

Hopitalier Universitaire, Cotonou, Benin; ⁶Hopital Maisonneuve-Rosemont, Montreal, Canada; ⁷Centre Hospitalier Affilié Universitaire de Québec CHA and Université Laval, Quebec City, Canada

Background From 1993 to 2005 female sex workers (FSW) were the focus of a HIV intervention in Cotonou where most local FSW originated from three neighbouring countries. Intervention impact was assessed using a HIV transmission model parameterised and fitted to empirical data within a Bayesian framework, to compare predicted epidemic outcomes with and without the intervention.

Methods An age-structured model was developed of HIV transmission in Cotonou, coupled with a non-age structured Gc model. The model included realistic demography, heterogeneous sexual risk groups including local and migrant FSW to and from Cotonou, clients and general population (GP); each FSW nationality was parameterised separately. Programs of condom use and STI treatment modelled reflected levels of uptake pre- and post-intervention. Plausible parameter ranges based on local multiple survey data from different risk groups and time points and literature reviews (ie, prior parameter distribution) were sampled repeatedly by Latin hypercube sampling. Model predictions from parameter sets matching (ie, fitting") observed HIV prevalence data from Cotonou (FSW by nationality, their clients, and broad GP age-bands) at different time points were accepted as good fits (ie, posterior parameter distribution (PPD)) and used to estimate impact (95% credibility interval (CrI)) by comparing HIV incidence predicted based on the PPD with that using the same parameter values except for the assumption that condom use and STI treatment remained at 1993 levels (control group/counterfactual).

Results From 100 000 parameter combinations tested, 18 produced results that agreed with observed HIV prevalences in FSW (Abstract O1-S09.06 figure 1) and other groups over time. Results with no intervention suggest a peak HIV prevalence in FSW 10–12 years

later than observed and at around 75%, compared with the observed level of just over 53% (corresponding GP prevalences were 9.6% & 6.7% respectively). Results also suggest that about 33%(CrI: 28, 37) and 25%(CrI: 17, 33) potential HIV cases may have been averted in Cotonou FSW and GP respectively, by increased condom use and STI services after the start of the intervention.

Conclusions Coupled with observed HIV trends, the analysis indicates that FSW targeted intervention was effective in curtailing the HIV epidemic in Cotonou-based FSW despite high turnover of foreign FSW. There was also substantial impact in the general population by impeding onward transmission to clients/boy-friends.

Epidemiology oral session 10: Men who have sex with men

O1-S10.01 HIGH HIV INCIDENCE AMONG MSM WHO WERE PRESCRIBED HIV-PEP: INDICATIONS FOR FURTHER RISKFUL SEXUAL BEHAVIOUR

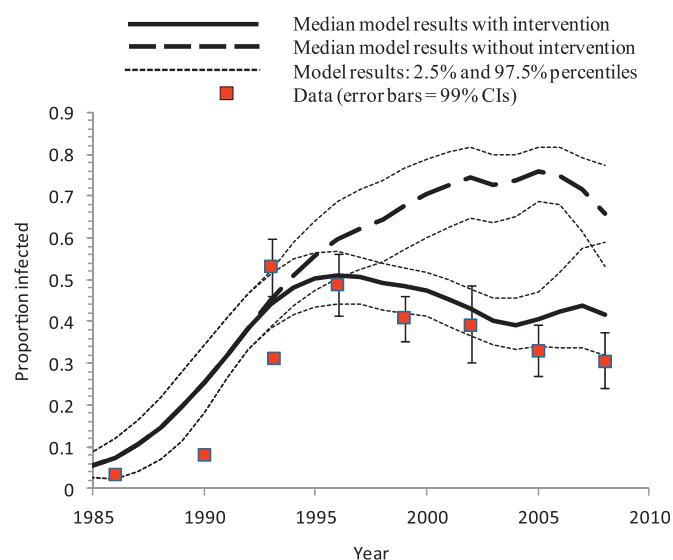
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¹J Heuker, ²G Sonder, ¹I Stolte, ²A van den Hoek. ¹Public Health Service Amsterdam, Amsterdam, Netherlands; ²Public Health Service Amsterdam, Center for Infection and Immunology Amsterdam CINIMA, Academic Medical Center, University of Amsterdam, Netherlands

Background Are MSM who were prescribed PEP, men with high risk behaviour or men who incidentally had a riskful sexual contact? One way to answer this question is to compare the HIV incidence among MSM who were prescribed PEP with the HIV incidence among MSM without such request, using HIV incidence as a surrogate marker for highly riskful sexual behaviour.

