PrEP in the Context of Sex Work: Possibilities and Limitations

Report on the 25th Annual Canadian Conference on HIV/AIDS Research May 12-15, 2016, Winnipeg Manitoba (http://www.cahr-acrv.ca)

By Andrew Sorfleet (Updated June 29, 2016)

Thursday, May 12, Triple-X Workers' Solidarity Association of B.C. and Dalla Lana School of Public Health, University of Toronto hosted a closed, invite-only ancillary event (funded by Canadian Institutes of Health Research) to plan and organize our national consultation on PrEP in the context of sex work to be held in Toronto in October (funded by Elton John AIDS Foundation). In collaboration with Sunshine House, Winnipeg, we brought together people with experience in sex work from across Canada to learn about PrEP and to discuss the capacity and research needs of sex workers in Canada with regards to PrEP.

Following our planning session at the phenomenal Sunshine House who provided us with the most yummy lunch as well as coffee and treats in the morning, planning session participants returned to the conference hall for a symposium where the new draft Canadian guidelines for PrEP (Pre-Exposure Prophylaxis and nPEP (nonoccupational Post-Exposure Prophylaxis) was being presented. Several comments arose around the room in particular with regard to Table 6B which listed sex workers as a "source" group for transmissible HIV.

When pressed, Mr. Pendergraft stated that Kate Shannon's research which provided evidence that HIV rates are high in survival sex workers (in the Downtown Eastside, Vancouver). The table suggested that those who were exposed to sex workers were eligible for nPEP, while there was no specific reference to providing nPEP for sex workers. As a result of the discussion, sex-work organizations were invited to provide feedback on the draft Canadian guidelines by May 31.

Planning session participants took part in a teleconference on May 26 to discuss the implications of the draft, and collected and compiled feedback in the form of letter which was submitted by the May 31 deadline. The letter was signed by seven participant organizations.

Letter in response to the Draft Guidelines:
http://triple-x.org/about/pr/PrEPguideLetter-160531.pdf

Canadian Guidelines for HIV PrEP and nPEP Draft Guidelines:
http://triple-x.org/safety/prep/CanadianPrEPguide-201605.pdf

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It seems our little project is getting noticed! In the June 27 issue of *Maclean's Magazine*, the project was mentioned in an exclusive interview with Elton John and husband David Furnish on HIV/AIDS awareness:

"Just this past year, we've funded three organizations in Canada working on projects related to HIV and refugees, efforts to address unjust use of sexual assault law to target HIV-positive people for having consensual sex, and a project engaging sex workers in the development of a program providing them with medications that prevent HIV infections."

Video of plenaries and symposiums are available on CAHR2016 YouTube Channel Playlist:
https://www.youtube.com/playlist?list=PLlo18mkd-N5KW0kZ4RthyNkEYx6mUOmON

The Program for the 25th Annual Canadian Conference on HIV/AIDS Research is available here:
http://triple-x.org/safety/prep/CAHR16Program.pdf

The book of conference Abstracts is available in PDF, you can find the link here:
http://triple-x.org/safety/prep/CAHR16Abstracts.pdf

Lessons Learned about Women and PrEP

In the wrap-up session, I learned that more PrEP pills are needed to protect the vaginal tract. I also learned that women were more likely to have *detectable* viral load. Recurring use of PEP is an indicator for risk where PrEP should be made available.

PrEP/PEP Related Abstracts

Here is a list of all the PrEP/PEP related abstracts along with the page number from the Abstracts book.

[EPH1.1] High incidence of subsequent HIV seroconversion among Montreal PEP users (p. 7)

"67% of patients had one PEP, while 33% had repeated PEP episodes. 200 patients (15%) had at least one syphilis infection during follow-up. 129 patients (10%) had also consulted for PrEP. ... Patients consulting for PEP should consider PrEP as an alternative therapy."

[EPH1.2] High incidence of subsequent HIV seroconversion amongst MSM accessing recurrent non-occupational post-exposure prophylaxis (NPEP) in Vancouver, BC (p. 8)

"Over the study period, 559 unique individuals accessed the NPEP program (91% male, median age 33) with 57 recurrent users. Overall 79% reported condomless anal intercourse (CAI) as their risk exposure for accessing NPEP. Ten individuals seroconverted ... Additional prevention strategies including pre-exposure prophylaxis should be made available to these individuals."

