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Changes in drug use and HIV/AIDS risk-taking 1989–90

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Abstract

The Australian National AIDS and Injecting Drug Use Study was designed to monitor the risk behaviour of Australian injecting drug users (IDUs) in a number of major cities, and to estimate the seroprevalence of those interviewed. Differences in risk behaviour found across 2 years in Perth are reported. One hundred and ninety-six Perth IDUs were interviewed in 1989, and 150 in 1990 using the same survey questionnaire, with a small cohort of 38 respondents being followed up across the 2 years.

Significant injecting differences between 1989 and 1990 in both the cohort and independent samples were found. In general, these amounted to a greater likelihood that a new needle and syringe would be used on each injecting occasion, and a greater use of bleach in 1990 than in 1989. The most common response of respondents who said they had changed their drug use behaviour in 1990 was to report ceasing to share needles, while the most common response in 1989 was reduced sharing. There was an increased use of condoms for vaginal intercourse with all partners in both studies across the 2 years. Seropositivity for all new cases across the 2 years was 1.75%.

It is apparent that there has been a significant shift in risky behaviour in the direction of greater safety across the 2 years. There is also objective corroborative evidence in increased demand for sterile injecting equipment sold through pharmacists, although there is no evidence that drug use increased significantly during the same period. It is concluded that the availability of sterile needles and syringes should be maintained and improved and that emphasis should be placed on encouraging safer sexual behaviour among IDUs. [Marsh A, Loxley W, Hawks D, Quigley A. Changes in drug use and HIV/AIDS risk-taking 1989–90. *Drug Alcohol Rev* 1995;14:201–212]

Key words: injecting drug use, heroin, amphetamines, HIV risk, needle sharing.

Introduction

Estimated HIV seroprevalence among Australian injecting drug users (IDUs) is low and varies from approximately 1% to 5% [1–4]. This low seroprevalence rate is cause for celebration but not for complacency because, as emphasized by Wodak, HIV/AIDS will continue to spread unless the

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reduction in HIV risk-behaviour in a group is occurring faster than the rise in prevalence of HIV infection in that group [5]. Among IDUs the primary HIV-risk behaviours of concern are the sharing of injection equipment and unprotected sexual activity. In the USA, Europe, Britain and Thailand both cross-sectional and longitudinal studies show a reduction in the incidence of self-reported HIV risk behaviour among IDUs, with changes in sexual practices less evident than changes in injecting practices [6–11].

Australia has responded promptly to the threat of the spread of HIV/AIDS through the IDU population by instituting various HIV/AIDS risk reduction programmes. Education and community awareness initiatives have been conducted through the mass media, treatment facilities and needle and syringe outlets. HIV/AIDS testing and counselling have been made readily and freely available through general practitioners, sexually transmitted disease clinics and some drug treatment facilities. Methadone treatment has been made more readily accessible to opiate injectors. Community-based AIDS councils have been established in every state to provide support, counselling, information and advocacy for those infected or at risk of being infected with the disease. Finally, needle and syringe exchange programmes and pharmacy sales programmes have been established to increase the availability of needles and syringes, provide information about safer injecting (and sexual) practices and the cleaning of injecting equipment, and encourage the safe disposal of used injecting equipment in rigid plastic containers (sharps).

The success of these initiatives is suggested by the low seroprevalence rate, but this needs to be supported with evidence of behavioural risk reduction among Australian IDUs. In Australia, the largest study of the HIV risk behaviours of IDUs to date is the Australian National AIDS and Injecting Drug Use Study (ANAIDUS). Funded by the Commonwealth AIDS Research Grants Committee (CARG), ANAIDUS was a cross-sectional survey of Australian IDUs. The aims of ANAIDUS were to estimate seropositivity among the injecting drug using population by the testing of blood samples (blots); to investigate HIV/AIDS related knowledge, attitudes and behaviour among IDUs; to identify hindrances and facilitators of behaviour change, to identify subgroups of IDUs for educational and interventional targeting; to identify the most credible information sources for these target groups; and to provide feedback on the efficacy of particular safe practices and injecting drug use campaigns. The study commenced in 1988 with piloting and revision of the questionnaire, and in 1989 data was collected from IDUs in Sydney, Brisbane, Melbourne, Perth and Hobart. There was a second year of data collection in Sydney and Perth in 1990.

In Perth the study was conducted at the National Centre for Research into the Prevention of Drug Abuse (NCRPDA) in collaboration with the Western Australian Alcohol and Drug Authority (WAADA). In the first year of the study 196 Perth IDUs were interviewed, and in the second year a further 150 were interviewed, of whom 38 were followed-up from the previous year. The Perth arm of the study thus included a longitudinal as well as a repeated cross-sectional component. In both years approximately half the respondents were currently in treatment and half were not.

