

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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A M Niekamp, C J P H Hoebe, L W L Spauwen, Nicole H T M Dukers-Muijers. *Public Health Service South Limburg, Geleen, Netherlands*

**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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I Doherty, D Pasquale, A Liebman, A Adimora, P Leone. *University of North Carolina, Chapel Hill, USA*

**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