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[MD1.1] High adherence but modest risk compensation among MSM in a PrEP demonstration project (p. 28)

"Most (69.2%) had a history or baseline diagnosis of ≥1 bacterial STI. Median overall adherence was high at 98.4% (96.2%,100%) by pill count, and adherence four-day recall was perfect at 89.7% of visits. ... Many (24/52, 46.2%) participants experienced ≥1 incident bacterial STI, including 4, 13, 19 and 4 episodes of syphilis, gonorrhea, chlamydia/non-specific urethritis and LGV respectively. No HIV seroconversions occurred. ... Despite frequent STIs, PrEP has been associated with high adherence and no HIV infections in this MSM demonstration project. Modest risk compensation occurred with HIV+ partners."

[MD1.3] PrEP in Montreal: Good Adherence, No Seroconversion and No Evidence of Risk Compensation (p. 29)

"355 patients were included. The main indication for PrEP was regular unprotected anal intercourse (69%), repeated use of PEP (14%) or couples in sero-discordant relationships (14%). Patients requesting PrEP were male (99%) and MSM (97%) with a median age of 36 (range=18- 66y). 80% had a history of STIs and 73% had >10 sexual partners in the last 12 months. Mean condom use was 49% for receptive anal intercourse and 48% for insertive. ... 49 patients (21%) stopped PrEP with 49% of treatment discontinuations arising in the first 3 months: 39% due to 'no longer need,' 23% for adverse events. ... Patients receiving PrEP were at high risk for HIV and seem adherent to treatment and to follow-up. No seroconversion occurred. In short term, PrEP does not promote an increase in high-risk behaviors."

[CSP9.02] Adherence counseling in a community-based setting for daily oral TDF/FTC-based HIV pre-exposure prophylaxis (PrEP) (p. 126)

"42/52 participants have completed counseling sessions. Most (59.5%) had never spoken to a counselor about HIV-related issues before. Participants reported that they felt listened to and understood (100%), that they were treated with confidentiality and respect (97.6%), and that they had the right amount of time with the counselor (100%). Most would recommend such sessions to other PrEP users (97.6%), and found the session helpful (95.2%) ... Although most participants had no adherence challenges, most valued the opportunity to discuss PrEP and sexual health in a supportive environment."

[CSP9.04] HIV-1 Infection With Multi-class Resistance Despite Pre-Exposure Prophylaxis (PrEP) (p. 127)

"Pharmacy records demonstrated consistent prescription refills. DBS testing revealed TVF-DP of 2,297 fmol/ punch indicating consistent dose-taking in the preceding 1-2 months, thus overlapping with the

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seroconversion time. ... This patient's clinical history, pharmacy records and DBS results consistent with long-term dosing of FTC/TDF suggest that HIV infection is possible despite adherence to daily oral PrEP when exposed to FTC/TDF-resistant virus."

[CSP12.04] Tenofovir and Emtricitabine Resistance in the CANOC Collaboration: Implications for PrEP (p. 132)

"Resistance data were available for 4512 (82%) of 5495 patients. Resistance status was available at ARV initiation for 3760 (68%) patients and 4996 follow-up resistance tests were obtained for 1919 (35%) patients. ... There were very low levels of resistance detected among ARV naive patients. Resistance to components of Truvada, and FTC in particular, was present in a substantial number of patients with virologic failure capable of transmitting HIV which might impact the efficacy of PrEP."

[EPHP1.01] #PrEP @ #CROI2015: Exploring the roles of Twitter user types in sharing and discussing new evidence on HIV pre-exposure prophylaxis (PrEP) (p. 137)

"Our data extract included 7,902 PrEP-related tweets ... PrEP evidence released at CROI was shared rapidly on Twitter leading to social media conversations over the subsequent six weeks. In our preliminary analysis, findings differed by user type with NGOs contributing a quarter of all tweets in our sample suggesting an important role in sharing/starting conversations about new HIV information online."

[EPHP3.02] In What Circumstances Could Non-daily Pre-exposure Prophylaxis (PrEP) Substantially Reduce Program Costs (HPTN 067)? (p. 139)

"Per protocol, for 1, 2, 3 and 4 sex-days/week, 2, 3–4, 4–5 and 5–6 pills/week respectively were required with event-driven, and 2–3, 2–4, 3–5 and 5–7 pills/week for time-driven, vs. 7 pills/week for daily PrEP. ... Non-daily PrEP could cost substantially (>50%) less than daily PrEP in populations with low sexual activity in high-income countries, if taken as prescribed."