In this paper, evidence regarding reductions in HIV risk behaviour by IDUs in Perth, Western Australia, is examined by comparing data from the 2 years of data collection. Comparing data from subjects interviewed in the first year with those interviewed for the first time in the second year (independent samples) only allows conclusions to be drawn about differences between years, not about behaviour change across years. Comparing data across years from subjects who were re-interviewed (cohort) allows conclusions to be drawn regarding behaviour change.

Method

In year 1 (May 1989–May 1990), all interviews were conducted by one trained interviewer, and in year 2 (July 1990–March 1991), a second trained interviewer conducted all interviews. All respondents were recruited in the Perth metropolitan area. In each year respondents were recruited such that approximately equal numbers were in and not in treatment at the time of the interview. The treatment sample in each year was approximately representative of the drug treatment population in Perth in terms of gender (65% male, 35% female) and type of treatment (75% methadone programme, 25% a mix of those in the government detoxification unit, non-government drug rehabilitation centres, self-help groups and other counselling). The non-treatment sample could not be representative of the population since the characteristics of the IDU population in

Perth are not known. Attempts were made, however, to obtain respondents from a wide range of target groups.

Respondents were recruited by advertising, referrals of individuals by staff at various agencies, direct approach to individuals by the interviewers, and snowballing (whereby previous respondents recruit their peers to the study). The interview venue was negotiated between respondent and interviewer in each instance and included treatment and youth agencies, coffee shops and respondents' and interviewer's homes.

The data were collected by means of a structured questionnaire which had been piloted on a sample of 100 IDUs in Sydney. Topics covered included demographics, drug use, needle use and the sharing of injection equipment, social context of drug use, sexual behaviour, knowledge and attitudes regarding HIV/AIDS and behaviour change.

The aims and procedures of the study were explained to respondents before the commencement of the interview, as was the fact that it was anonymous and confidential. The interview took between an hour-and-a-half and two hours to complete. At the conclusion of the interview, subjects were given health care, HIV/AIDS, and HIV/AIDS risk reduction information, paid Aust $20.00 and asked if they would volunteer a finger-prick blood blot (obtained using a glucolet and lancet) for anonymous seropositivity testing. Results of testing were not returned to respondents because pre- and post-test counselling could not be made available by the research team. Respondents were, however, referred to sources of HIV testing where pre- and post-test counselling was available. Further methodological information is available in Marsh & Loxley [4].

Questionnaires were sent to the co-ordinating centre in Sydney where they were coded and punched for analysis. Perth data were analysed with the SPSSx package on Curtin University's VAX mainframe at the National Centre for Research into the Prevention of Drug Abuse. Dried blood specimens were sent to the National HIV Reference Laboratory and eluted. Eluates initially reactive by the Genetic Systems Enzyme Immunoassay (LAV EIA) were assayed again in duplicate. Repeatedly reactive eluates were then tested by Western Blot. The western blot method routinely used by the National HIV Reference Laboratory was adapted to the Immunetics miniblotter system (MN45).

The independent samples compared across years were the full 196 respondents interviewed in year 1 and the 112 respondents interviewed for the first time in year 2. Differences across years for the independent samples were analysed as follows: (1) all continuous variables were transformed to approximate a normal distribution; (2) the effect of year on the variables was assessed by analysis of variance (ANOVA) with transformed variables; (3) the effect of year on the categorical variables was assessed by the chi-square test of statistical significance; and (4) multiple response variables were analysed using the SPSS multiple response procedure. Statistics are not available with this procedure therefore the statistical significance of any differences between years cannot be reported.

The cohort consisted of the 38 respondents followed up in year 2. Differences across years for the cohort were analysed as follows: (1) all significance testing was done using non-parametric statistics as the sample was small, and assumptions could not be made about the underlying distribution of variables; (2) differences in continuous variables were assessed using the Wilcoxon matched-pairs signed-ranks test; (3) categorical variables were recoded as dichotomous and differences assessed using the McNemar test; (4) individual variable data in both years for any individual for whom data was missing was removed from the set; and (5) multiple responses variables were analysed in the same manner as for the independent samples.

Full details of all data are found in Marsh & Loxley [12]; Loxley, MacDonald & Marsh [13]; Loxley & Marsh [14]; Marsh & Loxley [4] and Marsh & Loxley [15]. Only statistically significant ($p < 0.05$) differences are reported other than for multiple response variables where apparently substantial differences are reported, although it is understood that these may not represent anything other than chance variation.