Methods The HIV-PEP cohort consisted of MSM who were prescribed a 28 day PEP-course after a riskful sexual contact between 2000 and 2009 in Amsterdam, the Netherlands, who were HIV negative at baseline and had a follow-up HIV test at 3 and 6 months. Predictors for seroconversion were analysed using χ^2 tests and Mann–Whitney U tests. The comparison cohort consisted of MSM participating in the Amsterdam Cohort Studies (ACS) who were tested every 6 months in the same study period. The latter cohort aims to represent the overall gay community in Amsterdam. HIV incidences, including 95% CIs, were calculated for both cohorts by dividing newly diagnosed HIV-infections by total Person Years (PY) under observation.

Results The HIV-PEP cohort comprised of 395 PEP prescriptions (n=321 MSM with one PEP prescription; n=34 MSM with two or more PEP prescriptions) with a total follow up time of 169.45 PY. The median age at PEP prescription was 35 (IQR 30-41) and 62 % was born in the Netherlands. In 61% of the cases PEP was prescribed for receptive unprotected anal intercourse (RUAI) and MSM who seroconverted were more likely to report RUAI compared to those who did not seroconvert (82% and 60% resp.; p=0.15). In the ACS cohort 809 MSM participated with a total follow-up time of 4412 PY. The median age at visit in the ACS was 32 (IQR 28-36) and 86%



Abstract O1-S09.06 Figure 1

Abstract O1-S10.01 Table 1 HIV incidences among MSM of the HIV-PEP cohort and of the Amsterdam Cohort Studies (ACS), 2000–2009

Time period	HIV-PEP cohort			ACS			p Value
	No. of serocon-versions	Person Years (PY) under observation	Incidence density per 100 PY (95% CI)	No. of serocon-versions	Person Years (PY) under observation	Incidence density per 100 PY (95% CI)	
2000–2004	1	42.1	2.38 (0.12 to 11.73)	26	2095	1.24 (0.83 to 1.79)	NS
2005–2009	10	127.4	7.85 (4.0 to 14.0)	44	2317	1.90 (1.40 to 2.53)	<0.001
Total study period 2000–2009	11	169.5	6.49 (3.4 to 11.3)	70	4412	1.59 (1.25 to 2.0)	<0.001

NS: Not Significant.

was born in the Netherlands. The HIV incidence in the time period 2005–2009, as well as the overall HIV incidence in the total study period, was four times higher in the HIV-PEP cohort compared to the ACS (Abstract O1-S10.01 table 1). In the HIV-PEP cohort the overall HIV incidence was 6.49 (95% CI 3.24% to 11.62%) per 100 PY, compared to 1.59 (95% CI 1.25% to 2.0% per 100 PY in the MSM in the ACS in the same study period ($p < 0.001$).

Conclusions The HIV incidence of MSM who were prescribed a PEP course was four times higher than in the overall gay community in Amsterdam. Our results show that PEP users belong to a group of MSM at high risk for HIV infection. Further analyses will be conducted to compare predictors of HIV seroconversion in both cohorts.

O1-S10.02 HIV AND BACTERIAL STI TESTING AMONG MEN WHO HAVE SEX WITH MEN IN THE USA

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¹J G Rosenberger, ¹B Van Der Pol, ¹D Herbenick, ²D S Novak, ¹M Reece, ³J D Fortenberry. ¹Indiana University, Bloomington, USA; ²Online Buddies Inc, Cambridge, USA; ³Indiana University, School of Medicine, Indianapolis, USA

Purpose Growing literature has documented the extent to which bacterial sexually transmitted infections (STI) facilitate transmission/acquisition of HIV. Due to the disproportionate impact of HIV on men who have sex with men (MSM), public health messaging encourages routine STI and HIV screening among this population. This study sought to document testing behaviours among MSM in the US and understand factors associated with STI testing.

Methods Data were collected via an internet survey from 27 756 18–80 year old MSM members of an online sexual networking website. Measures included sociodemographics, STI/HIV testing behaviours, STI/HIV diagnoses, and lifetime sexual behaviour history.

Results Participants' mean age was 39.0 years, ethnicities included white (84.5%), Latino (6.4%), African American (3.5%), and most (79.9%) identified as homosexual. Over half (54.2%) indicated they were not in a romantic relationship, and nearly all (88.9%) had been sexually active with more than one partner in the past year. Testing rates (past year) were similar for both HIV (65.4%) and STI (60.8%), yet testing in the past 6 months differed with men reporting more frequent STI testing (63.8%) compared to HIV (46.5%); rates of infection in the previous 2 years included gonorrhoea (4.5%), Chlamydia (4.1%), and HIV (3.2%), with lifetime HIV infection rate being 12.5%. Among men living with HIV infection, rates of bacterial STI testing in the past year were higher (76.1%), with gonorrhoea and Chlamydia rates being 8.6% and 7.6% respectively. Both race and sexual orientation were predictive of bacterial STI testing in the past year, with non-white and bisexual men being less likely to have done so ($p < 0.01$).

