



Quarterly Research Digest on HIV and Key Populations

June 2017

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

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Key Populations General - 4

1. Stahlman, S., et al. "Measuring Sexual Behavior Stigma to Inform Effective HIV Prevention and Treatment Programs for Key Populations." *JMIR Public Health Surveill* 2017 3(2): e23. Online at: <http://publichealth.jmir.org/2017/2/e23/pdf>.

BACKGROUND: The levels of coverage of human immunodeficiency virus (HIV) treatment and prevention services needed to change the trajectory of the HIV epidemic among key populations, including gay men and other men who have sex with men (MSM) and sex workers, have consistently been shown to be limited by stigma.

OBJECTIVE: The aim of this study was to propose an agenda for the goals and approaches of a sexual behavior stigma surveillance effort for key populations, with a focus on collecting surveillance data from 4 groups: (1) members of key population groups themselves (regardless of HIV status), (2) people living with HIV (PLHIV) who are also members of key populations, (3) members of nonkey populations, and (4) health workers.

METHODS: We discuss strengths and weaknesses of measuring multiple different types of stigma including perceived, anticipated, experienced, perpetrated, internalized, and intersecting stigma as measured among

key populations themselves, as well as attitudes or beliefs about key populations as measured among other groups.

RESULTS: With the increasing recognition of the importance of stigma, consistent and validated stigma metrics for key populations are needed to monitor trends and guide immediate action. Evidence-based stigma interventions may ultimately be the key to overcoming the barriers to coverage and retention in life-saving antiretroviral-based HIV prevention and treatment programs for key populations.

CONCLUSIONS: Moving forward necessitates the integration of validated stigma scales in routine HIV surveillance efforts, as well as HIV epidemiologic and intervention studies focused on key populations, as a means of tracking progress toward a more efficient and impactful HIV response.

2. Ippoliti, N. B., et al. "**Meeting the Reproductive Health Needs of Female Key Populations Affected by HIV in Low- and Middle-Income Countries: A Review of the Evidence.**" *Stud Fam Plann* 2017 48(2): 121-151. Online at: <http://onlinelibrary.wiley.com/doi/10.1111/sifp.12020/epdf>.

Female sex workers and other women at high risk of acquiring HIV have the right to sexual and reproductive health, including the right to determine the number and timing of pregnancies. We conducted a literature review to examine the data that exist regarding the family planning and reproductive health needs of female key populations, the underlying determinants of these populations' vulnerability to poor reproductive health outcomes, and the obstacles they face in accessing high-quality reproductive health services. Findings indicate that female key populations experience high rates of unmet need for family planning and safer conception services, unintended pregnancies, sexual violence, and abortion, and that they practice inconsistent condom use. Restrictive policy environments, stigma and discrimination in health care settings, gender inequality, and economic marginalization restrict access to services and undermine the ability to safely achieve reproductive intentions. We offer recommendations for structural, health system, community, and individual-level interventions that can mitigate the effects of these barriers and improve reproductive health outcomes.

3. Cremin, I., et al. "**PrEP for key populations in combination HIV prevention in Nairobi: a mathematical modelling study.**" *Lancet HIV* 2017 4(5): e214-e222.

BACKGROUND: The HIV epidemic in the population of Nairobi as a whole is in decline, but a concentrated sub-epidemic persists in key populations. We aimed to identify an optimal portfolio of interventions to reduce HIV incidence for a given budget and to identify the circumstances in which pre-exposure prophylaxis (PrEP) could be used in Nairobi, Kenya.

METHODS: A mathematical model was developed to represent HIV transmission in specific key populations (female sex workers, male sex workers, and men who have sex with men [MSM]) and among the wider population of Nairobi. The scale-up of existing interventions (condom promotion, antiretroviral therapy, and male circumcision) for key populations and the wider population as have occurred in Nairobi is represented. The model includes a detailed representation of a PrEP intervention and is calibrated to prevalence and incidence estimates specific to key populations and the wider population.

FINDINGS: In the context of a declining epidemic overall but with a large sub-epidemic in MSM and male sex workers, an optimal prevention portfolio for Nairobi should focus on condom promotion for male sex workers and MSM in particular, followed by improved antiretroviral therapy retention, earlier antiretroviral therapy, and male circumcision as the budget allows. PrEP for male sex workers could enter an optimal portfolio at similar levels of spending to when earlier antiretroviral therapy is included; however, PrEP for MSM and female sex workers would be included only at much higher budgets. If PrEP for male sex workers cost as much as US\$500, average annual spending on the interventions modelled would need to be less than \$3.27 million for PrEP for male sex workers to be excluded from an optimal portfolio. Estimated costs per infection averted when providing PrEP to all female sex workers regardless of their risk of infection, and to high-risk female sex workers only, are \$65 160 (95% credible interval [CrI] \$43 520-\$90 250) and \$10 920

(95% CrI \$4700-\$51 560), respectively.

INTERPRETATION: PrEP could be a useful contribution to combination prevention, especially for under-served key populations in Nairobi. An ongoing demonstration project will provide important information regarding practical aspects of implementing PrEP for key populations in this setting. **FUNDING:** The Bill & Melinda Gates Foundation.

4. Koechlin, F. M., et al. "**Values and Preferences on the Use of Oral Pre-exposure Prophylaxis (PrEP) for HIV Prevention Among Multiple Populations: A Systematic Review of the Literature.**" *AIDS Behav* 2017 21(5): 1325-1335.

Daily oral pre-exposure prophylaxis (PrEP) is the use of antiretroviral drugs by HIV-negative people to prevent HIV infection. WHO released new guidelines in 2015 recommending PrEP for all populations at substantial risk of HIV infection. To prepare these guidelines, we conducted a systematic review of values and preferences among populations that might benefit from PrEP, women, heterosexual men, young women and adolescent girls, female sex workers, serodiscordant couples, transgender people and people who inject drugs, and among healthcare providers who may prescribe PrEP. A comprehensive search strategy reviewed three electronic databases of articles and HIV-related conference abstracts (January 1990-April 2015). Data abstraction used standardised forms to categorise by population groups and relevant themes. Of 3068 citations screened, 76 peer-reviewed articles and 28 conference abstracts were included. Geographic coverage was global. Most studies (N = 78) evaluated hypothetical use of PrEP, while 26 studies included individuals who actually took PrEP or placebo. Awareness of PrEP was low, but once participants were presented with information about PrEP, the majority said they would consider using it. Concerns about safety, side effects, cost and effectiveness were the most frequently cited barriers to use. There was little indication of risk compensation. Healthcare providers would consider prescribing PrEP, but need more information before doing so. Findings from a rapidly expanding evidence base suggest that the majority of populations most likely to benefit from PrEP feel positively towards it. These same populations would benefit from overcoming current implementation challenges with the shortest possible delay.

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People Who Inject Drugs - 20

1. Bijker, R., et al. "**Adherence to antiretroviral therapy for HIV in sub-Saharan Africa and Asia: a comparative analysis of two regional cohorts.**" *J Int AIDS Soc* 2017 20(1): 1-10. Online at: <http://www.jiasociety.org/index.php/jias/article/view/21218/pdf>.

INTRODUCTION: Our understanding of how to achieve optimal long-term adherence to antiretroviral therapy (ART) in settings where the burden of HIV disease is highest remains limited. We compared levels and determinants of adherence over time between HIV-positive persons receiving ART who were enrolled in a bi-regional cohort in sub-Saharan Africa and Asia.

METHODS: This multicentre prospective study of adults starting first-line ART assessed patient-reported adherence at follow-up clinic visits using a 30-day visual analogue scale. Determinants of suboptimal adherence (<95%) were assessed for six-month intervals, using generalized estimating equations multivariable logistic regression with multiple imputations. Region of residence (Africa vs. Asia) was assessed as a potential effect modifier.

RESULTS: Of 13,001 adherence assessments in 3934 participants during the first 24 months of ART, 6.4% (837) were suboptimal, with 7.3% (619/8484) in the African cohort versus 4.8% (218/4517) in the Asian cohort ($p < 0.001$). In the African cohort, determinants of suboptimal adherence were male sex (odds ratio (OR) 1.27, 95% confidence interval (CI) 1.06-1.53; $p = 0.009$), younger age (OR 0.8 per 10 year increase; 0.8-0.9; p

= 0.003), use of concomitant medication (OR 1.8, 1.0-3.2; $p = 0.044$) and attending a public facility (OR 1.3, 95% CI 1.1-1.7; $p = 0.004$). In the Asian cohort, adherence was higher in men who have sex with men (OR for suboptimal adherence 0.6, 95% CI 0.4-0.9; $p = 0.029$) and lower in injecting drug users (OR for suboptimal adherence 1.6, 95% CI 0.9-2.6; $p = 0.075$), compared to heterosexuals. Risk of suboptimal adherence decreased with longer ART duration in both regions. Participants in low- and lower-middle-income countries had a higher risk of suboptimal adherence (OR 1.6, 1.3-2.0; $p < 0.001$), compared to those in upper-middle or high-income countries. Suboptimal adherence was strongly associated with virological failure, in Africa (OR 5.8, 95% CI 4.3-7.7; $p < 0.001$) and Asia (OR 9.0, 95% CI 5.0-16.2; $p < 0.001$). Patient-reported adherence barriers among African participants included scheduling demands, drug stockouts, forgetfulness, sickness or adverse events, stigma or depression, regimen complexity and pill burden.

CONCLUSION: Psychosocial factors and health system resources may explain regional differences. Adherence-enhancing interventions should address patient-reported barriers tailored to local settings, prioritizing the first years of ART.

2. Ross, I., et al. "**Awareness and attitudes of pre-exposure prophylaxis for HIV prevention among physicians in Guatemala: Implications for country-wide implementation.**" *PLoS One* 2017 12(3): e0173057. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5336255/pdf/pone.0173057.pdf>.

INTRODUCTION: HIV continues to be a major health concern with approximately 2.1 million new infections occurring worldwide in 2015. In Central America, Guatemala had the highest incident number of HIV infections (3,700) in 2015. Antiretroviral pre-exposure prophylaxis (PrEP) was recently recommended by the World Health Organization (WHO) as an efficacious intervention to prevent HIV transmission. PrEP implementation efforts are underway in Guatemala and success will require providers that are knowledgeable and willing to prescribe PrEP. We sought to explore current PrEP awareness and prescribing attitudes among Guatemalan physicians in order to inform future PrEP implementation efforts.

METHODS: We conducted a cross-sectional survey of adult internal medicine physicians at the main teaching hospital in Guatemala City in March 2015. The survey included demographics, medical specialty, years of HIV patient care, PrEP awareness, willingness to prescribe PrEP, previous experience with post-exposure prophylaxis, and concerns about PrEP. The primary outcome was willingness to prescribe PrEP, which was assessed using a 5-point Likert scale for different at-risk population scenarios. Univariate and multivariate logistic regression was performed to identify predictors for willingness to prescribe PrEP.

RESULTS: Eighty-seven physicians completed the survey; 66% were male, 64% were internal medicine residency trainees, and 10% were infectious disease (ID) specialists. Sixty-nine percent of physicians were PrEP aware, of which 9% had previously prescribed PrEP. Most (87%) of respondents were willing to prescribe PrEP to men who have sex with men (MSM), sex workers, injection drug users, or HIV-uninfected persons having known HIV-positive sexual partners. Concerns regarding PrEP included development of resistance (92%), risk compensation (90%), and cost (64%). Univariate logistic regression showed that younger age, being a resident trainee, and being a non-ID specialist were significant predictors for willingness to prescribe PrEP. In multivariate logistic regression, being a non-ID specialist was a significant predictor.

CONCLUSIONS: Guatemalan physicians at an urban public hospital were PrEP aware and willing to prescribe, but few have actually done so yet. Future education programs should address the concerns identified, including the low potential for the development of antiretroviral resistance. These findings can aid PrEP implementation efforts in Guatemala.

3. Ghaddar, A., et al. "**Barriers to Access to Sterile Syringes as Perceived by Pharmacists and Injecting Drug Users: Implications for Harm Reduction in Lebanon.**" *Subst Use Misuse* 2017: 1-9.

BACKGROUND: Access to sterile syringes to injecting drug users (IDU) reduces sharing behavior and prevents the transmission of HIV.

OBJECTIVES: To describe the barriers to access to sterile syringes for IDUs in Lebanon from the perspectives of pharmacists and IDUs.

METHODS: in this qualitative study conducted in Lebanon, data were collected from 72 syringe purchase tests at pharmacies, 64 interviewees with pharmacists and 2 focus groups with injecting drug users. Two independent researchers analyzed the verbatim transcripts.

RESULTS: Results revealed that pharmacists often deny access to sterile syringes to IDUs who are frequently stigmatized and intimidated at pharmacies. While no large gender differences in pharmacists' attitudes and practices were observed, inequalities in syringe access were noticed with men IDUs more often denied purchase. Pharmacists had several barriers to sell syringes to IDUs including fear of disease spread, increased drug use, inappropriately discarded syringes, staff and customer safety, and business concerns. IDUs had several challenges to purchase syringes including stigmatization, intimidation, physical harassment, concern to reveal identity, fear of arrest and syringe price abuse.

CONCLUSIONS: Identifying the barriers to and facilitators of access to sterile syringes to IDUs is important to guide the development of efficient policies. Findings implicate the importance of empowering IDUs to purchase syringes at pharmacies through reducing the negative attitude towards IDUs and strengthening pharmacists' role in the promotion of health of IDUs. Findings also suggest that the habit of syringe sharing would decrease if the legal and cultural barriers to access are reduced.

4. Akram, B., et al. "**Coping strategies, mental health and HIV status: Predictors of suicidal behaviour among PWIDs.**" *J Pak Med Assoc* 2017 67(4): 568-572. Online at: <http://jpma.org.pk/PdfDownload/8157.pdf>.

OBJECTIVE: To understand suicidal behaviour among people who inject drugs.

METHODS: This correlational, cross-sectional study was conducted in two Pakistani cities of Gujrat and Jhelum from October 2015 to March 2016, and comprised male injecting-drug users aged 18-60 years. Multistage systematic random sampling method was used. Urdu-translated versions of the brief cope inventory, mental health status scale and suicidal behaviour questionnaire (revised) were administered. SPSS 16 was used for data analysis.

RESULTS: Of the 200 participants, 83(41.5%) were aged 26-32 years. The prevalence of human immunodeficiency virus was in 94(47%) cases. Suicidal behaviour was positively associated with psychological distress and human immunodeficiency virus status ($p < 0.05$), whereas it was negatively associated with mental health, psychological well-being and coping strategies ($p < 0.05$). Regression analysis showed mental health index and psychological well-being were negative predictors, whereas psychological distress and human immunodeficiency virus status were positive predictors of suicidal behaviour among the participants ($p < 0.05$).

CONCLUSIONS: The level of stress led people who inject drugs towards suicidal behaviour. However, the level of stress varied according to the severity of human immunodeficiency virus and poor mental health.

5. Bazazi, A. R., et al. "**Design and implementation of a factorial randomized controlled trial of methadone maintenance therapy and an evidence-based behavioral intervention for incarcerated people living with HIV and opioid dependence in Malaysia.**" *Contemp Clin Trials* 2017 59: 1-12.

Incarcerated people living with HIV and opioid dependence face enormous challenges to accessing evidence-based treatment during incarceration and after release into the community, placing them at risk of poor HIV treatment outcomes, relapse to opioid use and accompanying HIV transmission risk behaviors. Here we describe in detail the design and implementation of Project Harapan, a prospective clinical trial conducted among people living with HIV and opioid dependence who transitioned from prison to the community in Malaysia from 2010 to 2014. This trial involved 2 interventions: within-prison initiation of

methadone maintenance therapy and an evidence-based behavioral intervention adapted to the Malaysian context (the Holistic Health Recovery Program for Malaysia, HHRP-M). Individuals were recruited and received the interventions while incarcerated and were followed for 12 months after release to assess post-release HIV transmission risk behaviors and a range of other health-related outcomes. Project Harapan was designed as a fully randomized 2x2 factorial trial where individuals would be allocated in equal proportions to methadone maintenance therapy and HHRP-M, methadone maintenance therapy alone, HHRP-M alone, or control. Partway through study implementation, allocation to methadone maintenance therapy was changed from randomization to participant choice; randomization to HHRP-M continued throughout. We describe the justification for this study; the development and implementation of these interventions; changes to the protocol; and screening, enrollment, treatment receipt, and retention of study participants. Logistical, ethical, and analytic issues associated with the implementation of this study are discussed.

6. McFall, A. M., et al. "**Epidemiology of HIV and hepatitis C infection among women who inject drugs in Northeast India: a respondent-driven sampling study.**" *Addiction* 2017.

BACKGROUND AND AIMS: Despite extensive research on HIV and hepatitis C (HCV) among people who inject drugs (PWID), there remains a gap in knowledge on the burden among women who inject drugs and their unique contexts and risk factors. This analysis compares HIV and HCV prevalence in female and male PWID and estimates injection and sexual risk correlates of prevalent HIV and HCV infection among women in Northeast India.

DESIGN: Cross-sectional sample accrued using respondent-driven sampling.

SETTING: Seven cities in Northeast India, 2013.

PARTICIPANTS: A total of 6457 adult PWID.

MEASUREMENTS: Participants completed an interviewer-administered survey. HIV infection was diagnosed on-site and HCV antibody testing was performed on stored specimens. HIV and HCV prevalence estimates were stratified by gender. Among women, the association of risk correlates with HIV and HCV were estimated using multi-level logistic regression models.

FINDINGS: A total of 796 (15.9%) of the PWID were women, of whom 52.9% [95% confidence interval (CI) = 49.3-56.5%] were HIV-infected and 22.3% (CI = 19.9-24.7%) were HCV-infected. HIV and HCV prevalence among men was 17.4% (CI = 16.9-24.7%) and 30.4% (CI = 31.2-32.0%), respectively. Among women, correlates of HIV were widowhood [adjusted odds ratio (aOR) versus currently married = 4.03, CI = 2.13-7.60] and a higher number of life-time sexual partners (aOR \geq 8 versus none = 3.08, CI = 1.07-8.86). Correlates of HCV were longer injection duration (aOR per 10 years = 1.70, CI = 1.25-2.27), injecting only heroin and a combination of drugs (aOR versus pharmaceuticals only = 5.63, CI = 1.68-18.9 and aOR = 2.58, CI = 1.60-4.16, respectively), sharing needles/syringes (aOR = 2.46, CI = 1.29-4.56) and a larger PWID network (aOR \geq 51 versus 1-5 = 4.17, CI = 2.43-7.17).

CONCLUSIONS: Women who inject drugs in Northeast India have a high HIV prevalence, which was more than double their hepatitis C (HCV) prevalence, an opposite pattern than is observed typically among male PWID. HIV infection is associated with sexual risk factors while injection-related behaviors appear to drive HCV infection.

7. Koirala, S., et al. "**Facilitators and barriers for retention in HIV care between testing and treatment in Asia-A study in Bangladesh, Indonesia, Lao, Nepal, Pakistan, Philippines and Vietnam.**" *PLoS One* 2017 12(5): e0176914. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5411091/pdf/pone.0176914.pdf>.

INTRODUCTION: The need for efficient retention in HIV care is more evident than ever because of the expansion of earlier ART initiation and the shift towards 'Test and Treat'. This study assesses factors affecting participation in the HIV care cascade among people living with HIV (PLHIV) in the Asia-Pacific Region.

METHODS: A total of 7843 PLHIV aged 18-50 years were recruited using targeted and venue-based sampling between October 1, 2012, and May 31, 2013, across 59 sites in 7 countries (Bangladesh, Indonesia, Lao People's Democratic Republic (Lao PDR), Nepal, Pakistan, Philippines and Vietnam). Statistically significant associations between demographic and health system determinants, and various steps in the HIV care cascade were computed using a generalized structural equation model.

RESULTS: A high proportion of PLHIV (40-51%) presented late for HIV care and delayed linkage to care in all seven countries. However, once PLHIV enrolled in care, retention in the various steps of the care cascade including adherence to antiretroviral treatment (ART) was satisfactory. The proportion still engaged in HIV care at 36 months post HIV diagnosis, varied from 78% in Nepal to >90% in Lao PDR. Similarly, the proportion of ART initiation who also were adherent to ART ranged from 91% in Bangladesh to >95% in Philippines/ Vietnam and from 70% in Lao PDR to 89% in the Philippines respectively. The following factors enhanced the likelihood of ART initiation and high adherence to HIV care and ART: good client-provider communication, high HIV treatment literacy, a referral from a health worker and TB/HIV co-infection. The following barriers were identified: young age, sex work, imprisonment, transgender identity, illiteracy, rural residence, alcohol/ injecting drug use, perceived poor health status, lack of health insurance, fear of confidentiality breach, self-referral for HIV testing, and public hospital as the place of HIV diagnosis.

CONCLUSIONS: HIV programme planners should ensure easy access to HIV testing and earlier linkage to HIV care among PLHIV. In addition, multiple socio-economic and health systems barriers need to be addressed along the HIV care cascade to reach the UNAIDS 90-90-90 target in the Asia-Pacific region.

8. DeBeck, K., et al. "**HIV and the criminalisation of drug use among people who inject drugs: a systematic review.**" *Lancet HIV* 2017.

BACKGROUND: Mounting evidence suggests that laws and policies prohibiting illegal drug use could have a central role in shaping health outcomes among people who inject drugs (PWID). To date, no systematic review has characterised the influence of laws and legal frameworks prohibiting drug use on HIV prevention and treatment.

METHODS: Consistent with PRISMA guidelines, we did a systematic review of peer-reviewed scientific evidence describing the association between criminalisation of drug use and HIV prevention and treatment-related outcomes among PWID. We searched MEDLINE, Embase, SCOPUS, PsycINFO, Sociological Abstracts, CINAHL, Web of Science, and other sources. To be included in our review, a study had to meet the following eligibility criteria: be published in a peer-reviewed journal or presented as a peer-reviewed abstract at a scientific conference; examine, through any study design, the association between an a-priori set of indicators related to the criminalisation of drugs and HIV prevention or treatment among PWID; provide sufficient details on the methods followed to allow critical assessment of quality; be published or presented between Jan 1, 2006, and Dec 31, 2014; and be published in the English language.

FINDINGS: We identified 106 eligible studies comprising 29 longitudinal, 49 cross-sectional, 22 qualitative, two mixed methods, four mathematical modelling studies, and no randomised controlled trials. 120 criminalisation indicators were identified (range 1-3 per study) and 150 HIV indicators were identified (1-5 per study). The most common criminalisation indicators were incarceration (n=38) and street-level policing (n=39), while the most frequent HIV prevention and treatment indicators were syringe sharing (n=35) and prevalence of HIV infection among PWID (n=28). Among the 106 studies included in this review, 85 (80%) suggested that drug criminalisation has a negative effect on HIV prevention and treatment, 10 (9%) suggested no association, five (5%) suggested a beneficial effect, one (1%) suggested both beneficial and negative effects, and five (5%) suggested both null and negative effects.

INTERPRETATION: These data confirm that criminalisation of drug use has a negative effect on HIV prevention and treatment. Our results provide an objective evidence base to support numerous international

policy initiatives to reform legal and policy frameworks criminalising drug use.

FUNDING: Canadian Institutes of Health Research and US National Institutes of Health.

9. Birger, R. B., et al. "**The impact of HCV therapy in a high HIV-HCV prevalence population: A modeling study on people who inject drugs in Ho Chi Minh City, Vietnam.**" *PLoS One* 2017 12(5): e0177195. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5426709/pdf/pone.0177195.pdf>.

BACKGROUND: Human Immunodeficiency Virus (HIV) and Hepatitis C Virus (HCV) coinfection is a major global health problem especially among people who inject drugs (PWID), with significant clinical implications. Mathematical models have been used to great effect to shape HIV care, but few have been proposed for HIV/HCV.

METHODS: We constructed a deterministic compartmental ODE model that incorporated layers for HIV disease progression, HCV disease progression and PWID demography. Antiretroviral therapy (ART) and Methadone Maintenance Therapy (MMT) scale-ups were modeled as from 2016 and projected forward 10 years. HCV treatment roll-out was modeled beginning in 2026, after a variety of MMT scale-up scenarios, and projected forward 10 years.

RESULTS: Our results indicate that scale-up of ART has a major impact on HIV though not on HCV burden. MMT scale-up has an impact on incidence of both infections. HCV treatment roll-out has a measurable impact on reductions of deaths, increasing multifold the mortality reductions afforded by just ART/MMT scale-ups.

CONCLUSION: HCV treatment roll-out can have major and long-lasting effects on averting PWID deaths on top of those averted by ART/MMT scale-up. Efficient intervention scale-up of HCV alongside HIV interventions is critical in Vietnam.

10. Edelman, E. J., et al. "**Impact of illicit opioid use on T cell subsets among HIV-infected adults.**" *PLoS One* 2017 12(5): e0176617. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5417591/pdf/pone.0176617.pdf>.

OBJECTIVES: Opioids have immunosuppressive properties, yet opioid effects on T cell abnormalities consistent with the immune risk phenotype among HIV-infected individuals are understudied.

METHODS: To assess associations between illicit opioid use and T cell characteristics (CD4/CD8 ratio, memory profiles based on CD45RO and CD28 expression, and senescence based on CD57 expression), we conducted an exploratory cross-sectional analysis of Russia ARCH, a cohort of antiretroviral therapy (ART)-naive HIV-infected individuals recruited 11/2012 to 10/2014 in St. Petersburg, Russia. The main independent variable was past 30 day illicit opioid use (yes vs. no). Secondary analyses evaluated none (0 days), intermittent (1 to 7 days), and persistent (8 to 30 days) opioid use. Outcomes were determined with flow cytometry. Analyses were conducted using linear regression models.

RESULTS: Among 186 participants, 38% reported any illicit opioid use (18% intermittent and 20% persistent). Any illicit opioid use was not significantly associated with T cell characteristics. Intermittent opioid use appeared to be associated with decreased memory CD8+ T cells proportion (CD45RO+CD45RA- CD8+ T cells: adjusted mean difference [AMD] [95% CI] = -6.15 [-11.50, -0.79], $p = 0.02$) and borderline significant increased senescent T cells (%CD57+ of total CD28-CD8+ T cells (AMD [95% CI] = 7.70 [-0.06, 15.46], $p = 0.05$).

CONCLUSIONS: Among ART-naive HIV-infected Russians, any illicit opioid use was not significantly associated with T cell abnormalities although intermittent illicit opioid use may be associated with CD8 T cell abnormalities. Longitudinal studies are warranted to confirm these findings given increased risk of infections and comorbidities seen among HIV-infected individuals with illicit opioid use.

11. Cepeda, J. A., et al. "Injection drug network characteristics are important markers of HIV risk behavior and lack of viral suppression." *J Acquir Immune Defic Syndr* 2017.

BACKGROUND: People who inject drugs (PWID) who are highly connected within their injection drug networks may be important HIV transmission nodes if they frequently share syringes with other PWID and are not engaged in HIV care. In India, HIV transmission fueled by injection drug use is increasing, however little is known about the associations between injection network size and syringe sharing and viral suppression.

METHODS: We recruited 14,481 PWID between October 2012 - December 2013 by respondent driven sampling across 15 sites in India. Interviewer-administered questionnaires assessed network characteristics, substance use, HIV testing experience, and access to health services. We used multilevel logistic regression modeling to evaluate the relationship between injection drug network size and 1) syringe sharing at last injection and 2) viral suppression among HIV-positive participants (<150 copies/ml).

FINDINGS: The median injection network size was 3 [IQR: 1-5] and 7% of participants injected with >10 members in the past 30 days. PWID who had >10 members in their network were 1.65 times (95% CI: 1.12 - 2.42, $p=0.0111$) more likely to have shared a syringe at last injection compared to those in the 0-1 members in their drug networks. Additionally, individuals with the largest injection drug networks were also 31% (95% CI: 0.53 - 0.90, $p=0.006$) less likely to be virally suppressed compared to individuals in the smallest injection drug networks.

DISCUSSION: Individuals with larger networks may be important in HIV transmission within injection drug networks since they were the most likely to engage in recent syringe sharing and least likely to be virally suppressed.

12. Karamouzian, M., et al. "Injection drug use among female sex workers in Iran: Findings from a nationwide bio-behavioural survey." *Int J Drug Policy* 2017 44: 86-91.