Results

Seropositivity

Over the 2 years approximately 80% of respondents agreed to be HIV tested. Of the 228 first blood blots which could be eluted, four (1.75%) contained HIV antibodies. There were no seroconversions across the two years.

Table 1. *Demographics and drug treatment status: independent samples*

Variable	1989	*n*	1990 (%)	*n*	χ^2	df	*p*
Gender							
Men	65.3	128	64.3	72			
Women	34.7	68	35.7	40			ns
Age (years)							
Under 23	22.6	44	17.9	20			
23–27	19.0	37	25.0	28			
28–30	19.0	37	24.1	27			
31–33	22.1	43	19.6	22			
Over 23	17.3	34	13.4	15			ns
Employment							
Unemployed	69.7	136	87.5	98			
Employed or student	30.3	59	12.5	14	12.4	1	<0.01
Time on benefits							
Years	86.9	119	93.8	90			
Months or less	13.1	18	6.3	6			ns
Country of birth							
Australia	76.9	150	66.1	74			
US-UK-Can-NZ	20.0	39	22.3	25			
Other	3.0	6	11.6	13			ns
Always lived in Perth							
Yes	31.3	61	44.6	50			
No	68.7	134	55.4	62	5.5	1	<0.05
Interstate in last 12 months							
Yes	33.2	64	16.2	18			
No	66.8	129	83.8	93	10.3	1	$<.01$
Ever been in drug treatment							
Yes	71.9	141	74.1	83			
No	28.1	55	25.9	29			ns
Currently in drug treatment							
Yes	46.4	91	46.4	52			
No	53.6	105	53.6	60			ns

Demographics, drug treatment and drug use history

The 1989 and 1990 independent samples were compared with each other, and the cohort was compared to the 1989 and 1990 samples independently on demographic, drug treatment and drug use history variables.

Demographics and drug treatment. Table 1 shows the demographic and drug treatment characteristics of the independent samples. Table 1 also shows that there were few demographic or drug treatment differences between years in the independent samples. Respondents in 1990 were significantly more likely than 1989 respondents to be unemployed, to have always lived in Perth, and significantly less likely to have been interstate in the last year.

It should be noted that education could not be compared meaningfully across years due to the addition of a new category of trade and technical in the 1990 questionnaire. In 1989 those in this category were coded as not having finished high school.

The only significant differences between the cohort and the independent samples were that in 1989 those in the cohort were more likely to have com-

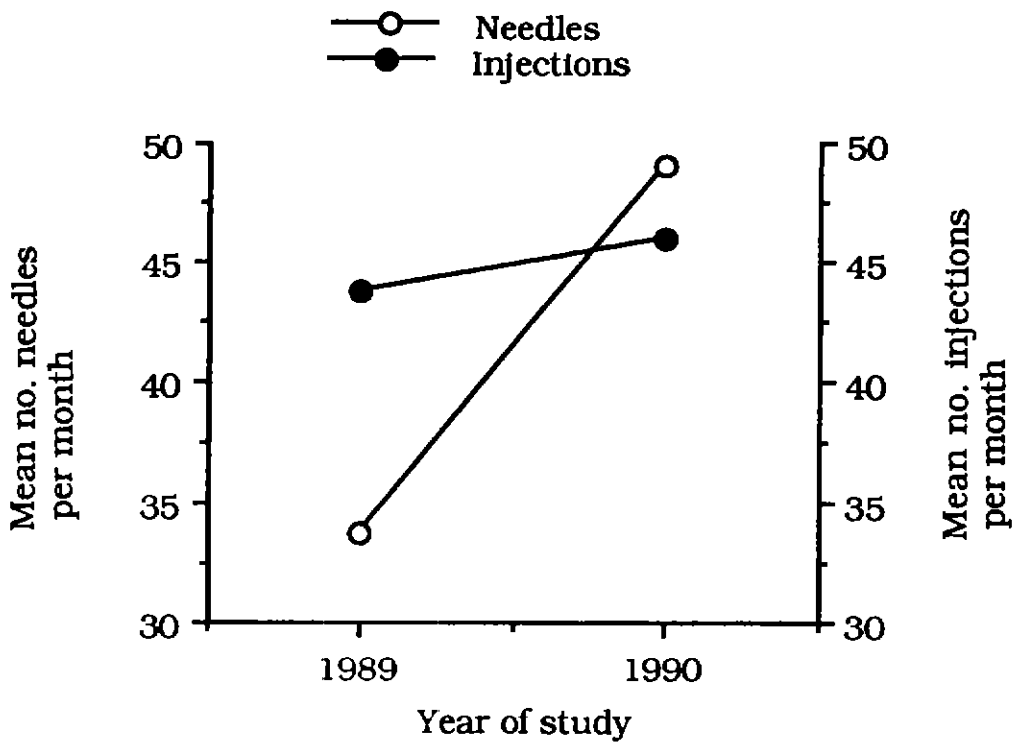

Fig. 1. *Mean number of N&S and mean number of injections in most recent typical using month, by year: independent samples ('Needles' $F_{1,305} = 16.8$; $p < 0.01$; SD: 1989 = 52.4, 1990 = 71.3; 'Injections' $F_{1,305} = 14.5$; $p < 0.01$; SD: 1989 = 3.9, 1990 = 1.3).*

pleted high school and have further education than the remainder of the sample and in 1990 those in the cohort were significantly older and more likely to be in full or part time employment than other respondents.