[EPHP7.09] Antiretroviral therapy based HIV prevention awareness, acceptability and use among transgender gay and queer men: Findings from interviews in Vancouver, BC (p. 155)

"While some participants had heard of PrEP, knowledge was limited overall and none had considered using or had used PrEP. Most had heard of Treatment as Prevention (TasP), and HIV viral load impacted sexual decision-making for a few. Overall, participant narratives indicated awareness of, perceived efficacy of, and a willingness to use PEP, though this is not yet the case for PrEP and awareness of other ART-based prevention varied."

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[SSP3.04] PrEP arandote (Getting Ready): Theoretical Approaches for the Future Use of New HIV Prevention Technologies, Access Issues among Spanish-Speaking MSM in Canada (p. 177)

"Spanish-speaking MSM in Canada are formed mostly from immigrants. MSM individuals face great challenges in Canada. Immigration issues, homophobia-rejection, are still issues faced by this group. Many of those MSM struggle with problems related to their own sexual desires, and identities-social needs. PrEP offers a new window for SPP-MSM to reconcile their sexual practices with their own HIV-prevention objectives."

[SSP5.12] Taking Culture Seriously in Biomedical HIV Prevention Trials: Promoting Meaningful Community Engagement in HIV Research (p. 185)

"A substantial gap exists between widespread acknowledgement of the importance of incorporating cultural sensitivity as an integral component of community engagement in biomedical HIV prevention trials, and empirical evidence to guide the operationalization of cultural sensitivity in these trials. ... Four overarching themes emerged: (1) semantic cultural sensitivity — challenges in communicating scientific terminology in local vernaculars; (2) instrumental cultural sensitivity — understanding historical experiences to guide tailoring of trial activities; (3) budgetary, logistical, and personnel implications of operationalizing cultural sensitivity; and, (4) culture as an asset. A few studies demonstrated sophisticated operationalization and analysis of cultural sensitivity, with many conceptualizing culture primarily as a barrier to be navigated."

[SSP11.01] PrEP Promise and Peril: The Regulatory Pathways to Equitable, Affordable and Timely Access in Canada (p. 200)

"Complex structural and institutional factors that trace the fault-line of health inequity in Canada may keep PrEP out of reach of marginalized people who could benefit most — including low income people, Aboriginal people, GBMSM, and sex working people. ... his session will build knowledge, awareness and capacity. It will explain the current state of PrEP access in Canada; the regulatory pathways to expand access to PrEP; drug approval and public formulary listing..."

Sex-Work Related Abstracts

Here is a list of all the sex-worker related abstracts with the page number and a quote to give you some idea about the research. The book of conference Abstracts is available in PDF, you can find the link here: **http://triple-x.org/safety/prep/CAHR16Abstracts.pdf**

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[EPH2.8] The impact of food insecurity on sexual HIV risk negotiation with clients among youth sex workers in Metro Vancouver, Canada (p. 24)

"An Evaluation of Sex Workers' Health Access ("AESHA"), a prospective community cohort of 723 street and off-street SWs between January 2010 and August 2013. ... Three-quarters of YSWs experienced some kind of food insecurity and one-third reported client condom refusal. This study suggests a critical relationship between food insecurity and HIV/STI risk, indicating YSWs' acute vulnerability. Public food assistance should be implemented as a harm reduction measure with a focus on marginalized youth."

[MD1.6] Daily oral use of acetylsalicylic acid (ASA) reduces HIV target cells at the female genital tract (p. 31)

"HIV incidence among female sex workers (FSWs) is very high. However, despite being at high risk a small group remains HIV uninfected. We have observed that HIV-exposed seronegative FSW have a unique immune phenotype called Immune Quiescence (IQ). IQ is a state of no inflammation where decreased levels of baseline cytokine/chemokines and low levels of T cell activation result in fewer HIV target cells in the female genital tract (FGT) We hypothesized that the anti-inflammatory agent acetylsalicylic acid (ASA) can induce the IQ phenotype and reduce HIV target cells."

[MD3.3] Intervention fidelity, process evaluation and effectiveness of complex HIV prevention intervention for female sex workers in Bangladesh (p. 35)

"Effectiveness of the intervention could not be ascertained either because of low adherence to intervention fidelity or saturation effect in some of the outcomes for example, reported high condom use at baseline in both the intervention and control group."

