available, and last for 2002–2003; 8746 cases and contacts were available over 2 years. For the first 3-year period, components ranged from 1 to 2166; in 1997–1998; from 1 to 82 people, and from 1 to 33 people in 2002–2003. The giant component decreased by an order of magnitude over time as a proportion of all components, consisting of 9.4% of the population in the first time period, 1.8% in the second, and 0.4% (Abstract P1-S5.37 figure 1). Twenty people who had chlamydia or gonorrhoea in 1990–1992 had subsequent STIs every 2–3 years up to an including 1997–1998. They were significantly younger than other cases, (means 17.81, 23.27, p=0.0002) and were more likely to be of North American Indian ancestry (OR14.22, p<0.0001). They did not differ by area of residence or gender and the sizes of the components in which all cases and contacts were connected by sexual intercourse in 1997/98 were similar to those in which the 20 long term repeaters were active.

Conclusions The existence of 20 young, First Nations people who had STI at least every 2–3 years from 1990–1998 provides evidence that the STD core group likely consists of some of the same people over a 7–9-year period, who by virtue of their repeated infections contribute disproportionately to STI transmission. The decrease in size of the large components together with decreases in STI supports the hypothesis that eco-niches of STI adapt to control programs over time.

P1-S5.38 CONCURRENT SEXUAL PARTNERSHIPS AND GROUP SEX AS DETERMINANTS OF STI WITHIN SEXUAL NETWORKS OF SWINGERS

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Background Concurrent sexual partnerships create higher network connectivity and increase spread of STI through their sexual networks. Recently in our prospective cohort study SWAP (Swingers World Attitude and Practice) swingers were identified as a high transmission population for STI. Swingers, heterosexual couples together having sex with others, by definition are involved in concurrent sexual relationships. Objective of the present paper is to examine indicators for the level of concurrency in sexual relations among swingers predicting high potential of STI transmission.

Methods Participants of the SWAP cohort were followed using (network) questionnaires and STI consultations. Urogenital, oropharyngeal and anorectal samples were tested for *Chlamydia trachomatis* (CT) and *Neisseria gonorrhoeae* (NG) by NAAT. STI is defined as positive CT and/or NG diagnosis. We used epidemiological (SPSS) and social network methods for the analysis of the data. Different indicators for level of concurrency were measured: frequency of swinging; types and number of sex partners; and involvement in group sex (sexual intercourse at the same moment in time with multiple partners), all during the past 6 months.

Results Of the 106 respondents, median age 43 years, 13.2% were diagnosed positive for STI. Of the swingers 96% were in a steady relationship, 5% formed a swinging couple with a friend not being their steady partner, 9% also had casual sex partners outside swinging with median 4 sex partners. Median frequency of swinging was 10 times, with median 7 swing sex partners in 6 months. Median number of swing sex partners during an average swinging date was 2; 59% practiced group sex with median 3 sex partners. Median total number of sex partners was 9 in 6 months. Abstract P1-S5.38 table 1 shows frequency of swinging, participating in group sex and total number of sex partners were significantly correlated with having STI.

Abstract P1-S5.38 Table 1 Correlation between swingers characteristics, concurrency measures and STI diagnosis

Variable	No STI n (%)	STI n (%)	Total	**p≤0.05 ***p≤0.01
Sex				
Male	47 (90.4)	5 (9.6)	52 (49.1)	
Female	45 (83.3)	9 (16.7)	54 (50.9)	ns
Age				
<45	55 (90.2)	6 (9.8)	61 (57.5)	
≥45	37 (82.2)	8 (17.8)	45 (42.5)	ns
Frequency of swinging				
<5	25 (100)	0 (0)	25 (23.8)	**
5–10	30 (88.2)	4 (11.8)	34 (32.4)	
11–15	19 (86.4)	3 (13.6)	22 (21.0)	
>15	17 (70.8)	7 (29.2)	24 (22.9)	
Number of sex partners during swinging				
<5	27 (90.0)	3 (10.0)	30 (28.3)	ns
5–8	23 (92.0)	2 (8.0)	25 (23.6)	
9–12	20 (90.9)	2 (9.1)	22 (20.8)	
>12	22 (75.9)	7 (24.1)	29 (27.4)	
Group sex				
Yes without steady partner	16 (72.7)	6 (27.3)	22 (20.8)	**
Yes with steady partner	39 (95.1)	2 (4.9)	41 (38.7)	
No	37 (86.0)	6 (14.0)	43 (40.6)	
Total number of sex partners				
1	4 (57.1)	3 (42.9)	7 (6.6)	***
2–5	23 (100.0)	0 (0.0)	23 (21.7)	
6–10	25 (96.2)	1 (3.8)	26 (24.5)	
11–15	21 (84.0)	4 (16.0)	25 (23.6)	
>15	19 (76.0)	6 (24.0)	25 (23.6)	

