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Sexually transmitted diseases and hepatitis in a national sample of men who have sex with men in New Zealand

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Abstract

Aims To investigate the lifetime self-reported incidence of sexually transmitted diseases and hepatitis A, B and C in a national sample of men who have sex with men (MSM) in New Zealand.

Methods A national telephone survey of MSM was conducted in 1996 with the aim of collecting baseline information on the sexual behaviour, safe sex practices, socio-sexual milieu and HIV knowledge of a broad range of MSM.

Results Of the 1852 respondents, 37.1% reported a lifetime history of sexually transmitted diseases (STDs), 7.0% reported hepatitis A, 8.0% hepatitis B and 1.8% hepatitis C. A quarter (26.2%) had been for a sexual health check-up or treatment in the year prior to survey. Logistic regression analysis revealed independent associations with STD history (older age, higher number of lifetime partners, seeking partners in public venues, tested HIV positive), HAV (older age, higher number of lifetime partners, use of sex venues, tested HIV positive), HBV (older age, seeking partners in public venues, tested HIV positive), HCV (lower income, recent injecting drug use, tested HIV positive).

Conclusions This is the first time that information on STDs and hepatitis among a large national sample of MSM has been collected in New Zealand. The findings corroborate previous evidence that MSM are disproportionately affected by sexually transmitted infections other than HIV.

Over the last 20 years HIV/AIDS has dominated the territory where health and sexuality intersect for gay and bisexual men. This may be because many other sexually transmitted diseases (STDs) are treatable or can be prevented by vaccination. However, many infections are the cause of considerable physical and emotional discomfort in their own right and some may lead onto more serious problems, such as the relationship between human papillomavirus and anal cancer, rates of which are increasing among men who have sex with men (MSM).[1] At the same time, research has also demonstrated that a number of STDs may actually facilitate the transmission of HIV.[2-4] For those involved in HIV prevention this means that certain STDs must now be considered when designing health promotion strategies.

MSM have been the population most affected by HIV in New Zealand,[5] however few data on the burden of other sexually transmitted infections within this group have been reported to date. Information relating to MSM attending the Burnett Clinic for anonymous HIV testing during 1988-9 revealed a self-reported lifetime STD rate of 47.7%.[6] In 1991 the New Zealand Partner Relations Survey found elevated self-reported lifetime STD rates among males reporting a history of same-sex behaviour (54.0%, personal communication, Peter Davis and Roy Lay-Yee, 2nd Dec 1999) compared to the total male rate of 10.4%.[7] Sentinel surveillance of STD clinic attendees between 1991-2 also found that a history of male-male sex was associated

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with higher rates of syphilis and gonorrhoea, but also with lower rates of chlamydia.[8] No data on sexually-acquired hepatitis infection among MSM in New Zealand have been published to date.

These earlier findings are important, especially given the difficulties collecting STD data in conjunction with comprehensive demographic and behavioural information, including history of male-male sex. Yet as they are based on either very small samples or samples of clinic attendees, it is still uncertain whether they are representative of the general MSM population. Also, STD data routinely collected from sentinel public sexual health clinics by ESR currently does not include information on male-male sexual behaviour, meaning that the proportion of total new STD diagnoses that are attributable to sex between men cannot be determined in New Zealand. Moreover, recent evidence from several countries points to an increase in unprotected anal intercourse,[9,10] STD diagnoses,[11,12] and ongoing HIV infection among MSM[13] and the absence of similar surveillance information in New Zealand hinders the delivery of timely and appropriate health promotion interventions to this population.

The aim of this paper was to investigate the lifetime incidence of self-reported STDs and hepatitis in a national study of MSM. This paper extends existing analysis presented in an earlier community report[14] and represents the first time that New Zealand data on a large sample of MSM exhibiting a broad range of demographic, social and behavioural characteristics have been made available.

Methods

The Male Call/Waea Mai, Tane Ma study was conducted in mid-1996 with the aim of obtaining nationwide baseline data on the sexual identity, sexual behaviour, safe sex practices, and knowledge about HIV transmission of a broad range of MSM. Due to the methodological difficulties inherent in social research on MSM and HIV,[15] the survey employed an innovative data collection approach that was based largely on previous Australian experience[16] and adapted to the New Zealand context. This method was non-random and relied on self-selection, however it has been argued elsewhere that the comprehensive recruitment strategy coupled with the ease and safety of participating resulted in a broad sample in which different groups of MSM were well-represented (unpublished manuscript). In total, 1852 completed questionnaires were recorded and the sample displayed a broad range of demographic characteristics, enabling comparisons to be made between groups.