Drug use history. The drugs ever used, and the proportion of respondents who had ever used them, were similar for the independent samples in both years, but those in the cohort were more likely to have ever used opiates than the full samples in either year. The drugs commonly used in 'the most recent typical using month' (as determined by respondents) were similar for all groups in both years. They were heroin and amphetamine by injection, and methadone, benzodiazepines, cannabis and alcohol by non-injection.

Respondents in the independent samples began injecting at a significantly older mean age in 1990 than in 1989 (19.3 ± 3.6 and 18.2 ± 3.9 years, respectively, $F_{1,305} = 9.6$, $p < 0.01$), but the mean age of beginning to inject at least once a month was similar for respondents in both years (20.3 ± 4.4 and 19.7 ± 4.4 years, respectively). The cohort had been involved in injecting drug use significantly longer than the 1990 sample, but this was related to the age difference.

Frequency of needle & syringe (N&S) use

Fig. 1 compares the number of needles and syringes obtained with the number of injections for the independent samples (self-reported information for 'the most recent typical using month'). Fig. 1 also shows that respondents in the independent samples reported obtaining more N&S in the most recent typical using month in 1990 than in 1989, such that in 1990 the mean number of N&S obtained approached the mean number of injections.

Table 2 illustrates data for frequency of use of each N&S and number of N&S discarded for respondents in the independent samples and the cohort, respectively. From Table 2 it is clear that respondents in 1990, both those in the independent samples and the cohort, used each N&S on average fewer times before discarding it, and discarded more N&S per month than those in 1989.

Needle sharing

The frequency of sharing injection equipment is

Table 2. *Needle use and disposal in 'the most recent typical using month'*

	Mean number	SD	*n*	*F*	df	*p*
Mean no. times each N&S used						
Independent samples						
1989	3.9	3.9	195			
1990	1.9	1.3	112	84.1	305	<0.01
Cohort						
1989	4.3	6.0	37			
1990	1.8	1.0	37			<0.01
Mean no. N&S disposed per month						
Independent samples						
1989	25.2	10.0	193			
1990	38.6	28.0	109	17.3	1,300	<0.01
Cohort						
1989	22.2	28.3	38			
1990	36.9	32.0	38			<0.05

illustrated in Fig. 2 for respondents in both the independent samples and the cohort. From Fig. 2 it is also clear that respondents reported sharing N&S on fewer occasions when injecting in 1990 than in 1989, although this decline was greater for the cohort than for the independent samples.

All other significant needle sharing differences between years are between the independent samples. These differences are described in the remainder of this section.

Fig. 3 shows the recency of sharing N&S for the independent samples and illustrates that respondents were less likely to have shared N&S recently (within weeks or days of the interview) in 1990 than in 1989.

Respondents in the independent samples also reported having shared N&S with fewer people in the 6 months prior to being interviewed in 1990 than in 1989 (0.7 ± 1.1 and 1.5 ± 2.9 sharing partners, respectively, $F_{1,301} = 8.8$; $p < 0.01$).

In 1990 respondents in the independent samples were more likely to say they would usually share with no one, and less likely to say 'friends and/or lovers', whereas in 1989 friends and/or lovers was a more popular choice than sharing with no one ($\chi^2_3 = 13.6$, $p < 0.01$).

Reasons for sharing

Respondents who shared injecting equipment were asked why they did so. In 1989, 79.6% (156), but in 1990 only 53.7% (59) of respondents in the independent samples reported sharing N&S and responded to the question. Similarly, fewer respondents in the cohort reported sharing and answered the question in 1990 than in 1989 (only 15 respondents answered the question in both years). Reasons given for sharing by respondents in the independent samples and the cohort were comparable between years in order of priority, with the main ones being difficulty obtaining new N&S and withdrawing from drugs. However, the percentage of respondents citing some reasons differed between years. Worth noting is that relative to respondents in 1989, those in 1990 (in both groups) were less likely to say they shared N&S because of functional barriers to obtaining injecting equipment (difficulty of obtaining N&S, and fear of police harassment if clean N&S kept around), or lack of concern for the dangers of sharing (easier to use someone else's, not caring about the dangers, or not seeing the dangers of sharing as so important when withdrawing).