Conclusions Swingers have concurrent sexual relations with a range of different types and numbers of sex partners and therefore transmission of STI through connected networks is highly plausible. Some of the presented indicators of level of concurrency are associated with STI infection. Further analysis of the concurrency measures, STI related risk behaviours, and the sexual networks of swingers, is necessary to examine how concurrent sexual partnerships form these networks and influence STI transmission through them.

P1-S5.39 TRIPLE JEOPARDY? SEXUAL NETWORKS OF SYPHILIS & HIV INFECTION AMONG HETEROSEXUALS, MSM, AND BISEXUAL MEN IN NORTH CAROLINA

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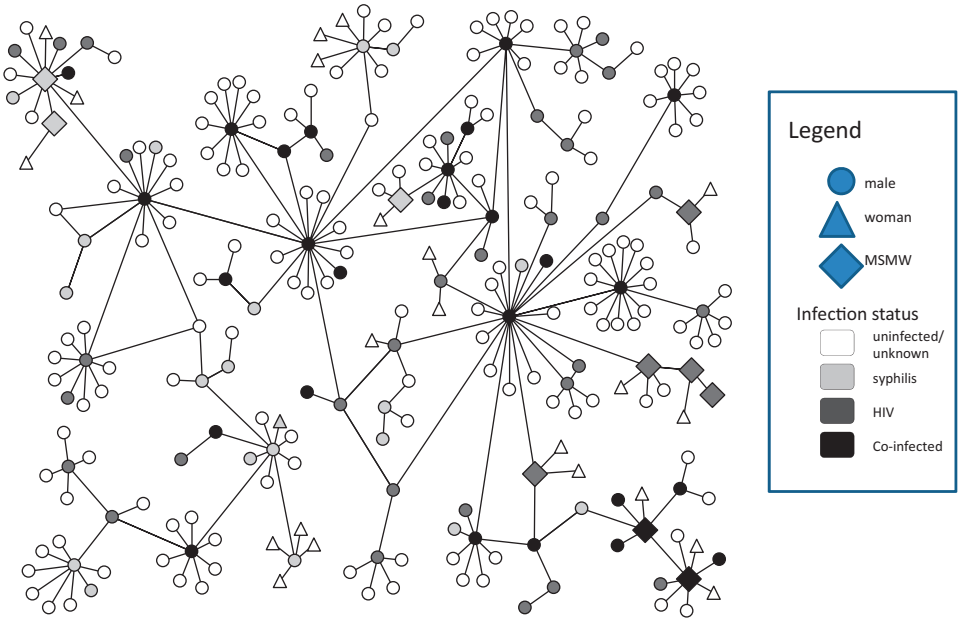
Background The velocity of STI spread depends in part on the formation of sexual partnerships and the structure of sexual networks. Dual outbreaks of HIV and syphilis have persisted in NC since 2001 among young black men who have sex with men (MSM). During 2007–2009, the incidence rate of early stage syphilis increased 600% in County X from 9/100 000 to 57/100 000; the outbreak involved MSM, bisexual men (MSMW), heterosexual men (MSW), and women. We sought to determine if bisexual men bridged MSMs and heterosexuals to facilitate syphilis and HIV spread in both populations.

Methods We abstracted public health department charts in County "X" for early stage syphilis cases and HIV for black men ages 15–30 during 2006–2009. We documented each sexual and social tie, permitting sociometric analysis.

Results Of the 532 cases with syphilis, HIV, or both infections, 69% were male. The per cent of males declined with age from 24% to



Abstract P1-S5.39 Figure 1 Infection Status.

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 33% 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.

P1-S5.40 SEX CELLS: A PILOT STUDY INVESTIGATING CELL PHONE-BASED SEXUAL NETWORKS AMONG MEN WHO HAVE SEX WITH MEN IN SOUTH INDIA

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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."

P1-S5.41 QUANTIFYING THE CONTRIBUTION OF RE-INFECTION WITHIN PARTNERSHIPS TO PERSISTENT SPREAD OF CHLAMYDIA

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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