despite increasing reports of drug use among female sex workers (FSW) in Vietnam, FSW HIV interventions remain focused mainly on sexual risk reduction. We assessed the impact of drug use and inconsistent condom use on HIV infection among FSW in Vietnam, which few studies have quantified. **METHODS:** We surveyed 5298 women aged ≥ 18 years who had sold sex in the past month from ten geographically dispersed provinces. We performed multivariate logistic regression on data from provinces with high ($\geq 10\%$) or low ($< 10\%$) HIV prevalence among FSW. **RESULTS:** Compared to FSW who never used illicit drugs, the odds of HIV infection among FSW who had ever injected drugs and those who reported non-injection drug use were 3.44 (CI 2.32-5.09) and 1.76 (CI 1.14-2.71), respectively, in high-prevalence provinces. FSW who always used condoms with clients had lower odds of HIV infection than those who did not (AOR=0.71; CI 0.52-0.98). In low-prevalence provinces lifetime injection drug use (AOR 22.05, CI 12.00-40.49), but not non-injecting drug use or inconsistent condom use, was significantly associated with HIV infection. **CONCLUSIONS:** Because injection drug use and inconsistent condom use were key risk factors for HIV infection in high-prevalence provinces, drug injection risk reduction should be as

much a focus of HIV prevention as sexual risk reduction. Where HIV prevalence remains low in FSW, a more general emphasis on harm reduction for all drug users will benefit FSW.

24. Lim, S., et al. (2015). "**Violence against female sex workers in Cameroon: accounts of violence, harm reduction, and potential solutions.**" *J Acquir Immune Defic Syndr* 68 Suppl 2: S241-247. Online at: http://journals.lww.com/jaids/Fulltext/2015/03011/Violence_Against_Female_Sex_Workers_in_Cameroon_22.aspx

BACKGROUND: Female sex workers (FSWs) in Cameroon, and West Africa generally, suffer a disproportionate burden of HIV. Although violence against FSWs has been documented extensively in other parts of the world, data on violence from West African countries are lacking. The aim of this study was to qualitatively document violence and harm reduction strategies from the perspective of FSWs in Cameroon as well as to understand how experiences of violence may increase FSWs' HIV risk. METHODS: FSWs from 7 major cities in Cameroon (Douala, Yaounde, Bamenda, Bertoua, N'Goundere, Kribi, and Bafoussam) were purposively recruited. Data from 31 in-depth interviews and 7 focus groups (n = 70; with some overlapping participants from in-depth interviews) conducted with these FSWs in 6 of these 7 cities (excluding Kribi) were analyzed using a grounded theory approach. RESULTS: Transcripts revealed 3 primary themes related to violence: (1) sources and types of violence, including sexual, physical, and financial violence perpetrated by clients and police, (2) harm reduction strategies, including screening clients and safe work locations, receipt of payment before sexual act, and formation of an informal security network, and (3) recommendations on structural changes to reduce violence that emphasized sex work decriminalization and increased police accountability. CONCLUSIONS: As in other parts of the world, violence against FSWs is pervasive in Cameroon. Interventions targeting violence and HIV must address the forms of violence cited locally by FSWs and can build on FSWs' existing strengths and harm reduction strategies. Structural changes are needed to ensure access to justice for this population.

25. MacAllister, J., et al. (2015). "**A comprehensive review of available epidemiologic and HIV service data for female sex workers, men who have sex with men, and people who inject drugs in select West and Central African countries.**" *J Acquir Immune Defic Syndr* 68 Suppl 2: S83-90. Online at: http://journals.lww.com/jaids/Fulltext/2015/03011/A_Comprehensive_Review_of_Available_Epidemiologic.3.aspx

OBJECTIVE: To identify gaps in epidemiologic and HIV service coverage data for key populations (KP), including men who have sex with men (MSM), female sex workers (FSW), people who inject drugs (PWID), and transgender persons, in 8 West and Central Africa countries: Cameroon, Chad, Cote d'Ivoire, Democratic Republic of Congo, Ghana, Guinea-Bissau, Niger, and Nigeria.

METHODS: A comprehensive search of peer-reviewed literature was conducted using PubMed and MEDLINE. This search was supplemented by an additional search of relevant non-peer-reviewed, or gray, literature. Available data on HIV prevalence, KP size estimates, HIV prevention service targets, and HIV prevention service coverage, including the availability of population-specific minimum packages of services, were included in the review. RESULTS: No data for transgender persons were found. HIV prevalence data and size estimates were more frequently available for FSW, followed by MSM. Only 2 countries (Ghana and Nigeria) had both KP size estimates and HIV prevalence data for PWID. The degree to which HIV prevention service targets

were adopted was highly variable across the selected countries, and the collection of relevant HIV prevention service coverage data for those targets that were identified was inconsistent.

Population-specific minimum packages of services were identified in 3 countries (Cote d'Ivoire, Ghana, and Nigeria), although only Ghana and Nigeria included services for PWID.

CONCLUSIONS: Epidemiologic and HIV prevention service data for FSW, MSM, PWID, and transgender persons remain sparse, and these KP are inconsistently accounted for in-service delivery and nationally endorsed minimum packages of HIV services in West and Central Africa. The strengthening of data collection and reporting to consistently include KP and the inclusion of that data in national planning is imperative for effectively addressing the HIV epidemic.

26. Merrigan, M. B., et al. (2015). "**HIV Prevalence and Risk Behaviors Among Female Sex Workers in Botswana: Results from the 2012 HIV/STI Bio-Behavioral Study.**" *AIDS Behav* 19(5): 899-908.

To evaluate HIV/STI prevalence among female sex workers (FSWs) in Botswana, and assess HIV-related risk behaviors. Cross-sectional study using time-location sampling in three districts of Botswana. Adjusted HIV prevalence at district level ranged from 53.5 to 68.5 %. Syphilis prevalence ranged from 3.7 to 14.5 %; chlamydia prevalence ranged from 4.8 to 16.3 %; and gonorrhoea prevalence ranged from 8.3 to 11.7 %. FSWs had been practicing sex work for a mean of 4.7 years, and had a mean of 7.6 sex partners in the week before the survey. While 67.1 % of FSWs surveyed reported always using condoms with clients in the past month. 59.5 % reported one or more of the following: being paid more not to use a condom, having a condom break, or being forced not to use a condom by clients. Predictors of HIV infection in the multivariate analysis included: age (over 30 years), perceiving oneself to be at high risk of HIV, selling sex for 2 or more years, and having a mean of 11 or more partners in the last week. High HIV prevalence, high rates of partner exchange, a sizable population, and Inconsistent condom use combine together help fuel the country's hyper epidemic. HIV prevention interventions need to take into account the important influence of clients and boyfriends on condom use behavior.

27. Mine, M., et al. (2015). "**Performance of rapid HIV testing by lay counselors in the field during the behavioral and biological surveillance survey among female sex workers and men who have sex with men in Botswana.**" *J Acquir Immune Defic Syndr* 68(3): 365-368.

The study assessed the performance of rapid HIV testing with whole blood using Kehua Bio-engineering HIV (1 + 2) and Uni-Gold HIV test kits by trained and certified lay counselors, offered to female sex workers and men who have sex with men during the 2012 survey fieldwork. The results of rapid HIV testing were compared with enzyme-linked immunosorbent assay testing performed in a parallel algorithm at the HIV Reference Laboratory. The sensitivity and the specificity of rapid HIV testing were high for men who have sex with men and female sex workers, with 98.1% and 100%, and 98.2% and 98.5%, respectively. Misclassifications occurred with rapid testing.

28. Minichiello, V., et al. (2015). "**A new public health context to understand male sex work.**" *BMC Public Health* 15(1): 282.

