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Sexually transmissible diseases in injecting drug users

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Abstract

Self-reported histories of sexually transmissible diseases (STDs) and HIV serostatus were investigated as part of a study of HIV risk behaviour in a sample of 1245 Sydney injecting drug users (IDUs) (mean age 27·5 years) both in and out of treatment. A high lifetime prevalence of STDs was reported in both men and women. For male IDUs, the lowest reported lifetime prevalence of STDs was in heterosexuals, with bisexuals intermediate and homosexuals reporting the highest prevalence. HIV seroprevalence followed the same pattern. For women, bisexuals had the highest reported STD history, heterosexual women were intermediate and homosexual women reported the lowest prevalence. Over one third of the bisexual women reported having been involved in prostitution. These data indicate that over one third of IDU men and over half of IDU women reported at least one STD in their lifetime. The high lifetime prevalence of STDs in IDUs indicates that this group is at increased risk of sexual transmission of HIV, given the importance of STDs as a cofactor. Reducing the prevalence of STDs in IDUs is a possible additional strategy to diminish the spread of HIV among IDUs and from them to non-IDU sexual contacts.

The sharing of injection equipment by injecting drug users (IDUs) is recognised in many western countries as one of the major mechanisms for transmission of the Human Immunodeficiency Virus (HIV) and as a precursor for the subsequent dissemination of this infection by sexual transmission to low prevalence populations. In the United States, over half of heterosexual men and women with no other risk factors for HIV report having been infected through sexual contact with IDUs.[1] Williams[2] found that over half of a population of IDUs in Texas reported having sex with at least one non-IDU man or woman in the past six months. In addition, Selwyn,[3] noting that IDUs have often been considered at increased risk for STDs, recommended that routine screening for sexually transmissible diseases (STDs) should be incorporated into baseline evaluation of IDUs with HIV infection. However, apart from a study by Webster *et al*[4] which found significantly increased reports of unspecified STDs in IDU men (19% compared with 4·9% in similar aged university students) and a similar trend in women (8% in IDUs versus 0·3% in university students), and the work of van den Hoek *et al*,[5] there are few reports of the STD history of IDUs in the literature on which an assessment of risk or lifetime prevalence could be based. Van den Hoek *et al*,[5] found that in a sample of 243 IDUs, 8% of men and 16% of women reported syphilis since 1980, 32% and 60% gonorrhoea, and 5% and 22% respectively reported genital herpes. Figures were significantly higher for women than men, and prostitutes than non-prostitutes, confirming the previous finding of van den Hoek *et al*.[6] Hart *et al*,[7] in a sample of needle exchange clients in the UK, also found that 31% of their sample had a lifetime history of STD, although they reported only on gonorrhoea and non-specific urethritis. Assessment of STD prevalence in IDUs is now of particular importance as STDs are reported to be associated with increased HIV sexual transmission rates.[5,8] The aim of this study was to assess the current and lifetime prevalence of STDs in IDUs, recognising the importance of this potentially remediable cofactor in HIV transmission.

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Method

This study formed part of a national HIV-IDU research project. Respondents were obtained by three forms of advertising. First, by interviewers distributing cards with study details including the telephone number and address of the interview site and payment details to IDUs: second, by placing

Table Reported frequency (%) of STDs, HIV‡ and sexual partners in male and female IDUs