[SS3.3] The Loss of Boystown and Transition to Online Sex Work: Strategies and Barriers to Increase Safety among Men Sex Workers and Clients of Men (p. 52)

"Narratives indicate that losing Boystown led to a loss of social support networks among men in the sex industry. Concurrently, significant reorganization of sex work and the shift to online increased workers' safety and control over working conditions. Narratives reveal how soliciting online provides greater opportunities to negotiate the terms of sex work (e.g., prices, types of services, condom use) and enhanced screening of clients using webcams, reducing risks of violence, stigma and police harassment for bother workers and clients as compared to street. [39 workers; 8 buyers]"

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[BSP2.04] Effect of Sex Work on the Vaginal Microbiome in a Cohort of Women from Nairobi, Kenya (p. 58)

"we compared high risk sex workers from the Pumwani clinics in Nairobi, Kenya, with women from the same community not involved in sex work (lower-risk), to determine the profile of vaginal microbiome and determine how sex work may alter it. ... The results indicate that sex work is likely associated with alternations in the vaginal microbiome. Ongoing studies are examining how the vaginal microbiome is altered by hormonal contraceptives in sex workers and lower-risk women."

[BSP2.06] The effect of depot medroxyprogesterone acetate (DMPA) on the mucosal immune system in the female genital tract: implications for HIV risk (p. 59)

"Female sex workers from Nairobi, Kenya, using DMPA (n=15) and those not using any hormonal contraception (n=33) were recruited and followed for a period of 3 months. Cervico-mononuclear cells (CMC), cervico-vaginal lavage (CVL) and cervical biopsy were taken. ... This study demonstrates that the use of DMPA leads to a pro-inflammatory environment at the female genital tract, which could have implication for increasing the risk of HIV infection."

[BSP2.08] Dichotomous Relationship of TLR7 and TLR8 Responses in HIV Exposed Seronegative Sex-Workers and Its Linkage to HIV Susceptibility in vitro (p. 60)

"Not all exposures to HIV end in infection. The innate immune system is at the interface between the host's immune system and initial contact with HIV. ... This study compared the Toll-like receptor responsiveness of different immune cells from the peripheral blood mononuclear cells (PBMCs) of HESN and HIV negative (susceptible) commercial sex workers (CSWs)..."

[BSP2.09] Interruption of sex work has subtle effects on systemic immune activation in sex workers from Nairobi, Kenya (p. 61)

"Thirty FSW were recruited from the Pumwani Sex Workers Cohort; 10 in each of the following groups: HIV-Exposed Seronegative (HIV-negative with at least 7 years in active sex work), HIV-positive, and New Negative (HIV-negative, less than 3 years in active sex work). Blood was obtained at three different phases; active sex work, during a break from sex work, and following a return to sex work. The break from sex work was to allow the women to heal following cervical biopsies."

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[BSP2.16] Plasma Antibodies to HIV-1 Protease Cleavage Sites and HIV Infection (p. 64)

"Plasma samples of sex workers enrolled in the Pumwani sex worker cohort in Nairobi, Kenya were screened for antibodies against PCS peptides and two non-PCS peptides (1 Gag and 1 Env) ... We identified many differences in the antibody responses against HIV-PCS peptides, Env, and Gag between HESN, HIV negative, and HIV positive individuals within the Pumwani sex worker cohort. The higher antibody responses observed in HESN individuals compared to the HIV negative group indicate the possibility that these antibodies are involved in protection against HIV infection and warrants further investigation."

[BSP3.15] Using CD4-aptamer-siRNA chimera to mimic the modestly reduced IRF-1 expression observed in HIV- exposed sero-negative (HESN) Kenyan female sex workers (p. 70)

"Interferon regulatory factor-1 (IRF-1) plays an essential role in mediating both the anti-viral interferon response and the early trans-activation of HIV-1 promoter. Modest reduction in IRF-1 expression was observed in Kenyan HESN female sex workers. ... Vaginal delivery of functional IRF-1-specific siRNA using CD4-AsiCs was efficient in knocking down modest level of IRF-1 expression systematically. However, this finding requires further validation, and the impacts of IRF-1 knockdown in-vivo on immune regulation and cellular susceptibility to infection would require further study."