Online at:

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4419468/pdf/12889_2015_Article_1498.pdf

BACKGROUND: Researching male sex work offers insight into the sexual lives of men and women while developing a more realistic appreciation for the changing issues associated with male sex work. This type of research is important because it not only reflects a growing and diversifying consumer demand for male sex work, but also because it enables the construction of knowledge that is up-to-date with changing ideas around sex and sexualities. **DISCUSSION:** This paper discusses a range of issues emerging in the male sex industry. Notably, globalisation and technology have contributed to the normalisation of male sex work and reshaped the landscape in which the male sex industry operates. As part of this discussion, we review STI and HIV rates among male sex workers at a global level, which are widely disparate and geographically contextual, with rates of HIV among male sex workers ranging from 0% in some areas to 50% in others. The Internet has reshaped the way that male sex workers and clients connect and has been identified as a useful space for safer sex messages and research that seeks out hidden or commonly excluded populations. **FUTURE DIRECTIONS:** We argue for a public health context that recognises the emerging and changing nature of male sex work, which means programs and policies that are appropriate for this population group. Online communities relating to male sex work are important avenues for safer sexual messages and unique opportunities to reach often excluded sub-populations of both clients and male sex workers. The changing structure and organisation of male sex work alongside rapidly changing cultural, academic and medical discourses provide new insight but also new challenges to how we conceive the sexualities of men and male sex workers. Public health initiatives must reflect upon and incorporate this knowledge.

29. Mishra, S. R. and S. R. Neupane (2015). "**Differentiated Typology of Sex Work and Implication for HIV Prevention Programs among Female Sex Workers in Nepal.**" *Front Public Health* 3: 36. Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4347026/pdf/fpubh-03-00036.pdf>

BACKGROUND: Sex work in exchange for kind and cash has long been practiced in Nepal. The HIV prevention program in Nepal is focused mainly on these two typologies of sex work. There might be more typologies of sex work beyond streets and establishments seeking research and programmatic attention. The objective of the study is to explore the differentiated typologies of sex work. **METHODS:** This is a cross-sectional study conducted using a qualitative technique. Researchers carried out eight Focus Group Discussions with female sex workers (FSWs) (n = 50) in different places of Tanahu district. Data were analyzed using a deductive thematic analysis approach. **RESULTS:** We identified a more differentiated typology of sex work. Private contact-based sex work and the covert sex work on the cruising areas along the major highways were common. Sex work has become easier to operate with the advent of new technologies such as cell phone. With limited role of facilitation by brokers and pimps, now FSWs are better off and have longer duration of relationship with clients. Soft prostitution was common, as FSWs complemented their income through sex work. **CONCLUSION:** The conventional mode of peer and outreach educational approach needs to be further strengthened and modified according to the changing typology of sex work. HIV testing sites need to be further expanded to cruising areas along the highways.

30. Mulongo, S., et al. (2015). "**Applying innovative approaches for reaching men who have sex with men and female sex workers in the Democratic Republic of Congo.**" *J Acquir Immune Defic Syndr* 68 Suppl 2: S248-251. Online at: http://journals.lww.com/jaids/Fulltext/2015/03011/Applying_Innovative_Approaches_for_Reaching_Men.23.aspx

BACKGROUND: In the Democratic Republic of Congo (DRC), men who have sex with men (MSM) and female sex workers (FSW) have the highest HIV prevalence but have the least access to services due to their marginalization within Congolese society. **METHODS:** The Projet Integre de VIH/SIDA au Congo (ProVIC) aims to reduce the risk and impact of HIV in the DRC through community- and facility-based prevention, counseling and testing, and treatment strategies aimed at high-risk populations, including MSM and FSW. To more effectively meet the needs of key populations, ProVIC tailored the existing interventions to better suit MSM and FSW by offering mobile counseling and rapid HIV testing services at night in MSM and FSW "hotspots," targeting outreach to and mobilizing key populations through social networks of MSM and FSW peer educators and recruiters, and referring MSM and FSW who test HIV positive to "friendly" clinics. **RESULTS:** Through these approaches, ProVIC was able to reach 2,621 MSM and 12,746 FSW with targeted prevention messaging in 2013 and provide testing and counseling services to 4,366 MSM and 21,033 FSW from October 2012 to June 2014. **CONCLUSIONS:** By applying innovative adaptations geared toward key populations, ProVIC has been able to better reach MSM and FSW in the DRC. ProVIC's targeted interventions for MSM and FSW provide promising examples of programming that can be used to meet the HIV prevention and testing needs of key populations and improve referrals for care and treatment, particularly in complex and unstable settings similar to the DRC.

31. Onyango, M. A., et al. (2015). **"It's all about making a life": poverty, HIV, violence, and other vulnerabilities faced by young female sex workers in Kumasi, Ghana.** *J Acquir Immune Defic Syndr* 68 Suppl 2: S131-137. Online at: http://journals.lww.com/jaids/Fulltext/2015/03011/It_s_All_About_Making_a_Life_Poverty,_HIV,.9.aspx

OBJECTIVES: This study aimed to identify social, economic, structural, and individual-level vulnerabilities of female adolescents who sell sex in Kumasi, Ghana. **METHODS:** Twenty-four in-depth interviews and 4 focus group discussions were conducted with female sex workers of age 18-20 years who had been involved in sex work for at least 2 years. Total sample size was 48. **FINDINGS:** One-third of participants started sex work before age 15. Knowledge of HIV was accurate and most reported having intentions to use condoms consistently with clients; however, factors such as higher payments, drug and/or alcohol use, fear of violence, and police harassment affected condom use. They perceived violence and rape at the hands of clients as their greatest risk. They also reported abuse and exploitation by police. Respondents voiced strong concerns that girls and teens involved in sex work are at higher risk of unsafe sex, exploitation, and abuse than their older and more experienced counterparts. Unprotected sex with boyfriends was also common. **DISCUSSION:** The pathway to sex work followed a similar pattern for many study participants who left their rural homes for Kumasi in search of economic opportunity. While adolescents who sell sex appear to be abundant in Kumasi, they have been missed by HIV prevention and harm reduction programming. The findings from this study informed the design and implementation of a young female sex worker peer educator pilot program. Key elements of that program are presented, and recommendations for future program evaluation are made.

32. Papworth, E., et al. (2015). "**Mothers who sell sex: a potential paradigm for integrated HIV, sexual, and reproductive health interventions among women at high risk of HIV in Burkina Faso.**" *J Acquir Immune Defic Syndr* 68 Suppl 2: S154-161. Online at: http://journals.lww.com/jaids/Fulltext/2015/03011/Mothers_Who_Sell_Sex_A_Potential_Paradigm_for.12.aspx

BACKGROUND: Antenatal care is a point of entry into the health system for women across Africa and may facilitate the uptake of HIV services among female sex workers (FSWs). This study aimed to evaluate the determinants of motherhood among FSWs, their sexual risks, and their engagement in health care. METHODS: A cross-sectional study was conducted from January to July 2013 among FSWs in Ouagadougou and Bobo-Dioulasso, Burkina Faso. The study used respondent-driven sampling for HIV testing and behavioral data collection. Predictors of motherhood and the association of motherhood and sex work dynamics were assessed separately using logistic regression. RESULTS: Of the 696 women enrolled, the majority of participants (76.6%, n = 533) had at least 1 biological child. Mothers were more likely to have a nonpaying partner [adjusted odds ratio (aOR), 1.73; 95% confidence interval (CI): 1.20 to 2.49], and significantly less likely to currently desire to conceive (aOR, 0.21; 95% CI: 0.13 to 0.33). Motherhood was predictive of having reduced condomless vaginal or anal sex with a new client [age-adjusted odds ratio (aaOR), 0.80; 95% CI: 0.65 to 0.97] in the past 30 days, and increased condomless vaginal or anal sex with a nonpaying partner (aaOR, 1.49; 95% CI: 1.13 to 1.96). Motherhood was prognostic of a higher likelihood of ever being tested for HIV (aaOR, 1.89; 95% CI: 1.55 to 2.31). Motherhood was predictive of reporting limited difficulty when accessing health services (aaOR, 0.15; 95% CI: 0.67 to 0.34). CONCLUSIONS: Motherhood is common among FSWs. The results indicate that FSWs who are mothers may have more exposure to health care because of seeking antenatal/perinatal services, presenting important opportunities for inclusion in the HIV continuum of care and to prevent vertical transmission.