BACKGROUND: Globally, one in three women who inject drugs is involved in sex work which increases their vulnerability to sexually transmitted infections including HIV. This study was conducted to improve our understanding of injection drug use practices among Iranian female sex workers (FSWs) and shed light on the high-risk profile of FSWs who inject drugs (FSW-IDUs).

METHODS: This survey was conducted in 2010, by recruiting 872 FSWs through facility-based sampling from 21 sites in 13 cities in Iran. Data were collected through face-to-face interviews and lifetime injection drug use was assessed through the responses to the question "Have you ever injected any illicit drugs?". Independent variables included a range of socio-demographic and risk characteristics. Logistic regression models were applied to investigate the correlates of lifetime history of injection drug use.

RESULTS: Median (Q1, Q3) age of the participants was 30 (25, 37) and a total of 127 (14.6%, 95% confidence interval (CI): 12.3-17.1) had ever injected drugs. In the multivariable logistic regression model, older age (adjusted odds ratio (AOR)=AOR₂₅₋₃₄ vs. <18=3.37, 95% CI: 1.64, 7.70; AOR_{>=35} vs. <18=2.80, 95% CI: 1.11, 7.10), longer duration (>5 years) of involvement in sex work (AOR=1.06, 95% CI: 1.02, 1.10), and history of drinking alcohol (AOR=4.42, 95% CI: 2.67, 7.32) were positively associated with lifetime history of drug injection and younger age at sex work debut (AOR=0.52, 95% CI: 0.28, 0.96) was negatively associated with lifetime history of illicit drug injection among FSWs.

CONCLUSION: The prevalence of injection drug use among FSWs in Iran is concerning. Given the potential of this sub-population in bridging HIV into the general population, gender-sensitive and peer-led harm reduction programs should be further scaled up to meet the special needs of this vulnerable population.

13. Guise, A., et al. **"Integrated opioid substitution therapy and HIV care: a qualitative systematic review and synthesis of client and provider experiences."** *AIDS Care* 2017: 1-10.
- People who use drugs in many contexts have limited access to opioid substitution therapy and HIV care. Service integration is one strategy identified to support increased access. We reviewed and synthesized literature exploring client and provider experiences of integrated opioid substitution therapy and HIV care to identify acceptable approaches to care delivery. We systematically reviewed qualitative literature. We searched nine bibliographic databases, supplemented by manual searches of reference lists of articles from the database search, relevant journals, conferences, key organizations and consultation with experts. Thematic synthesis was used to develop descriptive themes in client and provider experiences. The search yielded 11 articles for inclusion, along with 8 expert and policy reports. We identify five descriptive themes: the convenience and comprehensive nature of co-located care, contrasting care philosophies and their role in shaping integration, the limits to disclosure and communication between clients and providers, opioid substitution therapy enabling HIV care access and engagement, and health system challenges to delivering integrated services. The discussion explores how integrated opioid substitution therapy and HIV care needs to adapt to specific social conditions, rather than following universal approaches. We identify priorities for future research. Acceptable integrated opioid substitution therapy and HIV care for people who use drugs and providers is most likely through co-located care and relies upon attention to stigma, supportive relationships and client centred cultures of delivery. Further research is needed to understand experiences of integrated care, particularly delivery in low and middle income settings and models of care focused on community and non-clinic based delivery.

14. Kiriazova, T., et al. **"It is easier for me to shoot up": stigma, abandonment, and why HIV-positive drug users in Russia fail to link to HIV care."** *AIDS Care* 2017 29(5): 559-563.

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

15. Meacham, M. C., et al. **"Latent classes of polydrug and polyroute use and associations with human immunodeficiency virus risk behaviours and overdose among people who inject drugs in Tijuana, Baja California, Mexico."** *Drug Alcohol Rev* 2017.

INTRODUCTION AND AIMS: Patterns of polydrug use among people who inject drugs (PWID) may be differentially associated with overdose and unique human immunodeficiency virus (HIV) risk factors. Subgroups of PWID in Tijuana, Mexico, were identified based on substances used, route of administration, frequency of use and co-injection indicators.

DESIGN AND METHODS: Participants were PWID residing in Tijuana age ≥ 18 years sampled from 2011 to 2012 who reported injecting an illicit substance in the past month ($n = 735$). Latent class analysis identified discrete classes of polydrug use characterised by 11 indicators of past 6 months substance use. Multinomial logistic regression examined class membership association with HIV risk behaviours, overdose and other covariates using an automated three-step procedure in mplus to account for classification error.

RESULTS: Participants were classified into five subgroups. Two polydrug and polyroute classes were defined by use of multiple substances through several routes of administration and were primarily distinguished from each other by cocaine use (class 1: 5%) or no cocaine use (class 2: 29%). The other classes consisted

primarily of injectors: cocaine, methamphetamine and heroin injection (class 3: 4%); methamphetamine and heroin injection (class 4: 10%); and heroin injection (class 5: 52%). Compared with the heroin-only injection class, memberships in the two polydrug and polyroute use classes were independently associated with both HIV injection and sexual risk behaviours.

DISCUSSION AND CONCLUSIONS: Substance use patterns among PWID in Tijuana are highly heterogeneous, and polydrug and polyroute users are a high-risk subgroup who may require more tailored prevention and treatment interventions. [Meacham MC, Roesch SC, Strathdee SA, Lindsay S, Gonzalez-Zuniga P, Gaines TL. Latent classes of polydrug and polyroute use and associations with human immunodeficiency virus risk behaviours and overdose among people who inject drugs in Tijuana, Baja California, Mexico. *Drug Alcohol Rev* 2017;00:000-000].

16. Martin, N. K., et al. **"Modeling Combination HCV Prevention among HIV-infected Men Who Have Sex With Men and People Who Inject Drugs."** *AIDS Rev* 2017 19(2).

People who inject drugs (PWID) and HIV-infected men who have sex with men (MSM) are key risk groups for HCV transmission. Mathematical modeling studies can help elucidate what level and combination of prevention intervention scale-up is required to control or eliminate epidemics among these key populations. We discuss the evidence surrounding HCV prevention interventions and provide an overview of the mathematical modeling literature projecting the impact of scaled-up HCV prevention among PWID and HIV-infected MSM. Harm reduction interventions, such as opiate substitution therapy and needle and syringe programs, are effective in reducing HCV incidence among PWID. Modeling and limited empirical data indicate that HCV treatment could additionally be used for prevention. No studies have evaluated the effectiveness of behavior change interventions to reduce HCV incidence among MSM, but existing interventions to reduce HIV risk could be effective. Mathematical modeling and empirical data indicate that scale-up of harm reduction could reduce HCV transmission, but in isolation is unlikely to eliminate HCV among PWID. By contrast, elimination is possibly achievable through combination scale-up of harm reduction and HCV treatment. Similarly, among HIV-infected MSM, eliminating the emerging epidemics will likely require HCV treatment scale-up in combination with additional interventions to reduce HCV-related risk behaviors. In summary, elimination of HCV will likely require combination prevention efforts among both PWID and HIV-infected MSM populations. Further empirical research is required to validate HCV treatment as prevention among these populations, and to identify effective behavioral interventions to reduce HCV incidence among MSM.

17. Nasarruddin, A. M., et al. **"Opening up the HIV epidemic: a review of HIV seropositive status disclosure among people who inject drugs."** *AIDS Care* 2017 29(5): 533-540.

HIV status disclosure plays a crucial role in reducing risk behaviors of drug and sexual partners and thereby limiting HIV transmission. As people who inject drugs (PWID) bear a significant HIV burden and disclosure research among PWID is relatively few, we reviewed the literature to highlight what is known about disclosure among HIV-positive PWID. Searches of articles published from 2000 to 2015 yielded 17 studies addressing different aspects of disclosure, and results are presented by major themes. Our results suggest that despite the difficulties, most PWID (64-86%) disclose their HIV-positive status to trusted individuals (family members and intimate sexual partners) and to those who are known to be HIV-positive. Disclosure to non-intimate sexual partners and fellow drug users is relatively lower. Disclosure decision-making is primarily driven by the perceived positive and negative consequences of disclosure. Subsequent risk reduction practices following disclosure are influenced by the feeling of responsibility, as well as partners' willingness to accept risk. Cultural family values, ethnicity, and different localities were several contextual factors that affect patterns of disclosure and risk behaviors of PWID. Areas for future research are recommended.

18. Guise, A., et al. **"PrEP is not ready for our community, and our community is not ready for PrEP: pre-exposure prophylaxis for HIV for people who inject drugs and limits to the HIV prevention response."** *Addiction* 2017 112(4): 572-578.

BACKGROUND AND AIMS: Pre-exposure prophylaxis for HIV, or 'PrEP', is the use of antiretroviral medicines by people who are HIV-negative to protect themselves against acquiring HIV. PrEP has shown efficacy for preventing HIV acquisition. Despite the potential, many concerns have been voiced by people who inject drugs (PWID) and their organizations. There is a need to engage with these views and ensure their integration in to policy and strategy. This paper presents PWID views on PrEP to foster the uptake of these opinions into scientific and policy debate around PrEP.

METHODS: Critical analysis of a report of a community consultation led by the International Network of People who Use Drugs (INPUD).

RESULTS: The INPUD report highlights enthusiasm from PWID for PrEP, but also three main concerns: the feasibility and ethics of PrEP, its potential use as a substitute for other harm reduction strategies and how a focus on PrEP heralds a re-medicalization of HIV. Each concern relates to evidenced gaps in essential services or opposition to harm reduction and PWID human rights.

CONCLUSIONS: People who use drugs have fundamental concerns about the potential impacts of pre-exposure prophylaxis for HIV which reflect a 'fault line' in HIV prevention: a predominance of biomedical approaches over community perspectives. Greater community engagement in HIV prevention strategy is needed, or we risk continuing to ignore the need for action on the underlying structural drivers and social context of the HIV epidemic.

19. Jiao, M., et al. **"Resilience associated with mental health problems among methadone maintenance treatment patients in Guangzhou, China."** *AIDS Care* 2017 29(5): 660-665.

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

20. Artzrouni, M., et al. **"A syringe-sharing model for the spread of HIV: application to Omsk, Western Siberia."** *Math Med Biol* 2017 34(1): 15-37.

A system of two differential equations is used to model the transmission dynamics of human immunodeficiency virus between 'persons who inject drugs' (PWIDs) and their syringes. Our vector-borne disease model hinges on a metaphorical urn from which PWIDs draw syringes at random which may or may not be infected and may or may not result in one of the two agents becoming infected. The model's parameters are estimated with data mostly from the city of Omsk in Western Siberia. A linear trend in PWID prevalence in Omsk could only be fitted by considering a time-dependent version of the model captured through a secular decrease in the probability that PWIDs decide to share a syringe. A global sensitivity analysis is performed with 14 parameters considered random variables in order to assess their impact on

average numbers infected over a 50-year projection. With obvious intervention implications the drug injection rate and the probability of syringe-cleansing are the only parameters whose coefficients of correlations with numbers of infected PWIDs and infected syringes have an absolute value close to or larger than 0.40.

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Men who have Sex with Men - 57

1. Pizzicato, L. N., et al. "**Active syphilis and its association with HIV and sexual risk behaviours in a multicity sample of men who have sex with men and transgender women in Peru.**" *Sex Health* 2017.

Background: Syphilis in Peru is heavily concentrated in men who have sex with men (MSM) and transgender women (TGW). The aim of the present study was to understand the risk factors for active syphilis infection among MSM and TGW in Peru.

Methods: Independent correlates suggestive of active syphilis infection were examined to better understand risk factors for syphilis in MSM and TGW, with separate analyses conducted based on location and among TGW. In 2011, 5101 MSM and TGW completed both self-report surveys and HIV and syphilis testing in five Peruvian cities.

Results: Overall, 261 (5.1%) MSM and TGW met the criteria for active syphilis, with higher prevalence in Lima than elsewhere (7.0% vs 3.0%) and in TGW than in MSM (10.7% vs 4.2%). Significant independent correlates of active syphilis infection differed greatly by location. In Lima, they included being HIV-infected (aware or unaware of status), being a TGW, being a high school graduate, engaging in receptive anal intercourse, no recent sex with a female partner and having had any symptomatic sexually transmissible infection, including syphilis, in the previous 6 months. Outside Lima, the independent correlates included being HIV-infected and unaware of status, engaging in recent sex work, no recent sex with a female partner and age 35-44 years. Among TGW, independent correlates of active syphilis included being HIV-infected (aware or unaware of status), a recent syphilis diagnosis in the previous 6 months and recent drug use.

Conclusion: The findings of the present study support the need not only for combined HIV and syphilis screening, but also for increased screening and treatment of syphilis in MSM and TGW populations. Stratified analyses suggest different syphilis epidemics throughout the country and in TGW, yet being HIV-infected and aware were consistently associated with active syphilis, suggesting higher syphilis risk in HIV-infected MSM and TGW.

2. Khawcharoenporn, T., et al. "**Active targeted HIV testing and linkage to care among men who have sex with men attending a gay sauna in Thailand.**" *AIDS Care* 2017 29(3): 355-364.

Existing data on the feasibility of human immunodeficiency virus (HIV) testing and counseling (HTC) and linkage to care among men who have sex with men (MSM) in hotspots are currently limited. A prospective study on active targeted HTC and linkage to care among MSM (≥ 18 years old) was conducted at a gay sauna in Thailand from November 2013 to October 2015. HIV risks and risk perception were evaluated through an anonymous survey. HIV testing with result notification and care appointment arrangement were provided on-site. Of the 358 participants; median age was 30 years; 206/358(58%) were at high risk for HIV acquisition; 148/358(41%) accepted HTC, all of whom either had prior negative HIV tests [98/148 (66%)] or had not known their HIV status [50/148 (34%)]. The three most common reasons for declining HTC were prior HIV testing within 6 months (48%), not ready (19%) and perceiving self as no risk (11%). Of the 262 moderate- and high-risk participants, 172 (66%) had false perception of low HIV risk which was significantly

associated with declining HTC. Among the 148 participants undergoing HTC, 25 (17%) were HIV-infected. Having false perception of low risk ($P = 0.004$) and age <30 years ($P = 0.02$) were independently associated with HIV positivity. Only 14 of the 25 HIV-infected participants (56%) could be contacted after the result notification, of whom 12 (86%) had established HIV care and received immediate antiretroviral therapy. The active targeted HTC and facilitating care establishment was feasible among MSM attending the gay sauna but required strategies to improve accuracy of HIV-risk perception and linkage to care.

3. Bijker, R., et al. "**Adherence to antiretroviral therapy for HIV in sub-Saharan Africa and Asia: a comparative analysis of two regional cohorts.**" *J Int AIDS Soc* 2017 20(1): 1-10. Online at: <http://www.jiasociety.org/index.php/jias/article/view/21218/pdf>.

INTRODUCTION: Our understanding of how to achieve optimal long-term adherence to antiretroviral therapy (ART) in settings where the burden of HIV disease is highest remains limited. We compared levels and determinants of adherence over time between HIV-positive persons receiving ART who were enrolled in a bi-regional cohort in sub-Saharan Africa and Asia.

METHODS: This multicentre prospective study of adults starting first-line ART assessed patient-reported adherence at follow-up clinic visits using a 30-day visual analogue scale. Determinants of suboptimal adherence ($<95\%$) were assessed for six-month intervals, using generalized estimating equations multivariable logistic regression with multiple imputations. Region of residence (Africa vs. Asia) was assessed as a potential effect modifier.

RESULTS: Of 13,001 adherence assessments in 3934 participants during the first 24 months of ART, 6.4% (837) were suboptimal, with 7.3% (619/8484) in the African cohort versus 4.8% (218/4517) in the Asian cohort ($p < 0.001$). In the African cohort, determinants of suboptimal adherence were male sex (odds ratio (OR) 1.27, 95% confidence interval (CI) 1.06-1.53; $p = 0.009$), younger age (OR 0.8 per 10 year increase; 0.8-0.9; $p = 0.003$), use of concomitant medication (OR 1.8, 1.0-3.2; $p = 0.044$) and attending a public facility (OR 1.3, 95% CI 1.1-1.7; $p = 0.004$). In the Asian cohort, adherence was higher in men who have sex with men (OR for suboptimal adherence 0.6, 95% CI 0.4-0.9; $p = 0.029$) and lower in injecting drug users (OR for suboptimal adherence 1.6, 95% CI 0.9-2.6; $p = 0.075$), compared to heterosexuals. Risk of suboptimal adherence decreased with longer ART duration in both regions. Participants in low- and lower-middle-income countries had a higher risk of suboptimal adherence (OR 1.6, 1.3-2.0; $p < 0.001$), compared to those in upper-middle or high-income countries. Suboptimal adherence was strongly associated with virological failure, in Africa (OR 5.8, 95% CI 4.3-7.7; $p < 0.001$) and Asia (OR 9.0, 95% CI 5.0-16.2; $p < 0.001$). Patient-reported adherence barriers among African participants included scheduling demands, drug stockouts, forgetfulness, sickness or adverse events, stigma or depression, regimen complexity and pill burden.

CONCLUSION: Psychosocial factors and health system resources may explain regional differences. Adherence-enhancing interventions should address patient-reported barriers tailored to local settings, prioritizing the first years of ART.

4. Hao, Y. X., et al. "[**Analysis of Spatial Clustering of HIV infected in men who have sex with men in Chongqing of 2004-2015**]." *Zhonghua Yu Fang Yi Xue Za Zhi* 2017 51(5): 432-437.

Objective: To analyze the spatial clustering characteristics of HIV/AIDS among men who have sex with men (MSM) in Chongqing from January 2004 to December 2015 and understand the HIV/AIDS related behaviors among MSM by interview.

Methods: Data related to MSM who were infected with HIV and whose present address were in Chongqing, were collected from Information System on the HIV/AIDS Prevention and Control. Information included the age when the information was inputted, address, occupation, education level, and marital status. The total number of MSM who were infected with HIV and reported was 6 604 in Chongqing. Those with unknown address were ruled out. The spatial autocorrelation analysis and the local spatial autocorrelation analysis were carried out by using ArcGIS 10.3. In addition, in November 2015 and May 2016, using a convenience

sampling, we conducted one-on-one interviews among 23 MSM in the Chongqing Center for Disease Control and prevention. INCLUSION CRITERIA: Receiving voluntary counseling and testing in the urban area of Chongqing and willing to participate in the interview by oral informed consent; male and self-described as MSM. The content of the interview included basic information, sexual orientation, sexual role, the main place of making friends, the main place of sexual behavior, a long-term experience in other provinces and drug abuse.

Results: The HIV/AIDS reported number in Chongqing from 2004 to 2015 showed an uptrend, except in 2010. The age distribution of 6 604 cases of HIV positive patients was mainly concentrated in the 15-34 years old, about 68.5% (4 522 cases). There was a positive spatial autocorrelation in MSM, except 2005 (Moran's $I = -0.046$, $P = 0.823$), from 2004 to 2015, Global Moran's I values were 0.308, 0.254, 0.335, 0.683, 0.673, 0.558, 0.620, 0.673, 0.685, 0.654 and 0.649, respectively; all P values were < 0.01 . The result of local spatial autocorrelation analysis showed that high-high accumulation area development in Chongqing city was divided into two stages in 2004-2015, which were Yuzhong, Jiangbei, and Shapingba district in 2004-2007 and the expanded Jiulongpo, Nan'an, and Yubei district in 2008-2015. Qualitative interviews results revealed that the age of the respondents was 20-44, and the mainly way of making friends were using mobile phone App and internet (17 participants). Most of the participants (11 participants) were making friends in the bar. The majority of respondents would ask the friends or themselves to use condoms when meeting with them the first time (19 participants), and 8 of respondents reported that they would not use condoms when their old friends refused to use condoms.

Conclusion: The HIV infected MSM mainly aged between 15-34 years old and the spatial distribution of HIV/AIDS among MSM was clustered in economically developed main area in Chongqing. MSM began to make friends on the Internet, and could not adhere to using condom, which indicated that we should focus on internet intervention to find more efficacious interventions.

5. Beck, E. J., et al. "**Attitudes towards homosexuals in seven Caribbean countries: implications for an effective HIV response.**" *AIDS Care* 2017: 1-10.

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

6. Ross, I., et al. "**Awareness and attitudes of pre-exposure prophylaxis for HIV prevention among physicians in Guatemala: Implications for country-wide implementation.**" *PLoS One* 2017 12(3): e0173057. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5336255/pdf/pone.0173057.pdf>.

INTRODUCTION: HIV continues to be a major health concern with approximately 2.1 million new infections occurring worldwide in 2015. In Central America, Guatemala had the highest incident number of HIV infections (3,700) in 2015. Antiretroviral pre-exposure prophylaxis (PrEP) was recently recommended by the World Health Organization (WHO) as an efficacious intervention to prevent HIV transmission. PrEP implementation efforts are underway in Guatemala and success will require providers that are knowledgeable and willing to prescribe PrEP. We sought to explore current PrEP awareness and prescribing attitudes among Guatemalan physicians in order to inform future PrEP implementation efforts.

METHODS: We conducted a cross-sectional survey of adult internal medicine physicians at the main teaching hospital in Guatemala City in March 2015. The survey included demographics, medical specialty, years of HIV patient care, PrEP awareness, willingness to prescribe PrEP, previous experience with post-exposure prophylaxis, and concerns about PrEP. The primary outcome was willingness to prescribe PrEP, which was assessed using a 5-point Likert scale for different at-risk population scenarios. Univariate and multivariate logistic regression was performed to identify predictors for willingness to prescribe PrEP.

RESULTS: Eighty-seven physicians completed the survey; 66% were male, 64% were internal medicine residency trainees, and 10% were infectious disease (ID) specialists. Sixty-nine percent of physicians were PrEP aware, of which 9% had previously prescribed PrEP. Most (87%) of respondents were willing to prescribe PrEP to men who have sex with men (MSM), sex workers, injection drug users, or HIV-uninfected persons having known HIV-positive sexual partners. Concerns regarding PrEP included development of resistance (92%), risk compensation (90%), and cost (64%). Univariate logistic regression showed that younger age, being a resident trainee, and being a non-ID specialist were significant predictors for willingness to prescribe PrEP. In multivariate logistic regression, being a non-ID specialist was a significant predictor.

CONCLUSIONS: Guatemalan physicians at an urban public hospital were PrEP aware and willing to prescribe, but few have actually done so yet. Future education programs should address the concerns identified, including the low potential for the development of antiretroviral resistance. These findings can aid PrEP implementation efforts in Guatemala.

7. Hoagland, B., et al. "**Awareness and Willingness to Use Pre-exposure Prophylaxis (PrEP) Among Men Who Have Sex with Men and Transgender Women in Brazil.**" *AIDS Behav* 2017 21(5): 1278-1287.

Antiretroviral pre-exposure prophylaxis (PrEP) is recommended to prevent HIV infection among high-risk men who have sex with men (MSM) though not available in Brazil where the HIV epidemic persists unabated in this group. This cross-sectional study describes PrEP awareness and willingness and associated factors among MSM and transvestite/transgender women (trans women) pre-screened for the PrEP Brasil study. Awareness was reported by 61.3 % of the participants and was associated with age, education, site, study period and prior HIV testing. Most participants (82.1 %) were willing to use PrEP, which was associated with site, study period, number of male condomless anal sexual partners and anal sex with HIV positive/unknown partners. PrEP information is need among young and less educated individuals. Willingness to use PrEP was high and future studies should be conducted to confirm PrEP acceptability and the characteristics of the population who chose to adopt this intervention.

8. Ogunbajo, A., et al. "**Barriers, Motivators, and Facilitators to Engagement in HIV Care Among HIV-Infected Ghanaian Men Who have Sex with Men (MSM).**" *AIDS Behav* 2017.

In Ghana, men who have sex with men (MSM) bear a high burden of HIV. Identifying factors that influence engagement in HIV care among HIV-infected Ghanaian MSM is critical to devising novel interventions and strengthening existing programs aimed at improving outcomes across the HIV care continuum. Consequently, we conducted an exploratory qualitative research study with 30 HIV-infected Ghanaian MSM between May 2015 and July 2015. Common barriers were fear of being seen in HIV-related health facility, financial difficulties, and health system challenges. Major motivators for engagement in care included social

support, fear of mortality from HIV, and knowledge of effectiveness of HIV treatment. Key facilitators were enrollment in health insurance, prior relationship and familiarity with hospital personnel, and positive experience in healthcare setting. Our findings highlight the need for new and innovative care delivery mediums, affirming and competent healthcare providers, and increased access to health insurance.

9. Lee, M., et al. "**Breakage is the norm: use of condoms and lubrication in anal sex among Black South African men who have sex with men.**" *Cult Health Sex* 2017 19(4): 501-514.

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

10. Maheu-Giroux, M., et al. "**Changing dynamics of HIV transmission in Cote d'Ivoire: modeling who acquired and transmitted infections and estimating the impact of past HIV interventions (1976-2015).**" *J Acquir Immune Defic Syndr* 2017.

INTRODUCTION: Understanding the impact of past interventions and how it affected transmission dynamics is key to guiding prevention efforts. We estimated the population-level impact of condom, antiretroviral therapy (ART), and prevention of mother-to-child transmission activities on HIV transmission and the contribution of key risk factors on HIV acquisition and transmission.

METHODS: An age stratified dynamical model of sexual and vertical HIV transmission among the general population, female sex workers (FSW), and men who have sex with men (MSM) was calibrated to detailed prevalence and intervention data. We estimated the fraction of HIV infections averted by the interventions, and the fraction of incident infections acquired and transmitted by different populations over successive 10-year periods (1976-2015).

RESULTS: Overall, condom use averted 61% (95% Credible Intervals: 56-66%) of all adult infections during 1987-2015 mainly due to increases by FSW (46% of infections averted). In comparison, ART prevented 15% (10-19%) of adult infections during 2010- 2015. As a result, FSW initially (1976-1985) contributed 95% (91-97%) of all new infections, declining to 19% (11-27%) during 2005-2015. Older men and clients mixing with non-FSW are currently the highest contributor to transmission. MSM contributed $\leq 4\%$ transmissions throughout. Young women (15-24 years; excluding FSW) do not transmit more infection than they acquired.

CONCLUSION: Early increases in condom use, mainly by FSW, have substantially reduced HIV transmission. Clients of FSW and older men have become the main source of transmission whereas young women remain at increased risk. Strengthening prevention and scaling-up of ART, particularly to FSW and CFSW, is important.

11. Zou, H., et al. "**Characteristics of Men Who Have Sex With Men Who Use Smartphone Geosocial Networking Applications and Implications for HIV Interventions: A Systematic Review and Meta-Analysis.**" *Arch Sex Behav* 2017 46(4): 885-894.

Men who have sex with men (MSM) are increasingly using geosocial networking (GSN) mobile applications

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

12. Wu, Y., et al. "**Characterization of a novel HIV-1 unique recombinant form between CRF07_BC and CRF55_01B in men who have sex with men in Guangzhou, China.**" *PLoS One* 2017 12(4): e0175770. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5389846/pdf/pone.0175770.pdf>.

Here, we report the genetic diversity of HIV-1 and emergence of novel HIV-1 unique recombinant forms (URF) in both HIV-infected intravenous drug users (IDU) and men who have sex with men (MSM) in Guangzhou, China. We further characterized a novel URF strain isolated from an HIV-infected MSM, GD698. Near full-length genome (NFLG) phylogenetic analysis showed that this novel URF was composed of CRF07_BC and CRF55_01B, with two recombinant breakpoints (nt 6,003 and 8,251 relative to the HXB2 genome) in the *vpu/env* and *env* genes, respectively. Twenty six percent of the genome is classified as CRF55_01B, spanning part of *vpu* and most of the *env* gene. The remaining 74% of the genome is classified as CRF07_BC. Both the backbone CRF07_BC sequence and CRF55_01B fragment were clustered with the HIV-1 isolates found in MSM. The emergence of the novel HIV-1 recombinant indicates the ongoing recombinants derived from the CRF07_BC and CRF55_01B isolates, and provides critical insights into our understanding of the dynamics and complexity of the HIV-1 epidemic in China.

13. Sivay, M. V., et al. "**Characterization of HIV seroconverters in a TDF/FTC PrEP study: HPTN 067/ADAPT.**" *J Acquir Immune Defic Syndr* 2017.