[BSP4.02] Regulation of Mucosal and Systemic Immune Activation and Inflammation During the Menstrual Cycle of Female Sex Workers from Nairobi, Kenya (p. 72)

"Sex hormones modulate immune responses in the female genital tract (FGT) to allow for reproductive function. However, the impact of hormone-induced activation and inflammation on HIV susceptibility and chronic HIV infection remain elusive. ... The study groups were FSW from the Pumwani cohort, Kenya, chronically infected by HIV (n=7), new to sex work (HIV susceptible: <3 years) (n=22) and HIV-exposed seronegative (HESN >7 years) (n=17). Menstrual cycle phases were characterized using days since last menstrual period and confirmed with plasma concentrations of progesterone ... These results support a hormonally-induced local dampening of immune activation during the luteal phase. This state of immune suppression may reduce opportunities for HIV infection but open a window of vulnerability for other sexually transmitted infections."

[BSP4.03] Sexual Activity Induced Differential Alterations in T cell Activation in HIV-Susceptible and Naturally Protected Female Sex Workers from Nairobi, Kenya (p. 73)

"Sex induces inflammation and T cell recruitment in the female genital tract (FGT), which are conditions conducive for HIV acquisition. We have suggested that in the Pumwani Sex Worker Cohort in Nairobi, a

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subset (5-15%) are HIV-exposed seronegative (HESN) female sex workers (FSW) who are naturally protected against HIV through reduced cervical inflammation and T cell activation. ... Participants were followed for 3 months, the first active in sex work, second month abstaining from sex work and third month resuming sex work. Enrolment and sample collection were synchronized with the menstrual cycle. Sexual activity was monitored by detecting prostate-specific antigen (PSA) in the FGT and through a behavioural questionnaire."

[CSP1.03] Proving adherence to sexual abstinence after cervical biopsies performed in the context of basic science studies in female sex workers from Nairobi, Kenya (p. 97)

"Two cervical biopsies were taken two weeks apart and women were asked to abstain from vaginal intercourse for 2 weeks after each biopsy to limit risk of HIV acquisition. In Phase I, women received counselling about HIV prevention and the importance of abstain from sexual intercourse during the healing period. As their primary income was from sex work, women were monetarily compensated for loss of income during that period. Despite the majority (82%) of participants' self-declaring full compliance to the abstinence period, we detected the presence of prostate-specific antigen (PSA) in 21% of the cervico-vaginal lavage collected."

[EPHP7.07] HIV Risk and Prevention Uptake among a Community Sample of Young Gay and other Men Who Have Sex with Men (MSM) and Transgender Women Sex Workers in Thailand (p. 154)

"We collaborated with community-based organizations (CBOs) serving YMSM and TGW, including SWs, to conduct venue-based sampling of staff at go-go bars, host bars and massage parlors, and CBO clients, in Chiangmai and Pattaya. ... Preventive interventions should promote access to high-school education and increased HIV testing for YMSM and TGW in Thailand. Tailored interventions for non-gay-identified male SWs should focus on condom use, and risks with female and paid partners, and for gay and TGW SWs reducing incidence of forced sex."

[EPHP8.02] Heterogeneity in the emerging trends and patterns of HIV transmission among key populations in Pakistan: a mathematical modeling study of survey data (p. 157)

"This study explores trends in the emergence of HIV transmission among key populations(KPs; people who inject drugs [PWIDs], female sex workers [FSWs] and hijra/transgender/male sex workers [H/MSWs]) in several cities of Pakistan. ... Geographical and temporal heterogeneity exists in the emerging trends of HIV transmission, and in the trajectories of prevalence and incidence among KPs in Pakistan. Further study is needed to examine the impact of mixing between sex workers with PWIDs in HIV transmission."

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[SSP11.05] Hammer and Baton in synergy: Forging Strategic Partnerships to reduce violence and stigma against Female Sex workers (p. 201)

"Project Samvedana implemented by Karnataka Health Promotion Trust, funded by UNWomen aimed at reducing violence against sex workers in Karnataka state, India. Advocating with the State's Judicial Academy and the High Court, 400 judges across the state were sensitized on violence against Sex Workers. These judges headed District and Sub district Legal Services Authority. Advocacy with sensitized District Legal Services Authority led to partnerships in training police. 1567 policemen were trained in ten districts..."