	Hetero-sexual	*Bisexual*	*Homosexual*
Males	(n=719)	(n=117)	(n=50)
Syphilis	4·6	1·7	6·0
Gonorrhoea	11·0	19·7	30·0†
Anal and genital warts	9·5	17·1	24·0†
Genital herpes	10·8	15·4	10·0
Non-specific urethritis	11·3	19·7	26·0†
Hepatitis B	33·7	25·6	36·0
Pelvic inflammatory disease	0	0·9	0
Candida (thrush)	9·3	9·4	10·0
HIV seropositive (laboratory analysis)	3·2	12·1	36·0‡
No STD reported (hepatitis B excluded)	66·2	50·4	40·0†
Number female partners, past year	6·1	6·2	0*
Number male partners, past year	0	10·8	23·1†
Females	(n=220)	(n=95)	(n=10)
Syphilis	1·4	1·1	0
Gonorrhoea	8·6	14·7	0
Anal and genital warts	16·8	31·6	10·0†
Genital herpes	14·1	15·8	20·0
Non-specific urethritis	17·3	22·1	10·0
Hepatitis B	27·7	42·1	20·0*
Pelvic inflammatory disease	10·9	20·0	0*
Candida (thrush)	59·6	67·4	30·0
HIV seropositive (laboratory analysis)	5·7	3·8	40·0‡
No STD reported (hepatitis B excluded)	25·5	20·0	60·0*
(hepatitis B and candida excluded)	51·8	36·8	70·0*
Number male partners, past year	8·1	28·1	0†
Number female partners, past year	0	4·2	4·2†

*p < 0·05; †p < 0·01.
‡Laboratory analysis, not self-report.

advertisements with the same information in employment and social security offices, needle exchanges and pharmacies which sold needles and syringes; and third by placing the same advertisement in a popular free central city magazine. Interviews took place in a neighbourhood associated with the drug subculture in an inner city suburb of Sydney using an unmarked buiding, with direct access off the street into a waiting room. Interviews were conducted in an individual private cubicle by interviewers who had extensive personal or professional experience in the area of injecting drug use and were trained and supervised by the first author. A single receptionist recorded initials and date of birth. If respondents were suspected or recognised as having attended previously, these data were checked to ensure that there was no double interviewing. In addition, interviews were conducted by one interviewer in the western suburbs of Sydney to obtain a broader geographical distribution of injecting drug users: these interviews were conducted at a community health centre under the same conditions. All data were entered on the interview schedule by the interviewer. At the conclusion of the interview, respondents were invited to contribute a drop of blood obtained by Microlet from the distal pad of the central digit onto a strip of blotting paper, which was then coded, dried and sealed in a plastic bag for laboratory analysis. Payment of $A20.00 took place at the completion of the interview and preceding the blood collection. Interviews were conducted between May and December 1989. Interview data were coded and punched for analysis by the SPSS package.

The study employed an interview schedule which had been piloted on over 100 injecting drug users and subsequently modified. Sections covered demographics, drug use behaviour, use of new equipment/reuse of own equipment, sharing injection equipment, cleaning of injection equipment, disposal of used injection equipment, social context of injecting drug use, sexual history, knowledge and attitudes about HIV/AIDS, HIV/AIDS preventive behaviours, sources of HIV/AIDS information, HIV/AIDS antibody testing, and modules on treatment and prison use if appropriate. Response possibilities ranged from closed options to open-ended questions. All response possibilities were provided on show-cards where appropriate (a copy of the full 36 page interview schedule is available from the first author on request). The interview took on average 1¼ hours to complete.

Respondents were questioned as to which of a series of STDs (listed in the table) they had ever had (lifetime or current). Interviewers provided additional details of the STDs if the respondents were unsure or asked for clarification. If respondents were uncertain about the diagnosis of any of the STDs, a negative response was recorded. Only diagnoses reported as having been made by a medical practitioner were recorded. Hepatitis B was included both because it is sexually transmissible and as a check with known data on its seroprevalence in this population. Sexual orientation was determined by asking respondents the gender of sexual partners they had had in the past five years. Those who had had at least one male and female sexual partner in this period were defined in this study as behaviourally bisexual. Data were analysed separately for males and females by sexual orientation using χ^2 tests with Yates correction for discontinuity where appropriate. Significance was set at the 5% level.

Laboratory analysis The dried bloods were sent to the National HIV Reference Laboratory (NRL) and eluted according to the method of Maskill *et al.*[9] Eluates initially reactive by ELISA were repeated in duplicate: repeatedly reactive eluates were tested by Western Blot (WB). The WB method routinely used by the NRL was adapted to the Immunetics miniblotter system (MN45).

Results

Sample characteristics

A total of 1245 respondents were interviewed, including 908 males, 331 females, and six male to female transsexuals. Characteristics of the males and females are described (means, SDs are given where appropriate, and figures for females are bracketed after those for males).