BACKGROUND: HPTN 067/ADAPT evaluated tenofovir disoproxil fumarate/emtricitabine (TDF/FTC) pre-exposure prophylaxis (PrEP) in women (South Africa) and men who have sex with men (Thailand, US). Participants received once-weekly directly observed TDF/FTC (DOT), and were then randomized to daily, time-driven, or event-driven PrEP. This report describes characterization of 12 HIV seroconversion events in this trial.

METHODS: HIV rapid testing was performed at study sites. Retrospective testing included: 4 generation assays; HIV RNA testing; Western blot; an HIV-1/2 discriminatory assay; resistance testing; and antiretroviral (ARV) drug testing.

RESULTS: Six of the 12 seroconverters received TDF/FTC in the DOT phase, but were not randomized (3 were acutely infected at enrollment; 2 were infected during the DOT phase; one was not randomized due to pregnancy). One of the six randomized participants had acute infection at randomization but was not diagnosed for 3-4 months because HIV rapid tests were non-reactive; continued daily PrEP use was associated with false-negative antibody tests and low HIV RNA levels. The five participants infected after randomization included four with low adherence to the PrEP regimen, and one who reported a 7-day period without dosing prior to infection. Three participants had TDF/FTC resistance (M184I, K65R), including two who received only four once-weekly TDF/FTC doses; most TDF/FTC mutations were detected by next generation sequencing only.

CONCLUSIONS: In HPTN 067/ADAPT, participants who acquired HIV infection had infrequent PrEP dosing or low/suboptimal adherence. Sensitive assays improved detection of HIV infection and drug resistance. Drug resistance was observed with limited PrEP exposure. This is an open-access article distributed under the terms of the Creative Commons Attribution-Non Commercial License 4.0 (CCBY-NC), where it is permissible to download, share, remix, transform, and buildup the work provided it is properly cited. The work cannot be used commercially without permission from the journal.

14. Buck, M., et al. "**Combination HIV Prevention Strategy Implementation in El Salvador: Perceived Barriers and Adaptations Reported by Outreach Peer Educators and Supervisors.**" *Glob Qual Nurs Res* 2017 4: 2333393617703198. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5406143/pdf/10.1177_2333393617703198.pdf.

El Salvador was one of three countries to receive funding from the Global Fund to Fight AIDS, Tuberculosis and Malaria to conduct a combination HIV prevention intervention among transwomen (TW), men who have sex with men (MSM), and commercial sex workers (CSW). Program evaluation revealed that prevention activities reached only 50% of the target population. The purpose of this study is to examine the barriers that Salvadoran educators faced in implementing the peer education as designed and adaptations made as a result. Between March and June 2015, 18 in-depth interviews with educators were conducted. Violence was reported as the biggest barrier to intervention implementation. Other barriers differed by subpopulation. The level of violence and discrimination calls into question the feasibility and appropriateness of peer-led interventions in the Salvadoran context and demonstrates the importance of implementation research when translating HIV prevention interventions developed in high-income countries to low- and middle-income countries.

15. Bohlius, J. "**Comparison of Kaposi sarcoma risk in HIV-positive adults across five continents: a multiregional multicohort study.**" *Clin Infect Dis* 2017.

Background: We compared Kaposi sarcoma (KS) risk in adults who initiated antiretroviral therapy (ART) across the Asia-Pacific, South Africa, Europe, Latin, and North America.

Methods: We included cohort data of HIV-positive adults who initiated ART after 1995 within the framework of two large collaborations of observational HIV cohorts. We present incidence rates and adjusted hazard ratios (aHRs).

Results: We included 208,140 patients from 57 countries. Over 1,066,572 person-years (pys) 2,046 KS cases were diagnosed. KS incidence rates per 100,000 pys were 52 in the Asia-Pacific, and ranged between 180 and 280 in the other regions. KS risk was five times higher in South African women (aHR 4.56, 95% confidence intervals [CI] 2.73-7.62) and two times higher in South African men (aHR 2.21, 95% CI 1.34-3.63) compared to their European counterparts. In Europe, Latin, and North America KS risk was six times higher in men who have sex with men (MSM, aHR 5.95, 95% CI 5.09-6.96) than in women. Comparing patients with current CD4 cell counts ≥ 700 cells/microl to those with CD4 counts < 50 cells/microl, KS risk was halved in South Africa (aHR 0.53, 95% CI 0.17-1.63), but reduced by $\geq 95\%$ in other regions.

Conclusions: Despite important ART-related declines in KS incidence, men and women in South Africa and MSM remain at increased KS risk, likely due to high human herpesvirus 8 coinfection rates. Early ART initiation and maintaining high CD4 cell counts are essential to further reduce KS incidence worldwide, but especially in Southern Africa additional measures might be needed.

16. Doshi, M., et al. "**Contextualizing willingness to participate: recommendations for engagement, recruitment & enrolment of Kenyan MSM in future HIV prevention trials.**" *BMC Public Health* 2017 17(1): 469. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5437608/pdf/12889_2017_Article_4395.pdf.

BACKGROUND: The HIV epidemic among men who have sex with men (MSM) continues to expand globally.

The addition of an efficacious, prophylactic vaccine to combination prevention offers immense hope, particularly in low- and middle- income countries which bear the greatest global impact. However, in these settings, there is a paucity of vaccine preparedness studies that specifically pertain to MSM. Our study is the first vaccine preparedness study among MSM and female sex workers (FSWs) in Kenya. In this paper, we explore willingness of Kenyan MSM to participate in HIV vaccine efficacy trials. In addition to individual and socio-cultural motivators and barriers that influence willingness to participate (WTP), we explore the associations or linkages that participants draw between their experiences with or knowledge of medical research both generally and within the context of HIV/AIDS, their perceptions of a future HIV vaccine and their willingness to participate in HIV vaccine trials.

METHODS: Using a social network-based approach, we employed snowball sampling to recruit MSM into the study from Kisumu, Mombasa, and Nairobi. A field team consisting of seven community researchers conducted in-depth interviews with a total of 70 study participants. A coding scheme for transcribed and translated data was developed and the data was then analysed thematically.

RESULTS: Most participants felt that an HIV vaccine would bring a number of benefits to self, as well as to MSM communities, including quelling personal fears related to HIV acquisition and reducing/eliminating stigma and discrimination shouldered by their community. Willingness to participate in HIV vaccine efficacy trials was highly motivated by various forms of altruism. Specific researcher responsibilities centred on safeguarding the rights and well-being of participants were also found to govern WTP, as were reflections on the acceptability of a future preventive HIV vaccine.

CONCLUSION: Strategies for engagement of communities and recruitment of trial volunteers for HIV vaccine efficacy trials should not only be grounded in and informed by investigations into individual and socio-cultural factors that impact WTP, but also by explorations of participants' existing experiences with or knowledge of medical research as well as attitudes and acceptance towards a future HIV vaccine.

17. Maloney, K. M., et al. "**Culturally Competent Sexual Healthcare as a Prerequisite for Obtaining Preexposure Prophylaxis: Findings from a Qualitative Study.**" *LGBT Health* 2017.

PURPOSE: Men who have sex with men (MSM) experience stigma in healthcare settings, which impedes disclosure of sexual behavior, potentially limiting uptake of preexposure prophylaxis (PrEP). The purpose of this study was to describe the context of this limitation and explore geographical variability.

METHODS: To understand how discomfort in healthcare settings affects PrEP utilization, we conducted two online focus groups with geographically diverse samples of MSM.

RESULTS: Respondents identified primary care providers as preferred sources for PrEP, but potential uptake was limited by barriers to establishing nonjudgmental relationships with these providers.

CONCLUSION: Improved patient-provider communication about sexual behaviors might increase PrEP use among MSM.

18. Chow, J. Y., et al. "**Demographics, Behaviors, and Sexual Health Characteristics of High Risk Men Who Have Sex With Men and Transgender Women Who Use Social Media to Meet Sex Partners in Lima, Peru.**" *Sex Transm Dis* 2017 44(3): 143-148.

BACKGROUND: Men who have sex with men (MSM) and transgender women (TW) in Peru bear a disproportionate burden of human immunodeficiency virus (HIV) and sexually transmitted infections (STIs). In a context of quickly expanding communication technology, increasing numbers of MSM and TW are using social media applications to seek sex partners. Understanding social media users and their sex partnering practices is needed to update HIV and STI prevention programming.

METHODS: In Lima, Peru, 312 MSM and 89 TW from 2 STI clinics underwent HIV and STI testing and

participated in a survey of demographics, behaviors, sexual health, and social media practices. chi, t tests, and Wilcoxon Mann-Whitney tests were used to compare those with and without recent social media sex partners.

RESULTS: Men who have sex with men with social media sex partners were younger, more educated, and more likely to identify as gay. They were significantly more likely to report greater numbers of sex partners, including anonymous sex partners; sex in higher-risk venues, orgies, and have rectal *Neisseria gonorrhoeae* or *Chlamydia trachomatis* infection. Transgender women with social media sex partners were also younger, more likely to participate in sex work, and have a lower rate of rapid plasma reagin positivity or history of syphilis. Participants reported using several social media sites including sexual hook-up applications, websites for gay men, pornographic websites, and chat sites, but the most common was Facebook.

CONCLUSIONS: Prevention strategies targeting Peruvian MSM and TW who use social media are needed to address higher-risk sexual behavior and the high burden of STIs.

19. Thomas, B., et al. "**Development and Open Pilot Trial of an HIV-Prevention Intervention Integrating Mobile-Phone Technology for Male Sex Workers in Chennai, India.**" *Arch Sex Behav* 2017 46(4): 1035-1046.

In India men who have sex with men and engage in sex work (i.e., male sex workers; MSW) have a high risk of transmitting HIV. Globally, sex workers have become more spatially mobile due to advances in mobile-phone technology. In 2012 in-depth qualitative feedback was garnered from 40 interviews with MSW and four focus groups with 35 key informants (KIs) who had expert knowledge of the local MSW community to inform the design of an HIV-prevention intervention among MSW in Chennai, India. All MSW were recruited during outreach by employees of a Chennai-based organization for MSM (men who have sex with men). The data were analyzed using a descriptive qualitative approach. MSW and KIs discussed the need for intervention content that went beyond basic HIV psychoeducation. They emphasized the importance of addressing psychological distress, alcohol-related risk, and sexual communication skills. Concerns were raised about confidentiality, privacy, and scheduling. Participants endorsed a combination of in-person and mobile-phone-delivered sessions as well as the integration of mobile-phone messaging. These findings served as the basis for the development of a theoretically driven, manual-based intervention incorporating mobile phones. An open pilot assessed the feasibility and acceptability of the intervention with eight MSW. Assessments and HIV testing were administered at baseline, 3, and 6 months post-baseline. Exit interviews were conducted at the conclusion of the intervention. Retention for session attendance and assessment follow-up was 100 %. There was a high level of acceptability for the format, structure, and content. These data show initial promise, feasibility, and acceptability of the intervention.

20. Todesco, E., et al. "**Disparities in HIV-1 transmitted drug resistance detected by ultradeep sequencing between men who have sex with men and heterosexual populations.**" *HIV Med* 2017.

OBJECTIVES: Transmitted drug resistance (TDR) can impair the response to first-line antiretroviral therapy. In treatment-naive patients chronically infected with HIV type 1 (HIV-1), it was previously shown through Sanger sequencing that TDR was more common in men who have sex with men (MSM) than in other transmission risk groups. We aimed to compare two HIV-1 transmission groups in terms of the presence of TDR mutations.

METHODS: We investigated, through Sanger sequencing and ultradeep sequencing (UDS), the presence of resistance mutations, both in majority (> 20%) and in minority (1-20%) proportions, in 70 treatment-naive MSM and 70 treatment-naive heterosexual patients who recently screened positive for HIV-1.

RESULTS: The global prevalence of TDR was not significantly different between the two groups, either by Sanger or by UDS. Nevertheless, a higher frequency of nucleoside reverse transcriptase inhibitor TDR was observed among heterosexual patients ($P = 0.04$). There was also a trend for a higher frequency of TDR among MSM infected with HIV-1 subtype B compared with MSM infected with HIV-1 non-B subtypes ($P =$

0.06).

CONCLUSIONS: Ultradeep sequencing UDS allowed sensitive monitoring of TDR, and highlighted some disparities between transmission groups.

21. Amirkhanian, Y. A. "Emerging opportunities and challenges for HIV prevention, treatment and care for MSM in the former Soviet Union and other post-communist states in Eastern Europe." *Sex Transm Infect* 2017.
22. Shen, L., et al. "The Epidemic of Human Immunodeficiency Virus, Hepatitis C Virus, and Syphilis Infection, and the Correlates of Sexually Transmitted Infections among Men Who Have Sex with Men in Zhenjiang, Jiangsu, China." *Jpn J Infect Dis* 2017 70(2): 171-176. Online at: https://www.jstage.jst.go.jp/article/yoken/70/2/70_JJID.2015.464/_pdf.

A cross sectional survey was performed to investigate the epidemic of human immunodeficiency virus (HIV), hepatitis C virus (HCV), syphilis, and HIV-1 subtype infections among men who have sex with men (MSM) and to evaluate factors that were correlated with sexually transmitted infections (STIs) among 657 MSM in Zhenjiang, Jiangsu, during 2012-2013. Data on socio-demographic parameters and risky behaviors were collected, and blood samples were obtained. In this survey, the prevalence of STIs due to HIV (5.3%), HCV (0.6%), and syphilis (19.2%) were measured. Of 35 HIV-infected MSM, 1 (0.2%) and 17 (2.6%) were co-infected with HCV and syphilis. Among 33 samples with available HIV-1 genomic fragment sequences, 6.1% B, 72.7% CRF01_AE, and 21.2% CRF07_BC were identified. Multivariate logistic regression analysis showed that age > 30 years (odds ratio [OR] 2.002; 95% confidence interval [CI], 1.144-3.502) and having had STI symptoms in the past year (OR, 11.673; 95% CI, 3.092-44.078) were positively correlated with having an STI, while consistent use of a condom when having sex with male partners (OR, 0.621; 95% CI, 0.408-0.945) was significantly associated with a low STI rate. The worsening epidemic of HIV, HCV, and syphilis infections, and the prevalence of complex subtypes of HIV-1 and other risk factors suggest that effective intervention strategies should be strengthened for MSM in Zhenjiang, Jiangsu.

23. Johnson, C. C., et al. "Examining the effects of HIV self-testing compared to standard HIV testing services: a systematic review and meta-analysis." *J Int AIDS Soc* 2017 20(1): 1-10. Online at: <http://www.jiasociety.org/index.php/jias/article/view/21594/pdf>.

INTRODUCTION: HIV self-testing (HIVST) is a discreet and convenient way to reach people with HIV who do not know their status, including many who may not otherwise test. To inform World Health Organization (WHO) guidance, we assessed the effect of HIVST on uptake and frequency of testing, as well as identification of HIV-positive persons, linkage to care, social harm, and risk behaviour.

METHODS: We systematically searched for studies comparing HIVST to standard HIV testing until 1 June 2016. Meta-analyses of studies reporting comparable outcomes were conducted using a random-effects model for relative risks (RR) and 95% confidence intervals. The quality of evidence was evaluated using GRADE.

RESULTS: After screening 638 citations, we identified five randomized controlled trials (RCTs) comparing HIVST to standard HIV testing services among 4,145 total participants from four countries. All offered free oral-fluid rapid tests for HIVST and were among men. Meta-analysis of three RCTs showed HIVST doubled uptake of testing among men (RR = 2.12; 95% CI: 1.51, 2.98). Meta-analysis of two RCTs among men who have sex with men showed frequency of testing nearly doubled (Rate ratio = 1.88; 95% CI: 1.17; 3.01), resulting in two more tests in a 12-15-month period (Mean difference = 2.13; 95% CI: 1.59, 2.66). Meta-analysis of two RCTs showed HIVST also doubled the likelihood of an HIV-positive diagnosis (RR = 2.02; 95% CI: 0.37, 10.76, 5.32). Across all RCTs, there was no indication of harm attributable to HIVST and potential increases in risk-taking behaviour appeared to be minimal.

CONCLUSIONS: HIVST is associated with increased uptake and frequency of testing in RCTs. Such increases, particularly among those at risk who may not otherwise test, will likely identify more HIV-positive individuals

as compared to standard testing services alone. However, further research on how to support linkage to confirmatory testing, prevention, treatment and care services is needed. WHO now recommends HIVST as an additional HIV testing approach.

24. Lou, J., et al. "**Expanded antiretroviral treatment, sexual networks, and condom use: Treatment as prevention unlikely to succeed without partner reduction among men who have sex with men in China.**" *PLoS One* 2017 12(4): e0171295. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5390964/pdf/pone.0171295.pdf>.

BACKGROUND: To project the impact of partner reduction on preventing new HIV infections among men who have sex with men (MSM) under varying conditions of enhanced HIV testing and treatment (T&T) and condom use in Beijing, China.

METHODS AND FINDINGS: A complex network model was fitted to predict the number of new HIV infections averted from 2014 to 2023 under four scenarios of sexual behavior risk reduction (S)-S1: Male sexual partners decrease (reduced by a random value m from 1-50) while condom use increases (risk constant p is a random value between 0.2 and 1); S2: Both sexual partners and condom use decrease (m 1, 50; p 1, 1.8); S3: Sexual partners reduce (m 1, 10) while condom use increases or decreases (p 0.2, 1.8); S4: Only MSM with ≥ 100 male sexual partners reduce their partners (m 1, 50) while condom use increases (p 0.2, 1). HIV prevalence will reach 23.2% by 2023 among Beijing MSM if T&T remains at the 2013 level. The three most influential factors are: T&T coverage; partner reduction (m); and the background risk (p). Under scenarios 1-4 of sexual behavioral changes with enhanced T&T interventions, the cumulative HIV new infections prevented over the 10 years will be 46.8% for S1 (interquartile range [IQR] 32.4%, 60.1%); 29.7% for S2 (IQR 18.0%, 41.4%), 23.2% for S3 (IQR 12.2%, 37.0%) and 11.6% for S4 (IQR 4.0%, 26.6%), respectively. The reproduction number R_0 could drop below 1 if there were a substantial reduction of male sexual partners and/or expanded condom use.

CONCLUSION: Partner reduction is a vital factor within HIV combination interventions to reduce HIV incidence among Beijing MSM, with substantial additional benefits derived from condom use. T&T without substantial partner reduction and increased condom use is less promising unless its implementation were extremely (and improbably) efficient.

25. Clark, J. L., et al. "**Expedited Partner Therapy (EPT) increases the frequency of partner notification among MSM in Lima, Peru: a pilot randomized controlled trial.**" *BMC Med* 2017 15(1): 94. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5415724/pdf/12916_2017_Article_858.pdf.

BACKGROUND: Expedited Partner Therapy (EPT) has been shown to improve treatment outcomes among heterosexual partners of individuals with curable sexually transmitted infections (STIs). Although the use of EPT with men who have sex with men (MSM) has been debated, due to the potential for missed opportunities to diagnose unidentified cases of HIV and syphilis infection in symptomatic partners, increases in partner notification (PN) resulting from use of EPT may promote testing and treatment of otherwise unidentified partners. We assessed the impact of EPT on self-reported PN among MSM in Peru with gonorrheal (GC) and/or chlamydial (CT) infection.

METHODS: We enrolled 173 MSM in Lima, Peru with symptomatic or asymptomatic GC and/or CT infection between 2012 and 2014. We enrolled 44 MSM with symptomatic urethritis/proctitis and 129 MSM with asymptomatic GC/CT infection, diagnosed based on nucleic acid testing (Aptima Combo 2 Transcription-Mediated Amplification [TMA]) from urethral, pharyngeal, and rectal sites. Eligible participants were randomly assigned to receive either standard PN counseling ($n = 84$) or counseling plus EPT (cefixime 400 mg/azithromycin 1 g) for up to five recent partners ($n = 89$). Self-reported notification was assessed by computer-assisted self-administered survey among 155 participants who returned for 14-day follow-up.

RESULTS: The median age of participants was 26 (interquartile range [IQR]: 23-31) with a median of 3 sexual partners (IQR: 2-4) in the previous 30-day period. Among all participants, 111/155 (71.6%) notified at least

one partner at 14-day follow-up with a median of 1 partner notified per participant (IQR: 0-2). For participants randomized to receive EPT, 69/83 (83.1%) reported notifying at least one partner, compared with 42/72 (58.3%) of participants in the control arm (odds ratio = 3.52; 95% confidence interval [CI]: 1.68-7.39). The proportion of all recent partners notified was significantly greater in the EPT than in the control arm (53.5%, 95% CI: 45.0-62.0% versus 36.4%, 95% CI: 27.0-47.4%).

CONCLUSIONS: Provision of EPT led to significant increases in notification among Peruvian MSM diagnosed with GC/CT infection. Additional research is needed to assess the impact of EPT on biological outcomes, including persistent or recurrent infection, antimicrobial resistance, and HIV/STI transmission, in MSM sexual networks.

TRIAL REGISTRATION: ClinicalTrials.gov, NCT01720654 . Registered on 10/29/2012.

26. Weikum, D., et al. **"An explanatory factor analysis of a brief self-report scale to detect neurocognitive impairment among HIV-positive men who have sex with men and transgender women in Peru."** *AIDS Care* 2017: 1-5.

Neurocognitive impairment (NCI) has been associated with poor clinical outcomes in various patient populations. This study used exploratory factor analysis (EFA) to examine the factor structure of the existing 95-item Neuropsychological Impairment Scale (NIS) to create a suitable NCI screening instrument for people living with HIV (PLH). In Lima, Peru, 313 HIV-positive men who have sex with men (MSM) and transgender women (TGW) prescribed antiretroviral therapy (ART) completed the NIS using computer-assisted self-interviews (CASI). The EFA used principal axis factoring and orthogonal varimax rotation, which resulted in 42 items with an 8-factor solution that explained 51.8% of the overall variance. The revised, 8-factor, Brief Inventory of Neurocognitive Impairment for Peru (BINI-P) showed a diverse set of factors with excellent to good reliability (i.e., F1 alpha = 0.92 to F8 alpha = 0.78). This EFA supports the use of the BINI-P to screen for NCI among Spanish-speaking, HIV-positive MSM and TGW. Future research should examine the effectiveness of the BINI-P in detecting NCI in clinical care settings and the impact of NCI on HIV health-related outcomes, including linkage and retention in care, ART adherence and HIV risk behaviors.

27. Kazennova, E., et al. **"Genetic Variants of HIV Type 1 in Men Who Have Sex with Men in Russia."** *AIDS Res Hum Retroviruses* 2017.

The men who have sex with men (MSM) population infected with HIV is poorly studied in Russia because of stigma and discrimination. In the first years of the HIV epidemic, the only HIV genetic variant that circulated among MSM was subtype B, usually acquired abroad. Meanwhile, the massive epidemic of HIV in Russia was caused by a highly homogenic subtype A variant, AFSU (A6), and spread mainly among drug users. In this study, 155 HIV pol sequences from MSM collected during the 2006-2016 period were analyzed. Phylogenetic analysis found that 19.4% of the viral sequences from MSM clustered with HIV genetic variants A6 and BFSU, which were previously identified only among drug users and their heterosexual partners. These data show that the MSM population in Russia is gradually becoming less isolated from the general epidemic process. Urgent measures should be taken to prevent the spread of HIV among the MSM population.

28. Raghavendran, A., et al. **"Genital Human Papillomavirus Infection in Indian HIV-Seropositive Men Who Have Sex With Men."** *Sex Transm Dis* 2017 44(3): 173-180.

BACKGROUND: The incidence of penile cancer in Indian men is high. Little is known about genital human papillomavirus (HPV) infection in Indian HIV-seropositive men who have sex with men (MSM), a population that may be at particularly high risk for genital HPV infection and, potentially, penile cancer. In this study, we assessed the prevalence and risk factors for genital HPV infection in this population. DESIGN AND

METHODS: Three hundred HIV-seropositive MSM were recruited from 2 clinical sites in India. They were tested for genital HPV infection using L1 HPV DNA polymerase chain reaction with probes specific for 29 types and a mixture of 10 additional types. Participants received an interviewer-administered questionnaire

that included questions on demographics and behaviors.

RESULTS: Human papillomavirus data were available from 299 participants. The prevalence of any HPV type in the penis and scrotum was 55% and 54%, respectively. Human papillomavirus type 35 was the most common oncogenic HPV type followed by HPV-16. In multivariate analysis, being the insertive partner with 100+ male partners increased the odds of any penile HPV infection compared with not being insertive with any partners (odds ratio, 2.5; 95% confidence interval, 1.3-5.1). Circumcision was protective against penile HPV infection (odds ratio, 0.39; 95% confidence interval, 0.19-0.76).

CONCLUSIONS: The prevalence of penile and scrotal HPV infection was high among Indian HIV-seropositive MSM. The most common oncogenic HPV type in this population, HPV-35, is not included in any currently available HPV vaccines. Insertive anal sex with men and lack of circumcision were the primary risk factors for penile HPV infection in this population.

29. Micheni, M., et al. **"Health Provider Views on Improving Antiretroviral Therapy Adherence Among Men Who Have Sex with Men in Coastal Kenya."** *AIDS Patient Care STDS* 2017 31(3): 113-121.

HIV-positive Kenyan men who have sex with men (MSM) are a highly stigmatized group facing barriers to care engagement and antiretroviral therapy (ART) adherence. Because care providers' views are important in improving outcomes, we sought the perspective of those serving MSM patients on how to optimize ART adherence in a setting where same-sex behavior is criminalized. We conducted 4 focus group discussions with a total of 29 healthcare workers (HCWs) experienced in providing HIV care to MSM. The semistructured, open-ended topic guide used was based on an access-information-motivation-proximal cues model of adherence, with added focus on trust in providers, stigma, and discrimination. Detailed facilitator notes and transcripts were translated into English and reviewed for common themes. The HCW identified adherence challenges of MSM patients that are similar to those of the general population, including HIV-related stigma and lack of disclosure. In addition, HCWs noted challenges specific to MSM, such as lack of access to MSM-friendly health services, economic and social challenges due to stigma, difficult relationships with care providers, and discrimination at the clinic and in the community. HCWs recommended clinic staff sensitivity training, use of trained MSM peer navigators, and stigma reduction in the community as interventions that might improve adherence and health outcomes for MSM. Despite noting MSM-specific barriers, HCWs recommended strategies for improving HIV care for MSM in rights-constrained settings that merit future research attention. Most likely, multilevel interventions incorporating both individual and structural factors will be necessary.

30. Hoagland, B., et al. **"High pre-exposure prophylaxis uptake and early adherence among men who have sex with men and transgender women at risk for HIV Infection: the PrEP Brasil demonstration project."** *J Int AIDS Soc* 2017 20(1): 1-14. Online at: <http://www.jiasociety.org/index.php/jias/article/view/21472/pdf>.

INTRODUCTION: The efficacy of pre-exposure prophylaxis (PrEP) in preventing sexual acquisition of human immunodeficiency virus (HIV) is well established. Little is known about the feasibility of PrEP implementation in middle-income settings with concentrated epidemics among men who have sex with men (MSM) and transgender women (TGW).

METHODS: PrEP Brasil is a prospective, multicentre, open-label demonstration project assessing PrEP delivery in the context of the Brazilian Public Health System. HIV-uninfected MSM and TGW in 3 referral centres in Rio de Janeiro and Sao Paulo were evaluated for eligibility and offered 48 weeks of daily emtricitabine/tenofovir for PrEP. Concentrations of tenofovir diphosphate in dried blood spot samples (DBS) at week 4 after enrolment (early adherence) were measured. Predictors of drug levels were assessed using ordinal logistic regression models considering the DBS drug level as a 3 level variable (<350 fmol/punch, >/=350-699 fmol/punch and >/=700 fmol/punch).

RESULTS: 1,270 individuals were assessed for participation; n = 738 were potentially eligible and n = 450 were offered PrEP (PrEP uptake was 60.9%). Eligible but not enrolled individuals were younger, had lower HIV

risk perception and had lower PrEP awareness. At week 4, 424 participants (of the 450 enrolled) had DBS TFV-DP concentrations, 94.1% in the protective range (≥ 350 fmol/punch, consistent with ≥ 2 pills per week), and 78% were in the highly protective range (≥ 700 fmol/punch, ≥ 4 pills per week). Participants with ≥ 12 years of schooling had 1.9 times the odds (95%CI 1.10-3.29) of a higher versus lower drug level than participants with < 12 years of schooling. Condomless receptive anal intercourse in the prior 3 months was also associated with higher drug levels (adjusted OR = 1.78; 95% CI 1.08-2.94).