Self-reported injecting behaviour change

There was no significant difference in the proportion of respondents in the independent samples or the cohort in each year who reported having changed their drug use behaviour to reduce the risk of contracting HIV/AIDS. In 1989 64.4%, and in 1990 74.8% of the full sample reported such changes.

Figs 4 and 5 show the proportion of respondents

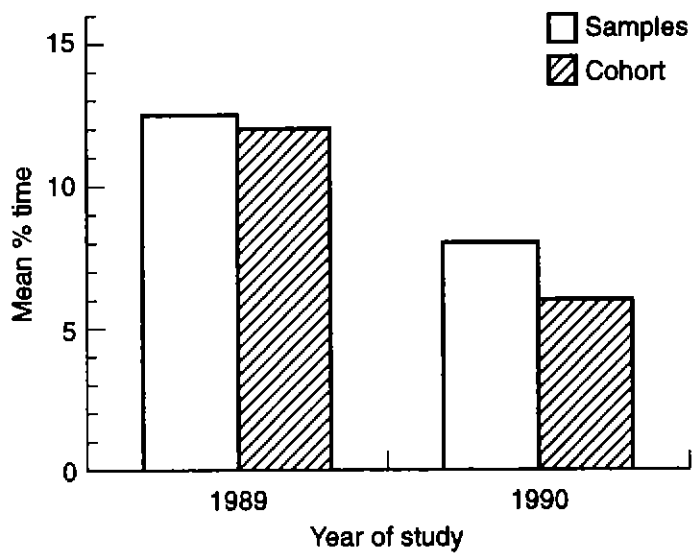

Fig. 2. *Mean percent of injecting occasions when used N&S were accepted, by year: independent samples and cohort (independent samples* $F_{1,308} = 9.003$, $p < 0.01$; *cohort* $Z = -2.5299$, $p < 0.05$).

in the independent samples and the cohort (respectively) who reported ceasing and reducing sharing N&S, and also illustrate that respondents in both the independent samples and the cohort were more likely to have stopped than to have reduced needle sharing as an HIV/AIDS risk-reduction measure in 1990 than in 1989.

Perceived availability of N&S

The perceived availability of N&S in Perth was similar in both years for the independent samples and the cohort, with the majority of respondents considering them to be readily available (a mean of over 80 in both years on a scale of 1–100 where 100 indicates total ease of access).

Cleaning injecting equipment

The use of bleach for cleaning N&S when sharing was compared across the 2 years for those respondents in the independent samples who had shared within the previous year. In 1989 130 respondents, and in 1990 57 respondents were included using this criteria.

Respondents in the independent samples were more likely to have used bleach (from half to three-quarters of the sample; $p < 0.05$) and to have used bleach more frequently in 1990 than in 1989 (from 2/3 to over 3/4 of the time; $p < 0.01$).

Source and disposal of used injecting equipment

Respondents' preferred source of sterile injecting equipment, and placement of used needles in containers before disposal, were assessed with multiple response questions.

Relative to respondents in 1989, respondents in the independent samples in 1990 were more likely to dispose of used N&S in sharps containers, and less likely to dispose of them in paper. The cohort showed a similar pattern of responses across the 2 years.

Respondents in both the independent samples and the cohort were more likely to obtain their needles and syringes from needle exchanges and after hours chemists as well as regular chemists in 1990 than in 1989.

Sexual behaviour

Respondents were asked a range of questions relating to their current sexual behaviour. Fig. 6 shows the proportion of the time that respondents in both the cohort and the independent samples used condoms for vaginal intercourse with partners not specified as regular. Figure 6 also shows that respondents in both the independent samples and the cohort used condoms for vaginal intercourse more frequently in 1990 than in 1989 with partners not specified as regular.

The only other noteworthy difference across years in sexual behaviour was that significantly more