33. Schwartz, S., et al. (2015). "**An urgent need for integration of family planning services into HIV care: the high burden of unplanned pregnancy, termination of pregnancy, and limited contraception use among female sex workers in Cote d'Ivoire.**" *J Acquir Immune Defic Syndr* 68 Suppl 2: S91-98. Online at: http://journals.lww.com/jaids/Fulltext/2015/03011/An_Urgent_Need_for_Integration_of_Family_Planning.4.aspx

BACKGROUND: HIV infection and unintended pregnancy are occupational risks of commercial female sex work (FSW). The burden of unintended pregnancy among FSW including maternal and infant outcomes in the context of HIV is largely unknown. METHODS: FSW ≥ 18 years were recruited through respondent driven sampling into a cross-sectional study in Abidjan, Cote d'Ivoire. Participants completed a sociobehavioral questionnaire and HIV counseling and testing. Pregnancy history by HIV status and contraceptive use were described, and Poisson regression used to estimate correlates of termination of pregnancy (TOP). RESULTS: From March to July 2014, 466 FSW were enrolled. Unintended pregnancy was common, and 64% of participants had ≥ 1 TOP. Half of FSW experiencing TOPs did so without a medical professional, resulting in frequent complications. Contraceptive use was lowest among younger FSW, and 37% of 20-24 year olds reported multiple TOPs. FSW with a TOP history reported 19% less consistent condom use with clients than women who never had a TOP (adjusted-prevalence ratio, 0.81; 95% confidence interval: 0.74 to 0.88), whereas use of reliable nonbarrier contraceptive methods was comparable between the groups. Although FSW were engaged in HIV testing and prevention

services, only 59% of FSW had received HIV testing before childbirth during their last pregnancy, and 30% of HIV-infected FSW had lost ≥ 1 children. CONCLUSIONS: Low contraceptive use and high burden of unintended pregnancy result in poor reproductive outcomes for FSW and avoidable mother-to-child HIV transmission risks. Integration of family planning and antenatal services into HIV prevention and care programs accessed by FSW could enhance reproductive outcomes and HIV prevention goals.

34. Shukla, P., et al. (2015). "**Predictors of Sexually Transmitted Infections among Female Sex Workers (FSWs) in a City of Northern India.**" *Indian J Community Med* 40(2): 121-126. Online at: <http://www.ijcm.org.in/article.asp?issn=0970-0218;year=2015;volume=40;issue=2;spage=121;epage=126;aulast=Shukla>

INTRODUCTION: Sexually transmitted infections (STIs) and Reproductive tract infections RTIs are important public health problems in India. The prevalence of these infections is considerably higher among high risk groups (HRGs) ranging from 20-30%. It is high time that a study should be conducted to explore different factors and conditions responsible for the practice of unsafe sex among female sex workers (FSWs) in Uttar Pradesh (UP) and the impact of this on social life and health of FSWs. As Lucknow provides a comprehensive opportunity in terms of tourism, occupation, and economy, it becomes a potential hub for sex work. Studying FSW in Lucknow can thus be considered as a yardstick for the entire FSW population of UP population. The present study was thus planned with the objective of knowing the STI prevalence and its determinants among FSWs. MATERIALS AND METHODS: A cross-sectional descriptive study was conducted on FSWs registered with Targeted Intervention-Non-government Organization (TI-NGO), registered with Uttar Pradesh State Acquired Immuno Deficiency Syndrome (AIDS) Control Society (UPSACS) of Lucknow city. Total 288 subjects were studied. RESULTS: The average age of FSWs was 31 years. FSWs were mostly Hindus and illiterate. The overall prevalence of STI as per Syndromic diagnosis was found to be 35.8%. However, the percentage of FSWs with STI was higher in street-based (50.6%) than home-based (29.8%). Majority (42.7%) of sex workers with STI had non-regular partners only while majority (52.4%) of sex workers without any STI had only regular partners. Condom usage with regular partners was poor. However, with the non-regular partners the condom usage was better. On multivariate analysis being single, having sex work as a sole means of earning, duration of sex work > 2 years, having pallor, and giving in to client's demand for unsafe sex were found to be significant in causing STI. CONCLUSIONS: Prevalence of STI among the female sex workers as per Syndromic diagnosis was found to be 35.8%. Unemployment, anemia, and having sex without condom for extra money, failure to persuade the client and not doing anything were found to be important predictors for presence of STI.

35. Smolak, A., et al. (2015). "**Sex workers, condoms, and mobility among men in Uzbekistan: implications for HIV transmission.**" *Int J STD AIDS*.

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.

36. Swendeman, D., et al. (2015). **""Whatever I have, I have made by coming into this profession": the intersection of resources, agency, and achievements in pathways to sex work in Kolkata, India.**" *Arch Sex Behav* 44(4): 1011-1023.

This article investigated the complex interplay of choice, socioeconomic structural factors, and empowerment influencing engagement in sex work. The analysis was focused on pathways into and reasons for staying in sex work from in-depth qualitative interviews with participants ($n = 37$) recruited from the Durbar community-led structural intervention in Kolkata, India. Kabeer's theory of empowerment focused on resources, agency, and achievements was utilized to interpret the results. Results identified that contexts of disempowerment constraining resources and agency set the stage for initiating sex work, typically due to familial poverty, loss of a father or husband as a breadwinner, and lack of economic opportunities for women in India. Labor force participation in informal sectors was common, specifically in domestic, construction, and manufacturing work, but was typically insufficient to provide for families and also often contingent on sexual favors. The availability of an urban market for sex work served as a catalyst or resource, in conjunction with Durbar's programmatic resources, for women to find and exercise agency and achieve financial and personal autonomy not possible in other work or as dependents on male partners. Resources lost in becoming a sex worker due to stigma, discrimination, and rejection by family and communities were compensated for by achievements in gaining financial and social resources, personal autonomy and independence, and the ability to support children and extended family. Durbar's programs and activities (e.g., savings and lending cooperative, community mobilization, advocacy) function as empowering resources that are tightly linked to sex workers' agency, achievements, and sex work pathways.

37. Tang, W., et al. (2015). **"Burden of HIV and Syphilis: A Comparative Evaluation between Male Sex Workers and Non-Sex-Worker Men Who Have Sex with Men in Urban China."** *PLoS One* 10(5): e0126604.

Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4427281/pdf/pone.0126604.pdf>

BACKGROUND: The increasing burden of sexually transmitted infections (STIs) including HIV and syphilis among male sex workers (MSWs) is a major global concern. The aim of our study was to evaluate the difference between MSWs and non-commercial MSMs in China. **METHODS:** During 2008-09, in a cross-sectional study, 2618 adult MSM were recruited through respondent-driven and snowball sampling from seven cities of China. Information regarding socio-demographics, risk behaviors, HIV-related knowledge and STI-related symptoms were collected and participants were tested for HIV and syphilis. **RESULTS:** Among 2618 participating MSM, 9.97% sold sex to males. HIV prevalence was 7.45% (6.13% among MSWs and 7.59% among non-MSW MSM) and syphilis prevalence was 14.32% (10.73% for MSWs and 14.72% for non-MSW MSM). Compared to non-MSW MSM, MSWs were more likely to be younger (adjusted odds ratio: aOR = 0.91, 95% confidence interval: 95%CI=0.88-0.93), never married (aOR = 4.38, 95% CI = 2.38-6.80), less educated, heterosexual (aOR = 13.04, 95% CI = 6.08-27.95), less knowledgeable regarding HIV (aOR = 0.70, 95% CI=0.51-0.96), experiencing symptoms of STI (aOR = 2.16, 95% CI = 1.47-3.19),

engaging in condomless vaginal intercourse (aOR = 2.16, 95% CI = 1.47-3.19) and less likely to engage in condomless anal intercourse (aOR = 0.62, 95% CI = 0.46-0.85). CONCLUSIONS: High HIV and syphilis prevalence warranted urgent intervention targeting MSWs as a separate sentinel group for efficient surveillance owing to their different distribution from non-MSW MSM. Although male sex workers and non-commercial homosexuals have similar rates of HIV and syphilis, MSWs have different characteristics which should be considered in designing intervention programs targeting them.