CONCLUSION: The high uptake and early adherence indicate that PrEP for high-risk MSM and TGW can be successfully delivered in the context of the Brazilian Public Health System. Interventions to address disparities on PrEP awareness and HIV risk perception among the younger and less educated are urgently needed in order to maximize the impact of this prevention strategy on the reduction of HIV infection among MSM and TGW in Brazil.

31. Abara, W. E., et al. **"HIV epidemic and human rights among men who have sex with men in sub-Saharan Africa: Implications for HIV prevention, care, and surveillance."** *Glob Public Health* 2017 12(4): 469-482.

Recent research has presented evidence that men who have sex with men (MSM) bear a disproportionate burden of HIV and are at increased risk for HIV in sub-Saharan Africa (SSA). However, many countries in SSA have failed to address the needs of MSM in national HIV/AIDS programmes. Furthermore, many MSM face structural barriers to HIV prevention and care, the most significant of which include laws that criminalise male-to-male sexual contact and facilitate stigma and discrimination. This in turn increases the vulnerability of MSM to acquiring HIV and presents barriers to HIV prevention, care, and surveillance. This relationship illustrates the link between human rights, social justice, and health outcomes and presents considerable challenges to addressing the HIV epidemic among MSM in SSA. The response to the HIV epidemic in SSA requires a non-discriminatory human rights approach to all at-risk groups, including MSM. Existing international human rights treaties, to which many SSA countries are signatories, and a 'health in all policies' approach provides a strong basis to reduce structural barriers to HIV prevention, care, surveillance, and research, and to ensure that all populations in SSA, including MSM, have access to the full range of rights that help ensure equal opportunities for health and wellness.

32. Lahuerta, M., et al. **"HIV Prevalence and Related Risk Factors in Men Who Have Sex with Men in Bamako, Mali: Findings from a Bio-behavioral Survey Using Respondent-Driven Sampling."** *AIDS Behav* 2017.

Using respondent driven sampling, we conducted a cross-sectional bio-behavioral survey among men who have sex with men (MSM) in Bamako, Mali. Eligibility criteria included age ≥ 18 years and having had sex with another man in the last 6 months. We enrolled 552 MSM, 99.6% were tested for HIV. MSM in Bamako were young (69.6% ≤ 24 years) and educated (63.7% \geq secondary). HIV prevalence among MSM in Bamako was 13.7; 90.1% of HIV-infected men were unaware of their HIV status. Almost one-third had never been tested for HIV. Factors associated with higher odds of HIV included younger age, being receptive with last partner, condom breaking during anal sex in last 6 months, talking to peer educator about HIV, and having sexually transmitted infection symptoms in past year. The results suggest the need for enhanced HIV prevention and treatment services targeted at MSM in Bamako, with emphasis on repeated HIV testing.

33. Maleke, K., et al. **"HIV risk and prevention among men who have sex with men in rural South Africa."** *Afr J AIDS Res* 2017 16(1): 31-38.

Rural South African men who have sex with men (MSM) are likely to be underserved in terms of access to relevant healthcare and HIV prevention services. While research in urban and peri-urban MSM populations has identified a range of factors affecting HIV risk in South African MSM, very little research is available that examines HIV risk and prevention in rural MSM populations. This exploratory study begins to address this lack by assessing perceptions of HIV risk among MSM in rural Limpopo province. Using thematic analysis of interview and discussion data, two overarching global themes that encapsulated participants' understandings of HIV risk and the HIV risk environment in their communities were developed. In the first

theme, "community experience and the rural social environment", factors affecting HIV risk within the broad risk environment were discussed. These included perceptions of traditional value systems and communities as homophobic; jealousy and competition between MSM; and the role of social media as a means of meeting other MSM. The second global theme, "HIV/AIDS knowledge, risk and experience", focused on factors more immediately affecting HIV transmission risk. These included: high levels of knowledge of heterosexual HIV risk, but limited knowledge of MSM-specific risk; inconsistent condom and lubricant use; difficulties in negotiating condom and lubricant use due to uneven power dynamics in relationships; competition for sexual partners; multiple concurrent sexual partnerships; and transactional sex. These exploratory results suggest that rural South African MSM, like their urban and peri-urban counterparts, are at high risk of contracting HIV, and that there is a need for more in-depth research into the interactions between the rural context and the specific HIV risk knowledge and behaviours that affect HIV risk in this population.

34. Heimer, R., et al. "**HIV Risk, Prevalence, and Access to Care among Men Who Have Sex with Men in Lebanon.**" *AIDS Res Hum Retroviruses* 2017.

OBJECTIVE: Little is known about HIV prevalence and risk among men who have sex with men in much of the Middle East, including Lebanon. Recent national level surveillance has suggested an increase in HIV prevalence concentrated among men in Lebanon. We undertook a bibehavioral study to provide direct evidence for the spread of HIV.

DESIGN: MSM were recruited by respondent driven sampling, interviewed, and offered HIV testing anonymously at sites located in Beirut, Lebanon from October 2014 through February 2015. The interview questionnaire was designed to obtain information on participants' sociodemographic situation, sexual behaviors, alcohol and drug use, health, HIV testing and care, experiences of stigma and discrimination. Individuals not reporting an HIV diagnosis were offered optional, anonymous HIV testing.

RESULTS: Among the 292 MSM recruited, we identified 36 cases of HIV (12.3%). A quarter of the MSM were born in Syrian and recently arrived in Lebanon. Condom use was uncommon; 65% reported unprotected sex with other men. Group sex encounters were reported by 22% of participants. Among the 32 individual already aware of their infection, 32 were in treatment and receiving antiretroviral therapy.

CONCLUSIONS: HIV prevalence was substantially increased over past estimates. Efforts to control future increases will have to focus on reducing specific risk behaviors and experienced stigma and abuse, especially among Syrian refugees.

35. Oldenburg, C. E., et al. "**HIV testing practices and the potential role of HIV self-testing among men who have sex with men in Mexico.**" *Int J STD AIDS* 2017 28(3): 242-249.

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

36. Daniels, J., et al. **"Learning to Live With HIV in the Rural Townships: A Photovoice Study of Men Who Have Sex With Men Living With HIV in Mpumalanga, South Africa."** *J Assoc Nurses AIDS Care* 2017 28(3): 408-421.

There is limited understanding about the health and well-being of men who have sex with men (MSM) with HIV infection living in rural African areas. We present the results of an adapted photovoice project with 35 MSM with HIV infection who live in townships in Mpumalanga, South Africa. The project was designed to explore the social factors that influenced HIV care. Twenty-four photo essays were developed by participants in focus group discussions that were audio-recorded and transcribed for analysis. Transcripts and photo essays were coded using a constant comparison approach combining researcher observation notes and reflection on participant-identified themes. Participants identified (a) a shared experience of illness and coming to terms with having HIV infection and (b) family and taverns as necessary support systems. The findings suggested that family- and tavern-based interventions might improve health outcomes for MSM newly diagnosed with HIV infection living in rural and semi-rural African communities.

37. Hladik, W., et al. **"Men Who Have Sex with Men in Kampala, Uganda: Results from a Bio-Behavioral Respondent Driven Sampling Survey."** *AIDS Behav* 2017 21(5): 1478-1490.

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

38. Martin, N. K., et al. **"Modeling Combination HCV Prevention among HIV-infected Men Who Have Sex With Men and People Who Inject Drugs."** *AIDS Rev* 2017 19(2).

People who inject drugs (PWID) and HIV-infected men who have sex with men (MSM) are key risk groups for HCV transmission. Mathematical modeling studies can help elucidate what level and combination of prevention intervention scale-up is required to control or eliminate epidemics among these key populations. We discuss the evidence surrounding HCV prevention interventions and provide an overview of the mathematical modeling literature projecting the impact of scaled-up HCV prevention among PWID and HIV-infected MSM. Harm reduction interventions, such as opiate substitution therapy and needle and syringe programs, are effective in reducing HCV incidence among PWID. Modeling and limited empirical data indicate that HCV treatment could additionally be used for prevention. No studies have evaluated the effectiveness of behavior change interventions to reduce HCV incidence among MSM, but existing interventions to reduce HIV risk could be effective. Mathematical modeling and empirical data indicate that scale-up of harm reduction could reduce HCV transmission, but in isolation is unlikely to eliminate HCV among PWID. By contrast, elimination is possibly achievable through combination scale-up of harm reduction and HCV treatment. Similarly, among HIV-infected MSM, eliminating the emerging epidemics will likely require HCV treatment scale-up in combination with additional interventions to reduce HCV-related risk behaviors. In summary, elimination of HCV will likely require combination prevention efforts among both PWID and HIV-infected MSM populations. Further empirical research is required to validate HCV treatment as prevention among these populations, and to identify effective behavioral interventions to reduce HCV incidence among MSM.

39. Scheibe, A., et al. "**Modelling the UNAIDS 90-90-90 treatment cascade for gay, bisexual and other men who have sex with men in South Africa: using the findings of a data triangulation process to map a way forward.**" *AIDS Behav* 2017.

A data triangulation exercise was carried out between 2013 and 2015 to assess the HIV epidemic and response among gay, bisexual and other men who have sex with men (GBMSM) in South Africa. We used the findings to assess progress in achieving the UNAIDS 90-90-90 goals for GBMSM in the country. Three scenarios were developed using different GBMSM population factors (2.0, 3.5 and 5.0% of males aged ≥ 15) to estimate the population size, HIV prevalence of 13.2-49.5%, and 68% of GBMSM knowing their status. Due to data gaps, general population data were used as estimates of GBMSM on antiretroviral therapy (ART) and virologically suppressed (25.7 and 84.0%, respectively). The biggest gap is access to ART. To address the data gap we recommend developing data collection tools, indicators, and further quantification of HIV cascades. Targeted testing, linkage to services and scaled-up prevention interventions (including pre-exposure prophylaxis) are also required.

40. Wirtz, A. L., et al. "**New HIV testing technologies in the context of a concentrated epidemic and evolving HIV prevention: qualitative research on HIV self-testing among men who have sex with men and transgender women in Yangon, Myanmar.**" *J Int AIDS Soc* 2017 20(1): 1-9. Online at: <http://www.jiasociety.org/index.php/jias/article/view/21796/pdf>.

INTRODUCTION: Global effort to increase early diagnosis and engagement in HIV care emphasize the importance of developing novel approaches to reaching those missed by traditional methods. Such needs are particularly great for men who have sex with men (MSM), transgender women (TW), and other populations who face stigma. Myanmar's HIV epidemic is concentrated among key populations and the revised National Strategy aims to reduce late diagnosis and barriers to care to curb HIV incidence among these groups. HIV self-testing (HIVST) may be one method to improve testing and diagnosis among key populations, by placing HIV testing and disclosure within the individual's control.

METHODS: Formative, qualitative research including in-depth interviews with adult MSM (N = 12) and TW (N = 13) and focus group discussions with MSM, TW, and community key informants (N = 35) were conducted in June-September 2015 in Yangon, Myanmar. To inform a subsequent HIV care continuum intervention, including HIVST, participants' opinions and perceptions about HIVST were elicited.

RESULTS: The confidentiality and privacy of HIVST, particularly as it related to disclosure of HIV status and sexual behaviour, was widely recognized among participants. These major advantages were further supported by the opportunity to avoid stigma, convenience of self-testing (reduced need for transportation and time to go to clinics), and the availability of a pain-free testing option. Participants weighed these benefits against perceived disadvantages of HIVST, the majority of which centred on the perception that HIVST does not include counselling. Participants were concerned that potential lack of counselling would result in poor mental health outcomes, inadequate linkage to HIV care and surveillance, and reductions in disclosure of HIV status. Participants did not view these disadvantages as an impediment, but provided suggestions for future implementation of HIVST in Myanmar.

CONCLUSION: MSM and TW are optimistic about the confidentiality and privacy afforded by HIVST but wanted HIV counselling and linkage to appropriate services. The domestic reprioritization of HIV and opening of the country to international support has substantially increased the availability of HIV treatment and provides new opportunities, like HIVST, to potentially improve the HIV response for key populations who are at risk for HIV acquisition.

41. Anand, T., et al. "**A novel Online-to-Offline (O2O) model for pre-exposure prophylaxis and HIV testing scale up.**" *J Int AIDS Soc* 2017 20(1): 1-11. Online at: <http://www.jiasociety.org/index.php/jias/article/view/21326/pdf>.

INTRODUCTION: PrEP awareness and uptake among men who have sex with men (MSM) and transgender women (TG) in Thailand remains low. Finding ways to increase HIV testing and PrEP uptake among high-risk

groups is a critical priority. This study evaluates the effect of a novel Adam's Love Online-to-Offline (O2O) model on PrEP and HIV testing uptake among Thai MSM and TG and identifies factors associated with PrEP uptake.

METHODS: The O2O model was piloted by Adam's Love (www.adamslove.org) HIV educational and counselling website. MSM and TG reached online by PrEP promotions and interested in free PrEP and/or HIV testing services contacted Adam's Love online staff, received real-time PrEP eCounseling, and completed online bookings for receiving services at one of the four sites in Bangkok based on their preference. Auto-generated site- and service-specific e-tickets and Quick Response (QR) codes were sent to their mobile devices enabling monitoring and check-in by offline site staff. Service uptake and participant's socio-demographic and risk behaviour characteristics were analyzed. Factors associated with PrEP uptake were assessed using multiple logistic regression.

RESULTS: Between January 10th and April 11th, 2016, Adam's Love reached 272,568 people online via the PrEP O2O promotions. 425 MSM and TG received eCounseling and e-tickets. There were 325 (76.5%) MSM and TG who checked-in at clinics and received HIV testing. Nine (2.8%) were diagnosed with HIV infection. Median (IQR) time between receiving the e-ticket and checking-in was 3 (0-7) days. Of 316 HIV-negative MSM and TG, 168 (53.2%) started PrEP. In a multivariate model, higher education (OR 2.30, 95%CI 1.14-4.66; $p = 0.02$), seeking sex partners online (OR 2.05, 95%CI 1.19-3.54; $p = 0.009$), being aware of sexual partners' HIV status (OR 2.37, 95%CI 1.29-4.35; $p = 0.008$), ever previously using post-exposure prophylaxis (PEP) (OR 2.46, 95%CI 1.19-5.09; $p = 0.01$), and enrolment at Adam's Love clinic compared to the other three sites (OR 3.79, 95%CI 2.06-6.95; $p < 0.001$) were independently associated with PrEP uptake.

CONCLUSION: Adam's Love O2O model is highly effective in linking online at-risk MSM and TG to PrEP and HIV testing services, and has high potential to be replicated and scaled up in other settings with high Internet penetration among key populations.

42. Wirtz, A. L., et al. "The Parazol Protocol: An Implementation Science Study of HIV Continuum of Care Interventions for Gay Men and Transgender Women in Burma/Myanmar." *JMIR Res Protoc* 2017 6(5): e90. Online at: <http://www.researchprotocols.org/2017/5/e90/pdf>.

BACKGROUND: Efforts to improve HIV diagnosis and antiretroviral therapy (ART) initiation among people living with HIV and reduce onward transmission of HIV rely on innovative interventions along multiple steps of the HIV care continuum. These innovative methods are particularly important for key populations, including men who have sex with men (MSM) and transgender women (TW). The HIV epidemic in Myanmar is concentrated among key populations, and national efforts now focus on reducing stigma and improving engagement of MSM and TW in HIV prevention and care.

OBJECTIVE: This study aims to test the use of several innovations to address losses in the HIV care continuum: (1) use of respondent-driven sampling (RDS) to reach and engage MSM and TW in HIV testing, (2) HIV self-testing (HIVST) to increase HIV testing uptake and aid early diagnosis of infection, (3) community-based CD4 point-of-care (POC) technology to rapidly stage HIV disease for those who are HIV infected, and (4) peer navigation support to increase successful health system navigation for HIV-infected MSM and TW in need of ART or HIV engagement in care.

METHODS: To assess the effect of HIVST, we will implement a randomized trial in which MSM and TW adults in the greater Yangon metropolitan area who are HIV uninfected will be recruited via RDS (N=366). Participants will complete a baseline socio-behavioral survey and will be randomized to standard, voluntary counseling and testing (VCT) or to HIVST. Biologic specimens will be collected during this baseline visit for confirmatory testing using dried blood spots. Participants will be asked to return to the study office to complete a second study visit in which they will report their HIV test result and answer questions on the acceptability of the assigned testing method. Aim 1 participants with confirmed HIV infection and who are not engaged in care (N=49) will be offered direct enrollment into Aims 2 and 3, which include immediate CD4 POC and the option for peer navigation, respectively. Aims 2 and 3 participants will be prospectively

followed for 12 months with data collection including interviewer-administered sociobehavioral survey, CD4 POC, and viral load testing occurring biannually. Participants who accept peer navigation will be compared to those who decline peer navigation. Analyses will estimate the impact of CD4 POC on engagement in care and the impact of peer navigation on ART adherence and viral load.

RESULTS: Formative qualitative research was conducted in June and September 2015 and led to further refinement of recruitment methods, HIVST instructions and counseling, and peer navigation methods. Aim 1 recruitment began in November 2015 with subsequent enrollment into Aims 2 and 3 and is currently ongoing.

CONCLUSIONS: These innovative interventions may resolve gaps in the HIV care continuum among MSM and TW and future implementation may aid in curbing the HIV epidemic among MSM and TW in Myanmar.

43. Kojima, N., et al. "The PICASSO Cohort: baseline characteristics of a cohort of men who have sex with men and male-to-female transgender women at high risk for syphilis infection in Lima, Peru." *BMC Infect Dis* 2017 17(1): 255. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5387233/pdf/12879_2017_Article_2332.pdf.

BACKGROUND: Men who have sex with men (MSM) and male-to-female transgender women (transwomen) are disproportionately at risk of syphilis infection in Peru.

METHODS: From 2013 to 2014, MSM and transwomen seeking human immunodeficiency virus (HIV) or sexually transmitted infection (STI) testing and/or treatment were recruited into a 2-year observational cohort study to determine predictors of recently acquired syphilis infection (defined as a rapid plasma reagin [RPR] titer $\geq 1:16$ and a reactive treponemal antibody test) in Lima, Peru. At baseline, interviewers collected sociodemographic, behavioral, and medical characteristics from participants. All cohort participants were tested for syphilis, HIV, Chlamydia trachomatis (CT), and Neisseria gonorrhoeae (NG) infection. Using cross-sectional analyses, bivariate and multivariate models were used to determine factors associated with recently acquired syphilis infection and calculate adjusted prevalence ratios.

RESULTS: We recruited 401 participants, 312 MSM and 89 transwomen, with median ages of 29.0 and 32.5 years old (interquartile ranges: 23.3, 37.4 and 27.2, 39.5, respectively). The prevalence of recently acquired syphilis infection at baseline was 16.8% for MSM and 6.7% for transwomen. Among MSM and transwomen, 30.1 and 33.7% were infected with HIV, 18.6 and 24.7% were infected with CT, and 14.2 and 19.1% were infected with NG, respectively. Co-infection rates among MSM with recently acquired syphilis infection included: 44.2% with HIV, 40.4% with CT (32.7% with anal CT and 7.7% with pharyngeal CT), and 19.2% with NG (11.5% with anal NG and 7.7% with pharyngeal NG). Co-infection rates among transwomen with recently acquired syphilis infection included: 66.7% with HIV, 0% with CT, and 16.7% with anal NG. In multivariate analysis among the entire cohort, recently acquired syphilis infection was independently associated with younger age (adjusted prevalence ratio [aPR] = 0.96, 95% confidence interval [CI] = 0.93-0.99), receptive role during anal sex (aPR = 2.56, 95% CI = 1.05-6.25), prior HIV diagnosis (aPR = 1.70, 95% CI = 1.11-2.61), anal CT or NG infection (aPR = 1.69, 95% CI = 1.09-2.60), and prior syphilis diagnosis (aPR = 3.53, 95% CI = 2.20-5.68).

CONCLUSIONS: We recruited a cohort of MSM and transwomen who had a high prevalence of recently acquired syphilis infection in Lima, Peru. Recently acquired syphilis infection was associated with socio-demographic characteristics, sexual risk, and sexually transmitted co-infections.

44. Lamblet, L. C. R., et al. "Prevalence and types of rectal douches used for anal intercourse among men who have sex with men in Brazil." *BMJ Open* 2017 7(5): e011122. Online at: <http://bmjopen.bmj.com/content/bmjopen/7/5/e011122.full.pdf>.

INTRODUCTION: Rectal douching (RD) is practised among men who have sex with men (MSM), and various products and materials are used. There have been no studies in Brazil on this practice and its risks in the

transmission of sexually transmitted infections and HIV.

METHOD: Between June and August 2015, 401 MSM over the age of 18 were interviewed about their sexual practices associated with RD over the last 3 months. RD was associated with the reported sexual behaviour, and descriptive statistical analyses were conducted on the same.

RESULTS: Among the respondents, 85.6% identified themselves as men and 14.4% as transgender; 255 declared themselves to be white (63.6%) and 104 to be mixed (25.9%). From among those who had performed anal sex within the last 3 months (n=369), 197 reported having used RD (53.4%). The most commonly used material was a shower hose (84.5%) and the main product used was water (93%). Of those interviewed, 94.5% never received guidelines from health professionals on this practice and its potential risks. Receptive anal intercourse and RD were found to be associated ($p < 0.001$).

CONCLUSIONS: RD is a common practice among the MSM population. Health professionals must deepen their knowledge of this. We propose studies in Brazil on the practice of RD that-from that knowledge strategies for prevention and harm reduction-can be incorporated to the vulnerable populations.

45. Quilter, L., et al. "**Prevention of Sexually Transmitted Diseases in HIV-Infected Individuals.**" *Curr HIV/AIDS Rep* 2017 14(2): 41-46.

Prevention of sexually transmitted infections (STIs) is an important part of the care of the HIV-infected individual. STIs have been associated with increased risk of transmission and acquisition of HIV. Among HIV-infected persons, treatment failures and high recurrence rates of some STIs are more common. Despite the recognized importance of prevention and discussion of sexual health, rates of screening for STIs are suboptimal. Moreover, rates of STIs such as syphilis continue to increase particularly in men who have sex with men (MSM). This review focuses on the most common STIs seen among HIV-infected individuals and recommendations for screening and prevention.

46. Davis, S. L., et al. "**Punitive laws, key population size estimates, and Global AIDS Response Progress Reports: An ecological study of 154 countries.**" *J Int AIDS Soc* 2017 20(1): 1-8. Online at: <http://www.jiasociety.org/index.php/jias/article/view/21386/pdf>.

INTRODUCTION: UN global plans on HIV/AIDS have committed to reducing the number of countries with punitive laws criminalizing key populations. This study explores whether punitive laws are associated with countries' performance on targets set in the global plans.

METHODS: The study used chi-square tests of independence to explore associations between legal status, key population size estimates, and HIV service coverage for 193 countries from 2007 to 2014. We used data reported by countries on United Nations Global AIDS Progress Report (GARPR) indicators, and legal data from UNAIDS, UNDP, and civil society organizations. Due to lack of sufficiently reliable legal data, only men who have sex with men (MSM) could be studied. The study utilized public data aggregated at the national level. Correspondence with individual experts in a subset of countries stated the purpose of the study, and all responses were anonymized.

RESULTS AND DISCUSSION: A significantly larger proportion of countries that criminalize same-sex sexual behaviour reported implausibly low size estimates or no size estimates for MSM. This is consistent with findings in qualitative research that MSMs are marginalized and reluctant to be studied in countries where same-sex sexuality is criminalized. Size estimates are often used as the denominators for national HIV service coverage reports. Initially, countries that criminalized same-sex sexuality appeared to have higher HIV testing coverage among MSM than did countries where it is not criminalized. However, investigation of a subset of countries that have reported 90-100% HIV testing coverage among MSM found that most were based on implausibly low or absent size estimates.

CONCLUSION: Criminalization of same-sex sexuality is associated with implausibly low or absent MSM size

estimates. Low size estimates may contribute to official denial of the existence of MSM; to failure to adequately address their needs; and to inflated HIV service coverage reports that paint a false picture of success. To enable and measure progress in the HIV response, UN agencies should lead a collaborative process to systematically, independently and rigorously gather data on laws and their enforcement.

47. Nowak, R. G., et al. "**Rectal microbiota among HIV-uninfected, untreated HIV, and treated HIV-infected in Nigeria.**" *Aids* 2017 31(6): 857-862.

OBJECTIVE: Untreated advanced HIV infection alters the gut microbiota, but it is unclear whether antiretroviral therapy (ART) reverses these changes. We compared the composition of the rectal microbiota among three groups of men who have sex with men (MSM): HIV-uninfected, untreated HIV, and ART-treated HIV-infected.

DESIGN: A cross-sectional study was conducted among 130 MSM (55 HIV-uninfected, 41 untreated HIV, and 34 ART-treated HIV) in Abuja, Nigeria.

METHODS: Bacterial 16S rRNA genes were amplified from rectal swabs, sequenced and clustered into Genera-level operational taxonomic units. Alpha diversity was quantified using the Shannon index and compared among groups using the Kruskal-Wallis test; associations with other scale variables were quantified using Spearman's rank correlation (Rs). The relative abundance of the top 15 taxa was compared according to HIV infection/treatment status using the Wilcoxon rank sum test. **RESULTS:** HIV-treated MSM had a decrease in a commensal phylum, Bacteroidetes ($P < 0.01$). Alpha diversity was positively correlated with viral loads ($R_s = 0.32$, $P < 0.01$). Statistically significant shifts in relative abundance of rectal microbiota for the HIV-treated group included a decrease in the most abundant bacteria, Prevotella ($P = 0.02$) and an increase in pathogenic bacteria, Peptoniphilus ($P = 0.04$), Finegoldia ($P = 0.01$), Anaerococcus ($P = 0.03$), and Campylobacter ($P = 0.03$) compared with the other groups.

CONCLUSION: Untreated HIV infection does not significantly alter the rectal microbiota, whereas prior treatment is associated with a shift toward a more pathogenic pattern of microbiota. Treatment with an antibiotic, co-trimoxazole, in conjunction with ART may have contributed to this shift.

48. Gomez, F., et al. "**Relation between HIV status, risky sexual behavior, and mental health in an MSM sample from three Chilean cities.**" *Rev Panam Salud Publica* 2017 41: e4. Online at: <http://www.scielosp.org/pdf/rpsp/v41/1020-4989-RPSP-41-e4.pdf>.

Objective: To explore the association among HIV status; negative psychological symptoms (anxiety, depression, and hostility); and risky sexual behaviors (multiple sexual partners and unprotected sexual intercourse) in a Chilean sample of men who have sex with men (MSM). **Methods:** This study had a cross-sectional design and a sample of 325 MSM whose ages ranged from 18 to 64 years (mean: 30.8; standard deviation: 9.8). Association tests (chi-squared) and group mean comparisons (Student's t-tests and F-tests) were performed.

Results: No statistically significant differences were found for condom use or for the number of sexual partners between HIV-positive men and those who are not infected. In both groups, about 50% reported sexual encounters without condom use in the past six months. There were statistically significant differences in symptoms associated with depression between the two groups.

Conclusions: These results reveal the need to strengthen messages about the importance of condom use, as the only way to prevent HIV, and as a means of preventing HIV infection and reinfection, in national prevention and self-care programs for sexually active subjects. More studies are needed in Latin America to advance HIV prevention efforts for the MSM population. The data generated by this study can be used to inform the development of HIV prevention programming strategies and interventions targeting the MSM population in Latin America.

49. Vu, N. T., et al. "**The Relationship Between Methamphetamine Use, Sexual Sensation Seeking and Condomless Anal Intercourse Among Men Who Have Sex With Men in Vietnam: Results of a Community-Based, Cross-Sectional Study.**" *AIDS Behav* 2017 21(4): 1105-1116.

