18% to 13% for ages 21–25, 26–30, and 31–35 respectively, whereas women in each age group were equally distributed between 16% and 18%. Women, MSW, and MSM, accounted for 31%, 32% and 30% respectively of cases; 7% were bisexual men. Though most heterosexuals had only syphilis, 16% were HIV+ and 38% of them were coinfected. Among 196 bisexual and MSM, 73% were HIV+; of these, half were coinfected. On the basis of timing of HIV and syphilis diagnoses and syphilis stage, an estimated 53% of HIV+ men may have serosorted. Unlike other MSM populations, these cases did not use methamphetamine; 35% reported marijuana use. Crack cocaine use was reported for 16% of MSW and 33% of women. A total of 2099 individuals (cases, uninfected contacts, and anonymous partners) made up the network divided into 293 components. The largest component of 261 people (Abstract P1-S5.39 figure 1) was predominantly MSM including 10 of the 36 MSMW. None of MSMWs’ female partners had other partners, suggesting that onward transmission did not occur. Heterosexuals, engaging in transactional sex, comprised the second largest component involving at least 135 individuals; all cases were syphilis-infected. 

**Conclusions** Contemporaneous syphilis and HIV epidemics persist among MSM; neither serosorting nor methamphetamine use fuels spread. Heterosexuals experienced a syphilis outbreak driven in part by transactional sex and crack cocaine use. Bisexual men did not bridge the populations. Frequent dual screening among MSM is critical to impede further transmission of both STIs.

**SEX CELLS: A PILOT STUDY INVESTIGATING CELL PHONE-BASED SEXUAL NETWORKS AMONG MEN WHO HAVE SEX WITH MEN IN SOUTH INDIA**

**Background** A high HIV prevalence (19–32%) has been reported among men who have sex with men (MSM) in South India. Indeed, sexual networks play a central role in the spread of HIV in these communities but have rarely been studied because of intense social stigma and methodological and ethical challenges. Although cell phones are commonly used among MSM to contact sexual partners in India, few studies have explored the formation of such sexual networks. This study sought to understand the structure, context and evolution of cell phone-based sexual networks of MSM in three South Indian cities.

**Methods** Sampling frames in the three cities were established using MSM contacts stored in the cell phones of community-based researchers (CBRs). Study participant “seeds” were randomly selected from these social networks. Seeds were asked to recruit their sexual partners, who completed surveys about their sexual practices with regular partners and 7-day partners. Network diagrams were constructed using non-nominal codes linking study participants.

**Results** Cell phone contacts represent a useful resource for constructing social networks. Preliminary results indicate the diversity of sexual networks and sexual practices within these networks.

**Conclusions** New community-based methods of exploring sexual networks were assessed, and sexual practices, partner concurrency, and risk behaviours were explored. This information can be used to tailor more specific services for MSM in these communities. As this methodology sampled from social networks, more hidden “individuals who do not access health services were included in the study.”

**QUANTIFYING THE CONTRIBUTION OF RE-INFECTION WITHIN PARTNERSHIPS TO PERSISTENT SPREAD OF CHLAMYDIA**

**Background** Many studies show that people testing positive and treated for genital chlamydia infection are at high risk of a repeat infection in the first year after treatment. Repeat infection can come from treatment failure, a new partner, or from within an existing partnership if the partner was not treated. Partnerships can therefore form a reservoir of chlamydia infections that might affect the effectiveness of population screening programs. It is not known how
much reinfection within partnerships contributes to the persistent spread of chlamydia in heterosexual populations.

**Methods** We derive an expression for the basic reproduction number of an SIS infection in a population with long term monogamous partnerships. The basic reproduction number contains an explicit term quantifying the contribution of re-infection within partnerships to the overall reproduction number. The derivation is then extended to include partner notification and treatment. Finally, the model is extended to include two types of partnerships with differing average duration.

**Results** For small recovery rates and low transmission probabilities reinfection plays a minor role in sustaining chlamydia transmission. However, there is an optimal combination of duration of infection and transmission probability for which reinfection contributes substantially to keeping chlamydia endemic in a population. We discuss the functional dependency of the basic reproduction number on these parameters. Using a more complex model numerical scenarios were simulated showing that partner notification prevents a large proportion of re-infections.

**Conclusions** The effect of screening depends, in part, on whether or not it succeeds in moving the basic reproduction number away from the transmission optimum via reinfection. This can be achieved either by choice of the screening interval or by rescoring those individuals who tested positive in a first screening test. There is an optimal time interval for retesting that minimises the basic reproduction number. The precise numerical value depends on partnership durations and transmission probabilities.

**Epidemiology poster session 5: Transmission dynamic: Income/race disparities**

**P1-S5.43 DISPARITIES IN SEXUALLY TRANSMITTED DISEASES ACROSS RACE-INCOME “COUNTIES IN THE USA: A RACE-SPECIFIC MORBIDITY ANALYSIS**

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**Background** We examined the association between race-specific incidence rates for three major bacterial STDs and race-specific household income at the county level for all counties in the 48 contiguous states in the USA.

**Methods** Race-specific county-level median household incomes were obtained from the 2000 decennial census. We used the overall US median household income (ie, $41,994, in 2000 dollars) as the cut-point to categorise counties into six race-income county groups. “Race-income” county groups were defined by black household income and white household income at the county level (see Abstract P1-S5.43 table 1). County-level race-specific morbidity for chlamydia, gonorrhoea and primary and secondary (P&S) syphilis were obtained from the National Electronic Telecommunications System for Surveillance (NETSS) for 1999–2001. For each of the six county groups, we calculated race-specific STD rates (new cases per 100,000 residents) using the total number of cases and population size for all three years. In a supplemental analysis, we used a spatial regression technique to examine the association in more detail, controlling for county-level socio-demographic factors.

**Results** STD rates for Blacks in each category were at least 4 times higher than for Whites. For chlamydia, county group 1 had the...