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A TALE OF TWO COUNTRIES: ATTEMPTS TO CONTROL HIV AMONG INJECTING DRUG USERS IN AUSTRALIA AND THE UNITED STATES

Alex Wodak
Peter Lurie

Prevalence of injectable drug use is surprisingly similar in Australia and the United States. HIV prevalence among injection drug users (IDUs) is less than 5% in Australia and about 14% in the United States. IDUs accounted for 2.5% of AIDS cases in Australia in 1994 and 28% in the United States in 1993. Harm reduction was officially adopted in Australia in 1985 but has been explicitly rejected by the U.S. government. In 1994, needle programs exchanged over 10 million syringes from over 4,000 outlets in Australia while 55 needle exchange programs in the United States exchanged almost eight million syringes. Since 1985, methadone maintenance expanded almost ten-fold in Australia but barely increased in the United States. Timely and vigorous adoption of harm reduction strategies in Australia and the relative lack of such programs in the United States is the most plausible explanation for the good control of HIV among IDUs in Australia and poor control in the United States.

Introduction

The HIV pandemic has taken remarkably different courses in different countries. In recent years, there has been increasing interest in ecological studies to elucidate policies that might underlie these differences (Des Jarlais et al. 1995:1226-1231; Stimson 1995:699-716; Kaldor et al. 1993:175-184). This paper compares and contrasts the experience of two countries, Australia and the United States, both beset in the early 1980s by impending epidemics of HIV among injecting drug users (IDUs).

HIV was already well established among IDUs in New York City (Des Jarlais et al. 1989:1008-1012) before AIDS was first recognized in 1981. Despite an increasingly impressive body of data appearing during the 1990s confirming the effectiveness of needle exchange as an HIV prevention strategy and the lack of adverse consequences in terms of increased drug use (U.S. Government Accounting Office 1993; Lurie et al. 1993; National Research Council 1995), policy responses in the United States have been tardy, partial and cautious. In contrast, HIV

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prevention policies in Australia were influenced by a desire to be "roughly right rather than perfectly wrong". Adoption of the needle exchange concept in Australia in 1987 and subsequent vigorous implementation was based on the notion that it was inherently plausible that removing potentially HIV-infected syringes from circulation and replacing them with sterile injection equipment would reduce HIV infection. These programs were adopted at a time when there was no evidence of significant HIV infection among IDUs in Australia and minimal data supporting the effectiveness of needle exchange as an HIV prevention strategy.

From the outset, Australia's response to HIV was grounded on sound public health principles with the explicit acceptance of harm reduction at the most senior political level (Commonwealth Department of Community Services and Health 1989; Wodak 1992:549-562). Consistent support has been provided by all major political parties. A spirit of partnership also prevailed among government officials, clinicians, researchers, and community groups. This remarkable, collegial relationship provided a solid foundation for impressive achievements in public health, clinical care, and bio-medical research. Australia's policy response to HIV/AIDS has remained remarkably open. National HIV/AIDS strategy has been set for two 3-year periods. A comprehensive evaluation of the Second Strategy has been published (Feachem 1995), and a Third Strategy formulated (Commonwealth Department of Health and Family Services 1996).

A major new national approach to drugs, placing far more emphasis on public health and less on interdiction, was adopted in Australia in April 1985 (Blewett 1987), before the consequences of an uncontrolled epidemic of HIV infection among IDUs was fully appreciated. Thus, when the enormous health, social, and economic costs of the HIV epidemic in New York City and the critical role of IDUs in the dynamics of the epidemic became evident in late 1985 (Weinberg and Murray 1987:1469-1473) Australia could respond with greater flexibility in the selection and implementation of policies to prevent HIV infection among IDUs. Although there have been a number of major official reviews of HIV prevention among IDUs in the United States, the effect on policies and programs involving IDUs has always been subordinated to policy commitments to reduce the supply of illicit drugs.

AIDS was perceived as a major public health problem in Australia as early as 1983. The experience of the epidemic in the United States had a profound impact on Australia's response to HIV. First, most of the earliest AIDS cases diagnosed in Australia were men with a history of homosexual contact who had lived for some years in the United States, suggesting that they had become infected with HIV in the United States (although this is difficult to prove). Second, when the potential magnitude of the epidemic became apparent, politicians and senior officials looked to the United States for guidance and leadership. Third, the far-reaching effects of the uncontrolled HIV epidemic among IDUs in New York City convinced Australian policy makers that similar results could ensue if Australian authorities did not promote policy change more actively than in the United States. Unfortunately, the United States has scarcely benefited from the knowledge gained in some other countries about the effectiveness of measures capable of controlling the epidemic among IDUs and, in the area of needle exchange research in particular, there have often been suggestions that the foreign data are somehow not applicable in the United States.

When comparing Australian differences. Similarities include history as a repository for culture, and economic, political history of extensive immigration, capita gross national product (Bank 1993:239). Australia's million population of the differences include health and associated with excellent health. United States has less impressive and Salkeld 1996:233-240) populations. The United States history of slavery. The proportion Australian population has is considerable. The 1991 Australian time as having been born overseas speaking countries.

In this paper we first examine epidemiologies of drug use and next compare the differing interventions for IDUs: prevention, treatment, education of IDUs.

Epidemiology of Drug Use

A survey conducted in Australia using comparable methodology for amphetamines was broadly consumption of cocaine in the United States. Australia were the most striking.

The Australian sample of 156 from five larger states, 156 from through 19 year olds. The United States probability sample of the civilian population to derive a sample of 32,000.

The major findings are shown in Table 1.