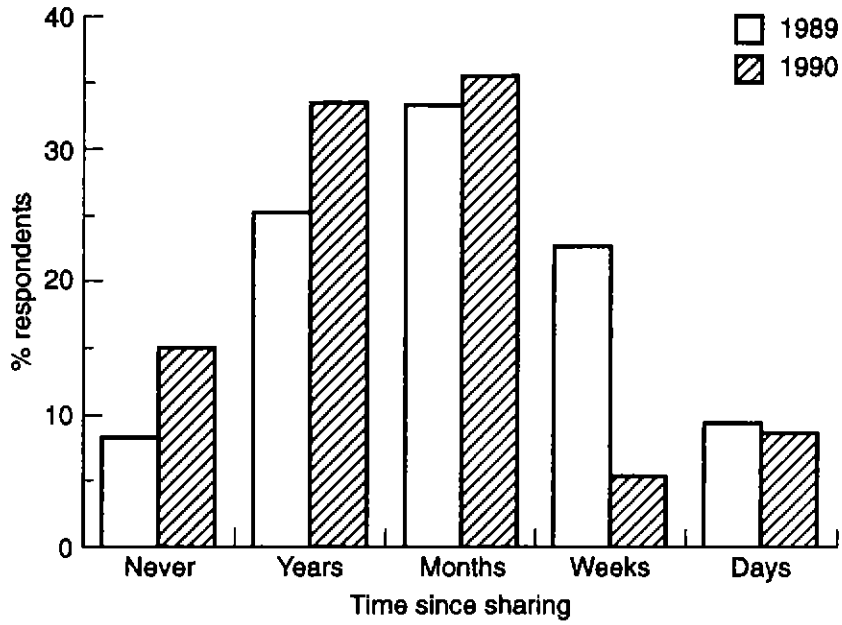

Fig. 3. *Time since last using N&S which had already been used by someone else, by year: independent samples ($\chi^2_4 = 18.6$, $p < 0.01$).*

respondents in the independent samples reported having changed their sexual behaviour to avoid contracting HIV/AIDS in 1990 than in 1989. However, the number of people reporting that these changes consisted of the consistent use of condoms or other safe sex methods were similar across years. The changes favoured in 1989 were more careful choice of partners and increased use of condoms. In 1990 they were fewer partners and starting to use condoms.

Discussion

Demographic differences between the independent samples across years were few. Those interviewed in 1990 were less likely to be employed or to have travelled interstate recently, and more likely to have always lived in Perth than those interviewed in 1989. These factors are probably related to the current economic climate rather than inherent differences in the samples interviewed in each year. The lack of mobility of 1990 respondents combined with the relative isolation of Perth from other cities within and without Australia also decreases the likelihood of the HIV spreading between Perth IDUs and those from other places.

The few differences which existed between the cohort and the rest of the sample in 1989 included cohort members' greater likelihood of completing high school, undergoing further education, being employed and being older. How important these differences are for risk behaviour is difficult to ascertain. One possibility is that they merely indicate that those who could be re-contacted were in some ways more stable.

Respondents in both the independent samples and the cohort exhibited less risky injecting and sexual behaviour in 1990 than 1989. Those in the cohort reduced the frequency with which they shared needles, and used more new needles every month; used needle exchanges more frequently and disposed of needles more safely; and changed their drug-using behaviour towards eliminating rather than merely reducing risk in 1990. They also used condoms for vaginal intercourse more frequently in 1990 than in 1989. Data for the independent samples were similar, with some additional differences across years not evident in the cohorts' behaviour. In addition to differences across years in the same behaviours outlined for the cohort, relative to 1989 the independent samples in 1990 also obtained considerably more N&S, but reported a similar number of injections; tended to have shared N&S less recently; to have shared with fewer people in the previous 6 months; and to be more likely to clean with bleach and to clean more often with bleach when sharing occurred. Although there were more behaviours showing risk reduction for the independent samples, the similar patterns of risk reduction which were evident for both the independent

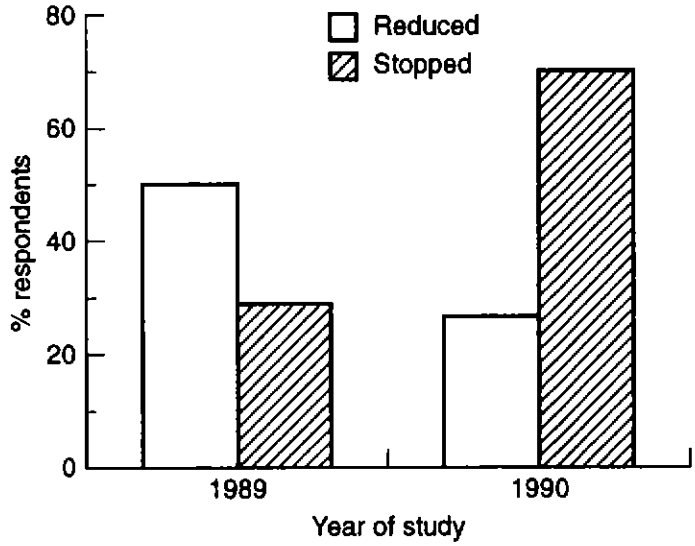

Fig. 4. *Percentage of respondents who reported reducing or ceasing needle sharing: independent samples (multiple responses).*

samples and the cohort respondents suggests that real behaviour change has occurred among Perth IDUs, rather than that the samples simply differed across years.