This study assessed the relationship between methamphetamine use and condomless anal intercourse (CAI) among men who have sex with men (MSM) in Hanoi and Ho Chi Minh City, Vietnam. Of 622 MSM participants, 75.7% reported any CAI in the last three months, 23.2% reported engaging in sex work in the last three months, 21.1% reported group sex in the last twelve months (21.1%) and 14.3% had used methamphetamine for sex in the last three months. CAI was associated with living in Ho Chi Minh City vs. Hanoi, being versatile during anal sex, a greater degree of sexual sensation-seeking, and more strongly agreeing that withdrawal before ejaculation is effective in preventing HIV. Effect-modification analysis showed that recent sex-related methamphetamine use was related to a higher probability of CAI for men with low sexual sensationseeking scores. Methamphetamine assessment and/or interventions should be incorporated into HIV prevention and research with Vietnam's MSM population.

50. Muller, A. "**Scrambling for access: availability, accessibility, acceptability and quality of healthcare for lesbian, gay, bisexual and transgender people in South Africa.**" *BMC Int Health Hum Rights* 2017 17(1): 16. Online at: http://download.springer.com/static/pdf/576/art%253A10.1186%252Fs12914-017-0124-4.pdf?originUrl=http%3A%2F%2Fbmcinthealthhumrights.biomedcentral.com%2Farticle%2F10.1186%2Fs12914-017-0124-4&token2=exp=1496689288~acl=%2Fstatic%2Fpdf%2F576%2Fart%25253A10.1186%25252Fs12914-017-0124-4.pdf*~hmac=30ccd4f6990ed7e384dd45353a866455e1b507e5b390986c8ea90918037c4de8.

BACKGROUND: Sexual orientation and gender identity are social determinants of health for people identifying as lesbian, gay, bisexual and transgender (LGBT), and health disparities among sexual and gender minority populations are increasingly well understood. Although the South African constitution guarantees sexual and gender minority people the right to non-discrimination and the right to access to healthcare, homo- and transphobia in society abound. Little is known about LGBT people's healthcare experiences in South Africa, but anecdotal evidence suggests significant barriers to accessing care. Using the framework of the UN International Covenant on Economic, Social and Cultural Rights General Comment 14, this study analyses the experiences of LGBT health service users using South African public sector healthcare, including access to HIV counselling, testing and treatment.

METHODS: A qualitative study comprised of 16 semi-structured interviews and two focus group discussions with LGBT health service users, and 14 individual interviews with representatives of LGBT organisations. Data were thematically analysed within the framework of the UN International Covenant on Economic, Social and Cultural Rights General Comment 14, focusing on availability, accessibility, acceptability and quality of care.

RESULTS: All interviewees reported experiences of discrimination by healthcare providers based on their sexual orientation and/or gender identity. Participants recounted violations of all four elements of the UN General Comment 14: 1) Availability: Lack of public health facilities and services, both for general and LGBT-specific concerns; 2) Accessibility: Healthcare providers' refusal to provide care to LGBT patients; 3) Acceptability: Articulation of moral judgment and disapproval of LGBT patients' identity, and forced subjection of patients to religious practices; 4) Quality: Lack of knowledge about LGBT identities and health needs, leading to poor-quality care. Participants had delayed or avoided seeking healthcare in the past, and none had sought out accountability or complaint mechanisms within the health system.

CONCLUSION: Sexual orientation and gender identity are important categories of analysis for health equity, and lead to disparities in all four dimensions of healthcare access as defined by General Comment 14. Discriminatory and prejudicial attitudes by healthcare providers, combined with a lack of competency and knowledge are key reasons for these disparities in South Africa.

51. Dangerfield, D. T., 2nd, et al. "**Sexual Positioning Among Men Who Have Sex With Men: A Narrative Review.**" *Arch Sex Behav* 2017 46(4): 869-884.

Sexual positioning practices among men who have sex with men (MSM) have not received a thorough discussion in the MSM and HIV literature, given that risks for acquiring or transmitting HIV and STIs via condomless anal sex vary according to sexual positioning. MSM bear a disproportionate burden of HIV compared to the general population in the United States; surveillance efforts suggest that HIV and STIs are increasing among domestic and international populations of MSM. We conducted a narrative review, using a targeted literature search strategy, as an initial effort to explore processes through which sexual positioning practices may contribute to HIV/STI transmission. Peer-reviewed articles were eligible for inclusion if they contained a measure of sexual positioning identity and/or behavior (i.e., "top", "bottom," etc.) or sexual positioning behavior (receptive anal intercourse or insertive anal intercourse), or assessed the relationship between sexual positioning identity with HIV risk, anal sex practice, masculinity, power, partner type, or HIV status. A total of 23 articles met our inclusion criteria. This review highlights dynamic psychosocial processes likely underlying sexual decision making related to sexual positioning identity and practices among MSM and MSM who have sex with women (MSMW), and ways these contexts may influence HIV/STI risk. Despite limited focus in the extant literature, this review notes the important role the contextual factors (masculinity stereotypes, power, partner type, and HIV status) likely to play in influencing sexual positioning identity and practices. Through this review we offer an initial synthesis of the literature describing sexual positioning identities and practices and conceptual model to provide insight into important areas of study through future research.

52. Qin, Q., et al. "**Spatial Analysis of the Human Immunodeficiency Virus Epidemic among Men Who Have Sex with Men in China, 2006-2015.**" *Clin Infect Dis* 2017 64(7): 956-963.

Background: Studies have shown a recent upsurge in human immunodeficiency virus (HIV) burden among men who have sex with men (MSM) in China, especially in urban areas. For intervention planning and resource allocation, spatial analyses of HIV/AIDS case-clusters were required to identify epidemic foci and trends among MSM in China.

Methods: Information regarding MSM recorded as HIV/AIDS cases during 2006-2015 were extracted from the National Case Reporting System. Demographic trends were determined through Cochran-Armitage trend tests. Distribution of case-clusters was examined using spatial autocorrelation. Spatial-temporal scan was used to detect disease clustering. Spatial correlations between cases and socioenvironmental factors were determined by spatial regression.

Results: Between 2006 and 2015, in China, 120 371 HIV/AIDS cases were identified among MSM. Newly identified HIV/AIDS cases among self-reported MSM increased from 487 cases in 2006 to >30 000 cases in 2015. Among those HIV/AIDS cases recorded during 2006-2015, 47.0% were 20-29 years old and 24.9% were aged 30-39 years. Based on clusters of HIV/AIDS cases identified through spatial analysis, the epidemic was concentrated among MSM in large cities. Spatial-temporal clusters contained municipalities, provincial capitals, and main cities such as Beijing, Shanghai, Chongqing, Chengdu, and Guangzhou. Spatial regression analysis showed that sociodemographic indicators such as population density, per capita gross domestic product, and number of county-level medical institutions had statistically significant positive correlations with HIV/AIDS among MSM.

Conclusions: Assorted spatial analyses revealed an increasingly concentrated HIV epidemic among young MSM in Chinese cities, calling for targeted health education and intensive interventions at an early age.

53. Crowell, T. A., et al. "**Stigma, access to healthcare, and HIV risks among men who sell sex to men in Nigeria.**" *J Int AIDS Soc* 2017 20(1): 1-9. Online at: <http://www.jiasociety.org/index.php/jias/article/view/21489/pdf>.

INTRODUCTION: Among men who have sex with men (MSM), men who sell sex (MSS) may be subject to increased sexual behaviour-related stigma that affects uptake of healthcare and risk of sexually transmitted infections (STIs). The objectives of this study were to characterize stigma, access to care, and prevalence of HIV among MSS in Nigeria.

METHODS: Respondent-driven sampling was used to recruit MSM in Abuja and Lagos into the ongoing TRUST/RV368 study, which provides HIV testing and treatment. Detailed behavioural data were collected by trained interviewers. MSS were identified by self-report of receiving goods or money in exchange for sex with men. Poisson regression with robust error variance was used to explore the impact of sex-selling on the risk of HIV.

RESULTS: From 12 initial seed participants, 1552 men were recruited from March 2013-March 2016. Of these, 735 (47.4%) reported sex-selling. Compared to other MSM, MSS were younger (median 22 vs. 24 years, $p < 0.001$) and more likely to identify as gay/homosexual (42.4% vs. 31.5%, $p < 0.001$). MSS were more likely to report perceived and experienced stigmas such as healthcare avoidance (27.6% vs. 21.5%, $p = 0.005$) and verbal harassment (39.2% vs. 26.8%, $p < 0.001$). Total HIV prevalence was 53.4%. After controlling for other factors, HIV prevalence among MSS was similar to that observed among other MSM (relative risk 0.94 [95% confidence interval 0.84-1.05]).

CONCLUSION: These data highlight increased sexual behaviour-related stigma affecting MSS, as compared with other MSM, that limits uptake of healthcare services. The distinct characteristics and risks among MSS suggest the need for specific interventions to optimize linkage to HIV prevention and treatment services in Nigeria.

54. Zhang, C., et al. "**Substance use and HIV-risk behaviors among HIV-positive men who have sex with men in China: repeated measures in a cohort study design.**" *AIDS Care* 2017 29(5): 644-653.

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

55. Hu, H., et al. "**Trends in late HIV diagnosis among men who have sex with men in Jiangsu province, China: Results from four consecutive community-based surveys, 2011-2014.**" *PLoS One* 2017 12(3): e0172664. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5344382/pdf/pone.0172664.pdf>.

OBJECTIVES: To examine trends in HIV testing, late HIV diagnosis and associated factors among men who have sex with men (MSM) in Jiangsu province, China.

METHODS: Four consecutive community-based cross-sectional surveys were conducted among MSM from 2011 to 2014 in eight cities in the province. Participants were recruited from MSM venues and via the internet. HIV bio-behavioral surveys were conducted to collect demographic and behavioral data and measure HIV infection. HIV-infected participants with CD4 counts less than 350 cells/uL were defined as having a late HIV diagnosis. Chi-square trend tests were used to compare temporal changes over the years and multivariable logistic regression analyses were used to identify factors associated with late diagnosis.

RESULTS: A total of 2,441, 2,677, 2,591 and 2,610 participants were enrolled in 2011, 2012, 2013 and 2014, respectively. Testing for HIV in the last 12 months decreased over the time period, from 59.9% to 52.5% ($p < 0.001$). Late HIV diagnosis remained high and steady, ranging from 33.3% to 44.2% over the years with no significant change over time ($p = 0.418$). MSM who were older than 24 years (aOR = 1.748, $p = 0.020$ for 25-39 years old; aOR = 3.148, $p < 0.001$ for 40 years old or older), were recruited via internet (aOR = 1.596, $p = 0.024$), and did not have an HIV test in the past 12 months (aOR = 3.385, $p < 0.001$) were more likely to be late diagnosed.

CONCLUSIONS: Our study showed a plateau in HIV testing among MSM in China, in parallel to high levels of late diagnosis. Emerging and innovative strategies such as HIV self-testing and reaching more MSM by internet, both highly acceptable to MSM in China, may reduce late diagnosis.

56. Chakrapani, V., et al. "Understanding How Sexual and Gender Minority Stigmas Influence Depression Among Trans Women and Men Who Have Sex with Men in India." *LGBT Health* 2017 4(3): 217-226.

PURPOSE: Few studies have assessed how sexual and gender minority stigmas affect the mental health of trans women and self-identified men who have sex with men (MSM) in India, populations with a high HIV burden. We tested whether social support and resilient coping act as mediators of the effect of sexual and gender minority stigmas on depression as proposed by Hatzenbuehler's psychological mediation framework, or as moderators based on Meyer's minority stress theory.

METHODS: We conducted a cross-sectional survey among trans women ($n = 300$) and MSM ($n = 300$) recruited from urban and rural sites in India. Standardized scales were used to measure depression (outcome variable), transgender identity stigma/MSM stigma (predictor variables), and social support and resilient coping (tested as moderators and parallel mediators). The mediation and moderation models were tested separately for trans women and MSM, using Hayes' PROCESS macro in SPSS.

RESULTS: Participants' mean age was 29.7 years (standard deviation 8.1). Transgender identity stigma and MSM stigma were significant predictors (significant total and direct effects) of depression, as were social support and resilient coping. Among trans women and MSM, social support and resilient coping mediated (i.e., significant specific indirect effects), but did not moderate, the effect of stigma on depression, supporting the psychological mediation framework.

CONCLUSION: Sexual and gender minority stigmas are associated with depression, with social support and resilient coping as mediators. In addition to stigma reduction interventions at the societal level, future interventions should focus on improving social support and promoting resilience among trans women and MSM in India.

57. Pankam, T., et al. "The validation and evaluation of anti-HIV testing algorithm used in mobile clinic setting for men who have sex with men in metropolitan Bangkok, Thailand." *Asian Pac J Allergy Immunol* 2017. Online at: <http://thailand.digitaljournals.org/index.php/APJAI/article/download/31324/32866>.

BACKGROUND: Same-day anti-HIV testing algorithm is recommended by Thai National Guidelines. We compared performance characteristics of algorithms used in a mobile clinic and a facility-based clinic for men who have sex with men (MSM) in Bangkok.

METHODS: Mobile clinic samples collected from 4 saunas and 2 spa venues were tested by Alere Determine™ HIV 1/2, followed by DoubleCheck Gold™ Ultra HIV 1/2 and SD Bioline HIV 1/2 3.0. All samples were re-tested at the Thai Red Cross Anonymous Clinic (TRCAC) by Architect HIV Ag/Ab or Elecsys HIV combi PT, followed by Alere Determine™ HIV 1/2 and Serodia HIV 1/2. Non-reactive samples were tested by Aptima nucleic acid amplification test (NAAT) and reactive/inconclusive samples were tested by less-sensitive immunoassays (IA) and HIV-1 RNA to detect acute HIV infection (positive NAAT or non-reactive IA/positive HIV-1 RNA).

RESULTS: Of 233 MSM, 36 (15.5%) had HIV infection diagnosed using mobile clinic algorithm. Two additional acute HIV cases (1 positive NAAT and 1 reactive Architect with detectable HIV-1 RNA) were diagnosed using TRCAC algorithm. The mobile clinic algorithm had a sensitivity of 94.9% (95% CI: 82.7, 99.4) and a specificity of 100% (95% CI: 98.1, 100).

CONCLUSION: Use of whole blood on rapid test kits demonstrated satisfactory performance and allowed same-day HIV test result through a mobile clinic model. For populations with high HIV incidence, careful history taking to define the window period is crucial and repeat testing must be encouraged if the testing algorithm does not include 4th generation anti-HIV assay or NAAT.

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Sex Workers - 37

1. Budhwani, H., et al. "**Association between violence exposure and condom non-use among transgender sex workers in the Dominican Republic: the mediating role of trust.**" *Int J STD AIDS* 2017 28(6): 608-612.

Transgender women are a high-risk population, and transgender female sex workers are one of the most vulnerable populations globally. Transgender female sex workers have high rates of sexually transmitted infections, HIV, and exposure to violence compared to cisgender sex workers; these negative exposures are associated with an increase in HIV risk behaviors. Thus, the aim of this study is to examine the relationship between exposure to violence and condom non-use in transgender female sex workers residing in the Dominican Republic. We hypothesize that mediation exists wherein the effects of violence on condom non-use are mediated by distrust. Facilitated interview data (N = 78) were used. Primary outcome was condom non-use with coercive partner. Four logistic regression models and a mediation analysis were employed. Respondents' mean age was 23.0 years (SD = 4.8) with an average level education attainment of 10.1 years (SD = 2.6); 35% reported experiencing violence; 17% believed that a person who asks a partner to use a condom does not trust that partner. Exploratory mediation analyses yielded a significant indirect effect of experience with violence on condom non-use through distrust (b = 0.64, SE = 0.33, p = .05). Results suggest that distrust mediates the association between experienced violence and condom use with coercive partners. It was concluded that developing interventions on increasing resilience and perceived self-worth, plus provision of screening for violence and referral services may reduce maladaptive attributions and cognitions about condom use. Furthermore, by implementing policies that protect vulnerable populations, and subsequently enforcing them, the Dominican Republic has the opportunity to improve overall population health and protect their most disadvantaged citizens.

2. Ross, I., et al. "**Awareness and attitudes of pre-exposure prophylaxis for HIV prevention among physicians in Guatemala: Implications for country-wide implementation.**" *PLoS One* 2017 12(3): e0173057. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5336255/pdf/pone.0173057.pdf>.

INTRODUCTION: HIV continues to be a major health concern with approximately 2.1 million new infections occurring worldwide in 2015. In Central America, Guatemala had the highest incident number of HIV infections (3,700) in 2015. Antiretroviral pre-exposure prophylaxis (PrEP) was recently recommended by the World Health Organization (WHO) as an efficacious intervention to prevent HIV transmission. PrEP implementation efforts are underway in Guatemala and success will require providers that are knowledgeable and willing to prescribe PrEP. We sought to explore current PrEP awareness and prescribing attitudes among Guatemalan physicians in order to inform future PrEP implementation efforts.

METHODS: We conducted a cross-sectional survey of adult internal medicine physicians at the main teaching hospital in Guatemala City in March 2015. The survey included demographics, medical specialty, years of HIV patient care, PrEP awareness, willingness to prescribe PrEP, previous experience with post-

exposure prophylaxis, and concerns about PrEP. The primary outcome was willingness to prescribe PrEP, which was assessed using a 5-point Likert scale for different at-risk population scenarios. Univariate and multivariate logistic regression was performed to identify predictors for willingness to prescribe PrEP.

RESULTS: Eighty-seven physicians completed the survey; 66% were male, 64% were internal medicine residency trainees, and 10% were infectious disease (ID) specialists. Sixty-nine percent of physicians were PrEP aware, of which 9% had previously prescribed PrEP. Most (87%) of respondents were willing to prescribe PrEP to men who have sex with men (MSM), sex workers, injection drug users, or HIV-uninfected persons having known HIV-positive sexual partners. Concerns regarding PrEP included development of resistance (92%), risk compensation (90%), and cost (64%). Univariate logistic regression showed that younger age, being a resident trainee, and being a non-ID specialist were significant predictors for willingness to prescribe PrEP. In multivariate logistic regression, being a non-ID specialist was a significant predictor.

CONCLUSIONS: Guatemalan physicians at an urban public hospital were PrEP aware and willing to prescribe, but few have actually done so yet. Future education programs should address the concerns identified, including the low potential for the development of antiretroviral resistance. These findings can aid PrEP implementation efforts in Guatemala.

3. Goyette, M. S., et al. "**Brief Report: Association Between Menopause and Unprotected Sex in High-Risk HIV-Positive Women in Mombasa, Kenya.**" *J Acquir Immune Defic Syndr* 2017 74(5): 488-492.

OBJECTIVE: Many HIV-positive women now live well beyond menopause. Postmenopausal women are no longer at risk for pregnancy, and some studies suggest that they may use condoms less often than premenopausal women. This study tests the hypothesis that, in HIV-positive women who report trading sex for cash or in-kind payment, unprotected sex is more common at postmenopausal visits compared with premenopausal visits.

DESIGN: Prospective cohort study of HIV-positive women ≥ 16 years old in Mombasa, Kenya.

METHODS: At enrollment and monthly follow-up visits, participants completed a standardized interview. Study clinicians collected genital samples at enrollment and quarterly visits. Menopausal status was assessed annually. The primary outcome of unprotected sex was determined by detection of prostate specific antigen (PSA) in vaginal secretions.

RESULTS: This study followed 404 HIV-positive women who contributed 2753 quarterly examination visits. Detection of PSA was less frequent at postmenopausal visits compared with premenopausal visits [55/554, 10.5% versus 394/2199, 17.9%; relative risk (RR) 0.58, 95% confidence interval (CI): 0.39 to 0.87]. Adjusting for age diminished the association between menopause and PSA detection (adjusted RR 0.73, 95% CI: 0.47 to 1.14). At visits where women reported sexual activity in the past week, they reported similar rates of 100% condom use at postmenopausal and premenopausal visits (RR 0.99, 95% CI: 0.87 to 1.13).

CONCLUSIONS: In this population of high-risk HIV-positive Kenyan women, postmenopausal status was not associated with a greater risk of unprotected sex. The relationship between menopause and unprotected sex is likely context specific and may differ with varying risk groups, regions, and levels of exposure to sexual health education.

4. Maheu-Giroux, M., et al. "**Changing dynamics of HIV transmission in Cote d'Ivoire: modeling who acquired and transmitted infections and estimating the impact of past HIV interventions (1976-2015).**" *J Acquir Immune Defic Syndr* 2017.

INTRODUCTION: Understanding the impact of past interventions and how it affected transmission dynamics is key to guiding prevention efforts. We estimated the population-level impact of condom, antiretroviral therapy (ART), and prevention of mother-to-child transmission activities on HIV transmission and the

contribution of key risk factors on HIV acquisition and transmission.

METHODS: An age stratified dynamical model of sexual and vertical HIV transmission among the general population, female sex workers (FSW), and men who have sex with men (MSM) was calibrated to detailed prevalence and intervention data. We estimated the fraction of HIV infections averted by the interventions, and the fraction of incident infections acquired and transmitted by different populations over successive 10-year periods (1976-2015).

RESULTS: Overall, condom use averted 61% (95% Credible Intervals: 56-66%) of all adult infections during 1987-2015 mainly due to increases by FSW (46% of infections averted). In comparison, ART prevented 15% (10-19%) of adult infections during 2010- 2015. As a result, FSW initially (1976-1985) contributed 95% (91-97%) of all new infections, declining to 19% (11-27%) during 2005-2015. Older men and clients mixing with non-FSW are currently the highest contributor to transmission. MSM contributed $\leq 4\%$ transmissions throughout. Young women (15-24 years; excluding FSW) do not transmit more infection than they acquired.

CONCLUSION: Early increases in condom use, mainly by FSW, have substantially reduced HIV transmission. Clients of FSW and older men have become the main source of transmission whereas young women remain at increased risk. Strengthening prevention and scaling-up of ART, particularly to FSW and CFSW, is important.

5. Buck, M., et al. **"Combination HIV Prevention Strategy Implementation in El Salvador: Perceived Barriers and Adaptations Reported by Outreach Peer Educators and Supervisors."** *Glob Qual Nurs Res* 2017 4: 2333393617703198. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5406143/pdf/10.1177_2333393617703198.pdf.

El Salvador was one of three countries to receive funding from the Global Fund to Fight AIDS, Tuberculosis and Malaria to conduct a combination HIV prevention intervention among transwomen (TW), men who have sex with men (MSM), and commercial sex workers (CSW). Program evaluation revealed that prevention activities reached only 50% of the target population. The purpose of this study is to examine the barriers that Salvadoran educators faced in implementing the peer education as designed and adaptations made as a result. Between March and June 2015, 18 in-depth interviews with educators were conducted. Violence was reported as the biggest barrier to intervention implementation. Other barriers differed by subpopulation. The level of violence and discrimination calls into question the feasibility and appropriateness of peer-led interventions in the Salvadoran context and demonstrates the importance of implementation research when translating HIV prevention interventions developed in high-income countries to low- and middle-income countries.

6. Rael, C. T., et al. **"Depression and key associated factors in female sex workers and women living with HIV/AIDS in the Dominican Republic."** *Int J STD AIDS* 2017 28(5): 433-440.

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

7. Chen, L., et al. "**Disparities in HIV and syphilis prevalence and risk factors between older male clients with and without steady sex partners in southwestern rural China.**" *BMC Infect Dis* 2017 17(1): 269. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5389008/pdf/12879_2017_Article_2367.pdf.

BACKGROUND: Heterosexual intercourse accounted for 93% of reported HIV cases in Guangxi, and Guangxi had 10% of China's total number of reported HIV cases. Older men are particularly vulnerable to STIs, for example, 46% of Guangxi's HIV cases were men over 50 years of age. As this is an under-studied population in China, effective prevention and control policies have yet to be developed. Thus, the aim of this study was to use a large-scale cross-sectional survey to understand the demographic and behavior factors associated with HIV and syphilis infections among older male clients of female sex workers (FSWs) in a high epidemic area of rural Guangxi, China.

METHODS: A large-scale cross-sectional survey was conducted in 2012 among older male clients of FSWS in low-cost commercial sex venues. Questionnaire interviews were administered to collect sociodemographic and sexual behavior information. Blood samples were collected for HIV and syphilis infection tests.

RESULTS: Of the 3485 participants, 2509 (72.0%) clients had a steady sex partner and 976 (28.0%) clients had no steady sex partner. The overall prevalence of HIV and syphilis infection were 3.0% and 3.2%, respectively. Compared to those with a steady sex partner, clients with no steady partner had higher odds of HIV infection (AOR: 1.90, 95% CI: 1.27-2.86), syphilis infection (AOR: 1.53, 95% CI: 1.02-2.30), and having factors associated with HIV or syphilis infection, including non-commercial casual sex encounters in last month (AOR: 3.29, 95% CI: 2.42-4.46), >10 years of commercial sex history (AOR: 1.31, 95% CI: 1.12-1.53), >2 incidents of commercial sex in last month (AOR: 1.53, 95% CI: 1.19-1.96), and aphrodisiac use in last month (AOR: 1.40, 95% CI: 1.16-1.70). Clients with no steady partner had lower odds of having heterosexual intercourse (AOR: 0.66, 95% CI: 0.56-0.79), awareness and knowledge of HIV/AIDS (AOR: 0.75, 95% CI: 0.64-0.88), and having had HIV tests (AOR: 0.65, 95% CI: 0.44-0.98).

CONCLUSION: Older male clients of low-cost commercial sex venues in rural southwestern China are at high risk for HIV and syphilis infection, especially those with no steady sex partner. Improved interventions are urgently needed for this neglected risk population.

8. Zhang, L., et al. "**Does the use of HIV testing and counseling services influence condom use among low-paid female sex workers in Guangxi, China?**" *AIDS Care* 2017 29(3): 335-338.

HIV testing and counseling (HTC) are increasingly used in China during routine medical care visits to health facilities. However, limited data are available regarding the association between the utilization of HTC services and condom use among low-paid female sex workers (FSWs) who are at high risk of HIV infection but are hard to reach. A cross-sectional study was conducted among 794 low-paid FSWS in a city of Guangxi Zhuang Autonomous Region in 2011. Results showed that 71.7% of low-paid FSWS had utilized HTC services in the previous year and 65.7% reported having used a condom during the last sexual intercourse with their clients. Multivariate logistic regression analysis showed that utilizing HTC services was significantly and positively associated with the condom use. It also indicated that low-paid FSWS who were older, married, had higher education, earned less money, had high number of clients, had a history of sexually transmitted diseases, or had little or no HIV knowledge were less likely to use a condom during the last sexual encounter. The study suggests that HTC services need to be scaled up and made more accessible for this vulnerable population.

9. Koirala, S., et al. "**Facilitators and barriers for retention in HIV care between testing and treatment in Asia-A study in Bangladesh, Indonesia, Lao, Nepal, Pakistan, Philippines and Vietnam.**" *PLoS One* 2017 12(5): e0176914. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5411091/pdf/pone.0176914.pdf>.

INTRODUCTION: The need for efficient retention in HIV care is more evident than ever because of the expansion of earlier ART initiation and the shift towards 'Test and Treat'. This study assesses factors affecting participation in the HIV care cascade among people living with HIV (PLHIV) in the Asia-Pacific Region.

METHODS: A total of 7843 PLHIV aged 18-50 years were recruited using targeted and venue-based sampling between October 1, 2012, and May 31, 2013, across 59 sites in 7 countries (Bangladesh, Indonesia, Lao People's Democratic Republic (Lao PDR), Nepal, Pakistan, Philippines and Vietnam). Statistically significant associations between demographic and health system determinants, and various steps in the HIV care cascade were computed using a generalized structural equation model.

RESULTS: A high proportion of PLHIV (40-51%) presented late for HIV care and delayed linkage to care in all seven countries. However, once PLHIV enrolled in care, retention in the various steps of the care cascade including adherence to antiretroviral treatment (ART) was satisfactory. The proportion still engaged in HIV care at 36 months post HIV diagnosis, varied from 78% in Nepal to >90% in Lao PDR. Similarly, the proportion of ART initiation who also were adherent to ART ranged from 91% in Bangladesh to >95% in Philippines/ Vietnam and from 70% in Lao PDR to 89% in the Philippines respectively. The following factors enhanced the likelihood of ART initiation and high adherence to HIV care and ART: good client-provider communication, high HIV treatment literacy, a referral from a health worker and TB/HIV co-infection. The following barriers were identified: young age, sex work, imprisonment, transgender identity, illiteracy, rural residence, alcohol/ injecting drug use, perceived poor health status, lack of health insurance, fear of confidentiality breach, self-referral for HIV testing, and public hospital as the place of HIV diagnosis.