The survey contained two questions specifically relating to sexually transmitted diseases: "I am going to read out a number of sexually transmitted diseases and I'd like you to tell me whether or not you have ever had each one"; and "[H]ave you been for a check-up or treatment in the last twelve months for any sexually transmitted diseases?". Seven of the infections (hereafter referred to as 'STDs': anal, oral and penile gonorrhoea, chlamydia/NSU, anal and genital herpes, anal warts) were subsequently grouped together in order to provide a simple measure of the overall health burden placed by sexually transmitted diseases on MSM, and these were separated from the three hepatitis infections.

Logistic regression was used to investigate the effect of certain variables on the presence of grouped STDs and each hepatitis separately whilst controlling for the effect of other variables in the model. Variables included in the analyses were chosen on the basis of previous research and what was possible given the constraints of the questionnaire. Ethnicity was based on census definitions and respondents categorised as Maori therefore included those who reported Maori and another ethnicity.

Results

Table 1 shows the proportion of Male Call respondents who reported any history of STD or hepatitis infection. The infections most commonly reported were chlamydia/NSU, penile gonorrhoea and anal warts. Any gonorrhoea and any herpes were reported by 16.8% and 8.0% of the sample respectively. Grouping the data reveals that 37.1% of the sample reported a history of STD and 14.9% reported a

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history of hepatitis, with 9.3% reporting a history of both STD and hepatitis. In total, 42.8% reported a history of any of the infections listed in Table 1. An examination of the history of specific STDs by HIV test status (Table 2) revealed significantly higher rates of current and/or previous infection amongst those testing HIV positive.

Table 1. Percentage of Male Call/Waea Mai, Tane Ma respondents reporting lifetime history of infection.

STD	Reported history of infection	
	N	%
Anal gonorrhoea	81	4.4
Oral gonorrhoea	55	3.0
Penile gonorrhoea	252	13.6
Chlamydia/NSU	315	17.0
Syphilis	66	3.6
Anal herpes	36	1.9
Genital herpes	127	6.9
Anal warts	216	11.7
% reporting any of above STDs	**688**	**37.1**
Hepatitis A	130	7.0
Hepatitis B	148	8.0
Hepatitis C	34	1.8
% reporting any hepatitis	**276**	**14.9**
Total	1852	100.0

Table 2. Reported history of infection by HIV test status.*

Infection	Tested HIV positive		Last tested HIV negative		Never tested for HIV	
	N	%	N	%	N	%
Anal gonorrhoea	12	21.8	58	4.8	10	1.8
Oral gonorrhoea	10	18.2	38	3.1	4	0.7
Penile gonorrhoea	25	45.5	175	14.3	49	8.9
Chlamydia/NSU	20	36.4	247	20.2	43	7.8
Syphilis	11	20.0	44	3.6	8	1.5
Anal herpes	8	14.5	25	2.0	3	0.5
Genital herpes	16	29.1	95	7.8	13	2.4
Anal warts	22	40.0	162	13.3	27	4.9
Total	55	100.0	1220	100.0	549	100.0

*$P<0.0001$ for all chi-squared and exact tests of association between STD and HIV status categories. The use of multiple tests means that the significance of these results should be interpreted conservatively. The analysis excludes 28 participants whose responses included 'declined' or 'did not know'.

Table 3 presents the factors that were independently associated with reported lifetime infection after controlling for the effect of all other variables included in the analysis (the complete list of variables is given beneath Table 3). Having had more than 50 lifetime male sexual partners was found to be strongly associated with both STD and hepatitis A history. Being older and having tested HIV positive were strongly associated with hepatitis B history. Hepatitis C history was strongly associated with recent injecting drug usage practice and having tested HIV positive or not having received their latest HIV test result.

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Table 3. Adjusted odds ratios for lifetime reported STD, hepatitis A, hepatitis B, hepatitis C among Male Call/Waea Mai, Tane Ma respondents.*