38. Wirtz, A. L., et al. (2015). "**Sexual violence, condom negotiation, and condom use in the context of sex work: results from two West African countries.**" *J Acquir Immune Defic Syndr* 68 Suppl 2: S171-179. Online at: http://journals.lww.com/jaids/Fulltext/2015/03011/Sexual_Violence,_Condom_Negotiation,_and_Condom.14.aspx

BACKGROUND: Female sex workers (FSWs) are vulnerable to violence within and beyond the workplace. Violence is associated with increased burden of HIV, possibly explained through physiologic or behavioral causal pathways. These analyses sought to determine the relationship between lifetime sexual violence with unprotected, condomless vaginal intercourse (UVI) among FSWs in West Africa. METHODS: FSWs (aged ≥ 18 years) were recruited into a cross-sectional study through respondent-driven sampling in two West African countries, Togo and Burkina Faso. A total of 1380 participants were enrolled from January to July 2013, and completed a sociobehavioral questionnaire and HIV testing. Measures included sex work history, lifetime experiences of violence victimization, sexual practices, and UVI (past month). Crude and adjusted robust log binomial regression was conducted to estimate prevalence ratios (PrR) as a measure of association between UVI with clients and the primary exposure, forced sex. RESULTS: Self-reported lifetime physical abuse (47.3%), forced sex (33.0%), and any violence (57.9%) were common. Almost one-quarter (23.9%) reported recent UVI with clients. History of forced sex was independently associated with recent UVI with clients [vs. none, adjusted PrR: 1.49; 95% confidence interval (CI): 1.18 to 1.88], with evidence of partial mediation by difficult condom negotiation with regular (aPrR: 1.83; 95% CI: 1.43 to 2.34) and new clients (aPrR: 1.60; 95% CI: 1.13 to 2.29). DISCUSSION: These data demonstrate the significant relationship between sexual violence experienced by FSWs and unprotected sex with clients. Comprehensive interventions reducing vulnerabilities to violence combined with improved condom negotiation are needed to address the complex influences of condom use during sex work as a means of ultimately lowering HIV acquisition and transmission.

39. Yu, G., et al. (2015). "**Substance use among male sex workers in Vietnam: Prevalence, onset, and interactions with sexual risk.**" *Int J Drug Policy* 26(5): 516-521.

BACKGROUND: HIV research in Vietnam has focused primarily on its large heroin injector population. Data on men who have sex with men [MSM], particularly the large and growing population of men who exchange sex for money or other material rewards, male sex workers [MSWs], is very limited. METHODS: Data derive from a cross-sectional study of MSW, age 16-35, recruited using community sampling methods in three cities in 2010-2011, including Hanoi, Ho Chi Minh City [HCMC], and Nha Trang City (n=710). Assessments included demographic characteristics, substance use, sexual risk, and use of health services. A series of "event" questions were used to assess the influence of alcohol and drugs on sexual risk. RESULTS: Both tobacco and alcohol are initiated at a young age and most participants currently use both substances overall across all three cities. While alcohol and tobacco use precede the initiation of sex work, stimulant

and opiate use are initiated following the initiation of sex work. There was substantial overlap between substance use and sexual risk, and this overlap was strongest in sexual events involving male and female elective partners rather than sex work clients. CONCLUSION: Although rates of HIV infection in this group are low, this may be an artifact of the young age of the sample. High rates of drug use, including alcohol, tobacco and illicit drugs, coupled with high rates of ulcerative STIs such as HPV, suggest the potential for rapid amplification of STI/HIV risk among MSW and their complex sex partnering networks.

40. Zulliger, R., et al. (2015). "**Retention in HIV Care Among Female Sex Workers in the Dominican Republic: Implications for Research, Policy and Programming.**" *AIDS Behav* 19(4): 715-722

There are clear benefits of retention in HIV care, yet millions of people living with HIV are sub-optimally retained. This study described factors from Andersen's behavioral model that were associated with retention in HIV care among 268 female sex workers (FSWs) living with HIV in the Dominican Republic using two measures of retention: a 6-month measure of HIV clinic attendance and a measure that combined clinic attendance and missed visits. FSWs who ever attended HIV care reported high rates (92 %) of 6-month attendance, but 37 % reported missed visits. Using the combined retention measure, the odds of being retained in HIV care were higher among FSWs with more positive perceptions of HIV service providers [adjusted odds ratio (AOR) 1.17; 95 % confidence interval (CI) 0.109, 1.25] and lower among women who reported recent alcohol consumption (AOR 0.50; 95 % CI 0.28, 0.92) and self-stigmatizing beliefs related to sex work (AOR 0.93; 95 % CI 0.88, 0.98). These findings support the hypothesis that retention in HIV care may be best determined through a combined measure as missed visits are an important mechanism to identify in-care patients who require additional support.

41. Wondergem, P., et al. (2015). "**A Short History of HIV Prevention Programs for Female Sex Workers in Ghana: Lessons Learned Over 3 Decades.**" *JAIDS Journal of Acquired Immune Deficiency Syndromes* 68: S138-S145. Online at: http://journals.lww.com/jaids/Fulltext/2015/03011/A_Short_History_of_HIV_Prevention_Programs_for.10.aspx

Background: Female sex workers (FSWs) in Ghana have a 10-fold greater risk for acquiring HIV than the general adult population, and they contribute a substantial proportion of the new HIV infections in the country. Although researchers have conducted behavioral and biological surveys, there has been no review of the contextual, programmatic, and epidemiological changes over time. Methods: The authors conducted a historical review of HIV prevention programs in Ghana. We reviewed the use of different interventions for HIV prevention among FSWs and data from program monitoring and Integrated Biological and Behavioral Surveillance Surveys. In particular, we looked at changes in service access and coverage, the use of HIV testing and counseling services, and the changing prevalence of HIV and other sexually transmitted infections. Results: HIV prevention interventions among FSWs increased greatly between 1987 and 2013. Only 72 FSWs were reached in a pilot program in 1987, whereas 40,508 FSWs were reached during a national program in 2013. Annual condom sales and the proportion of FSWs who used HIV testing and counseling services increased significantly, whereas the prevalence of gonorrhea and chlamydia decreased. The representation of FSWs in national HIV strategic plans and guidelines also improved. Conclusions: Ghana offers an important historical example of an evolving HIV prevention program that—despite periods of inactivity—grew in breadth and coverage over time. The prevention of HIV infections among sex workers has gained momentum in recent years

through the efforts of the national government and its partners—a trend that is critically important to Ghana's future.

42. Vuylsteke, B., et al. (2015). "**Retention and Risk Factors for Loss to Follow-up of Female and Male Sex Workers on Antiretroviral Treatment in Ivory Coast: A Retrospective Cohort Analysis.**" *JAIDS Journal of Acquired Immune Deficiency Syndromes* **68**: S99-S106. Online at: http://journals.lww.com/jaids/Fulltext/2015/03011/Retention_and_Risk_Factors_for_Loss_to_Follow_up.5.aspx

Background: Antiretroviral therapy (ART) for HIV-infected sex workers is an important HIV prevention strategy. However, sex workers may have additional challenges for retention in ART care. The objectives of this study were to assess retention of sex workers on ART in a routine setting in Ivory Coast and identify risk factors for loss to follow-up (LTFU). Methods: The design was a retrospective cohort study. An analysis of clinic files was conducted in 2 sites providing ART services to sex workers in Ivory Coast. Demographic, behavior, and clinical data of female and male sex workers on ART were abstracted onto a standardized anonymous data collection form. Data collection took place between May 11 and 28, 2010. Results: A total of 376 female and 38 male sex workers were included in the analysis. The retention probability was 75% at 6 months, 68% at 12 months, 55% at 24 months, and 47% at 36 months. Attrition was mainly because of LTFU. Factors significantly associated with LTFU in bivariate analysis were lower schooling level, later calendar year of starting ART, and not receiving initial adherence counseling. Later year of starting ART and not receiving adherence counseling at ART initiation remained significantly associated with LTFU in a multivariate Cox regression model. Conclusions: To improve the retention of sex workers on ART, there is a need for more in-depth investigation of the role of pre-ART counseling and the increasing rates of LTFU with each calendar year.