CONCLUSIONS: HIV programme planners should ensure easy access to HIV testing and earlier linkage to HIV care among PLHIV. In addition, multiple socio-economic and health systems barriers need to be addressed along the HIV care cascade to reach the UNAIDS 90-90-90 target in the Asia-Pacific region.

10. Logie, C. H., et al. "**Factors associated with sex work involvement among transgender women in Jamaica: a cross-sectional study.**" *J Int AIDS Soc* 2017 20(1): 1-10. Online at: <http://www.jiasociety.org/index.php/jias/article/view/21422/pdf>.

INTRODUCTION: Transgender women are disproportionately impacted by HIV. Transgender women involved in sex work may experience exacerbated violence, social exclusion, and HIV vulnerabilities, in comparison with non-sex work-involved transgender women. Scant research has investigated sex work among transgender women in the Caribbean, including Jamaica, where transgender women report pervasive violence. The study objective was to examine factors associated with sex work involvement among transgender women in Jamaica.

METHODS: In 2015, we implemented a cross-sectional survey using modified peer-driven recruitment with transgender women in Kingston and Ocho Rios, Jamaica, in collaboration with a local community-based AIDS service organization. We conducted multivariable logistic regression analyses to identify factors associated with paid sex and transactional sex. Exchanging oral, anal or vaginal sex for money only was categorized as paid sex. Exchanging sex for survival needs (food, accommodation, transportation), drugs or alcohol, or for money along with survival needs and/or drugs/alcohol, was categorized as transactional sex.

RESULTS: Among 137 transgender women (mean age: 24.0 [SD: 4.5]), two-thirds reported living in the Kingston area. Overall, 25.2% reported being HIV-positive. Approximately half (n = 71; 51.82%) reported any sex work involvement, this included sex in exchange for: money (n = 64; 47.06%); survival needs (n = 27; 19.85%); and drugs/alcohol (n = 6; 4.41%). In multivariable analyses, paid sex and transactional sex were both associated with: intrapersonal (depression), interpersonal (lower social support, forced sex, childhood sexual abuse, intimate partner violence, multiple partners/polyamory), and structural (transgender stigma, unemployment) factors. Participants reporting transactional sex also reported increased odds of incarceration perceived to be due to transgender identity, forced sex, homelessness, and lower resilience, in comparison with participants reporting no sex work involvement.

CONCLUSION: Findings reveal high HIV infection rates among transgender women in Jamaica. Sex work-involved participants experience social and structural drivers of HIV, including violence, stigma, and unemployment. Transgender women involved in transactional sex also experience high rates of incarceration, forced sex and homelessness in comparison with non-sex workers. Taken together, these findings suggest

that social ecological factors elevate HIV exposure among sex work-involved transgender women in Jamaica. Findings can inform interventions to advance human rights and HIV prevention and care cascades with transgender women in Jamaica.

11. Cange, C. W., et al. "**Female sex workers' empowerment strategies amid HIV-related socioeconomic vulnerabilities in Cameroon.**" *Cult Health Sex* 2017: 1-13.

Research has consistently demonstrated that female sex workers use a variety of empowerment strategies to protect one another and their families. This study examines the strategies Cameroonian sex workers employ to do so. In-depth interviews and focus-group discussions were conducted with 100 sex workers. Coded texts were analysed for recurring themes. Sex workers reported being concerned with physical violence and sexual assault and demands from authorities for bribes to avoid fines and/or imprisonment. Women described strategies such as 'looking out for' each other when faced with security threats. Many reported staying in sex work to provide for their children through education and other circumstances to allow them to lead a better life. Sex worker mothers reported not using condoms when clients offered higher pay, or with intimate partners, even when they understood the risk of HIV transmission to themselves. Concern for their children's quality of life took precedence over HIV-related risks, even when sex workers were the children's primary carers. A sex worker empowerment programme with a focus on family-oriented services could offer an effective and novel approach to increasing coverage of HIV prevention, treatment and care in Cameroon.

12. Cooper, J. E., et al. "**Female sex workers use power over their day-to-day lives to meet the condition of a conditional cash transfer intervention to incentivize safe sex.**" *Soc Sci Med* 2017 181: 148-157.

Female Sex Workers are a core population in the HIV epidemic, and interventions such as conditional cash transfers (CCTs), effective in other health domains, are a promising new approach to reduce the spread of HIV. Here we investigate how a population of Tanzanian female sex workers, though constrained in many ways, experience and use their power in the context of a CCT intervention that incentivizes safe sex. We analyzed 20 qualitative in-depth interviews with female sex workers enrolled in a randomized-controlled CCT program, the RESPECT II pilot, and found that while such women have limited choices, they do have substantial power over their work logistics that they leveraged to meet the conditions of the CCT and receive the cash award. It was through these decisions over work logistics, such as reducing the number of workdays and clients, that the CCT intervention had its greatest impact on modifying female sex workers' behavior.

13. Lion, R. R., et al. "**Gender and Sex Trading Among Active Methamphetamine Users in Cape Town, South Africa.**" *Subst Use Misuse* 2017 52(6): 773-784.

BACKGROUND: South Africa has experienced a tremendous rise in methamphetamine use since the year 2000. Sex trading is a global phenomenon that has been observed in active drug users and has been associated with risks for HIV infection and violence.

OBJECTIVES: This paper describes and examines the correlates of sex trading among active methamphetamine users in Cape Town, South Africa.

METHODS: Through peer referral, 360 (201 male; 159 female) active methamphetamine users were recruited in a peri-urban township. Demographics, sex trading, drug use, trauma, and mental health were assessed by a structured clinical interview and computer survey. Logistic regression models were used to examine predictors of sex trading for men and women.

RESULTS: In the past 3 months, 40% of men and 33% of women endorsed trading sex for methamphetamine or money. Among these, they reported trading with same sex partners (33%), high rates of inconsistent condom use (73%), and incidences of physical (23%) and sexual (27%) assault when sex trading. Increased drug use severity was correlated with sex trading. Women with experiences of violence and trauma were also more likely to trade sex. Conclusions/importance: The results stress a need for linkage to drug treatment, as addiction may be fueling sex trading. Targeted interventions geared towards safe sex

practices may reduce risky sexual behaviors. Women need interventions that are attuned to their specific vulnerabilities. More research is needed to explore the experiences of men who have sex with men given their particularly high rates of sex trading behavior.

14. Reeves, A., et al. "**Gender violence, poverty and HIV infection risk among persons engaged in the sex industry: cross-national analysis of the political economy of sex markets in 30 European and Central Asian countries.**" *HIV Med* 2017.

OBJECTIVES: Persons engaged in the sex industry are at greater risk of HIV and other sexually transmitted infections than the general population. One major factor is exposure to higher levels of risky sexual activity. Expanding condom use is a critical prevention strategy, but this requires negotiation with those buying sex, which takes place in the context of cultural and economic constraints. Impoverished individuals who fear violence are more likely to forego condoms.

METHODS: Here we tested the hypotheses that poverty and fear of violence are two structural drivers of HIV infection risk in the sex industry. Using data from the European Centre for Disease Prevention and Control and the World Bank for 30 countries, we evaluated poverty, measured using the average income per day per person in the bottom 40% of the income distribution, and gender violence, measured using homicide rates in women and the proportion of women exposed to violence in the last 12 months and/or since age 16 years.

RESULTS: We found that HIV prevalence among those in the sex industry was higher in countries where there were greater female homicide rates (beta = 0.86; P = 0.018) and there was some evidence that self-reported exposure to violence was also associated with higher HIV prevalence (beta = 1.37; P = 0.043). Conversely, HIV prevalence was lower in countries where average incomes among the poorest were greater (beta = -1.05; P = 0.046).

CONCLUSIONS: Our results are consistent with the theory that reducing poverty and exposure to violence may help reduce HIV infection risk among persons engaged in the sex industry.

15. Busza, J., et al. "**Good news for sex workers in Zimbabwe: how a court order improved safety in the absence of decriminalization.**" *J Int AIDS Soc* 2017 20(1): 1-3. Online at: <http://www.jiasociety.org/index.php/jias/article/view/21860/pdf>.

16. Avila, M. M., et al. "**High Frequency of Illegal Drug Use Influences Condom Use Among Female Transgender Sex Workers in Argentina: Impact on HIV and Syphilis Infections.**" *AIDS Behav* 2017.

The high prevalence of HIV and syphilis found among female transgender sex workers (FTSWs) in Argentina calls for the study of factors leading to negative health consequences. Given the particular characteristics observed in this population (high marginalization, school dropout, and low adherence to healthcare services), we explored the association of several socio-demographic characteristics with syphilis and HIV infections, and the determinants of condom use. This study revealed that FTSWs from Argentina were exposed to several risk factors decreasing thus their ability to negotiate condom use and leading to increased risk for transmission of HIV and other sexually transmitted infections (STIs). Strategies to reduce HIV and syphilis in this population should consider interventions aimed at decreasing violence and substance use which appear to be the most important determinants. Results of this study will contribute to the global information among FTSWs.

17. Nadol, P., et al. "**High HIV Prevalence and Risk Among Male Clients of Female Sex Workers in Hanoi and Ho Chi Minh City, Vietnam.**" *AIDS Behav* 2017.

In Vietnam's concentrated HIV epidemic, female sex workers (FSWs) are at increased risk for acquiring and transmitting HIV, largely through their male clients. A high proportion of males in Vietnam report being clients of FSWs. Studying HIV-related risk factors and prevalence among male clients is important,

particularly given the potential for male clients to be a 'bridge' of HIV transmission to the more general population or to sex workers. Time-location sampling was used to identify FSW in Hanoi and Ho Chi Minh City, Vietnam's largest cities, in 2013–2014. Recruited FSWs were asked to refer one male client to the study. Demographic and risk behavior data were collected from FSWs and male clients by administered questionnaires. Biologic specimens collected from male clients were tested for HIV and opiates. Sampling weights, calculated based on the FSWs probability of being selected for enrolment, were applied to prevalence estimates for both FSWs and male clients. Logistic regression models were developed to obtain odds ratios for HIV infection among male clients. A total of 804 male clients were enrolled. Overall, HIV prevalence among male clients was 10.2%; HIV prevalence was 20.7% (95% confidence interval (CI) 15.0–27.9%) among those reporting a history of illegal drug use and 32.4% (95% CI 20.2–47.7%) among those with opioids detected in urine. HIV prevalence among male clients did not differ across 'bridging' categories defined by condom use with FSWs and regular partners over the previous 6 months. HIV among male clients was associated with a reported history of illegal drug use (OR 3.76; 95% CI 1.87–7.56), current opioid use (OR 2.55; 95% CI 1.02–6.36), and being referred by an FSW who self-reported as HIV-positive (OR 5.37; 95% CI 1.46–19.75). Self-reported HIV prevalence among enrolled FSWs was 2.8%. Based on HIV test results of male clients and self-reported status from FSWs, an estimated 12.1% of male client-FSW pairs were sero-discordant. These results indicate high HIV prevalence among male clients of FSWs, particularly among those with a history of drug use. Programs to expand HIV testing, drug-use harm reduction, and HIV treatment for HIV-infected male clients of FSWs should be considered as key interventions for controlling the HIV epidemic in Vietnam.

18. Cowan, F. M., et al. "**The HIV Care Cascade Among Female Sex Workers in Zimbabwe: Results of a Population-Based Survey From the Sisters Antiretroviral Therapy Programme for Prevention of HIV, an Integrated Response (SAPPH-IRe) Trial.**" *J Acquir Immune Defic Syndr* 2017 74(4): 375-382.

INTRODUCTION: Female sex workers (FSW) in sub-Saharan Africa have a higher prevalence of HIV than other women of reproductive age. Social, legal, and structural barriers influence their access to care. Little is known about the HIV diagnosis and care cascade in most countries in Southern Africa. We aimed to describe the HIV diagnosis and care cascade among FSW in Zimbabwe.

METHODS: We conducted cross-sectional respondent driven sampling (RDS) surveys of FSW in 14 sites across Zimbabwe as the baseline for a cluster-randomised controlled trial investigating a combination HIV prevention and care package. We administered a questionnaire, tested women for HIV and measured viral load. We report the mean, minimum, and maximum respondent-driven sampling-2 weighted site values.

RESULTS: The survey included 2722 women, approximately 200 per site. The mean HIV prevalence was 57.5% (42.8–79.2 site minimum and maximum). Of HIV-positive women, 64.0% (51.6–73.7) were aware of their status, 67.7% (53.4–84.1) of these reported taking antiretroviral therapy, and 77.8% (64.4–90.8) of these had a suppressed HIV viral load (<1000 copies/mL). Among all HIV-positive women, 49.5% had a viral load < 1000 copies/mL.

CONCLUSIONS: Although most HIV-positive women aware of their status are accessing antiretroviral therapy, 36.0% of HIV-positive women are unaware of their status and 29.3% of all FSW have an unsuppressed HIV viral load. Investigation and investment into models of testing, treatment, and care are necessary to reach UNAIDS targets for HIV elimination.

19. Karamouzian, M., et al. "**Injection drug use among female sex workers in Iran: Findings from a nationwide bio-behavioural survey.**" *Int J Drug Policy* 2017 44: 86-91.

BACKGROUND: Globally, one in three women who inject drugs is involved in sex work which increases their vulnerability to sexually transmitted infections including HIV. This study was conducted to improve our understanding of injection drug use practices among Iranian female sex workers (FSWs) and shed light on the high-risk profile of FSWs who inject drugs (FSW-IDUs).

METHODS: This survey was conducted in 2010, by recruiting 872 FSWs through facility-based sampling from 21 sites in 13 cities in Iran. Data were collected through face-to-face interviews and lifetime injection drug use was assessed through the responses to the question "Have you ever injected any illicit drugs?". Independent variables included a range of socio-demographic and risk characteristics. Logistic regression models were applied to investigate the correlates of lifetime history of injection drug use.

RESULTS: Median (Q1, Q3) age of the participants was 30 (25, 37) and a total of 127 (14.6%, 95% confidence interval (CI): 12.3-17.1) had ever injected drugs. In the multivariable logistic regression model, older age (adjusted odds ratio (AOR)=AOR₂₅₋₃₄ vs. <18=3.37, 95% CI: 1.64, 7.70; AOR_{>=35} vs. <18=2.80, 95% CI: 1.11, 7.10), longer duration (>5 years) of involvement in sex work (AOR=1.06, 95% CI: 1.02, 1.10), and history of drinking alcohol (AOR=4.42, 95% CI: 2.67, 7.32) were positively associated with lifetime history of drug injection and younger age at sex work debut (AOR=0.52, 95% CI: 0.28, 0.96) was negatively associated with lifetime history of illicit drug injection among FSWs.

CONCLUSION: The prevalence of injection drug use among FSWs in Iran is concerning. Given the potential of this sub-population in bridging HIV into the general population, gender-sensitive and peer-led harm reduction programs should be further scaled up to meet the special needs of this vulnerable population.

20. Ippoliti, N. B., et al. "**Meeting the Reproductive Health Needs of Female Key Populations Affected by HIV in Low- and Middle-Income Countries: A Review of the Evidence.**" *Stud Fam Plann* 2017 48(2): 121-151. Online at: <http://onlinelibrary.wiley.com/doi/10.1111/sifp.12020/epdf>.

Female sex workers and other women at high risk of acquiring HIV have the right to sexual and reproductive health, including the right to determine the number and timing of pregnancies. We conducted a literature review to examine the data that exist regarding the family planning and reproductive health needs of female key populations, the underlying determinants of these populations' vulnerability to poor reproductive health outcomes, and the obstacles they face in accessing high-quality reproductive health services. Findings indicate that female key populations experience high rates of unmet need for family planning and safer conception services, unintended pregnancies, sexual violence, and abortion, and that they practice inconsistent condom use. Restrictive policy environments, stigma and discrimination in health care settings, gender inequality, and economic marginalization restrict access to services and undermine the ability to safely achieve reproductive intentions. We offer recommendations for structural, health system, community, and individual-level interventions that can mitigate the effects of these barriers and improve reproductive health outcomes.

21. Restar, A. J., et al. "**Perspectives on HIV Pre- and Post-Exposure Prophylaxes (PrEP and PEP) Among Female and Male Sex Workers in Mombasa, Kenya: Implications for Integrating Biomedical Prevention into Sexual Health Services.**" *AIDS Educ Prev* 2017 29(2): 141-153.

Pre- and post-exposure prophylaxes (PrEP and PEP) can reduce the risk of HIV acquisition, yet often are inaccessible to and underutilized by most-vulnerable populations, including sex workers in sub-Saharan Africa. Based on in-depth interviews with 21 female and 23 male HIV-negative sex workers in Mombasa, Kenya, we found that awareness and knowledge of PrEP and PEP were low, although willingness to use both was high. Participants felt PrEP would be empowering and give added protection against infection, although some expressed concerns about side effects. Despite PEP's availability, few knew about it and even fewer had used it, but most who had would use it again. Sex workers valued confidentiality, privacy, trustworthiness, and convenient location in health services and wanted thorough HIV/STI assessments. These findings suggest the importance of situating PrEP and PEP within sex worker-friendly health services and conducting outreach to promote these biomedical prevention methods for Kenyan sex workers.

22. Lyons, C. E., et al. "**Physical and Sexual Violence Affecting Female Sex Workers in Abidjan, Cote d'Ivoire: Prevalence, and the Relationship with the Work Environment, HIV, and Access to Health Services.**" *J Acquir Immune Defic Syndr* 2017 75(1): 9-17.

BACKGROUND: Violence is a human rights violation, and an important measure in understanding HIV among female sex workers (FSW). However, limited data exist regarding correlates of violence among FSW in Cote d'Ivoire. Characterizing prevalence and determinants of violence and the relationship with structural risks for HIV can inform development and implementation of comprehensive HIV prevention and treatment programs.

METHODS: FSW > 18 years were recruited through respondent driven sampling (RDS) in Abidjan, Cote d'Ivoire. In total, 466 participants completed a socio-behavioral questionnaire and HIV testing. Prevalence estimates of violence were calculated using crude and RDS-adjusted estimates. Relationships between structural risk factors and violence were analyzed using chi tests and multivariable logistic regression.

RESULTS: The prevalence of physical violence was 53.6% (250/466), and sexual violence was 43.2% (201/465) among FSW in this study. Police refusal of protection was associated with physical (adjusted Odds Ratio [aOR]: 2.8; 95% confidence interval [CI]: 1.7 to 4.4) and sexual violence (aOR: 3.0; 95% CI: 1.9 to 4.8). Blackmail was associated with physical (aOR: 2.5; 95% CI: 1.5 to 4.2) and sexual violence (aOR: 2.4; 95% CI: 1.5 to 4.0). Physical violence was associated with fear (aOR: 2.2; 95% CI: 1.3 to 3.1) and avoidance of seeking health services (aOR: 2.3; 95% CI: 1.5 to 3.8).

CONCLUSIONS: Violence is prevalent among FSW in Abidjan and associated with features of the work environment and access to care. These relationships highlight layers of rights violations affecting FSW, underscoring the need for structural interventions and policy reforms to improve work environments, and to address police harassment, stigma, and rights violations to reduce violence and improve access to HIV interventions.

23. Shayo, E. H., et al. **"Prevalence and risk factors associated with female anal sex in the context of HIV/AIDS in the selected districts of Tanzania."** *BMC Res Notes* 2017 10(1): 140. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5368909/pdf/13104_2017_Article_2452.pdf.

BACKGROUND: Female anal sex is a receptive type of sexual practice among heterosexual couples where the penis is inserted into the anus of a female partner. In the Western world, a number of studies and interventions have been carried out on anal sex among men due to its potential risks to HIV transmission. In African countries, including Tanzania, there is dearth of information on the risks inherent in practices associated with female anal sex in the general population. The objective of this study was to determine the prevalence and risk factors associated with female anal sex in fuelling HIV transmission in selected districts of Tanzania.

METHODS: This study was conducted in four districts of Tanzania of Kinondoni, Tanga Urban, Makete and Siha. Both quantitative and qualitative methods i.e. household interviews and focus group discussions were employed in data collection. Study participants included community members of aged 15 and above such as heads of the household, adolescents, bar workers and commercial sex workers.

FINDINGS: A total of 903 individuals were interviewed, 60.6% of whom were females. When respondents were asked to indicate whether they had ever been tempted to practise FAS, 167 (18.5%) reported to have been tempted in the past 12 months. Of these, 44 (26.3%) respondents had at least practised FAS. Risky practices associated with FAS were forced sex, multiple partners, frequency of engaging in FAS, low use of condoms during FAS, low rates of HIV testing among partakers, poor perception of the risks to acquire HIV through FAS and use of lubricants.

CONCLUSIONS: In this population, the frequency of FAS practice was rather low. And yet, FAS practice attendant risk factors are likely to exacerbate HIV transmission. As such, there is a need for further exploratory studies to determine and document drivers of FAS. In addition, public health education should be provided with regard to the risks of contracting HIV associated with FAS practices.

24. Maman, S., et al. **"A qualitative study of secondary distribution of HIV self-test kits by female sex workers in Kenya."** *PLoS One* 2017 12(3): e0174629. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5367822/pdf/pone.0174629.pdf>.

Promoting awareness of serostatus and frequent HIV testing is especially important among high risk populations such as female sex workers (FSW) and their sexual partners. HIV self-testing is an approach that is gaining ground in sub-Saharan Africa as a strategy to increase knowledge of HIV status and promote safer sexual decisions. However, little is known about self-test distribution strategies that are optimal for increasing testing access among hard-to-reach and high risk individuals. We conducted a qualitative study with 18 FSW who participated in a larger study that provided them with five oral fluid-based self-tests, training on how to use the tests, and encouragement to offer the self-tests to their sexual partners using their discretion. Women demonstrated agency in the strategies they used to introduce self-tests to their partners and to avoid conflict with partners. They carefully considered with whom to share self-tests, often assessing the possibility for negative reactions from partners as part of their decision making process. When women faced negative reactions from partners, they drew on strategies they had used before to avoid conflict and physical harm from partners, such as not responding to angry partners and forgoing payment to leave angry partners quickly. Some women also used self-tests to make more informed sexual decisions with their partners.

25. Nyblade, L., et al. **"The relationship between health worker stigma and uptake of HIV counseling and testing and utilization of non-HIV health services: the experience of male and female sex workers in Kenya."** *AIDS Care* 2017: 1-9.

The barrier HIV-stigma presents to the HIV treatment cascade is increasingly documented; however less is known about female and male sex worker engagement in and the influence of sex-work stigma on the HIV care continuum. While stigma occurs in all spheres of life, stigma within health services may be particularly detrimental to health seeking behaviors. Therefore, we present levels of sex-work stigma from healthcare workers (HCW) among male and female sex workers in Kenya, and explore the relationship between sex-work stigma and HIV counseling and testing. We also examine the relationship between sex-work stigma and utilization of non-HIV health services. A snowball sample of 497 female sex workers (FSW) and 232 male sex workers (MSW) across four sites was recruited through a modified respondent-driven sampling process. About 50% of both male and female sex workers reported anticipating verbal stigma from HCW while 72% of FSW and 54% of MSW reported experiencing at least one of seven measured forms of stigma from HCW. In general, stigma led to higher odds of reporting delay or avoidance of counseling and testing, as well as non-HIV specific services. Statistical significance of relationships varied across type of health service, type of stigma and gender. For example, anticipated stigma was not a significant predictor of delay or avoidance of health services for MSW; however, FSW who anticipated HCW stigma had significantly higher odds of avoiding (OR = 2.11) non-HIV services, compared to FSW who did not. This paper adds to the growing evidence of stigma as a roadblock in the HIV treatment cascade, as well as its undermining of the human right to health. While more attention is being paid to addressing HIV-stigma, it is equally important to address the key population stigma that often intersects with HIV-stigma.

26. Bradburn, C. K., et al. **"Risky Business: condom failures as experienced by female sex workers in Mombasa, Kenya."** *Cult Health Sex* 2017 19(3): 395-404.

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

female sex workers with strategies for minimising the risk of HIV, STIs, and pregnancy in the aftermath of a condom failure should be investigated.

27. Wahed, T., et al. "**Sexual and reproductive health behaviors of female sex workers in Dhaka, Bangladesh.**" *PLoS One* 2017 12(4): e0174540. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5378344/pdf/pone.0174540.pdf>.

OBJECTIVES: The objective of this study was to document sexual and reproductive health (SRH) practices among female sex workers (FSWs) including abortion, pregnancy, use of maternal healthcare services and sexually transmitted infections (STIs) with the aim of developing recommendations for action.

METHODS: A total of 731 FSWs aged between 15 and 49 years were surveyed using a stratified sampling in Dhaka, Bangladesh. A workshop with 23 participants consisted of policy makers, researchers, program implementers was conducted to formulate recommendations.

RESULTS: About 61.3% of 731 FSWs reported SRH-related experiences in the past one year, including abortion (15.5%), ongoing pregnancy (9.0%), childbirth (8.3%) or any symptoms of STIs (41.6%). Among FSWs who had an abortion (n = 113), the most common methods included menstrual regulation through manual vacuum aspiration (47.8%), followed by Dilation and Curettage procedure (31%) and oral medicine from pharmacies (35.4%). About 57.5% of 113 cases reported post abortion complications. Among FSWs with delivery in the past year (n = 61), 27.7% attended the recommended four or more antenatal care visits and more than half did not have any postnatal visit. Adopting sustainable and effective strategies to provide accessible and adequate SRH services for FSWs was prioritized by workshop participants.

CONCLUSION: There was substantial unmet need for SRH care among FSWs in urban areas in Dhaka, Bangladesh. Therefore, it is important to integrate SRH services for FSWs in the formal healthcare system or integration of abortion and maternal healthcare services within existing HIV prevention services.

28. Anteneh, Z. A., et al. "**Sexually transmitted diseases among female commercial sex workers in Finote Selam town, northwest Ethiopia: a community-based cross-sectional study.**" *HIV AIDS (Auckl)* 2017 9: 43-49. Online at: <https://www.dovepress.com/getfile.php?fileID=35250>.

BACKGROUND: Female commercial sex workers (FCSWs) are considered a high-risk group for acquiring sexually transmitted diseases (STDs), yet the reported prevalence varies in studies around the world. The aim of this study was to determine the magnitude and associated factors of STDs among female sex workers.

METHODS: A community-based cross-sectional study was conducted among female sex workers in Finote Selam town. A total of 389 sex workers were studied using census method. Data were collected using an interview with structured questionnaires. The data were entered and analyzed by using SPSS version 20 software package.

RESULTS: The findings of this study showed that the overall prevalence of STDs was 20.6%. The reported prevalence of genital discharge, ulcer, and bubo was 15.9%, 15.2%, and 11.6%, respectively. In the multivariable logistic regression analysis, respondents who did not use a condom were about four times at higher risk of STDs than those who were using a condom consistently (adjusted odds ratio [AOR] = 4.07; 95% confidence interval [CI]: 1.812, 9.139). Respondents who experienced condom breakages were more than 12 times more likely to report STDs than those who never experienced condom breakages (AOR = 12.291, 95% CI: 5.701, 26.495).

CONCLUSION: The findings of this study showed that one in five commercial sex workers in Finote Selam town had STDs. Sex without a condom and condom breakage during sexual intercourse showed a significant association with STDs. Therefore, the Woreda Health Office in collaboration with nongovernmental organizations in the area should work on safe sex promotion to enhance consistent condom use and reduce condom breakage through continuous education among commercial sex workers.

29. Crowell, T. A., et al. "**Stigma, access to healthcare, and HIV risks among men who sell sex to men in Nigeria.**" *J Int AIDS Soc* 2017 20(1): 1-9. Online at: <http://www.jiasociety.org/index.php/jias/article/view/21489/pdf>.

INTRODUCTION: Among men who have sex with men (MSM), men who sell sex (MSS) may be subject to increased sexual behaviour-related stigma that affects uptake of healthcare and risk of sexually transmitted infections (STIs). The objectives of this study were to characterize stigma, access to care, and prevalence of HIV among MSS in Nigeria.

METHODS: Respondent-driven sampling was used to recruit MSM in Abuja and Lagos into the ongoing TRUST/RV368 study, which provides HIV testing and treatment. Detailed behavioural data were collected by trained interviewers. MSS were identified by self-report of receiving goods or money in exchange for sex with men. Poisson regression with robust error variance was used to explore the impact of sex-selling on the risk of HIV.