Conclusions These data provide a large scale assessment of HIV and STI testing among MSM in the US. Findings from this study highlight gaps in screening between bacterial STI and HIV and suggest a need to promote services that offer HIV and STI testing simultaneously.

O1-S10.03 LYMPHOGRANULOMA VENEREUM, HIV AND HIGH-RISK BEHAVIOUR: FINDINGS FROM LGV ENHANCED SURVEILLANCE AND MATHEMATICAL MODELLING

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¹M Ronn, ¹G Garnett, ²G Hughes, ²C Ison, ²I Simms, ²S Alexander, ¹H Ward. ¹Imperial College London, London, UK; ²Health Protection Agency, UK

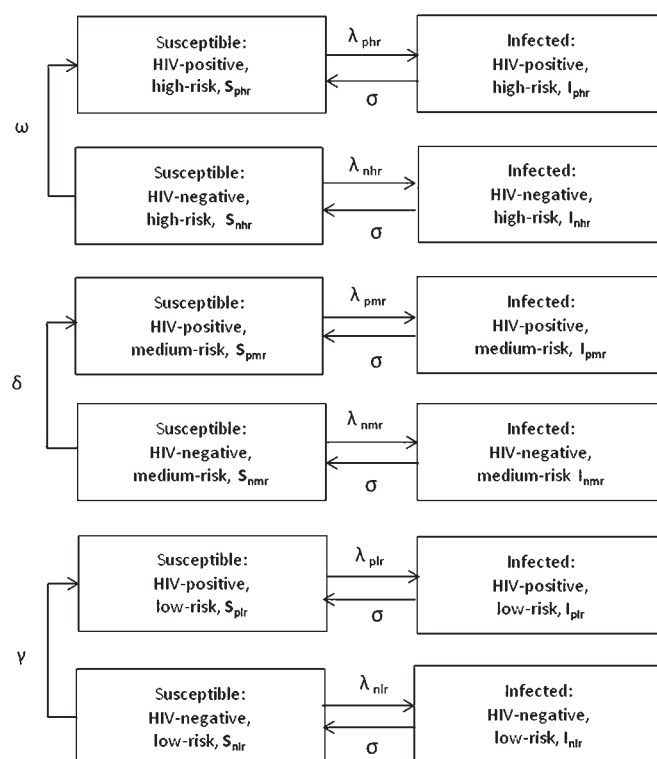
Background Lymphogranuloma venereum (LGV) re-emerged in industrialised countries in the early 2000s and most transmission is assumed to occur among high-risk HIV-positive men who have sex

with men (MSM). As the epidemic matures, we would expect to see declining HIV prevalence among cases as the transmission moves outside the initial core groups, however LGV cases continue to present with high levels of HIV-positivity. We have previously conducted a systematic review and a meta-analysis of literature published on LGV and found an eightfold greater likelihood of HIV-positivity among LGV cases when compared to controls with non-LGV chlamydia. In this study we investigate the role of high-risk behaviour, serosorting and differences in transmission probability as contributing factors to the persistent association between HIV and LGV.

Methods Data from LGV Enhanced Surveillance in the UK were used to investigate the relationship between HIV-positivity and LGV acquisition by setting HIV-positivity as the outcome in logistic regression. A simple deterministic compartmental model was developed, stratified by HIV-status and risk behaviour, to simulate the spread of infection among MSM in a large metropolitan population. Assortative mixing for HIV status and high-risk behaviour were controlled independently of each other see Abstract O1-S10.03 figure 1.

Results Up to date approximately 81% of the 1500 confirmed LGV cases have had surveillance forms returned with above 70% HIV-prevalence among cases over time. HIV-positive LGV cases were more likely to report unprotected anal intercourse and greater number of partners than HIV-negative LGV cases in surveillance data. The mathematical model indicates that extreme levels of serosorting would be needed to explain the high prevalence of HIV in the presence of high-risk HIV-negative group. Increase in the number of HIV-positive individuals, higher transmission probability in HIV-positive and serosorting together were better able to reproduce the strong association between HIV and LGV.

Conclusions Differential acquisition of LGV occurs according to HIV status. LGV acquisition among HIV-positives may be due to serosorting together with an increased transmission probability due to reduced condom use and sexual practices, and potential biological susceptibility. Findings suggest that HIV-positive MSM need targeted health promotion in view of their different risk behaviours.



Abstract O1-S10.03 Figure 1 Flowchart illustrating the model structure.