43. Trout, C. H., et al. (2015). "**West African Female Sex Workers in Mali: Reduction in HIV Prevalence and Differences in Risk Profiles of Sex Workers of Differing Nationalities of Origin.**" *JAIDS Journal of Acquired Immune Deficiency Syndromes* **68**: S221-S231. http://journals.lww.com/jaids/Fulltext/2015/03011/West_African_Female_Sex_Workers_in_Mali_20.aspx

Background: Female sex workers (FSW) in Mali are highly vulnerable to HIV. Their prevalence in 2009 was 9 times higher (24.2%) than that among pregnant women (2.7%). Methods: Four Integrated HIV/sexually transmitted infection (STI) Surveillance and Behavioral Surveys among FSW in Mali (2000, 2003, 2006, and 2009) tracked demographic characteristics, behavior, and HIV and STI prevalence. Logistic regression using generalized estimating equations to control for the cluster effect identified factors associated with HIV-positive serostatus adjusting for potential confounding. Results: Of 2430 FSW, 40.8% were Nigerian, 36.8% were Malian, and 22.4% were from other neighboring countries. Between 2003 and 2009, HIV prevalence dropped from 44.14% to 28.49% ($P < 0.0001$) among Malians, from 21.33% to 12.71% ($P = 0.0082$) among Nigerians, and from 43.42% to 33.67% ($P = 0.0442$) among "others." Between 2000 and 2009, condom availability increased (89.18%–99.3%; $P < 0.0001$) as did HIV testing (40%–75%; $P < 0.0001$). Consistent condom use with clients improved for Malians (72.3%–81.5%; $P = 0.0092$), but not among Nigerians (92.7%–90.94%; $P = 0.8240$) and "others" (88.9%–88.48%; $P = 0.8452$). Consistent condom use with boyfriends was low and improved only for Nigerians (9.8%–28.4%; $P = 0.0003$). Factors associated with HIV prevalence in the multivariate model were older age, study year (2003 and 2006), nationality, lack of education, mobility, STI symptoms, gonorrhea prevalence, and younger age at first sex. Conclusions: This study

documents progress in the fight against HIV among FSW in Mali. The different vulnerabilities to HIV found for different nationality FSW should be considered in programming and future research.

44. Low, A., et al. (2015). "**Potential Impact of Existing Interventions and of Antiretroviral Use in Female Sex Workers on Transmission of HIV in Burkina Faso: A Modeling Study.**" *J AIDS Journal of Acquired Immune Deficiency Syndromes* **68**: S180-S188. Online at: http://journals.lww.com/jaids/Fulltext/2015/03011/Potential_Impact_of_Existing_Interventions_and_o.f.15.aspx

Background: The impact and cost-effectiveness of antiretroviral treatment (ART) as prevention is likely to vary depending on the local context. Burkina Faso has a concentrated mature HIV epidemic where female sex workers (FSW) are thought to have driven HIV transmission. Methods: A dynamic HIV transmission model was developed using data from the Yerelon FSW cohort in Bobo-Dioulasso and population surveys. Compared with current ART provision [status quo (SQ)], the model estimated the proportion of HIV infections averted or incremental life-years gained per additional person-year of ART over 20 years for ART targeting different subgroups or expanding eligibility to all HIV-infected individuals compared with SQ. Results: Modeling suggests that condom use within commercial sex has averted 40% of past HIV infections. Continuing SQ averts 35%–47% of new infections over 20 years compared with no ART. Expanding ART eligibility to all HIV-infected individuals and increasing recruitment (80% per year) could avert a further 65% of new infections, whereas targeting full-time FSW or all FSWs achieved less impact but was more efficient in terms of life-years gained per 100 person-years of ART. Local HIV elimination is possible with expanded ART provision to FSWs but requires condom use within commercial sex to be maintained at high levels. Conclusions: Increasing FSW recruitment onto ART could be a highly efficient method for reducing HIV transmission in concentrated epidemic settings but should not be undertaken at the expense of existing interventions for FSWs. Specialized clinics providing multiple interventions for FSWs should be a fundamental component of prevention in concentrated epidemics.

45. Grosso, A. L., et al. (2015). "**Structural Determinants of Health Among Women Who Started Selling Sex as Minors in Burkina Faso.**" *J AIDS Journal of Acquired Immune Deficiency Syndromes* **68**: S162-S170. Online at: http://journals.lww.com/jaids/Fulltext/2015/03011/Structural_Determinants_of_Health_Among_Women_Who.13.aspx

Objectives: To explore the prevalence of and factors associated with initiation of selling sex as a minor. Design: Data were drawn from cross-sectional studies of adult female sex workers (FSW) recruited through respondent-driven sampling in Ouagadougou and Bobo-Dioulasso, Burkina Faso. Methods: FSW completed a questionnaire that included a retrospective question regarding the age at which they started selling sex. Separate multivariate logistic regression analyses were conducted for each city to examine associations with initiation of selling sex as a minor (<18 year old), controlling for current age. Results: Of study participants, 27.8% (194/698) reported selling sex as a minor, ranging from 24.4% (85/349) in Bobo-Dioulasso to 31.2% (85/349) in Ouagadougou. In Ouagadougou, early initiates were more than twice as likely to report someone ever forced them to have sex [age-adjusted odds ratio (aaOR): 2.54, 95% confidence interval (CI): 1.53 to 4.23]. In Bobo-Dioulasso, those who started as minors were more likely to report someone ever tortured them (aaOR: 2.29, 95% CI: 1.28 to 4.10). In both cities, early initiates were more likely to not use a condom with a client if offered more money (Ouagadougou aaOR: 2.34, 95% CI: 1.23 to 4.47; Bobo-Dioulasso aaOR: 2.37, 95% CI: 1.29 to 4.36). In Ouagadougou, women who had started selling sex at

a young age were half as likely to have been tested for HIV more than once ever (aaOR: 0.50, 95% CI: 0.26 to 0.94). In Bobo-Dioulasso, early initiates were less likely to attend HIV-related talks or meetings (aaOR: 0.56, 95% CI: 0.33 to 0.97). Conclusions: A substantial proportion of FSW in Burkina Faso started selling sex as minors. The findings show that there are heightened vulnerabilities associated with selling sex below age 18 years, including physical and sexual violence, client-related barriers to condom use, and lower access to HIV-related services.

46. Dugas, M., et al. (2015). "**Outreach Strategies for the Promotion of HIV Testing and Care: Closing the Gap Between Health Services and Female Sex Workers in Benin.**" *J AIDS Journal of Acquired Immune Deficiency Syndromes* **68**: S198-S205. Online at: http://journals.lww.com/jaids/Fulltext/2015/03011/Outreach_Strategies_for_the_Promotion_of_HIV.17.aspx

Background: Regular voluntary counseling and testing is a key component of the fight against HIV/AIDS. In Benin, the project SIDA-1/2/3 established to decrease HIV/sexually transmitted infection (STIs) among female sex workers (FSWs), implemented a multifaceted intervention, including outreach activities. The objective of this article was to present potential advantages and limitations of 3 categories of outreach interventions designed to increase the use of testing services among FSWs in Benin. Methods: This analysis is based on ethnographic fieldwork conducted in Benin from June to December 2012. Results: Sixty-six FSWs and 24 health care workers were interviewed. Their narratives revealed 3 main factors impeding the development of appropriate HIV testing behavior. These negative elements can be positioned along a continuum of health care behaviors, with each stage of this continuum presenting its own challenges: fear or lack of motivation to use testing services, inaccessibility of care when the decision to go has been made, and a perceived lack of quality in the care offered at the health care center. Many of these needs seem to be addressed in the outreach strategies tested. However, the study also exposed some potential barriers or limitations to the success of these strategies when applied in this specific context, due to social disruption, mobility, access to care, and hard to reach population. Conclusions: To increase the use of testing services, an outreach strategy based on community workers or peer educators, along with improved access to testing services, would be well adapted to this context and appreciated by both FSWs and health care workers.

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Transgender People - 7

1. Best, J., et al. (2015). "**Sexual Behaviors and HIV/Syphilis Testing Among Transgender Individuals in China: Implications for Expanding HIV Testing Services.**" *Sex Transm Dis* 42(5): 281-285.