RESULTS: From 12 initial seed participants, 1552 men were recruited from March 2013-March 2016. Of these, 735 (47.4%) reported sex-selling. Compared to other MSM, MSS were younger (median 22 vs. 24 years, $p < 0.001$) and more likely to identify as gay/homosexual (42.4% vs. 31.5%, $p < 0.001$). MSS were more likely to report perceived and experienced stigmas such as healthcare avoidance (27.6% vs. 21.5%, $p = 0.005$) and verbal harassment (39.2% vs. 26.8%, $p < 0.001$). Total HIV prevalence was 53.4%. After controlling for other factors, HIV prevalence among MSS was similar to that observed among other MSM (relative risk 0.94 [95% confidence interval 0.84-1.05]).

CONCLUSION: These data highlight increased sexual behaviour-related stigma affecting MSS, as compared with other MSM, that limits uptake of healthcare services. The distinct characteristics and risks among MSS suggest the need for specific interventions to optimize linkage to HIV prevention and treatment services in Nigeria.

30. Niama, F. R., et al. "**A study on HIV, Syphilis, and Hepatitis B and C virus infections among female sex workers in the Republic of Congo.**" *Arch Public Health* 2017 75: 21. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5421326/pdf/13690_2017_Article_189.pdf.

BACKGROUND: Female Sex Workers (FSWs) are considered to be at high risk for transmission of Sexually Transmitted Infections (STIs) and are defined as a priority of the national HIV/AIDS response in the Republic of Congo (RoC). However, no data are available regarding STIs in this group. This study aimed to determine the prevalences of HIV, syphilis and hepatitis B and C among FSWs in five cities in the country.

METHODS: A cross-sectional study was conducted from November 2nd 2011 to May 15th 2012. Participants were recruited in Brazzaville, Pointe-Noire, Dolisie, Nkayi and Pokola using a respondent-driven sampling method.

RESULTS: A total of 805 FSWs were recruited with an average age of 28.31 +/- 9.15 years. The overall prevalences of HIV, syphilis, HBV and HCV were 7.50%, 2.20%, 4.20% and 0.70%, respectively. The age groups 35-39 (20.51% [0%-36.93%], $p = 0.0057$) and greater than 40 years (16.67% [0%-34.93%], $P = 0.016$) were positively associated with behaviors at high risk of HIV infection. For syphilis, the most infected age group was the one greater than 40 years, at 6.25% ([1.06% -72.37%] $p = 0.04$). Pointe-Noire was the most infected city for syphilis and HBV, with 5.15% ($p = 0.0061$) and 4.22% ($p < 0.001$), respectively. No risk factors were associated with HCV infection. FSWs practicing in mobile prostitution sites had a significantly higher infection rate (2.1% [0%-11.09%] $p = 0.04$).

CONCLUSION: This study shows that the prevalence of HIV and other STIs in FSWs is high. Therefore, a combination of individual and structural interventions could reduce the risk of an STI "reservoir" among this population.

31. Carvajal, B., et al. "[Survey adaptation for bio-behavioural surveillance of HIV in Chilean female sex workers]." *Gac Sanit* 2017. Online at: <http://www.gacetasanitaria.org/es/pdf/S0213911116302618/S200/>.

OBJECTIVE: To adapt a behavioural questionnaire for second-generation HIV/AIDS surveillance in female sex workers (FSWs) in the Metropolitan Region, Chile.

METHODS: Qualitative study of instruments validation. A Spanish instrument adapted in Catalonia was validated through a translation and back-translation of the original version. The content validity was determined through a modified Delphi method, via FSW and HIV experts representing community, political and institutional levels. Applicability aspects were determined by the application of the questionnaire to FSW in the Metropolitan Region.

RESULTS: The questionnaire, drafted in Spain, was successfully adapted to Chilean Spanish. The content validity process enabled sections to be created that address HIV in FSWs. The adapted questionnaire takes less than 15minutes to complete, which makes it usable in fieldwork. The 61 women surveyed came from different countries (all were Latin Americans) and had different educational levels; all this enabled potential applicability problems to be detected.

DISCUSSION: The adapted questionnaire for Chile contains all the UNAIDS indicators for FSWs, as well as the recommended indicators of Family Health International for bio-behavioural surveillance. Said questionnaire serves as a tool for second-generation HIV/other STD surveillance and further contributes to preventive policies in Chilean FSWs.

32. Awungafac, G., et al. "**Systematic review of sex work interventions in sub-Saharan Africa: examining combination prevention approaches.**" *Trop Med Int Health* 2017.

OBJECTIVE: The incidence of HIV and sexually transmitted infections is disproportionately high among sex workers (SW). We aimed to update the evidence on the effectiveness of SW interventions in sub-Saharan Africa and to provide more insights into combination prevention.

METHODS: The Systematic review followed PRISMA guidelines in a search of PUBMED and POPLINE for peer-reviewed literature published between 1 January 2000 and 22 July 2016 (registration number on PROSPERO: CRD42016042529). We considered cohort interventions, randomised controlled trials and cross-sectional surveys of SW programmes. A framework was used in the description and mapping of intervention to desired outcomes.

RESULTS: Twenty-six papers(reporting on 25 studies) were included. A strategy that empowered peer educator leaders to steer community activities showed a twofold increase in coverage of behaviour change communication and utilisation of health facility among SW. Brief alcohol harm reduction effort demonstrated a significant effect on sexual violence and engagement in sex trading. A risk reduction counselling intervention among drug-injecting SW showed an effect on alcohol, substance use and engagement in sex work. No study on a promising intervention like PrEP among SWs was found. We observed that interventions that combined some structural components, biomedical and behavioural strategies tend to accumulate more desired outcomes.

CONCLUSION: The evidence base that can be considered in intervention designs to prevent HIV in SW in SSA is vast. The health sector should consider interventions to reduce binge alcohol intake and intravenous drug use among sex workers. Programmes should staunchly consider multicomponent approaches that explore community-based structural approaches.

33. Koechlin, F. M., et al. "**Values and Preferences on the Use of Oral Pre-exposure Prophylaxis (PrEP) for HIV Prevention Among Multiple Populations: A Systematic Review of the Literature.**" *AIDS Behav* 2017 21(5): 1325-1335.

Daily oral pre-exposure prophylaxis (PrEP) is the use of antiretroviral drugs by HIV-negative people to prevent HIV infection. WHO released new guidelines in 2015 recommending PrEP for all populations at substantial risk of HIV infection. To prepare these guidelines, we conducted a systematic review of values and preferences among populations that might benefit from PrEP, women, heterosexual men, young women and adolescent girls, female sex workers, serodiscordant couples, transgender people and people who inject drugs, and among healthcare providers who may prescribe PrEP. A comprehensive search strategy reviewed three electronic databases of articles and HIV-related conference abstracts (January 1990-April 2015). Data abstraction used standardised forms to categorise by population groups and relevant themes. Of 3068 citations screened, 76 peer-reviewed articles and 28 conference abstracts were included. Geographic coverage was global. Most studies (N = 78) evaluated hypothetical use of PrEP, while 26 studies included individuals who actually took PrEP or placebo. Awareness of PrEP was low, but once participants were presented with information about PrEP, the majority said they would consider using it. Concerns about safety, side effects, cost and effectiveness were the most frequently cited barriers to use. There was little indication of risk compensation. Healthcare providers would consider prescribing PrEP, but need more information before doing so. Findings from a rapidly expanding evidence base suggest that the majority of populations most likely to benefit from PrEP feel positively towards it. These same populations would benefit from overcoming current implementation challenges with the shortest possible delay.

34. Mendoza, C., et al. "**Violence From a Sexual Partner is Significantly Associated With Poor HIV Care and Treatment Outcomes Among Female Sex Workers in the Dominican Republic.**" *J Acquir Immune Defic Syndr* 2017 74(3): 273-278.

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

METHODS: We analyzed data from a socio-behavioral survey with a cohort of FSWs living with HIV in the Dominican Republic (n = 268) to describe the burden of violence from a sexual partner in the last 6 months. We assessed the relationship between violence and HIV treatment outcomes, comparing findings across 2 types of sexual partners: intimate partners and clients.

RESULTS: Nearly one-fifth of women (18.3%) experienced violence in the last 6 months. More women experienced violence from an intimate partner (12.3%) than a client (8.3%), with some (2.6%) reporting both. Although violence from an intimate partner was significantly associated with not currently being on antiretroviral treatment [ART; adjusted odds ratio (AOR): 4.05, 95% confidence interval (CI): 1.00 to 16.36] and missing an ART dose in the last 4 days (AOR: 5.26, 95% CI: 1.91 to 14.53), violence from a client was associated with never having received HIV care (AOR: 2.85, 95% CI: 1.03 to 7.92) and ever interrupting ART (AOR: 5.45, 95% CI: 1.50 to 19.75).

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

35. Carrasco, M. A., et al. "'We talk, we do not have shame': addressing stigma by reconstructing identity through enhancing social cohesion among female sex workers living with HIV in the Dominican Republic." *Cult Health Sex* 2017 19(5): 543-556.

This study explores social cohesion as a strategy used by female sex workers to address layered HIV and sex work-related stigma. Data derive from a thematic analysis of 23 in-depth interviews and 2 focus groups with female sex workers living with HIV enrolled in a multi-level HIV/STI prevention, treatment and care intervention in Santo Domingo, Dominican Republic. Drawing on Foucault's conceptualisation of modern power, discipline and resistance, we argue that social cohesion provides the psychosocial space (of trust,

solidarity and mutual aid) to subvert oppressive societal norms, enabling the reconstruction of identity. Among study participants, identity reconstruction happened through the production, repetition and performance of new de-stigmatised narratives that emerged and were solidified through collective interaction. Findings highlight that enabling the collective reconstruction of identity through social cohesion - rather than solely attempting to change individual beliefs - is a successful approach to addressing stigma.

36. Wanyenze, R. K., et al. **"When they know that you are a sex worker, you will be the last person to be treated": Perceptions and experiences of female sex workers in accessing HIV services in Uganda.** *BMC Int Health Hum Rights* 2017 17(1): 11. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5420144/pdf/12914_2017_Article_119.pdf.

BACKGROUND: HIV prevalence among female sex workers (FSWs) in high burden countries in sub-Saharan Africa varies between 24 and 72%, however their access to HIV services remains limited. This study explored FSWs' perspectives of the barriers and opportunities to HIV service access in Uganda.

METHODS: The cross-sectional qualitative study was conducted between October and December 2013. Twenty-four focus group discussions were conducted with 190 FSWs in 12 districts. Data were analysed using manifest content analysis, using Atlas.ti software, based on the socio-ecological model.

RESULTS: FSWs indicated that HIV services were available and these included condoms, HIV testing and treatment, and management of sexually transmitted infections. However, access to HIV services was affected by several individual, societal, structural, and policy related barriers. Individual level factors included limited awareness of some prevention services, fears, and misconceptions while societal stigma was prominent. Structural and policy level barriers included inconvenient hours of operation of the clinics, inflexible facility based distribution of condoms, interruptions in the supply of condoms and other commodities, and limited package of services with virtually no access to lubricants, HIV pre- and post-exposure prophylaxis, and support following client perpetrated violence. Policies such as partner testing and involvement at antenatal care, and using only one facility for antiretroviral drug refills hindered HIV service uptake and retention in care. FSWs had major concerns with the quality of services especially discrimination and rude remarks from providers, denial or delay of services, and potential for breach of confidentiality. However, some FSWs reported positive experiences including interface with friendly providers and participated in formal and informal FSW groups, which supported them to access health services.

CONCLUSION: Despite availability of services, FSWs faced major challenges in access to services. Comprehensive multilevel interventions targeting individual, societal, structural and policy level barriers are required to increase access to HIV services among FSWs in Uganda. Policy and institutional adjustments should emphasize quality friendly services and expanding the package of services to meet the needs of FSWs.

37. Oldenburg, C. E., et al. **"Zambian Peer Educators for HIV Self-Testing (ZEST) study: rationale and design of a cluster randomised trial of HIV self-testing among female sex workers in Zambia."** *BMJ Open* 2017 7(4): e014780. Online at: <http://bmjopen.bmj.com/content/bmjopen/7/4/e014780.full.pdf>.

BACKGROUND: HIV testing and knowledge of status are starting points for HIV treatment and prevention interventions. Among female sex workers (FSWs), HIV testing and status knowledge remain far from universal. HIV self-testing (HIVST) is an alternative to existing testing services for FSWs, but little evidence exists how it can be effectively and safely implemented. Here, we describe the rationale and design of a cluster randomised trial designed to inform implementation and scale-up of HIVST programmes for FSWs in Zambia.

METHODS: The Zambian Peer Educators for HIV Self-Testing (ZEST) study is a 3-arm cluster randomised trial taking place in 3 towns in Zambia. Participants (N=900) are eligible if they are women who have exchanged sex for money or goods in the previous 1 month, are HIV negative or status unknown, have not tested for HIV in the previous 3 months, and are at least 18 years old. Participants are recruited by peer educators

working in their communities. Participants are randomised to 1 of 3 arms: (1) direct distribution (in which they receive an HIVST from the peer educator directly); (2) fixed distribution (in which they receive a coupon with which to collect the HIVST from a drug store or health post) or (3) standard of care (referral to existing HIV testing services only, without any offer of HIVST). Participants are followed at 1 and 4 months following distribution of the first HIVST. The primary end point is HIV testing in the past month measured at the 1-month and 4-month visits.

ETHICS AND DISSEMINATION: This study was approved by the Institutional Review Boards at the Harvard T.H. Chan School of Public Health in Boston, USA and ERES Converge in Lusaka, Zambia. The findings of this trial will be presented at local, regional and international meetings and submitted to peer-reviewed journals for publication.

TRIAL REGISTRATION NUMBER: Pre-results; NCT02827240.

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Transgender People - 19

1. Pizzicato, L. N., et al. "**Active syphilis and its association with HIV and sexual risk behaviours in a multicity sample of men who have sex with men and transgender women in Peru.**" *Sex Health* 2017.

Background: Syphilis in Peru is heavily concentrated in men who have sex with men (MSM) and transgender women (TGW). The aim of the present study was to understand the risk factors for active syphilis infection among MSM and TGW in Peru.

Methods: Independent correlates suggestive of active syphilis infection were examined to better understand risk factors for syphilis in MSM and TGW, with separate analyses conducted based on location and among TGW. In 2011, 5101 MSM and TGW completed both self-report surveys and HIV and syphilis testing in five Peruvian cities.

Results: Overall, 261 (5.1%) MSM and TGW met the criteria for active syphilis, with higher prevalence in Lima than elsewhere (7.0% vs 3.0%) and in TGW than in MSM (10.7% vs 4.2%). Significant independent correlates of active syphilis infection differed greatly by location. In Lima, they included being HIV-infected (aware or unaware of status), being a TGW, being a high school graduate, engaging in receptive anal intercourse, no recent sex with a female partner and having had any symptomatic sexually transmissible infection, including syphilis, in the previous 6 months. Outside Lima, the independent correlates included being HIV-infected and unaware of status, engaging in recent sex work, no recent sex with a female partner and age 35-44 years. Among TGW, independent correlates of active syphilis included being HIV-infected (aware or unaware of status), a recent syphilis diagnosis in the previous 6 months and recent drug use.

Conclusion: The findings of the present study support the need not only for combined HIV and syphilis screening, but also for increased screening and treatment of syphilis in MSM and TGW populations. Stratified analyses suggest different syphilis epidemics throughout the country and in TGW, yet being HIV-infected and aware were consistently associated with active syphilis, suggesting higher syphilis risk in HIV-infected MSM and TGW.

2. Budhwani, H., et al. "**Association between violence exposure and condom non-use among transgender sex workers in the Dominican Republic: the mediating role of trust.**" *Int J STD AIDS* 2017 28(6): 608-612.

Transgender women are a high-risk population, and transgender female sex workers are one of the most vulnerable populations globally. Transgender female sex workers have high rates of sexually transmitted

infections, HIV, and exposure to violence compared to cisgender sex workers; these negative exposures are associated with an increase in HIV risk behaviors. Thus, the aim of this study is to examine the relationship between exposure to violence and condom non-use in transgender female sex workers residing in the Dominican Republic. We hypothesize that mediation exists wherein the effects of violence on condom non-use are mediated by distrust. Facilitated interview data (N = 78) were used. Primary outcome was condom non-use with coercive partner. Four logistic regression models and a mediation analysis were employed. Respondents' mean age was 23.0 years (SD = 4.8) with an average level education attainment of 10.1 years (SD = 2.6); 35% reported experiencing violence; 17% believed that a person who asks a partner to use a condom does not trust that partner. Exploratory mediation analyses yielded a significant indirect effect of experience with violence on condom non-use through distrust (b = 0.64, SE = 0.33, p = .05). Results suggest that distrust mediates the association between experienced violence and condom use with coercive partners. It was concluded that developing interventions on increasing resilience and perceived self-worth, plus provision of screening for violence and referral services may reduce maladaptive attributions and cognitions about condom use. Furthermore, by implementing policies that protect vulnerable populations, and subsequently enforcing them, the Dominican Republic has the opportunity to improve overall population health and protect their most disadvantaged citizens.

3. Hoagland, B., et al. "**Awareness and Willingness to Use Pre-exposure Prophylaxis (PrEP) Among Men Who Have Sex with Men and Transgender Women in Brazil.**" *AIDS Behav* 2017 21(5): 1278-1287.

Antiretroviral pre-exposure prophylaxis (PrEP) is recommended to prevent HIV infection among high-risk men who have sex with men (MSM) though not available in Brazil where the HIV epidemic persists unabated in this group. This cross-sectional study describes PrEP awareness and willingness and associated factors among MSM and transvestite/transgender women (trans women) pre-screened for the PrEP Brasil study. Awareness was reported by 61.3 % of the participants and was associated with age, education, site, study period and prior HIV testing. Most participants (82.1 %) were willing to use PrEP, which was associated with site, study period, number of male condomless anal sexual partners and anal sex with HIV positive/unknown partners. PrEP information is need among young and less educated individuals. Willingness to use PrEP was high and future studies should be conducted to confirm PrEP acceptability and the characteristics of the population who chose to adopt this intervention.

4. Buck, M., et al. "**Combination HIV Prevention Strategy Implementation in El Salvador: Perceived Barriers and Adaptations Reported by Outreach Peer Educators and Supervisors.**" *Glob Qual Nurs Res* 2017 4: 2333393617703198. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5406143/pdf/10.1177_2333393617703198.pdf.

El Salvador was one of three countries to receive funding from the Global Fund to Fight AIDS, Tuberculosis and Malaria to conduct a combination HIV prevention intervention among transwomen (TW), men who have sex with men (MSM), and commercial sex workers (CSW). Program evaluation revealed that prevention activities reached only 50% of the target population. The purpose of this study is to examine the barriers that Salvadoran educators faced in implementing the peer education as designed and adaptations made as a result. Between March and June 2015, 18 in-depth interviews with educators were conducted. Violence was reported as the biggest barrier to intervention implementation. Other barriers differed by subpopulation. The level of violence and discrimination calls into question the feasibility and appropriateness of peer-led interventions in the Salvadoran context and demonstrates the importance of implementation research when translating HIV prevention interventions developed in high-income countries to low- and middle-income countries.

5. Chow, J. Y., et al. "**Demographics, Behaviors, and Sexual Health Characteristics of High Risk Men Who Have Sex With Men and Transgender Women Who Use Social Media to Meet Sex Partners in Lima, Peru.**" *Sex Transm Dis* 2017 44(3): 143-148.

BACKGROUND: Men who have sex with men (MSM) and transgender women (TW) in Peru bear a disproportionate burden of human immunodeficiency virus (HIV) and sexually transmitted infections (STIs).

In a context of quickly expanding communication technology, increasing numbers of MSM and TW are using social media applications to seek sex partners. Understanding social media users and their sex partnering practices is needed to update HIV and STI prevention programming.

METHODS: In Lima, Peru, 312 MSM and 89 TW from 2 STI clinics underwent HIV and STI testing and participated in a survey of demographics, behaviors, sexual health, and social media practices. chi, t tests, and Wilcoxon Mann-Whitney tests were used to compare those with and without recent social media sex partners.

RESULTS: Men who have sex with men with social media sex partners were younger, more educated, and more likely to identify as gay. They were significantly more likely to report greater numbers of sex partners, including anonymous sex partners; sex in higher-risk venues, orgies, and have rectal *Neisseria gonorrhoeae* or *Chlamydia trachomatis* infection. Transgender women with social media sex partners were also younger, more likely to participate in sex work, and have a lower rate of rapid plasma reagin positivity or history of syphilis. Participants reported using several social media sites including sexual hook-up applications, websites for gay men, pornographic websites, and chat sites, but the most common was Facebook.

CONCLUSIONS: Prevention strategies targeting Peruvian MSM and TW who use social media are needed to address higher-risk sexual behavior and the high burden of STIs.

6. Weikum, D., et al. **"An explanatory factor analysis of a brief self-report scale to detect neurocognitive impairment among HIV-positive men who have sex with men and transgender women in Peru."** *AIDS Care* 2017: 1-5.

Neurocognitive impairment (NCI) has been associated with poor clinical outcomes in various patient populations. This study used exploratory factor analysis (EFA) to examine the factor structure of the existing 95-item Neuropsychological Impairment Scale (NIS) to create a suitable NCI screening instrument for people living with HIV (PLH). In Lima, Peru, 313 HIV-positive men who have sex with men (MSM) and transgender women (TGW) prescribed antiretroviral therapy (ART) completed the NIS using computer-assisted self-interviews (CASI). The EFA used principal axis factoring and orthogonal varimax rotation, which resulted in 42 items with an 8-factor solution that explained 51.8% of the overall variance. The revised, 8-factor, Brief Inventory of Neurocognitive Impairment for Peru (BINI-P) showed a diverse set of factors with excellent to good reliability (i.e., F1 alpha = 0.92 to F8 alpha = 0.78). This EFA supports the use of the BINI-P to screen for NCI among Spanish-speaking, HIV-positive MSM and TGW. Future research should examine the effectiveness of the BINI-P in detecting NCI in clinical care settings and the impact of NCI on HIV health-related outcomes, including linkage and retention in care, ART adherence and HIV risk behaviors.

7. Koirala, S., et al. **"Facilitators and barriers for retention in HIV care between testing and treatment in Asia-A study in Bangladesh, Indonesia, Lao, Nepal, Pakistan, Philippines and Vietnam."** *PLoS One* 2017 12(5): e0176914. Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5411091/pdf/pone.0176914.pdf>.

INTRODUCTION: The need for efficient retention in HIV care is more evident than ever because of the expansion of earlier ART initiation and the shift towards 'Test and Treat'. This study assesses factors affecting participation in the HIV care cascade among people living with HIV (PLHIV) in the Asia-Pacific Region.

METHODS: A total of 7843 PLHIV aged 18-50 years were recruited using targeted and venue-based sampling between October 1, 2012, and May 31, 2013, across 59 sites in 7 countries (Bangladesh, Indonesia, Lao People's Democratic Republic (Lao PDR), Nepal, Pakistan, Philippines and Vietnam). Statistically significant associations between demographic and health system determinants, and various steps in the HIV care cascade were computed using a generalized structural equation model.

RESULTS: A high proportion of PLHIV (40-51%) presented late for HIV care and delayed linkage to care in all seven countries. However, once PLHIV enrolled in care, retention in the various steps of the care cascade including adherence to antiretroviral treatment (ART) was satisfactory. The proportion still engaged in HIV

care at 36 months post HIV diagnosis, varied from 78% in Nepal to >90% in Lao PDR. Similarly, the proportion of ART initiation who also were adherent to ART ranged from 91% in Bangladesh to >95% in Philippines/ Vietnam and from 70% in Lao PDR to 89% in the Philippines respectively. The following factors enhanced the likelihood of ART initiation and high adherence to HIV care and ART: good client-provider communication, high HIV treatment literacy, a referral from a health worker and TB/HIV co-infection. The following barriers were identified: young age, sex work, imprisonment, transgender identity, illiteracy, rural residence, alcohol/ injecting drug use, perceived poor health status, lack of health insurance, fear of confidentiality breach, self-referral for HIV testing, and public hospital as the place of HIV diagnosis.

CONCLUSIONS: HIV programme planners should ensure easy access to HIV testing and earlier linkage to HIV care among PLHIV. In addition, multiple socio-economic and health systems barriers need to be addressed along the HIV care cascade to reach the UNAIDS 90-90-90 target in the Asia-Pacific region.

8. Logie, C. H., et al. "**Factors associated with sex work involvement among transgender women in Jamaica: a cross-sectional study.**" *J Int AIDS Soc* 2017 20(1): 1-10. Online at: <http://www.jiasociety.org/index.php/jias/article/view/21422/pdf>.

INTRODUCTION: Transgender women are disproportionately impacted by HIV. Transgender women involved in sex work may experience exacerbated violence, social exclusion, and HIV vulnerabilities, in comparison with non-sex work-involved transgender women. Scant research has investigated sex work among transgender women in the Caribbean, including Jamaica, where transgender women report pervasive violence. The study objective was to examine factors associated with sex work involvement among transgender women in Jamaica.

METHODS: In 2015, we implemented a cross-sectional survey using modified peer-driven recruitment with transgender women in Kingston and Ocho Rios, Jamaica, in collaboration with a local community-based AIDS service organization. We conducted multivariable logistic regression analyses to identify factors associated with paid sex and transactional sex. Exchanging oral, anal or vaginal sex for money only was categorized as paid sex. Exchanging sex for survival needs (food, accommodation, transportation), drugs or alcohol, or for money along with survival needs and/or drugs/alcohol, was categorized as transactional sex.

RESULTS: Among 137 transgender women (mean age: 24.0 [SD: 4.5]), two-thirds reported living in the Kingston area. Overall, 25.2% reported being HIV-positive. Approximately half (n = 71; 51.82%) reported any sex work involvement, this included sex in exchange for: money (n = 64; 47.06%); survival needs (n = 27; 19.85%); and drugs/alcohol (n = 6; 4.41%). In multivariable analyses, paid sex and transactional sex were both associated with: intrapersonal (depression), interpersonal (lower social support, forced sex, childhood sexual abuse, intimate partner violence, multiple partners/polyamory), and structural (transgender stigma, unemployment) factors. Participants reporting transactional sex also reported increased odds of incarceration perceived to be due to transgender identity, forced sex, homelessness, and lower resilience, in comparison with participants reporting no sex work involvement.

CONCLUSION: Findings reveal high HIV infection rates among transgender women in Jamaica. Sex work-involved participants experience social and structural drivers of HIV, including violence, stigma, and unemployment. Transgender women involved in transactional sex also experience high rates of incarceration, forced sex and homelessness in comparison with non-sex workers. Taken together, these findings suggest that social ecological factors elevate HIV exposure among sex work-involved transgender women in Jamaica. Findings can inform interventions to advance human rights and HIV prevention and care cascades with transgender women in Jamaica.

9. Avila, M. M., et al. "**High Frequency of Illegal Drug Use Influences Condom Use Among Female Transgender Sex Workers in Argentina: Impact on HIV and Syphilis Infections.**" *AIDS Behav* 2017.

The high prevalence of HIV and syphilis found among female transgender sex workers (FTSWs) in Argentina calls for the study of factors leading to negative health consequences. Given the particular characteristics

observed in this population (high marginalization, school dropout, and low adherence to healthcare services), we explored the association of several socio-demographic characteristics with syphilis and HIV infections, and the determinants of condom use. This study revealed that FTSWs from Argentina were exposed to several risk factors decreasing thus their ability to negotiate condom use and leading to increased risk for transmission of HIV and other sexually transmitted infections (STIs). Strategies to reduce HIV and syphilis in this population should consider interventions aimed at decreasing violence and substance use which appear to be the most important determinants. Results of this study will contribute to the global information among FTSWs.

10. Hoagland, B., et al. "**High pre-exposure prophylaxis uptake and early adherence among men who have sex with men and transgender women at risk for HIV Infection: the PrEP Brasil demonstration project.**" *J Int AIDS Soc* 2017 20(1): 1-14. Online at: <http://www.jiasociety.org/index.php/jias/article/view/21472/pdf>.

