intervention impact (relative reduction in MSM HIV prevalence after 10 years: A: 18.2% (95% CI 11.0 to 29.2%), B: 18.1% (10.6 to 29.7%)).
Conclusions The choice of method used to balance insertive and receptive contacts in an HIV transmission model affected the estimates for the amount of like-with-like mixing within different MSM groups, but the estimated impact of an intervention was robust to the method used.

P1-S4.25 USING MATHEMATICAL MODELS TO UNDERSTAND THE CAUSES OF THE ECOLOGICAL ASSOCIATION SEEN BETWEEN HIV AND HSV-2 IN FEMALE SEX WORKERS IN SOUTHERN INDIA

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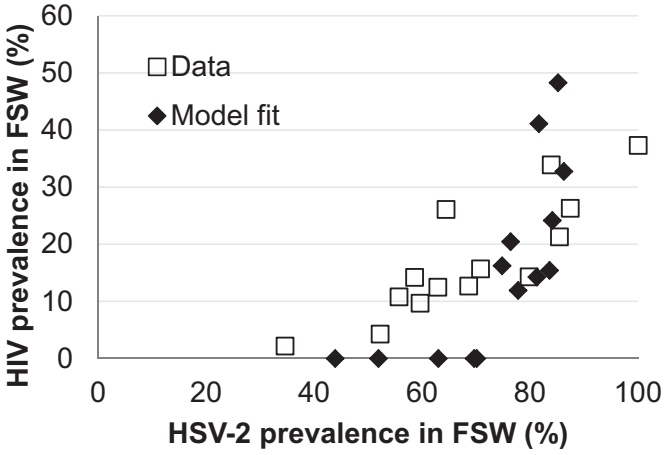
Background Cross-sectional surveys of female sex workers (FSW) in multiple districts in Southern India show a strong ecological association between HIV and HSV-2 prevalence. Modelling was used to determine if this association is primarily due to shared behavioural risk factors (such as partner change rate) or if biological interactions between the two viruses also play a major role.
Methods Linear regression was used to find significant predictors of FSW HIV prevalence in 17 districts in Southern India (using data from Avahan, the India AIDS Initiative). Explanatory variables investigated included prevalence of different STIs in FSW and clients, mean duration of being an FSW or client, and mean reported number of clients per FSW or FSW visited per client. A deterministic HIV/HSV-2 transmission model without behavioural heterogeneity or transmission co-factors was parameterised using district-specific FSW and client behavioural data and fitted to HIV and HSV-2 prevalence data for each district by varying the per partnership HIV and HSV-2 transmission probabilities. The model was firstly fit to all districts simultaneously assuming a constant HIV and HSV-2 transmission probability to see whether district-level variations in behaviour were sufficient to explain the trends seen, and then fit separately for each district to test for trends in the estimated transmission parameters in different settings.
Results FSW HSV-2, syphilis, gonorrhoea and chlamydia prevalence, client HIV prevalence and mean number of clients per FSW per week were all correlated with FSW HIV prevalence, but only FSW HSV-2 prevalence remained a significant predictor in multivariate analysis. The dynamic model reproduced the HIV/HSV-2 association when simultaneously fit to all districts, but was a poor fit to data (Abstract P1-S4.25 figure 1). When individual transmission probabilities were fit for each district positive correlations were seen between the HSV-2 transmission probability and both the HIV transmission probability and HSV-2 prevalence, but not between the HIV transmission probability and HSV-2 prevalence or vice versa.
Conclusion These results suggest that differences in mean reported partner change rate or duration of commercial sex are not sufficient to explain the association between HIV and HSV-2 prevalence in FSW in Southern India. However, initial analyses do not show clear evidence for a biological interaction. More detailed models will be used to further investigate the association.



Abstract P1-S4.25 Figure 1 FSW.

P1-S4.26 DURATION, INCIDENCE AND PREVALENCE OF *CHLAMYDIA TRACHOMATIS* IN WOMEN: ESTIMATION BY MULTI-PARAMETER SYNTHESIS

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Background An understanding of the prevalence and incidence of *Chlamydia trachomatis* (CT) infection is needed to assess the potential value of screening. Typically, the estimation of incidence, prevalence and duration are seen as distinct exercises. Here we estimate them simultaneously from the available data subject to the well-known relationship prevalence = incidence times duration.
Methods We re-examine studies of duration of asymptomatic CT, based on recent reviews, and propose a model. Information from a recent synthesis of UK prevalence studies, and data on infection and re-infection rates in UK clinic settings, are used to generate estimates of incidence of infection in the general population, taking account of the effect of duration of infection on observed incidence. We use Bayesian multi-parameter evidence synthesis to check the consistency of the evidence and to produce internally coherent estimates of duration, incidence and prevalence in women.
Results The three sets of evidence sources that directly inform incidence, prevalence and duration respectively were consistent with each other. Our estimates are: duration of asymptomatic infection 1.25 years (1.04, 1.50), average incidence and prevalence in 16–44 year olds 2.2% (1.7, 2.9) per year and 2.1% (1.7, 2.6) respectively.
Conclusions The apparently heterogeneous estimates of duration of asymptomatic CT in the literature are explained by the different study designs. Adapted appropriately, they agree with UK prevalence and incidence data.

Epidemiology poster session 4: Tests evaluation

P1-S4.27 QUALITY ASSURANCE OF SYPHILIS SEROLOGICAL TEST IN GUANGDONG, CHINA, 2004–2009

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Background Syphilis has made a major comeback in China, now representing the most common communicable disease in many cities and regions. A total of 327 433 cases of syphilis were reported