BACKGROUND: HIV and syphilis are disproportionately common among transgender individuals globally, yet few studies have investigated transgender HIV/syphilis risk and testing in low- and

middle-income nations. We conducted an online survey of men who have sex with men (MSM) and transgender individuals to examine sexual behaviors and HIV/syphilis testing in China. METHODS: We recruited MSM and transgender individuals from 2 major Chinese lesbian, gay, bisexual, and transgender Web platforms. chi Test and logistic regression were used to compare risk behaviors, HIV and syphilis testing history, and prevalence between transgender individuals and other MSM. RESULTS: Among the 1320 participants, 52 (3.9%) self-identified as transgender. Demographics, including education, employment, and marital status, were similar between both groups, whereas transgender individuals were older. Condomless anal intercourse rate was comparable between the groups. Transgender individuals were less likely to report ever testing for HIV (34.6% vs. 62.0%) and syphilis (15.7% vs. 31.2%) with adjusted odds ratios of 0.36 (95% confidence interval, 0.20-0.65) and 0.42 (95% confidence interval, 0.20-0.91), respectively. We found a trend toward a higher HIV prevalence among transgender individuals (11.1% vs. 5.7%, P = 0.12). CONCLUSIONS: Transgender individuals have suboptimal HIV and syphilis testing rates in China. Given the substantial risk behaviors and burden of HIV/STI in the general Chinese MSM population and a lack of knowledge about transgender individuals, enhanced HIV/syphilis testing programs for transgender individuals in China are needed.

2. Brito, M. O., et al. (2015). **"Risk behaviours and prevalence of sexually transmitted infections and HIV in a group of Dominican gay men, other men who have sex with men and transgender women."** *BMJ Open* 5(4): e007747.

Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4420963/pdf/bmjopen-2015-007747.pdf>

OBJECTIVES: The objectives of this study were to estimate the point prevalence of sexually transmitted infection (STI) and to investigate the sexual practices and behaviours associated with STIs in a group of gay men, other men who have sex with men and transgender women (GMT) in the province of La Romana, Dominican Republic. DESIGN: A cross-sectional study of a convenience sample of GMT persons. SETTING: The study was conducted in the province of La Romana, Dominican Republic, in June-July 2013. PARTICIPANTS: Out of 117 GMT persons screened, a total of 100 completed the study. Participants had to be at least 18 years of age, reside in La Romana and have had sex with another man in the preceding 12 months. All participants were interviewed and tested for STI. PRIMARY OUTCOME MEASURE: The main outcome of interest was the detection of any STI (HIV, herpes simplex virus type 2 (HSV-2), syphilis, hepatitis B or C) by serology. RESULTS: Among 100 participants, the median age was 22 years (range 18-65). One-third had consumed illicit drugs the preceding year and only 43% consistently used condoms. Prevalence was 38% for HSV-2, 5% for HIV and 13% for syphilis. There were no cases of hepatitis B or C. Factors associated with the odds of a STI were age >22 years (OR=11.1, 95% CI 3.6 to 34.5), receptive anal intercourse (OR=4.2, 95% CI 1.3 to 13.6) and having >/=2 male sexual partners during the preceding month (OR=4, 95% CI 1.3 to 12.5). CONCLUSIONS: In this group of GMT persons, seroprevalence of STI was high, and a number of risk behaviours were associated with STI. These preliminary data will help inform policy and programmes to prevent HIV/STI in GMT persons in the region.

3. Castillo, R., et al. (2015). **"Human Immunodeficiency Virus (HIV) and Sexually Transmitted Infection (STI) incidence and associated risk factors among high-risk MSM and male-to-female transgender women in Lima, Peru."** *J Acquir Immune Defic Syndr*.

BACKGROUND: Men who have sex with men (MSM) and male-to-female transgender women (TW) are at increased risk of HIV and sexually transmitted infections (STIs). We evaluated factors

associated with incidence of HIV, HSV-2, and chlamydia and gonorrhea (anal and pharyngeal). METHODS: We used data from the Comunidades Positivas trial with MSM/TW who have sex with men in Lima, Peru. Participants were asked about sexual risk behaviors and underwent HIV/STI testing at baseline and 9- and 18- month follow-ups. We used discrete time proportional hazards regression to calculate hazard ratios (HRs) for variables associated with incidence of each STI. RESULTS: Among 718 MSM/TW, HIV incidence was 3.6 cases per 100 person-years. HIV incidence was associated with having an incident STI (aHR 3.73). Unprotected receptive anal intercourse was associated with incident anal chlamydia (aHR 2.20). An increased number of sexual partners increased incident HSV-2 (aHR 3.15 for 6-14 partners and 3.97 for 15-46 partners compared to 0-2 partners). Risk of anal gonorrhea decreased with each sexually active year (aHR 0.94) and increased for unprotected compensated sex (aHR 2.36). Risk of pharyngeal gonorrhea also decreased with each year since sexual debut (aHR 0.95). Risk of anal chlamydia decreased with each sexually active year (aHR 0.96), risk increased with reports of unprotected sex work (aHR 1.61), and unprotected receptive anal sex (aHR 2.63). All aHRs have p-values <0.05. CONCLUSION: MSM/TW experience high incidence of HIV. Up-to-date prevalence and incidence information and identifying factors associated with infection can help develop a more effective combination prevention response.

4. Fernandes, F. R., et al. (2015). "**Syphilis infection, sexual practices and bisexual behaviour among men who have sex with men and transgender women: a cross-sectional study.**" 91(2): 142-149.

OBJECTIVES: Men who have sex with men (MSM) and transgender women (TW) are highly vulnerable groups to sexually transmitted infections (STIs). This study aims to assess the prevalence of syphilis infection, sexual behaviour and identify factors associated with syphilis in MSM and TW in Campo Grande, Central Brazil. METHODS: Between 2009 and 2011, 430 MSM/TW participants were interviewed and tested for syphilis. Univariable and multivariable regression analyses were done to assess associations with syphilis infection. RESULTS: A total of 430 MSM/TW (278 MSM and 152 TW) were included in the study. The overall prevalence of lifetime syphilis and active syphilis was 34.7% (26.3% among MSM; 50.0% among TW) and 17.5% (12.3% among MSM; 27.0% among TW), respectively (p<0.001). In multivariable regression analysis, being 20-24 years and ≥30 years, having engaged in a variety of sexual practices and with a history of genital/anal ulcer in the last 12 months were associated with lifetime syphilis infection in the MSM group. Among TW participants, being ≥30 years of age, having more than 10 male sexual partners in last week and being infected with HIV were associated with lifetime syphilis. Factors associated with active syphilis among MSM were massage parlour/sauna recruitment and alcohol consumption at least once a week. Having sex with female partners in the past 12 months was predictive for active syphilis among TW. CONCLUSIONS: The prevalence of syphilis infection and risk sexual behaviour were high in the two samples, especially among TW. High levels of bisexual behaviours and low rates of consistent condom use indicate potential HIV/STIs transmission into the heterosexual population. This finding indicates the need and urgency for implementing more effective integrated programmes targeting MSM/TW for the prevention of syphilis and other STIs.

5. Horton, P., et al. (2015). "**Contesting heteronormativity: the fight for lesbian, gay, bisexual and transgender recognition in India and Vietnam.**" *Cult Health Sex*: 1-15.

Recent public debates about sexuality in India and Vietnam have brought the rights of lesbian, gay, bisexual and transgender people sharply into focus. Drawing on legal documents, secondary sources and ethnographic fieldwork conducted in the urban centres of Delhi and Hanoi, this article shows how the efforts of civil society organisations dedicated to the fight for lesbian, gay, bisexual and transgender rights have had different consequences in these two Asian contexts. The paper considers how these organisations navigated government regulations about their formation and activities, as well as the funding priorities of national and international agencies. The HIV epidemic has had devastating consequences for gay men and other men who have sex with men, and has been highly stigmatising. As a sad irony, the epidemic has provided at the same time a strategic entry point for organisations to struggle for lesbian, gay, bisexual and transgender recognition. This paper examines how the fight for lesbian, gay, bisexual and transgender recognition has been doubly framed through health-based and rights-based approaches and how the struggle for recognition has positioned lesbian, gay, bisexual and transgender people in India and Vietnam differently.