Evidence supporting the increased use of new N&S across the 2 years by Perth IDUs is provided by data on sales of N&S through pharmacies and distribution of N&S through needle exchanges. Swensen, Westlund & Baker showed that the demand for sterile needles through these programmes in the second year of the ANAIDUS data collection was virtually triple that in the first year (Swenson *et al.*, unpublished paper, 1991). There is also no clinical or research evidence to suggest that an increase in the number of IDUs in Perth accounts for this increase. Moreover, although we found a small increase in the number of injections per person, this is also insufficient to account for a three-fold increase in the number of N&S distributed. Instead, our findings indicate that much less sharing of injection equipment, and a greater likelihood of a new N&S being used for every injection in the second year of the study than the first, almost certainly contributed significantly to the increased demand by IDUs for sterile N&S. The greater proportion of 1990 respondents who said needle and syringe exchanges were a usual source of injecting equipment, plus the greater reliance on pharmacists, indicates that the majority of respondents in 1990 were accessing both sources with greater ease than in 1989.

The finding that injecting behaviour had changed across the 2 years of data collection in the direction of risk elimination (stopping sharing) whereas sexual behaviour had changed in the direction of risk reduction but not elimination is also consistent with findings of greater injecting than sexual risk reduction among IDUs from other countries [6, 8–11]. These findings support the effectiveness of Perth HIV/AIDS risk reduction initiatives for injecting, but indicate the need to continue to encourage sexual risk reduction.

Safe disposal messages appear to have been effective as indicated by the large shift in 1990 to disposing of injecting equipment in sharps containers, and messages about cleaning with bleach appear also to have been effective, as indicated by the greater percentage of respondents cleaning with bleach a greater proportion of the time in 1990 than in 1989.

We recognize that the levels of risk behaviour presented here, combined with low HIV seroprevalence, suggest that future spread of HIV infection in this population in Perth is likely to be slow. However, hepatitis C (HCV), which is also spread by the sharing of injecting equipment, has a very high seroprevalence among IDUs in Australia [19] and also a high transmission rate [20]. There is therefore a pressing need to address the HCV epidemic by maintaining the impetus in HIV harm minimization policies and also to recognize, as Crofts has eloquently stated: 'the lesson we must learn and relearn is that the time to prevent HIV epidemics is before they begin' [20].

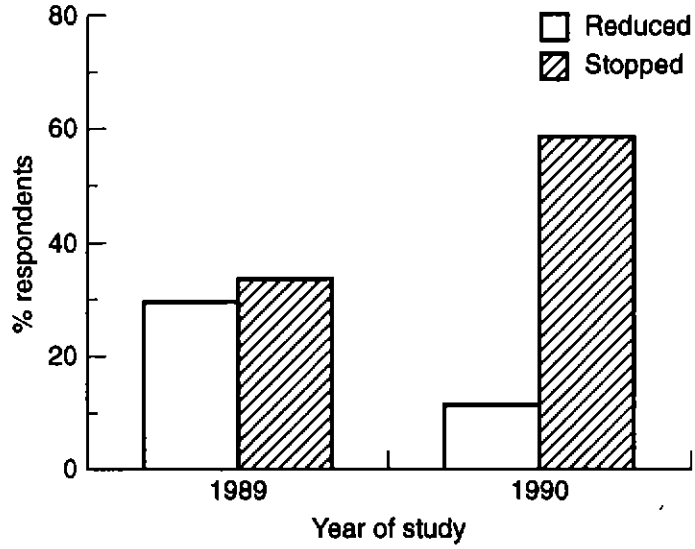

Fig. 5. *Percentage of respondents who reported reducing or ceasing sharing: Cohort (multiple responses).*

As a result of our research on ANAIDUS in Perth. we have already called for a number of HIV/AIDS risk reduction initiatives [4,12, 13]. It is disappointing to note that many of these have still not been implemented. For instance, at present the only sources of injecting equipment after pharmacy closing hours are in the inner city. In view of the large proportion of respondents even in 1990 who said that difficulty in obtaining injecting equipment was a reason for sharing it is clear that injecting equipment needs to be made available in a wider range of locations after hours. Vending machines and peer outreach schemes (whereby drug users are employed to provide N&S to others, or to help other users to self-organize to obtain N&S and keep supplies on hand for other people) are two means we have recommended by which this can be accomplished.