Other Highlights

[SS2.1] Are public testimonials effective in fighting stigma? Lessons learned from a community-based evaluation project in Quebec. Presented by Chez Stella, Montreal (p. 25)

"The main objective of the community-based research project "Partnership to evaluate the impact of public testimonials by people living with HIV" is to assess the effectiveness of testimonials by PHAs as a strategy for social intervention."

[SS2.3] HAART in Art: Historical Reflections on Artwork, Corporeality, and HIV Treatment Adherence
Presented by Eli Manning, Simon Fraser University, Vancouver, BC (p. 26)

"Through a historical analysis of the works of positive artists, I highlight themes arising with the release of highly active anti-retroviral therapy (HAART) and what these representations say about people's relationships to their bodies. I consider their critiques of medication and trace the differences between artistic representations of HAART in the late 1990s to the present as pharmaceutical and biomedical technologies emerge. I ask, in this new HAART panacea era — steeped in HIV criminalization, intensified surveillance, hyper-medicalization of prevention, and neoliberalization — how is medication represented in art created by people who often are targets of HIV treatment adherence practices?

Syphilis Related Abstracts

[CS2.1] Asymptomatic Neurosyphilis is Common in HIV/ Syphilis Co-infection: A Feasibility and Pilot Cohort Study (p. 16)

"HIV/syphilis co-infection can be complicated by asymptomatic neurosyphilis (ANS), but there is inadequate evidence to determine which neurologically asymptomatic patients should undergo diagnostic lumbar puncture (LP). … ANS may be common in HIV/syphilis co-infected adults and LPs are feasible in this population. Research to develop a clinical prediction rule is needed to determine which co-infected patients require an LP in the absence of neurological symptoms."

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[CSP3.12] Correlates of syphilis treatment success in a population with high rates of HIV co-infection in British Columbia (p. 107)

"Syphilis is a common co-infection among people living with HIV (PLWH). In the context of increasing syphilis rates we sought to characterize the proportion of individuals who achieved treatment success … Almost half of all syphilis cases in BC achieve treatment success based on a strict definition. PLWH are more likely to achieve success. Further analysis is needed Table 1. Effect of Coadministration on HIV ARVs and to differentiate treatment failure from re-infection."

[EPHP4.04] Characteristics of a Core Group of Gay, Bisexual and Men Who Have Sex with Men (MSM) with ≥4 Infectious Syphilis Infections in British Columbia (BC) from 2005 to 2014 (p. 141)

"The rate of syphilis has increased in BC, from 6.8 to 11.9 per 100,000 from 2005 to 2014. … Individuals with multiple syphilis reinfections were virtually all co-infected with HIV and almost half had sexual linkages at some point over 10 years. Routine syphilis testing among HIV patients and high-risk behaviours may account for the multiple syphilis diagnoses. Strategies to protect against syphilis infection, like daily prophylaxis, may benefit individuals in this core group."

[EPHP4.05] HIV a Risk factor for Reinfections of Infectious Syphilis among Gay, Bisexual, and Other Men Who Have Sex With Men (MSM) in British Columbia (BC), 2005-2014 (p. 142)

"Syphilis infection risk among MSM is not homogeneous, with small subpopulations most at risk. We sought to characterize and identify early markers for risk of syphilis reinfection among MSM in BC. … All infectious syphilis diagnoses among MSM from 1/1/2005 to 12/31/2014 were identified through the provincial STI surveillance system. Cases were categorized based on the number of infections (i.e. 1, 2, 3 and ≥4). … Between 2005-2014, there were 2348 syphilis diagnoses among 1830 MSM: 366 (20%) had two or more infection; 266 (73%) had two, 69 (19%) had three, and 30 (8%) had four or more. An increasing number of syphilis reinfections was positively associated with Caucasian ethnicity, number of self-reported partners, HIV-positivity and a history of gonorrhea..."

[EPHP4.08] A history of HIV and syphilis co-infection in Winnipeg, Manitoba (p. 143)

"Data were extracted from public health surveil- lance databases. HIV co-infection was compared between two time periods: 2004-2011 and 2012-2015, reflecting two distinct outbreaks of syphilis. … Between 2004-2015, 375 cases of infectious syphilis were reported. HIV co-infection was similar across both time periods … etween 2004 and 2015 the proportion of HIV co-infected men has remained similar across time in Winnipeg. The increasing geographic dispersion of HIV co-infected men underscores challenges for public health intervention."

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