Characteristic	STD Adj. OR (95% CITY)	Hep A Adj. OR (95% CI)	Hep B Adj. OR (95% CI)	Hep C Adj. OR (95% CI)
Age 25-39 years (vs. 15-24)	1.7† (1.2-2.4)	1.7 (0.7-4.1)	2.0 (0.9-4.1)	1.5 (0.5-5.2)
Age 40+ (vs. 15-24)	3.8† (2.5-5.7)	3.6† (1.5-8.6)	2.8† (1.3-6.0)	2.0 (0.5-7.8)
Income <$20,000 ‡	0.8 (0.6-1.1)	1.1 (0.7-1.8)	1.3 (0.9-2.1)	3.2† (1.4-7.1)
Christchurch Urban Area (vs. Wellington)	0.7 (0.5-1.2)	0.4† (0.2-0.9)	0.5 (0.2-1.1)	1.5 (0.4-6.2)
6-20 lifetime partners (vs. 1-5 partners)	2.5† (1.4-4.4)	2.0 (0.4-9.3)	0.9 (0.4-2.1)	2.5 (0.3-24.1)
21-50 lifetime partners (vs. 1-5 partners)	3.4† (1.9-6.1)	2.5 (0.6-11.6)	0.9 (0.4-2.2)	2.3 (0.2-23.6)
51+ lifetime partners (vs. 1-5 partners)	6.6† (3.7-11.7)	6.4† (1.4-28.5)	1.8 (0.8-4.1)	3.2 (0.3-31.3)
Went to public toilet for sex in last year ‡	1.4† (1.1-1.9)	1.0 (0.6-1.5)	1.6† (1.1-2.4)	0.6 (0.3-1.5)
Went to sauna for sex in last year ‡	1.1 (0.8-1.4)	1.9† (1.1-3.0)	1.0 (0.6-1.5)	0.8 (0.3-1.9)
Injected illegal drugs in last six months ‡	1.6 (0.7-3.4)	1.8 (0.6-4.9)	1.0 (0.3-3.0)	6.2† (1.9-20.6)
Never tested for HIV (vs. last tested negative)	0.5† (0.4-0.6)	0.7 (0.4-1.2)	0.4† (0.3-0.8)	0.2† (0.4-0.9)
Tested HIV positive (vs. last tested negative)	3.0† (1.5-6.2)	2.3† (1.5-6.1)	2.7† (1.3-5.5)	4.0† (1.2-13.3)
Tested for HIV, no result (vs. last tested negative)	0.8 (0.3-2.1)	0.9 (0.1-4.5)	1.1 (0.1-4.9)	14.8† (3.2-66.5)

* For the grouped STDs and each hepatitis a logistic regression model was fitted that included the following variables: age, ethnicity, education, income, place of residence, sex work, gay community attachment, age first had sex with a male, lifetime number of male partners, casual sex and condom use in previous six months, use of sex-on-site venues, use of public venues to look for sexual partners, injection of illegal drugs in previous six months, HIV test status. This table lists variables that were statistically significant for at least one of the four dependent variables. For each column, 1714, 1705, 1699 and 1704 respondents respectively had full information and were included in the analysis. † Variables for which the adjusted odds ratios returned $p<0.05$. ‡ Reference category is binary opposite.

A quarter of respondents (26.2%) stated that they had been for a sexual health check-up or treatment in the twelve months prior to survey. Previous logistic regression analysis revealed that this was independently associated with younger age, higher number of partners, knowing someone with HIV, higher income and education, gay community attachment and a higher self-assessed HIV risk[14].

Discussion

This is the first time that information on various STDs and hepatitis among a large national sample of MSM has been collected in New Zealand. Although differences in data collection make comparisons with other studies problematic, the lifetime STD rate of 37.1% corroborates evidence that MSM in New Zealand are disproportionately affected by sexually transmitted infections other than HIV. It is consistent with findings from the small sample of 24 MSM from the New Zealand Partner Relations Survey (Peter Davis and Roy Lay-Yee, personal communication, 2nd December 1999)

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and findings from sentinel surveillance of STD clinic attendees.[8] When using a reduced sample of Male Call respondents who sought sexual health services in the year prior to survey (n=485), the reported rates of STD (50.1%) were also consistent with self-reported lifetime data relating to MSM attending the Burnett Clinic for anonymous HIV testing (47.7%).[6] There exists no other published New Zealand data on hepatitis amongst MSM.

A somewhat striking finding was the consistency in lifetime rates between Male Call/Waea Mai, Tane Ma and the second Australian Project Male Call survey that was also conducted in 1996. This found lifetime rates of 37.4% for STDs and 14.5% for the combined hepatitis infections (separately 8.2% for hepatitis A, 7.5% for hepatitis B and 2.1% for hepatitis C).[17] Data on MSM and STDs other than HIV is absent from the majority of large nationally representative surveys outside New Zealand[18-20]. Overseas studies that do allow for comparisons within their sample indicate lifetime self-reported STD rates amongst MSM of 14.3%, 25.0% and 34.6% for Finland, the Netherlands and Norway respectively, with the latter two rates being significantly higher than the non-MSM male samples.[21]

The associations found between the STDs, hepatitis and selected characteristics of MSM mirror those found in other studies using cohort and clinic samples. Some of these associations are briefly discussed below, with a focus on those that are most relevant for HIV prevention initiatives.