INTRODUCTION: The efficacy of pre-exposure prophylaxis (PrEP) in preventing sexual acquisition of human immunodeficiency virus (HIV) is well established. Little is known about the feasibility of PrEP implementation in middle-income settings with concentrated epidemics among men who have sex with men (MSM) and transgender women (TGW).

METHODS: PrEP Brasil is a prospective, multicentre, open-label demonstration project assessing PrEP delivery in the context of the Brazilian Public Health System. HIV-uninfected MSM and TGW in 3 referral centres in Rio de Janeiro and Sao Paulo were evaluated for eligibility and offered 48 weeks of daily emtricitabine/tenofovir for PrEP. Concentrations of tenofovir diphosphate in dried blood spot samples (DBS) at week 4 after enrolment (early adherence) were measured. Predictors of drug levels were assessed using ordinal logistic regression models considering the DBS drug level as a 3 level variable (<350 fmol/punch, >/=350-699 fmol/punch and >/=700 fmol/punch).

RESULTS: 1,270 individuals were assessed for participation; n = 738 were potentially eligible and n = 450 were offered PrEP (PrEP uptake was 60.9%). Eligible but not enrolled individuals were younger, had lower HIV risk perception and had lower PrEP awareness. At week 4, 424 participants (of the 450 enrolled) had DBS TFV-DP concentrations, 94.1% in the protective range (>/=350 fmol/punch, consistent with >/=2 pills per week), and 78% were in the highly protective range (>/=700 fmol/punch, >/=4 pills per week). Participants with >/=12 years of schooling had 1.9 times the odds (95%CI 1.10-3.29) of a higher versus lower drug level than participants with <12 years of schooling. Condomless receptive anal intercourse in the prior 3 months was also associated with higher drug levels (adjusted OR = 1.78; 95% CI 1.08-2.94).

CONCLUSION: The high uptake and early adherence indicate that PrEP for high-risk MSM and TGW can be successfully delivered in the context of the Brazilian Public Health System. Interventions to address disparities on PrEP awareness and HIV risk perception among the younger and less educated are urgently needed in order to maximize the impact of this prevention strategy on the reduction of HIV infection among MSM and TGW in Brazil.

11. Yi, S., et al. "**HIV prevalence, risky behaviors, and discrimination experiences among transgender women in Cambodia: descriptive findings from a national integrated biological and behavioral survey.**" *BMC Int Health Hum Rights* 2017 17(1): 14. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5441093/pdf/12914_2017_Article_122.pdf.

BACKGROUND: Transgender people are disproportionately affected by HIV. Despite their high vulnerability to HIV, lack of adequate epidemiological and surveillance data related to this population in many countries prevents provision of appropriate services. This paper summarizes descriptive findings from a national integrated biological and behavioral survey and discusses policy implications of the findings on HIV prevention among transgender women in Cambodia.

METHODS: This cross-sectional study was conducted between December 2015 and February 2016.

Participants were recruited from 20 sites in the capital city and 12 provinces of Cambodia using Respondent Driven Sampling (RDS) method. Behavioral data were collected through structured questionnaire interviews, and rapid finger-prick HIV testing was performed. Descriptive data analyses were conducted using STATA.

RESULTS: This study included 1,375 transgender women with a mean age of 25.9 years (SD = 7.1). The overall prevalence of HIV was 5.9%. The prevalence of HIV was significantly higher among urban participants compared to their rural counterparts (6.5 vs. 2.6%, $p = 0.02$). Almost one in five (19.6%) had never been tested for HIV prior to the study. Overall, 45.0% reported ever using gender affirming hormones. More than one-third (39.1%) reported not using condoms in their last sex, 29.8% had engaged in sex in exchange for money/gifts, and 14.0% reported that they had experienced at least one symptom of sexually transmitted infections (STI) in the past year. About one in ten (10.1%) reported having used some form of amphetamine-type stimulant drugs, while 6.5% reported having sex during or after using illicit drugs. A significant number of participants experienced sexual abuse (39.2%), losing a job (24.3%), or physical abuse (23.6%) because of their transgender identity. In addition, 82.9 and 88.9% would be willing to use the HIV self-test and pre-exposure prophylaxis (PrEP), respectively, if they become available.

CONCLUSIONS: The high prevalence of HIV, STI, and related risk behaviors among transgender women in Cambodia is of great concern, suggesting an urgent need to further expand tailored prevention interventions for this key population focusing on individual, social, and structural drivers of HIV. HIV self-test and PrEP should be explored as a priority.

12. Wirtz, A. L., et al. "New HIV testing technologies in the context of a concentrated epidemic and evolving HIV prevention: qualitative research on HIV self-testing among men who have sex with men and transgender women in Yangon, Myanmar." *J Int AIDS Soc* 2017 20(1): 1-9. Online at: <http://www.jiasociety.org/index.php/jias/article/view/21796/pdf>.

INTRODUCTION: Global effort to increase early diagnosis and engagement in HIV care emphasize the importance of developing novel approaches to reaching those missed by traditional methods. Such needs are particularly great for men who have sex with men (MSM), transgender women (TW), and other populations who face stigma. Myanmar's HIV epidemic is concentrated among key populations and the revised National Strategy aims to reduce late diagnosis and barriers to care to curb HIV incidence among these groups. HIV self-testing (HIVST) may be one method to improve testing and diagnosis among key populations, by placing HIV testing and disclosure within the individual's control.

METHODS: Formative, qualitative research including in-depth interviews with adult MSM (N = 12) and TW (N = 13) and focus group discussions with MSM, TW, and community key informants (N = 35) were conducted in June-September 2015 in Yangon, Myanmar. To inform a subsequent HIV care continuum intervention, including HIVST, participants' opinions and perceptions about HIVST were elicited.

RESULTS: The confidentiality and privacy of HIVST, particularly as it related to disclosure of HIV status and sexual behaviour, was widely recognized among participants. These major advantages were further supported by the opportunity to avoid stigma, convenience of self-testing (reduced need for transportation and time to go to clinics), and the availability of a pain-free testing option. Participants weighed these benefits against perceived disadvantages of HIVST, the majority of which centred on the perception that HIVST does not include counselling. Participants were concerned that potential lack of counselling would result in poor mental health outcomes, inadequate linkage to HIV care and surveillance, and reductions in disclosure of HIV status. Participants did not view these disadvantages as an impediment, but provided suggestions for future implementation of HIVST in Myanmar.

CONCLUSION: MSM and TW are optimistic about the confidentiality and privacy afforded by HIVST but wanted HIV counselling and linkage to appropriate services. The domestic reprioritization of HIV and opening of the country to international support has substantially increased the availability of HIV treatment and provides new opportunities, like HIVST, to potentially improve the HIV response for key populations who are at risk for HIV acquisition.

13. Anand, T., et al. "A novel Online-to-Offline (O2O) model for pre-exposure prophylaxis and HIV testing scale up." *J Int AIDS Soc* 2017 20(1): 1-11. Online at: <http://www.jiasociety.org/index.php/jias/article/view/21326/pdf>.

INTRODUCTION: PrEP awareness and uptake among men who have sex with men (MSM) and transgender women (TG) in Thailand remains low. Finding ways to increase HIV testing and PrEP uptake among high-risk groups is a critical priority. This study evaluates the effect of a novel Adam's Love Online-to-Offline (O2O) model on PrEP and HIV testing uptake among Thai MSM and TG and identifies factors associated with PrEP uptake.

METHODS: The O2O model was piloted by Adam's Love (www.adamslove.org) HIV educational and counselling website. MSM and TG reached online by PrEP promotions and interested in free PrEP and/or HIV testing services contacted Adam's Love online staff, received real-time PrEP eCounseling, and completed online bookings for receiving services at one of the four sites in Bangkok based on their preference. Auto-generated site- and service-specific e-tickets and Quick Response (QR) codes were sent to their mobile devices enabling monitoring and check-in by offline site staff. Service uptake and participant's socio-demographic and risk behaviour characteristics were analyzed. Factors associated with PrEP uptake were assessed using multiple logistic regression.

RESULTS: Between January 10th and April 11th, 2016, Adam's Love reached 272,568 people online via the PrEP O2O promotions. 425 MSM and TG received eCounseling and e-tickets. There were 325 (76.5%) MSM and TG who checked-in at clinics and received HIV testing. Nine (2.8%) were diagnosed with HIV infection. Median (IQR) time between receiving the e-ticket and checking-in was 3 (0-7) days. Of 316 HIV-negative MSM and TG, 168 (53.2%) started PrEP. In a multivariate model, higher education (OR 2.30, 95%CI 1.14-4.66; $p = 0.02$), seeking sex partners online (OR 2.05, 95%CI 1.19-3.54; $p = 0.009$), being aware of sexual partners' HIV status (OR 2.37, 95%CI 1.29-4.35; $p = 0.008$), ever previously using post-exposure prophylaxis (PEP) (OR 2.46, 95%CI 1.19-5.09; $p = 0.01$), and enrolment at Adam's Love clinic compared to the other three sites (OR 3.79, 95%CI 2.06-6.95; $p < 0.001$) were independently associated with PrEP uptake.

CONCLUSION: Adam's Love O2O model is highly effective in linking online at-risk MSM and TG to PrEP and HIV testing services, and has high potential to be replicated and scaled up in other settings with high Internet penetration among key populations.

14. Wirtz, A. L., et al. "The Parasol Protocol: An Implementation Science Study of HIV Continuum of Care Interventions for Gay Men and Transgender Women in Burma/Myanmar." *JMIR Res Protoc* 2017 6(5): e90. Online at: <http://www.researchprotocols.org/2017/5/e90/pdf>.

BACKGROUND: Efforts to improve HIV diagnosis and antiretroviral therapy (ART) initiation among people living with HIV and reduce onward transmission of HIV rely on innovative interventions along multiple steps of the HIV care continuum. These innovative methods are particularly important for key populations, including men who have sex with men (MSM) and transgender women (TW). The HIV epidemic in Myanmar is concentrated among key populations, and national efforts now focus on reducing stigma and improving engagement of MSM and TW in HIV prevention and care.

OBJECTIVE: This study aims to test the use of several innovations to address losses in the HIV care continuum: (1) use of respondent-driven sampling (RDS) to reach and engage MSM and TW in HIV testing, (2) HIV self-testing (HIVST) to increase HIV testing uptake and aid early diagnosis of infection, (3) community-based CD4 point-of-care (POC) technology to rapidly stage HIV disease for those who are HIV infected, and (4) peer navigation support to increase successful health system navigation for HIV-infected MSM and TW in need of ART or HIV engagement in care.

METHODS: To assess the effect of HIVST, we will implement a randomized trial in which MSM and TW adults in the greater Yangon metropolitan area who are HIV uninfected will be recruited via RDS (N=366).

Participants will complete a baseline socio-behavioral survey and will be randomized to standard, voluntary counseling and testing (VCT) or to HIVST. Biologic specimens will be collected during this baseline visit for confirmatory testing using dried blood spots. Participants will be asked to return to the study office to complete a second study visit in which they will report their HIV test result and answer questions on the acceptability of the assigned testing method. Aim 1 participants with confirmed HIV infection and who are not engaged in care (N=49) will be offered direct enrollment into Aims 2 and 3, which include immediate CD4 POC and the option for peer navigation, respectively. Aims 2 and 3 participants will be prospectively followed for 12 months with data collection including interviewer-administered sociobehavioral survey, CD4 POC, and viral load testing occurring biannually. Participants who accept peer navigation will be compared to those who decline peer navigation. Analyses will estimate the impact of CD4 POC on engagement in care and the impact of peer navigation on ART adherence and viral load.

RESULTS: Formative qualitative research was conducted in June and September 2015 and led to further refinement of recruitment methods, HIVST instructions and counseling, and peer navigation methods. Aim 1 recruitment began in November 2015 with subsequent enrollment into Aims 2 and 3 and is currently ongoing.

CONCLUSIONS: These innovative interventions may resolve gaps in the HIV care continuum among MSM and TW and future implementation may aid in curbing the HIV epidemic among MSM and TW in Myanmar.

15. Reisner, S. L., et al. "**Perceived Barriers and Facilitators to Integrating HIV Prevention and Treatment with Cross-Sex Hormone Therapy for Transgender Women in Lima, Peru.**" *AIDS Behav* 2017.

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

16. Kojima, N., et al. "**The PICASSO Cohort: baseline characteristics of a cohort of men who have sex with men and male-to-female transgender women at high risk for syphilis infection in Lima, Peru.**" *BMC Infect Dis* 2017 17(1): 255. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5387233/pdf/12879_2017_Article_2332.pdf.

BACKGROUND: Men who have sex with men (MSM) and male-to-female transgender women (transwomen) are disproportionately at risk of syphilis infection in Peru.

METHODS: From 2013 to 2014, MSM and transwomen seeking human immunodeficiency virus (HIV) or sexually transmitted infection (STI) testing and/or treatment were recruited into a 2-year observational cohort study to determine predictors of recently acquired syphilis infection (defined as a rapid plasma reagin [RPR] titer $\geq 1:16$ and a reactive treponemal antibody test) in Lima, Peru. At baseline, interviewers collected sociodemographic, behavioral, and medical characteristics from participants. All cohort participants were tested for syphilis, HIV, Chlamydia trachomatis (CT), and Neisseria gonorrhoeae (NG) infection. Using cross-sectional analyses, bivariate and multivariate models were used to determine factors associated with recently acquired syphilis infection and calculate adjusted prevalence ratios.

RESULTS: We recruited 401 participants, 312 MSM and 89 transwomen, with median ages of 29.0 and 32.5 years old (interquartile ranges: 23.3, 37.4 and 27.2, 39.5, respectively). The prevalence of recently acquired syphilis infection at baseline was 16.8% for MSM and 6.7% for transwomen. Among MSM and transwomen,

30.1 and 33.7% were infected with HIV, 18.6 and 24.7% were infected with CT, and 14.2 and 19.1% were infected with NG, respectively. Co-infection rates among MSM with recently acquired syphilis infection included: 44.2% with HIV, 40.4% with CT (32.7% with anal CT and 7.7% with pharyngeal CT), and 19.2% with NG (11.5% with anal NG and 7.7% with pharyngeal NG). Co-infection rates among transwomen with recently acquired syphilis infection included: 66.7% with HIV, 0% with CT, and 16.7% with anal NG. In multivariate analysis among the entire cohort, recently acquired syphilis infection was independently associated with younger age (adjusted prevalence ratio [aPR] = 0.96, 95% confidence interval [CI] = 0.93-0.99), receptive role during anal sex (aPR = 2.56, 95% CI = 1.05-6.25), prior HIV diagnosis (aPR = 1.70, 95% CI = 1.11-2.61), anal CT or NG infection (aPR = 1.69, 95% CI = 1.09-2.60), and prior syphilis diagnosis (aPR = 3.53, 95% CI = 2.20-5.68).

CONCLUSIONS: We recruited a cohort of MSM and transwomen who had a high prevalence of recently acquired syphilis infection in Lima, Peru. Recently acquired syphilis infection was associated with socio-demographic characteristics, sexual risk, and sexually transmitted co-infections.

17. Muller, A. "**Scrambling for access: availability, accessibility, acceptability and quality of healthcare for lesbian, gay, bisexual and transgender people in South Africa.**" *BMC Int Health Hum Rights* 2017 17(1): 16. Online at: http://download.springer.com/static/pdf/576/art%253A10.1186%252Fs12914-017-0124-4.pdf?originUrl=http%3A%2F%2Fbmcinthealthhumrights.biomedcentral.com%2Farticle%2F10.1186%2Fs12914-017-0124-4&token2=exp=1496689288~acl=%2Fstatic%2Fpdf%2F576%2Fart%25253A10.1186%25252Fs12914-017-0124-4.pdf*~hmac=30ccd4f6990ed7e384dd45353a866455e1b507e5b390986c8ea90918037c4de8.

BACKGROUND: Sexual orientation and gender identity are social determinants of health for people identifying as lesbian, gay, bisexual and transgender (LGBT), and health disparities among sexual and gender minority populations are increasingly well understood. Although the South African constitution guarantees sexual and gender minority people the right to non-discrimination and the right to access to healthcare, homo- and transphobia in society abound. Little is known about LGBT people's healthcare experiences in South Africa, but anecdotal evidence suggests significant barriers to accessing care. Using the framework of the UN International Covenant on Economic, Social and Cultural Rights General Comment 14, this study analyses the experiences of LGBT health service users using South African public sector healthcare, including access to HIV counselling, testing and treatment.

METHODS: A qualitative study comprised of 16 semi-structured interviews and two focus group discussions with LGBT health service users, and 14 individual interviews with representatives of LGBT organisations. Data were thematically analysed within the framework of the UN International Covenant on Economic, Social and Cultural Rights General Comment 14, focusing on availability, accessibility, acceptability and quality of care.

RESULTS: All interviewees reported experiences of discrimination by healthcare providers based on their sexual orientation and/or gender identity. Participants recounted violations of all four elements of the UN General Comment 14: 1) Availability: Lack of public health facilities and services, both for general and LGBT-specific concerns; 2) Accessibility: Healthcare providers' refusal to provide care to LGBT patients; 3) Acceptability: Articulation of moral judgment and disapproval of LGBT patients' identity, and forced subjection of patients to religious practices; 4) Quality: Lack of knowledge about LGBT identities and health needs, leading to poor-quality care. Participants had delayed or avoided seeking healthcare in the past, and none had sought out accountability or complaint mechanisms within the health system.

CONCLUSION: Sexual orientation and gender identity are important categories of analysis for health equity, and lead to disparities in all four dimensions of healthcare access as defined by General Comment 14. Discriminatory and prejudicial attitudes by healthcare providers, combined with a lack of competency and knowledge are key reasons for these disparities in South Africa.

18. Chakrapani, V., et al. "**Understanding How Sexual and Gender Minority Stigmas Influence Depression Among Trans Women and Men Who Have Sex with Men in India.**" *LGBT Health* 2017 4(3): 217-226.

PURPOSE: Few studies have assessed how sexual and gender minority stigmas affect the mental health of trans women and self-identified men who have sex with men (MSM) in India, populations with a high HIV burden. We tested whether social support and resilient coping act as mediators of the effect of sexual and gender minority stigmas on depression as proposed by Hatzenbuehler's psychological mediation framework, or as moderators based on Meyer's minority stress theory.

METHODS: We conducted a cross-sectional survey among trans women (n = 300) and MSM (n = 300) recruited from urban and rural sites in India. Standardized scales were used to measure depression (outcome variable), transgender identity stigma/MSM stigma (predictor variables), and social support and resilient coping (tested as moderators and parallel mediators). The mediation and moderation models were tested separately for trans women and MSM, using Hayes' PROCESS macro in SPSS.

RESULTS: Participants' mean age was 29.7 years (standard deviation 8.1). Transgender identity stigma and MSM stigma were significant predictors (significant total and direct effects) of depression, as were social support and resilient coping. Among trans women and MSM, social support and resilient coping mediated (i.e., significant specific indirect effects), but did not moderate, the effect of stigma on depression, supporting the psychological mediation framework.

CONCLUSION: Sexual and gender minority stigmas are associated with depression, with social support and resilient coping as mediators. In addition to stigma reduction interventions at the societal level, future interventions should focus on improving social support and promoting resilience among trans women and MSM in India.

19. Koechlin, F. M., et al. "**Values and Preferences on the Use of Oral Pre-exposure Prophylaxis (PrEP) for HIV Prevention Among Multiple Populations: A Systematic Review of the Literature.**" *AIDS Behav* 2017 21(5): 1325-1335.

Daily oral pre-exposure prophylaxis (PrEP) is the use of antiretroviral drugs by HIV-negative people to prevent HIV infection. WHO released new guidelines in 2015 recommending PrEP for all populations at substantial risk of HIV infection. To prepare these guidelines, we conducted a systematic review of values and preferences among populations that might benefit from PrEP, women, heterosexual men, young women and adolescent girls, female sex workers, serodiscordant couples, transgender people and people who inject drugs, and among healthcare providers who may prescribe PrEP. A comprehensive search strategy reviewed three electronic databases of articles and HIV-related conference abstracts (January 1990-April 2015). Data abstraction used standardised forms to categorise by population groups and relevant themes. Of 3068 citations screened, 76 peer-reviewed articles and 28 conference abstracts were included. Geographic coverage was global. Most studies (N = 78) evaluated hypothetical use of PrEP, while 26 studies included individuals who actually took PrEP or placebo. Awareness of PrEP was low, but once participants were presented with information about PrEP, the majority said they would consider using it. Concerns about safety, side effects, cost and effectiveness were the most frequently cited barriers to use. There was little indication of risk compensation. Healthcare providers would consider prescribing PrEP, but need more information before doing so. Findings from a rapidly expanding evidence base suggest that the majority of populations most likely to benefit from PrEP feel positively towards it. These same populations would benefit from overcoming current implementation challenges with the shortest possible delay.

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1. Li, H., et al. "**Barriers and facilitators of linkage to HIV care among HIV-infected young Chinese men who have sex with men: a qualitative study.**" *BMC Health Serv Res* 2017 17(1): 214. Online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5356377/pdf/12913_2017_Article_2158.pdf.

BACKGROUND: The Four Free and One Care Policy (HIV/AIDS-related free services) has been in place in China since 2004. However, linkage to human immunodeficiency virus (HIV) care is not yet achieved very well among people living with HIV. We conducted a qualitative study to explore individual and contextual factors that may influence a linkage to HIV care from the perspective of young HIV-infected men who have sex with men (MSM) in a highly centralized HIV care context of China.

METHODS: Purposive sampling was used to recruit 21 HIV-infected MSM in Shandong Province, with in-depth interviews conducted between March and July 2015. Thematic content analysis was subsequently used for data analysis.

RESULTS: Key barriers and facilitators related to a linkage to HIV care emerged from participants' narratives. The barriers included perceived healthy status, low health literacy, and stigma associated with receiving HIV care. The facilitators included an awareness of responsibility, knowledge associated with health literacy, social support, and trusting and relying on services provided by the Center for Disease Control and Prevention (CDC) and the government. These were related to the quality of current HIV counselling and testing, service promotion, and the cost and placement of these HIV services.

CONCLUSIONS: In order to improve the MSM linkage to HIV care in China, it is imperative to improve the quality of the current on-going counselling and testing. Further critical linkage support includes increasing supportive services among local CDC systems, designated hospitals and community-based organizations (CBOs), and more financial support for HIV/AIDS related testing, medical checkups and treatments.

2. Logie, C. H., et al. "**Barriers and facilitators to HIV testing among young men who have sex with men and transgender women in Kingston, Jamaica: a qualitative study.**" *J Int AIDS Soc* 2017 20(1): 1-9. Online at: <http://www.jiasociety.org/index.php/jias/article/view/21385/pdf>.

INTRODUCTION: Young men who have sex with men (MSM) in Jamaica have the highest HIV prevalence in the Caribbean. There is little information about HIV among transgender women in Jamaica, who are also overrepresented in the Caribbean epidemic. HIV-related stigma is a barrier to HIV testing among Jamaica's general population, yet little is known of MSM and transgender women's HIV testing experiences in Jamaica. We explored perceived barriers and facilitators to HIV testing among young MSM and transgender women in Kingston, Jamaica.

METHODS: We implemented a community-based research project in collaboration with HIV and lesbian, gay, bisexual and transgender (LGBT) agencies in Kingston. We held two focus groups, one with young (aged 18-30 years) transgender women (n = 8) and one with young MSM (n = 10). We conducted 53 in-depth individual semi-structured interviews focused on HIV testing experiences with young MSM (n = 20), transgender women (n = 20), and community-based key informants (n = 13). We conducted thematic analysis to identify, analyze, and report themes.

RESULTS: Participant narratives revealed social-ecological barriers and facilitators to HIV testing. Barriers included healthcare provider mistreatment, confidentiality breaches, and HIV-related stigma: these spanned interpersonal, community and structural levels. Healthcare provider discrimination and judgment in HIV testing provision presented barriers to accessing HIV services (e.g. treatment), and resulted in participants hiding their sexual orientation and/or gender identity. Confidentiality concerns included: clinic physical arrangements that segregated HIV testing from other health services, fear that healthcare providers would publicly disclose their status, and concerns at LGBT-friendly clinics that peers would discover they were getting tested. HIV-related stigma contributed to fear of testing HIV-positive; this intersected with the stigma of HIV as a "gay" disease. Participants also anticipated healthcare provider mistreatment if they tested HIV positive. Participants identified individual (belief in benefits of knowing one's HIV status), social (social

support) and structural (accessible testing) factors that can increase HIV testing uptake.

CONCLUSION: Findings suggest the need for policy and practice changes to enhance confidentiality and reduce discrimination in Jamaica. Interventions to challenge HIV-related and LGBT stigma in community and healthcare settings can enhance access to the HIV prevention cascade among MSM and transgender youth in Jamaica.

3. Khumsaen, N., et al. "**Beliefs and Perception About HIV/AIDS, Self-Efficacy, and HIV Sexual Risk Behaviors Among Young Thai Men Who Have Sex With Men.**" *AIDS Educ Prev* 2017 29(2): 175-190.

This study examined the relationships of HIV/AIDS beliefs, self-efficacy for AIDS preventive behaviors, perception of HIV as a chronic disease, and HIV risk behaviors among young Thai men who have sex with men. Participants were recruited for a self-administered anonymous survey through Facebook. Logistic regression analysis was used to identify factors associated with each of four HIV risk behavior outcomes. Factors associated with sexual risk behaviors included age (18 and 21 years), having a current regular male partner, self-efficacy for AIDS preventive behaviors (self-efficacy in refusing sexual intercourse, self-efficacy in questioning potential sex partners, and self-efficacy in condom use), AIDS health belief (perceived susceptibility to HIV/AIDS, perceived severity of HIV/AIDS, perceived barriers to condom use, and cues to action for HIV/AIDS prevention), and perception of HIV/AIDS as a chronic disease (perceived HIV sero-status disclosure). Knowledge generated from this study has the potential to inform prevention messages for young Thai MSM.

4. Johnston, L. G., et al. "**Correlates of Forced Sex Among Young Men Who Have Sex With Men in Yangon and Monywa, Myanmar.**" *Arch Sex Behav* 2017 46(4): 1001-1010.

Forced sex at an early age is associated with a variety of negative factors including increased illness, high-risk sexual and substance-use behaviors, and mental and psychological stress. These sequelae may be compounded for men who have sex with men (MSM), especially young MSM and those with feminine gender identity and expression. This survey examined the prevalence and associations of forced sex among young MSM in two cities in Myanmar. In 2013-2014, surveys using respondent-driven sampling collected data on 200 young MSM in Yangon and 200 in Monywa. One quarter of young MSM in Yangon and 21 % in Monywa reported ever experiencing forced sex. In a multivariable model, having problems with family members and having any MSM friends with many partners had higher odds of experiencing forced sex. Having maternal acceptance of same-sex attraction (compared to acceptance by both parents) and becoming aware of their same-sex attraction at or above the age of 16 had lower odds of experiencing forced sex. Focused research is needed to understand the family and other social dynamics affecting vulnerability to forced sex, as well as specific sexual risks associated with forced sex among young MSM, including HIV acquisition and transmission risks.

5. Kornilova, M. S., et al. "**Decline in HIV seroprevalence in street youth 2006-2012, St. Petersburg, Russia: moving toward an AIDS-free generation.**" *Int J STD AIDS* 2017 28(4): 345-356.

A 2006 survey of street youth at pre-mapped street youth locations in St. Petersburg, Russia, found extremely high HIV seroprevalence (37.4%) among 313 street youth aged 15-19 years of age, strongly associated with injection drug use, which was reported by 50.6% of participants. In response, multi-sectoral social support and prevention measures were instituted. In 2012, we conducted a follow-up survey of 15- to 19-year-old street youth using the same study procedures as in 2006. Of 311 participants, 45 (14.5%) reported injection drug use; 31 participants (10.0%, 95% confidence interval, 6.0%-16.2%) were HIV-seropositive. Predictors independently associated with HIV seropositivity included injection drug use (adjusted prevalence ratio 53.1) and transactional sex (adjusted prevalence ratio 1.3). None of the 178 participants aged 15-17 years were HIV-positive. Thirty of 31 (96.8%) HIV-seropositive individuals reported injection drug use. Street youth in St Petersburg had a 73% decrease in HIV seroprevalence from 2006 to 2012, primarily due to decreased initiation of injection drug use. This marked reduction in the HIV epidemic

among street youth occurred after implementation of extensive support programs and socio-economic improvements.

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