Mean age was 27·9, 6·7 for males (females 26·3, 7·6), and modal highest level of education was some high school (57·2% of the males, 53·5% of the female sample). Modal employment status was social security benefits or pension for 59·2% of males and 58·5% of females, with only 13·5% (16·76%) employed full- or part-time and 20·0% (13·7%) unemployed. The majority of males (50·8%) and females (57·6%) had been on benefits or pension for over one year, and a further 38·2% (32%) for over a month. The sample was predominantly Australian-born (79·2% of males, 84·6% of females) with the majority of the remainder (15·5% of males, 12·3% of females) being born in the UK, New Zealand, or North America. Mean number of children was 0·6, 1·3 for males, 0·9, 2·7 for females, with the mean number of children financially dependent on the respondent being 0·1, 0·5 (0·6, 2·1). The mean number of other people financially dependent on the respondent was 0·2, 2·6 for males and 0·1, 0·4 for females. A majority of both males (63·8%) and females (55·9%) had been in some form of drug treatment, which had ended on average 2·3, 4·6 (2·3, 5·5) years ago. The most common previous treatments were methadone maintenance (19·7% of males, 21% of females), detoxification (40·1% of males, 48·5% of females) and inpatient rehabilitation (13·0%) for males and counselling (10·2%) for females. For those currently in treatment (30·4% of males, 15·7% of females), the most common treatment was methadone maintenance (39% of males and 49·1% of females) followed by therapeutic community (26·6% of males, 12% of females). Nearly half the males (45·2%) and less than a fifth of the females (19·6%) had been to prison, with a mean time of 3·6, 3·8 (4·9, 8·4) years since release. Just over half (55·4% of males, 54·1% of females) had moved to Sydney from elsewhere, on an average of 4·8, 7·7 (4·9, 8·4) years ago.

Most respondents were currently injecting with the majority having injected within hours (17·2% of males, 20·3% of females) or days (33·9% of males, 30·9% of females) of the interview: only 6·7% of males and 2·7% of females had not injected within the year. Mean age of first injection of a drug was 18·6, 4·4 for males, 18·1, 3·8 for females, and mean age of injecting a drug once a month or more was 20·0, 4·6 (19·0, 4·4) years. Average frequency of injecting (or for those not currently injecting, when they were last injecting) per typical month was 49, 66 times for males, 53, 66 times for females. The drugs most commonly injected were heroin (67·1% of males, 70·1% of females), amphetamines (34·6% of males, 32·2% of females) and cocaine (13·2% of the male and 15·1% of the female sample).

Cross tabulations of the STDs reported by respondents are given in the table. For males, there were significant differences across sexual orientation for gonorrhoea, non-specific urethritis and HIV seropositivity. For the females, there were significant differences for anal/genital warts, hepatitis B, pelvic inflammatory disease and HIV seropositivity.

Analysis of sexual behaviour showed significant differences between male partner numbers in the past year between bisexually and homosexually active men, but there were no differences in partner numbers between heterosexually and bisexually active men in female partner numbers. There were significantly different numbers of male partners in the past year between bisexually and heterosexually active females, but no differences in female partner numbers between homosexually and bisexually active women. There was a significant association for both males and females between male partner numbers in the past year and reporting a history of STD (excluding hepatitis B and candida) (males, $t_{419} = 2{\cdot}92$, $p < 0{\cdot}01$; females, $t_{311} = 3{\cdot}21$, $p < 0{\cdot}001$).

Discussion

The representativeness of samples of IDUs remains uncertain as the size and characteristics of the drug-using population in a community has never been defined confidently. However, this is a large sample, containing in-treatment and out-of-treatment populations recruited systematically and is comparable on many indices with another large sample of IDUs recruited from multiple sources in a city 300 km from Sydney.[10] Self-report of sexual behaviours has acceptable reliability and validity,[11] as have drug-related risk behaviours,[12] although this may be an additional source of error. However, such error is unlikely to be systematic.

