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Background The Chlamydia Screening Implementation (CSI) is a Dutch large-scale pilot of an internet-based self-sampling Chlamydia trachomatis (Ct) screening program for 16–29-year-old men and women. The effectiveness of CSI can be estimated from changes in the positivity rate of the sampled individuals, but shifts in health-care use and CSI participation rates makes modelling a valuable alternative approach for estimating screening effectiveness.
Methods We simulated the spread of Ct in a heterosexual population of age 13–65, using sexual survey data to parametrise a dynamic sexual contact network. A screening program was implemented in the model by constructing "participation trees", which capture the likelihood to participate given an individuals participation history, as observed in the CSI program. Currently available health-care options to test for and treat Ct were also implemented in the model as a baseline (including trends in their usage), against which the effect of screening could be compared. In order to estimate the long-term effects of screening on the Ct prevalence in the Netherlands, future participation rates were estimated from trends in the yearly number of new participants, and by extrapolation of the participation trees.
Results Compared to a baseline scenario, there is a moderate additional effect of 3 years of screening: the estimated Ct prevalence for the target population (16–29) dropped from 2.8% to 1.7% in large cities, and from 1.9% to 1.2% in more rural regions. As repeated invitees were likely not to participate, the largest effect of screening occurred in its first year when everyone in the target population was invited for the first time. After 3 years, the largest effect of screening on the Ct prevalence had been reached. Due to the anticipated further decrease in participation rates the long-term decrease in Ct prevalence is estimated to be in the range of 0.5–0.7 and 0.4–0.6 per cent-points in urban and rural regions, respectively.
Conclusions A continued population based screening program has a permanent additional effect on lowering the Ct prevalence in the Netherlands, but the size of this effect is strongly tied to the participation rate in the targeted population. Therefore, the accuracy of long-term predictions of screening effectiveness depends on a good model implementation of the available data on participation behaviour.

O1-S09.05 DECLINE IN HIV PREVALENCE AMONG YOUNG PEOPLE IN THE GENERAL POPULATION OF COTONOU, BENIN, 1998–2008

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Objective Comparative study of the prevalence of HIV and sexually transmitted infections (STI), and associated behaviours in the general population of Cotonou between 1998 and 2008.
Methods In Cotonou, two studies employing similar methods were carried out in 1998 and 2008 respectively. In these studies, the census areas (clusters) were sampled with probability proportional to size. After enumeration of all households in the selected clusters, a certain number of households were randomly sampled from each selected census area (950 in 1998, 1070 in 2008). Consenting adults, aged 15–49 years (but 15–64 years for the men in 2008) were interviewed and screened for HIV, syphilis, and HSV-2 (serologic detection of antibodies for the latter infections), *Neisseria gonorrhoeae* and *Chlamydia trachomatis* (nucleic acid amplification assays on urogenital samples). The Roa-Scott χ^2 was used to consider the cluster effect in the univariate comparison of proportions. Logistic regression (taking into account the cluster effect) was used for multivariate analysis, adjusting for socio-demographic variables.
Results The global HIV prevalence was stable (3.4% in 1998 vs 3.1% in 2008). There was however a trend towards decreasing among men (Abstract O1-S09.05 table 1). The decrease was highly significant among men aged less than 30 (3.0% in 1998 vs 0.5% in 2008, p<0.0001). A trend towards decreasing prevalence was also observed among women aged less than 20 (2.4% in 1998 vs 0.5% in 2008, p=0.102). On the other hand, an upward trend was observed among women aged 20+ (3.8 in 1998 vs 4.8% in 2008, p=0.346). Syphilis prevalence also decreased significantly, but this decline was more pronounced among women (Abstract O1-S09.05 table 1). The prevalence of gonorrhoea trended lower among men while prevalence of HSV-2 increased among both men and women (Abstract O1-S09.05 table 1). The proportion of adults who reported condom use during their last extramarital sexual intercourse increased (23.0% in 1998 vs 40.1% in 2008, p<0.0001).
Discussion The decrease in HIV prevalence among young people could be explained by the increase in condom use and may also be related to the impact of intensive interventions targeting the prostitution milieu during the same period. The upward trend among older women could be related to a large increase in access to antiretroviral therapy that occurred from 2004 onwards.

O1-S09.06 ASSESSING THE IMPACT OF A FSW TARGETED HIV INTERVENTION PROGRAMME ON INCIDENCE AND PREVALENCE IN COTONOU, BENIN

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Abstract O1-S09.05 Table 1 Multivariate comparison of HIV/STI prevalence between 1998 and 2008 among men and women of the general population of Cotonou aged 15–49

	Women			Men			Overall		
	1998 (N=1093)	2008 (N=1348)	p Value*	1998 (N=1019)	2008 (N=1159)	p Value	1998 (N=2112)	2008 (N=2507)	p Value
HIV	35 (3.5%)	50 (4.0%)	0.3463	31 (3.4%)	21 (2.0%)	0.2385	66 (3.4%)	71 (3.1%)	0.9259
N gonorrheae	9 (0.9%)	10 (0.8%)	0.9292	10 (1.1%)	3 (0.3%)	0.2464	19 (1.0%)	13 (0.6%)	0.5770
C trachomatis	13 (1.3%)	27 (2.2%)	0.0834	21 (2.5%)	23 (2.2%)	0.7977	34 (1.8%)	50 (2.2%)	0.2337
T pallidum	12 (1.3%)	4 (0.3%)	0.0263	16 (1.8%)	9 (0.9%)	0.0986	28 (1.5%)	13 (0.6%)	0.0050
HSV-2	275 (29.5%)	397 (33.2%)	0.2124	103 (11.9%)	181 (18.1%)	<0.0001	378 (21.1%)	578 (26.4%)	0.0026

*p Value from the logistic regression analysis taking into account the cluster effect and adjusting for sex (overall analysis only), age, marital status and education level.

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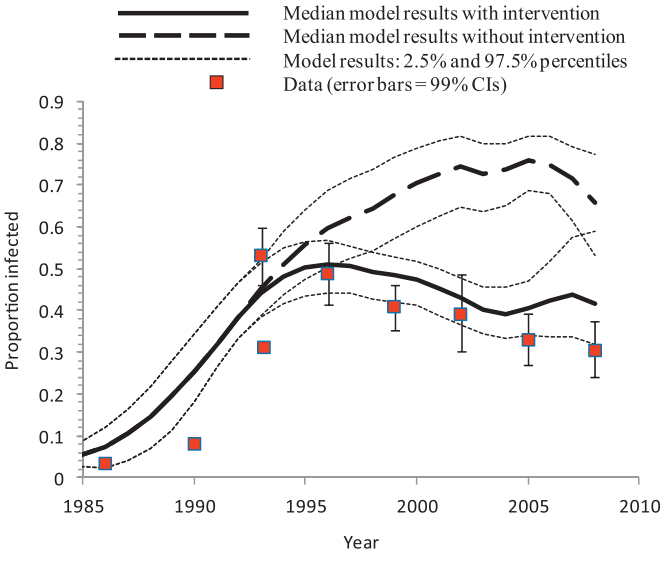
Background From 1993 to 2005 female sex workers (FSW) were the focus of a HIV intervention in Cotonou where most local FSW originated from three neighbouring countries. Intervention impact was assessed using a HIV transmission model parameterised and fitted to empirical data within a Bayesian framework, 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.



Abstract O1-S09.06 Figure 1

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

	HIV-PEP cohort			ACS			
Time period	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)	p Value
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.