6. Lee, S. W., et al. (2015). "**A cross-sectional study of low HIV testing frequency and high-risk behaviour among men who have sex with men and transgender women in Lima, Peru.**" BMC Public Health 15(1): 408.
Online at:
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4407786/pdf/12889_2015_Article_1730.pdf

BACKGROUND: Increased HIV testing frequency among high-risk populations such as men who have sex with men (MSM) and male-to-female transgender women (TW) can lead to earlier treatment and potentially reduce HIV transmission. METHODS: We analyzed baseline survey data from 718 high-risk, young (median age 29 [interquartile range 23-35]) MSM/TW enrolled in a community-based HIV prevention trial between 2008-2009. Participants were recruited from 24 neighborhoods in and around Lima, Peru. We assessed HIV testing frequency, testing behaviour, and motivations and barriers to testing. Multivariate analysis identified correlates to prior HIV testing. RESULTS: Overall, 79.6% reported HIV testing within their lifetimes, however, only 6.2% reported an average of two tests per year, as per Peruvian Ministry of Health guidelines. The most commonly reported motivators for testing were to check one's health (23.3%), lack of condom use (19.7%), and availability of free testing (14.0%), while low self-perceived risk for HIV (46.9%), fear of a positive result (42.0%), and lack of access to testing services (35.7%) were the most frequently reported barriers. In multivariate analysis, factors independently associated with HIV testing included age [adjusted prevalence ratio (APR) 1.00, 95% CI (1.00-1.01)], transgender-identification vs. gay-identification [APR 1.11, 95% CI (1.03-1.20)], history of transactional sex [APR 1.16, 95% CI (1.07-1.27)], and prior sexually transmitted infection diagnosis [APR 1.15, 95% CI (1.07-1.24)]. CONCLUSIONS: An overwhelming majority of participants did not meet the standard-of-care for testing frequency. The reported motivations and barriers to testing highlight issues of risk perception and accessibility. Our findings suggest utilizing non-traditional outreach methods and promoting HIV testing as a routine part of healthcare in Peru to encourage testing and knowledge of HIV serostatus.

7. Anderson, J. E. and S. Kanters (2014). "**Lack of Sexual Minorities' Rights as a Barrier to HIV Prevention Among Men Who Have Sex with Men and Transgender Women in Asia: A Systematic Review.**" LGBT Health 2(1): 16-26.

ABSTRACT: This study set out to assess the relationship between variation in human rights for sexual minorities in Asian countries and indicators of HIV prevention among men who have sex with men (MSM) and transgender women. To quantitatively measure the relationship between variation in HIV prevention and variation in human rights for sexual minorities, this study developed the Sexual Orientation and Gender Identity (SOGI) Human Rights Index (an original index with scores ranging from 0.0 to 1.0). Subsequently, this study collected 237 epidemiological and behavioral studies from 22 Asian countries and performed a series of meta-analyses in order to calculate national averages for five indicators of HIV prevention: HIV prevalence, inconsistent condom use, recent HIV testing, adequate HIV knowledge, and exposure to HIV prevention services. A change of human rights for sexual minorities from a score of 0.0 to 1.0 as measured by the SOGI Human Rights Index was correlated with a decrease in unprotected anal intercourse by 25.5% ($p=0.075$), and increases in recent HIV testing by 42.9% ($p=0.011$), HIV knowledge by 29.5% ($p=0.032$), and exposure to HIV prevention services by 37.9% ($p=0.119$). The relationship between HIV prevalence and variation in human rights for sexual minorities was not statistically significant. Our study found correlations between human rights and indicators of HIV prevention, further supporting the need for increased rights among marginalized populations. The paucity of studies from many Asian countries as well as the disparity in how indicators of HIV prevention are measured reveals a need for increased coverage and standardization of MSM serological and behavioral data in order to better inform evidence-based policymaking.

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Young Key Populations – 8

1. Beattie, T. S., et al. (2015). "**Supporting adolescent girls to stay in school, reduce child marriage and reduce entry into sex work as HIV risk prevention in north Karnataka, India: protocol for a cluster randomised controlled trial.**" *BMC Public Health* 15: 292.

Online at:

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4391662/pdf/12889_2015_Article_1623.pdf

BACKGROUND: Low caste adolescent girls living in rural northern Karnataka are at increased risk of school drop-out, child marriage, and entry into sex-work, which enhances their vulnerability to HIV, early pregnancy and adverse maternal and child health outcomes. This protocol describes the evaluation of Samata, a comprehensive, multi-level intervention designed to address these structural drivers of HIV risk and vulnerability. **METHODS/DESIGN:** The Samata study is a cluster randomised controlled trial that will be conducted in eighty village clusters (40 intervention; 40 control) in Bijapur and Bagalkot districts in northern Karnataka. The intervention seeks to reach low caste girls and their families; adolescent boys; village communities; high school teachers and school governing committees; and local government officials. All low caste (scheduled caste/tribe) adolescent girls attending 7(th) standard (final year of primary school) will be recruited into the study in two consecutive waves, one year apart. Girls ($n = 2100$), their families ($n = 2100$) and school teachers ($n = 650$) will be interviewed at baseline and at endline. The study is designed to assess the impact of the intervention on four primary outcomes: the proportion of low caste girls who (i) enter into secondary school; (ii) complete secondary school; (iii) marry before age 15; and (iv) engage in sex before age 15. Observers assessing the outcomes will be blinded to group assignment. The primary outcome will be an adjusted, cluster-level intention to treat analysis, comparing outcomes in intervention and control villages at follow-up. We will also conduct

survival analyses for the following secondary outcomes: marriage, sexual debut, pregnancy and entry into sex work. Complementary monitoring and evaluation, qualitative and economic research will be used to explore and describe intervention implementation, the pathways through which change occurs, and the cost-effectiveness of the intervention. DISCUSSION: This is an innovative trial of a comprehensive intervention to improve the quality of life and reduce HIV vulnerability among marginalised girls in northern Karnataka. The findings will be of interest to programme implementers, policy makers and evaluation researchers working in the development, education, and sexual and reproductive health fields. TRIAL REGISTRATION: ClinicalTrials.Gov NCT01996241 . 16(th) November 2013.

2. Choudhry, V., et al. (2015). "**Transactional sex and HIV risks - evidence from a cross-sectional national survey among young people in Uganda.**" *Glob Health Action* 8: 27249. Online at: http://www.globalhealthaction.net/index.php/gha/article/download/27249/pdf_85

BACKGROUND: Transactional sex is associated with the HIV epidemic among young people in Uganda. Few quantitative studies based on nationally representative survey data explored the relationship between sexual behaviors, HIV infection, and transactional sex. OBJECTIVE: This study aimed to determine the associations between risky sexual behaviors, participation in transactional sex, and HIV sero-status among men and women aged 15-24 in Uganda. DESIGN: The study uses data from the Uganda AIDS Indicator Survey, a cross-sectional national HIV serological study conducted in 2011. We analyzed data on 1,516 men and 2,824 women aged 15-24 who had been sexually active in the 12 months preceding the survey. Private, face-to-face interviews were also conducted to record the sociodemographics, sexual history, and experiences of sexual coercion. Logistic regression analysis was performed to measure associations between sexual behaviors and transactional sex, and associations between HIV sero-status and transactional sex. RESULTS: Among young people who had been sexually active in the 12 months prior to the survey, 5.2% of young men reported paying for sex while 3.7% of young women reported receiving gifts, favors, or money for sex. Lower educational attainment (ORadjusted 3.25, CI 1.10-9.60) and experience of sexual coercion (ORadjusted 2.83, CI 1.07-7.47) were significantly associated with paying for sex among men. Multiple concurrent sexual relationships were significantly associated with paying for sex among young men (ORadjusted 5.60, CI 2.08-14.95) and receiving something for sex among young women (ORadjusted 8.04, CI 2.55-25.37). Paying for sex among young men and having three to five lifetime sexual partners among young women were associated with increased odds of testing positive for HIV. CONCLUSIONS: Transactional sex is associated with sexual coercion and HIV risk behaviors such as multiple concurrent sexual partnerships among young people in Uganda. In addition, transactional sex appears to place young men at increased risk for HIV in Uganda. Both sexes appear equally vulnerable to risks associated with transactional sex, and therefore should be targeted in intervention programs. In addition, strengthening universal education policy and improving school retention programs may be beneficial in reducing risky sexual behaviors and transactional sex.