Positive HIV status was associated with a history of STD and a history of hepatitis A, B and C even when controlling for the typical sources of confounding (number of lifetime sexual partners, recent anal sex and recent injecting drug use). Studies have pointed to the possibility of an increased risk of acquiring HIV when infected with certain STDs, the increased risk of transmitting (shedding) HIV when infected with STDs, and alterations in the natural history of either HIV or STDs in individuals with dual infection. For example, 'ulcerative' STDs (herpes and syphilis) have been shown to increase the risk of acquiring HIV by between 1.2 and 8.5 times,[2-4] and evidence of increased HIV virus shedding in the semen of HIV positive individuals with a 'discharge' STD (gonorrhoea and clamydia/NSU) may indicate increased infectiousness.[22] There is also some evidence that dual infection with HIV and HBV or HCV increases the amount of shedding of these hepatitis viruses,[23] and viral infections such as genital warts acquired by HIV positive individuals may also have increased expression over time.[4] Wasserheit has labelled these inter-relationships 'epidemiological synergy', partly because of the way HIV and STDs appear to amplify the effects of each other, but also because confounding factors make it difficult to establish the exact nature of these relationships for each given STD.[4] It is therefore unclear whether the associations presented here are due to immune suppression, a synergistic effect between HIV and other infections, or shared risk behaviours that were unable to be controlled for in the logistic regression (specifically unsafe sexual and injecting behaviour that occurred more than six months prior to interview). Much of the evidence of epidemiological synergy is also derived from samples of the heterosexually active population and its applicability to MSM remains unclear.[22]

Associations were also found with high numbers of lifetime male partners and various sites of partner acquisition. High partner numbers are an important determinant of the spread of STDs, especially when accumulated over a short period of time[24,25]. Multiple sexual relationships for example increase the likelihood of rapid serial

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partner change as well as 'concurrency', or having two or more simultaneous sexual partners. Concurrency is particularly relevant to the transmission of bacterial infections that may only have a short duration of infectivity, because secondary transmission can still occur even when an individual acquires no new sexual partners.

Previous research on hepatitis in New Zealand has investigated injecting drug use,[26] but there are difficulties obtaining data on both injecting drug users and MSM. This is probably the result of a combination of factors, such as the low numbers of MSM in general studies of injecting drug users, the non-inclusion of hepatitis viruses in studies amongst MSM, and the fact that both MSM and injecting drug-user status have social histories of stigma and illegality. The apparently high rates of hepatitis A and B in this sample suggest the role of sexual transmission, even though non-sexual factors (e.g. overseas travel) may also exist, however the literature indicates that injecting drug usage is likely to be the cause of most hepatitis C infections amongst MSM.[27]

Ethnicity was not related to STD history, a finding that is contrary to STD research conducted on mainly heterosexual samples[8] but is consistent with epidemiological data indicating that Maori and Pacific Island MSM are not overrepresented in HIV diagnoses compared to MSM of European ethnicity.[5]

The data presented here are based on self-report of diseases acquired sexually over the lifetime, and should be interpreted with the usual qualifications. There may be a degree of under-reporting or misclassification of infections due to infections that were asymptomatic, to false recall, to incorrect diagnoses in the absence of a clinical test, or to respondent confusion between symptomatic disease versus antibodies that had been detected following a routine blood test. Caution also needs to be applied due to the non-random nature of the study and therefore the likely operation of certain participation biases. Also, 71.1% of the total sample reported that they had had sex with a female at least once in their life and therefore some of the reported infections may not be the direct result of male-male sex.

The connections between STDs and HIV transmission present new concerns but also shared intervention opportunities. For MSM as for non-MSM, reductions in transmission and morbidity at a population level can be achieved through the strategies of decreasing the risk per sexual contact, reducing the rate of sexual partner change, and decreasing the period of infectiousness[24]. Firstly, condoms used correctly with water-based lubricant are effective in reducing the risk of HIV transmission during anal sex, and provide some protection against acquiring certain STDs in anal sex as well.[28] Having said this, most of these STDs can also be efficiently transmitted through sexual practices other than anal sex and are substantially more infectious than HIV. Rigorous studies designed to confirm the effectiveness of condoms for the complete range of STDs are still awaited. Secondly, targeting individuals of strategic importance in sexual networks in order to break the chain of transmission may also be an effective prevention approach.[29] This will require identifying the markers of 'core group' membership, such as men who are frequent users of sex-on-site venues or who regularly present due to risk behaviours or for treatment of STDs (including men who do not identify as gay but may have had sex with another male). Thirdly, encouraging regular screening and ensuring services are appropriate to MSM[30] are measures that are likely to reduce STD infectiousness and therefore transmission.

The high lifetime experience of STDs in this sample and recent evidence of resurgent risk behaviours and infection overseas forewarn of challenges to the management of sexual health among MSM in New Zealand. Further development of information

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systems in New Zealand is therefore recommended so that health promotion programmes can plan effective interventions. This includes the extension of information on routine reporting of STD diagnoses to include male-male sexual behaviour and regular behavioural surveillance of risk practices. Health promotion strategies such as targeted educational campaigns and the provision of sexual health services that are free, anonymous, confidential and sensitive to the particular needs of MSM must also be continued.

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