In the absence of any studies which compare recall of STDs with laboratory evidence of infection, these data must be interpreted cautiously as the diagnosis of *reported* STDs may not have been accurately recalled or the STD accurately diagnosed. Problems of understanding and recall are illustrated by the fact that one male respondent reported pelvic inflammatory disease. Thus, these figures could be an underestimate (if not all diagnoses had been recalled) or an overestimate (if an assumed diagnosis was only based on possible symptoms). Furthermore, subclinical infections would not have been diagnosed unless revealed by routine testing. The only sexually transmissible infection confirmed by testing in this

study was HIV diagnosed from blood test.

A further caution should be given to the interpretation of hepatitis B data, as this infection can be transmitted parenterally or sexually in IDUs. A smaller study on 85 IDUs recruited from a hospital Accident and Emergency department two years earlier in the same area as the present study[13] found that 56% had markers of past infection with hepatitis B, and that 12% were seropositive for HIV. Compared with the present study, these are overestimates by a factor of two. Using such a comparison, it would appear that the ratio of HIV to hepatitis B in the study of McLaws *et al*[13] was 1:4·8 and in the present study 1:6·1, suggesting a degree of indirect validity for the present data. However, this also suggests that the bias in the present data is toward under-reporting, which is further supported by the findings of Webster *et al*[4] who found evidence of a 71% hepatitis B infection rate in narcotic addicts over ten yers earlier in the same inner city area, and Dwyer *et al*[14] who found evidence of infection in 88% in the suburbs of the same city. These data are in general agreement with the data of van den Hoek *et al*,[5] who found similar figures for syphilis and genital herpes in the past ten years in heterosexual men, although their figures for gonorrhoea were higher.

Webster *et al*[4] also found a general impairment of health in IDUs, and the fact that this population may have both a lower level of general health *and* less access to health care must be considered. Given the demonstrated link between ulcerative genital lesions associated with STDs and increased relative risk of HIV infection,[5 8] these data offer the possibility of a strategy which has been generally overlooked. Improvement in the sexual health of IDUs may substantially reduce the risk of HIV transmission from IDUs to those with no other risk factor for HIV infection apart from heterosexual intercourse. The figures obtained for women are lower than those obtained by van den Hoek *et al*,[5] with the exception of the figures for genital herpes, which are similar. However, the fact that 84% of their sample of women reported a history of prostitution suggests a greater risk of STD infection.

Numbers of male sexual partners in the past year (for both males and females) followed a similar trend to reported STDs, and there was a significant association between these. However, sexual behaviour in the past year may not be an accurate indicator of lifetime partner numbers, as such behaviour may vary markedly over time depending on personal circumstances.

These data indicate that lifetime (including current) prevalence of STDs in injecting drug users is high. The previously recognised gradient of STDs across sexual orientation, with homosexual men having generally higher reported STD rates than the heterosexual men, with bisexual men being at intermediate risk,[15] is also apparent. However, genital herpes and syphilis were exceptions.

For women, the pattern was generally consistent with the finding that fewer homosexual women have STDs than heterosexual women. The exception, however, was HIV seropositivity, although the small sample size must qualify this conclusion. The comparatively high STD rates reported by bisexual women is an anomaly which can be attributed to the relatively high proportion of bisexual women working as prostitutes. Such individuals may have had higher exposure to STDs and higher rates of seeking medical attention for genital symptoms.

This study supports previous suggestions that IDUs have high rates of reported lifetime STD infection, and demonstrates that IDUs are at increased risk for STDs.[3] The findings in this study are also relevant to the suggestions that sexual transmission of HIV from IDUs to sexual partners with no other known HIV risk may be a major route of spread to presently low HIV prevalence populations. Over one third of the males and more than half the heterosexual or bisexual females in this study have reported at least one STD (excluding hepatitis B and candida) in their lifetime. Given that the mean age of this sample was 27·5 years, and that the maximum duration of sexual activity for these respondents is likely to be ten to 15 years even after allowing for inaccurancy of reporting, these data nevertheless suggest that IDUs are at high risk of STDs, including HIV. Attention to the sexual health of IDUs may contribute to a decrease in the risk of HIV transmission through heterosexual intercourse to those with no other risk factor.

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