3. Goldsamt, L. A., et al. (2015). "**Injection and sexual risk practices among young heroin users in Hanoi, Vietnam.**" *Drugs (Abingdon Engl)* 22(2): 166-172. Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4435536/pdf/nihms689184.pdf>

Epidemiological data in Vietnam shows high HIV prevalence rates among injection drug users, especially in urban centres. However, there are limited data on specific practices used to prepare and inject drugs or on sexual practices among Vietnamese injectors. A street-based cross-

sectional interview was conducted with 862 heroin injectors in Hanoi, Vietnam, to collect such data. Variability was seen in both injection and sexual risk, with 12.9% of current injectors reporting at least one unsafe method of drug sharing and 57.1% reporting unsafe sex in the past 30 days. These risks were strongly associated with those who engaged in unsafe injection significantly more likely to engage in unsafe sex (69.4% vs. 55.3%) and those engaging in unsafe sex significantly more likely to engage in unsafe injection (15.7% vs. 9.2%). These findings highlight the overlap of injection and sexual risk practices among Vietnamese heroin users and suggest the need for strong, broadly targeted HIV prevention activities among this population.

4. Guadamuz, T. E., et al. (2015). "**Young, Online and in the Dark: Scaling Up HIV Testing among MSM in ASEAN.**" *PLoS One* 10(5): e0126658.

Online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4431680/pdf/pone.0126658.pdf>

BACKGROUND: Poor HIV testing uptake by MSM may be attributable to unique challenges that are localized in Southeast Asia. OBJECTIVE: To characterize MSM who never tested for HIV, to identify correlates of never testing, and to elucidate the perceived barriers to HIV testing. METHODS: The present study used data from the Asian Internet MSM Sex Survey (AIMSS) and restricted the analysis to 4,310 MSM from the ten member countries of the Association of South East Asian Nations (ASEAN). RESULTS: Among MSM participants from ASEAN in our sample, 1290 (29.9%) reported having never been tested for HIV, 471 (10.9%) tested for HIV more than 2 years ago, and 2186 (50.7%) reported their last test date was between 6 months and two years ago, with only 363 (8.4%) of these men having been tested in the past 6 months. In multivariable logistic regression, younger MSM (age 15-22 years old [AOR: 4.60, 95% CI: 3.04-6.96]), MSM with lower education (secondary school or lower [AOR: 1.37, 95% CI: 1.03-1.83]), MSM who identify as bisexual or heterosexual (compared to gay-identified) (AOR: 1.94, 95% CI: 1.60-2.35), and MSM who had never used a condom with male partners (AOR: 1.61, 95% CI: 1.32-1.97) had higher odds of never been HIV tested. Main reason for not being tested was a low risk perception of HIV exposure (n = 390, 30.2%). CONCLUSION: Current HIV prevention response must not leave MSM "in the dark," but instead meet them where they are by utilizing the Internet creatively through social media and smart phones. As ASEAN Economic Community (AEC) is quickly becoming a reality, so must there be an equally fast and united response to slowing down the HIV epidemics among MSM in ASEAN.

5. Guadamuz, T. E., et al. (2015). "**Consent Challenges for Participation of Young Men Who Have Sex With Men (YMSM) in HIV Prevention Research in Thailand.**" *Ethics Behav* 25(2): 180-195.

Young men who have sex with men (YMSM) under 18 years are often excluded from HIV prevention research in Thailand due to cultural attitudes toward youth sexuality, social stigma, and difficulties obtaining guardian permission. Culturally sensitive focus group discussions conducted with parents and YMSM in Bangkok, Thailand identified barriers and facilitators related to minors' participation in HIV prevention research. Although gender and class differences emerged, mothers and fathers were generally accepting of research to reduce HIV risk, but not in favor of waiver. Youth's positive attitude toward parental permission was tempered by concerns about harms posed by disclosing same-sex attraction through permission forms.

6. Hussen, S. A., et al. (2015). "**Transition to adulthood and antiretroviral adherence among HIV-positive young Black men who have sex with men.**" *Am J Public Health* 105(4): 725-731.

OBJECTIVES: We conducted a qualitative study of HIV-positive young Black men who have sex with men (YBMSM) to explore their experiences of living with HIV and adhering to antiretroviral medications (ARVs) within the developmental context of their transition to adulthood. **METHODS:** We conducted life history interviews with 20 HIV-positive YBMSM in Atlanta, Georgia, engaged in outpatient HIV care. We addressed these questions: (1) How do YBMSM living with HIV experience the transition to adulthood? and (2) What are the important sociocontextual influences on ARV adherence for YBMSM? **RESULTS:** Successful transition to adulthood and optimal ARV adherence were inextricably linked. HIV's detrimental impact on development was moderated by the degree of physical illness at diagnosis. Many participants described resilient trajectories while coping with HIV. Adherence problems occurred primarily among participants who were not meeting their developmental goals. **CONCLUSIONS:** Our findings support the need for early diagnosis and linkage to care, as well as the need to develop holistic, resilience-based interventions focusing on transition to adulthood. These findings have implications for individual clinical outcomes as well as ARV-based prevention efforts among YBMSM.

7. Nelson, L. E., et al. (2015). "**The Association of HIV Stigma and HIV/STD Knowledge With Sexual Risk Behaviors Among Adolescent and Adult Men Who Have Sex With Men in Ghana, West Africa.**" *Res Nurs Health* 38(3): 194-206.

Ghanaian men who have sex with men (MSM) have a high HIV seroprevalence, but despite a critical need to address this public health concern, research evidence has been extremely limited on influences on sexual risk behavior among MSM in Ghana. To investigate associations between HIV/STD knowledge, HIV stigma, and sexual behaviors in a sample of MSM in Ghana, we conducted a secondary data analysis of cross-sectional survey data from a non-probability sample of Ghanaian MSM (N = 137). Nearly all the men (93%) had more than one current sex partner (M = 5.11, SD = 7.4). Of those reported partners, the average number of current female sexual partners was 1.1 (SD = 2.6). Overall, knowledge levels about HIV and STDs were low, and HIV stigma was high. There was no age-related difference in HIV stigma. Younger MSM (≤ 25 years) used condoms less often for anal and vaginal sex than did those over 25. Relative frequency of condom use for oral sex was lower in younger men who had higher STD knowledge and also was lower in older men who reported high HIV stigma. Knowledge and stigma were not associated with condom use for anal or vaginal sex in either age group. These descriptive data highlight the need for the development of intervention programs that address HIV/STD prevention knowledge gaps and reduce HIV stigma in Ghanaian communities. Intervention research in Ghana should address age-group-specific HIV prevention needs of MSM youth. (c) 2015 Wiley Periodicals, Inc.

8. Onyango, M. A., et al. (2015). "**It's all about making a life": poverty, HIV, violence, and other vulnerabilities faced by young female sex workers in Kumasi, Ghana.**" *J Acquir Immune Defic Syndr* 68 Suppl 2: S131-137. Online at: http://journals.lww.com/jaids/Fulltext/2015/03011/It_s_All_About_Making_a_Life_Poverty,_HIV_9.aspx

OBJECTIVES: This study aimed to identify social, economic, structural, and individual-level vulnerabilities of female adolescents who sell sex in Kumasi, Ghana. **METHODS:** Twenty-four in-depth interviews and 4 focus group discussions were conducted with female sex workers of age 18-20 years who had been involved in sex work for at least 2 years. Total sample size was 48. **FINDINGS:** One-third of participants started sex work before age 15. Knowledge of HIV was accurate and most reported having intentions to use condoms consistently with clients; however,

factors such as higher payments, drug and/or alcohol use, fear of violence, and police harassment affected condom use. They perceived violence and rape at the hands of clients as their greatest risk. They also reported abuse and exploitation by police. Respondents voiced strong concerns that girls and teens involved in sex work are at higher risk of unsafe sex, exploitation, and abuse than their older and more experienced counterparts. Unprotected sex with boyfriends was also common. DISCUSSION: The pathway to sex work followed a similar pattern for many study participants who left their rural homes for Kumasi in search of economic opportunity. While adolescents who sell sex appear to be abundant in Kumasi, they have been missed by HIV prevention and harm reduction programming. The findings from this study informed the design and implementation of a young female sex worker peer educator pilot program. Key elements of that program are presented, and recommendations for future program evaluation are made.

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