Another issue we have repeatedly noted that needs rectifying is the illegality of supplying N&S to IDUs in Western Australia [16]. Although the police have cooperated with harm reduction initiatives and there have been no prosecutions for supplying N&S, the potential for prosecution is always present. Until it ceases to be illegal to supply injecting equipment to IDUs, ready accessibility of injecting equipment will, to some extent, be limited. Furthermore, IDUs' requests for injecting equipment will still be met by many potential N&S providers, such as pharmacists and health care workers, with discomfort and, often, refusal. It is clear that legislation change is a fundamental requirement for any serious strategy aimed at reducing HIV risk behaviour among IDUs. In Western Australia, such legislation is currently before the parliament, but progress in persuading political decision makers that the issue is high priority is slow.*

Although IDUs appear to be acting on messages about using new needle and syringes, or cleaning them with bleach if sharing occurs, the sharing of other injection equipment such as spoons, filters and water is an issue which has received insufficient emphasis in both research and HIV/AIDS prevention interventions. Both HIV and, particularly, HCV can be spread by sharing these other items of injection equipment [20], and as yet there is a dearth of evidence about this behaviour among IDUs. There is an urgent need for research which investigates this topic.

The perennial problem for HIV/AIDS prevention is how to encourage people to practise safe sexual behaviour. Messages from health professionals seem to have minimal effect on the sexual behaviour of not only IDUs, but also the general heterosexual community, a situation quite understandable in the context of low seroprevalence rates. Perhaps what is needed to encourage an increase in protective sexual behaviour is more acknowledgment of the degree of risk posed by different sexual relationships rather than blanket statements such as 'always use a condom'.

* By the time of publication this situation had been resolved and legislation passed.

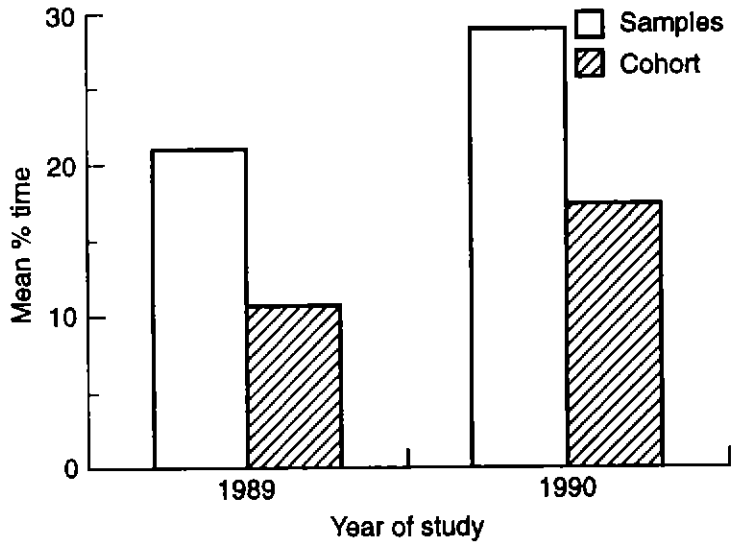

Fig. 6. *Percentage of time that condoms were used for vaginal intercourse: independent samples and cohort (independent samples: SD: 1989: 32.1 and 1990: 35.0;* $F_{1,271} = 4.4$; $p < 0.05$; *cohort* $p < 0.05$).

Behaviour change can always be reversed. Despite disappointingly few sexual behaviour changes, there have been many salutary changes in injecting behaviour among Perth IDUs. These must be maintained in order to avoid a rise in seroprevalence among this population. The same variables which limit sexual behaviour change, namely low seroprevalence and consequent low perceived susceptibility, will work against the maintenance of drug behaviour change. One of the best ways to prevent HIV among IDUs in a context of low HIV prevalence would be to broaden health and education messages to include other blood-borne infections such as hepatitis C. All health messages, then, could specify the risks and outcomes of contracting these viruses and educate and inform IDUs about the likelihood of infection and means of prevention.

In order to maintain this urgency, however, ongoing monitoring of people's attitudes as regards HIV/AIDS and behaviour change is needed to identify just what information and strategies may be effective with particular subgroups. Such research should include qualitative studies of drug use and sexual risk taking which look not just at what happens, but how and why, and how it is interpreted by particular subgroups of IDUs in a social and cultural context are necessary. In Perth, two such studies have incorporated this approach, one with young IDUs [17], and one with recreational psychostimulant users [18]. Other subgroups such as women, aboriginals and other ethnic minorities also need to be the focus of such research.

Finally, we cannot rest on our laurels because of the low seroprevalence among Perth IDUs. Besides the recommendations already discussed, seroprevalence among IDUs needs ongoing monitoring so we can gauge whether change to safer behaviour among IDUs is occurring at a sufficient rate to outrun the spread of HIV/AIDS among this population. Longitudinal studies investigating seroconversions are also necessary.

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