It seems clear, therefore, that the differences in drug use are due to account for differences in the social and cultural context.

Epidemiology of HIV/AIDS

A large body of published data on the prevalence of HIV infection, generally do not report male-to-male sexual contact. A survey involving 1,005 attendees at a needle exchange program of attendees with no history of injecting drug use (Feachem 1995). HIV seroprevalence was 1.3% when men with a history of injecting drug use.

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When comparing Australia and the United States, similarities outweigh the differences. Similarities include geographic size, major language spoken, colonial history as a repository for prisoners from the United Kingdom, major religions, culture, and economic, political, and legal systems. Both countries have a long history of extensive immigration. Living standards are comparable, although per capita gross national product is almost one-third higher in the United States (World Bank 1993:239). Australia has a population of 17.3 million, about $\frac{1}{15}$ the 252.7 million population of the United States (World Bank 1993:239). Other major differences include health and welfare systems. Universal health care in Australia is associated with excellent health outcomes from relatively modest inputs, while the United States has less impressive outcomes despite one-third higher inputs (Taylor and Salkeld 1996:233-240). Extreme poverty is rare in Australia outside aboriginal populations. The United States has a higher proportion of citizens of color, and a history of slavery. The proportion of citizens of color and the diversity of the Australian population has increased substantially in recent decades and is now considerable. The 1991 Australian census identified 22.3% of the population at that time as having been born overseas and 12.9% as having been born in non-English speaking countries.

In this paper we first examine the differences and similarities between the epidemiologies of drug use and HIV/AIDS in Australia and the United States. We next compare the differing policy responses to a variety of HIV prevention interventions for IDUs: provision of sterile syringes, methadone maintenance treatment, education of IDUs, and formation of IDU organizations.

Epidemiology of Drug Use

A survey conducted in Australia and the United States in 1991 (Makkai 1994) using comparable methodologies concluded that consumption of tobacco, heroin, and amphetamines was broadly similar in the two countries. A four-fold greater consumption of cocaine in the United States and higher alcohol consumption in Australia were the most striking differences.

The Australian sample of 2,483 was stratified with 400 respondents from each of five larger states, 156 from each of three smaller states and over sampling of 14 through 19 year olds. The United States Household survey used a multistage area probability sample of the civilian non-institutionalized population aged 12 and over to derive a sample of 32,000.

The major findings are shown in table 1.

It seems clear, therefore, that differences in drug consumption alone are unlikely to account for differences in the epidemiology of HIV/AIDS.

Epidemiology of HIV/AIDS

A large body of published and unpublished data consistently indicate low prevalence of HIV infection, generally less than 5%, among IDUs in Australia who do not report male-to-male sexual contact (Kaldor et al. 1993:175-184). A 1995 survey involving 1,005 attenders at 21 needle exchanges in all states found that 1.0% of attenders with no history of male-to-male sexual contact were HIV-positive (Feachem 1995). HIV seroprevalence in a 1994 four-city study of 792 IDUs was 1.3% when men with a history of having had sex with men were excluded (Loxley

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et al. 1995). HIV prevalence in Australian prison entrants between 1990 and 1994 was less than 0.5% (Feachem 1995), although the prevalence of inmates with a history of injecting was 46% in one large Australian study (Crofts et al. 1995:285-288).

Table 1
Reported Drug Use (1991)

	Percentage	
	Australia N=2,479	United States N=31,550
Heroin (female) lifetime	1.4	0.8
Heroin (male) lifetime	2.3	1.9
Cocaine (female) lifetime	2.1	9.3
Cocaine (male) lifetime	4.4	14.8
Amphetamine (female) lifetime	4.9	6.1
Amphetamine (male) lifetime	10.0	8.5
Tobacco lifetime	74.8	74.4
Tobacco every day	23.0	24.9
Alcohol lifetime	92.6	86.7
Alcohol 1 day a week	53.3	25.2
Alcohol regularly, age 14 to 17 years	20	12
Heavy drinker	17.3	7.6

Source: Makkai 1994.

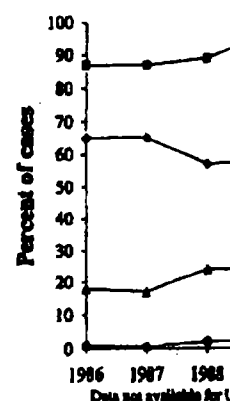
HIV infection is reportable in Australia. Of the 12,024 reported HIV infections of known exposure category in Australia by the end of 1994, 9,740 (81.0%) were attributed to homosexual and bisexual contact, 360 (3.0%) to a combination of homosexual and bisexual contact and injecting drug use, and 592 (4.9%) to injecting drug use (Feachem 1995). Thus 38% of the reported HIV infections among IDUs in Australia through the end of 1994 also had a history of male homosexual contact and may well have been infected sexually. Figure 1 shows a slow increase from a low base in the proportion of newly diagnosed AIDS cases attributed to injecting drug use in Australia in contrast with the inexorable increase in the United States in the period 1986-94.

The annual incidence of HIV in Australia rapidly reached a peak estimated at about 3,000 cases per year in 1984 (Feachem 1995) and thereafter declined sharply. The number of incident cases of HIV infection in Australia in 1993 was estimated to be only 480 (Feachem 1995). AIDS incidence in Australia was 45.8 per million population in 1991, 43.9 in 1992, and 44.1 in 1993 (Feachem 1995). Annual incidence appears to have reached a plateau in the mid-1990s and is expected to start

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declining slowly within a in the United States. Co countries converged after began to diverge again among IDUs in the U Australia.

Percentage of Newly



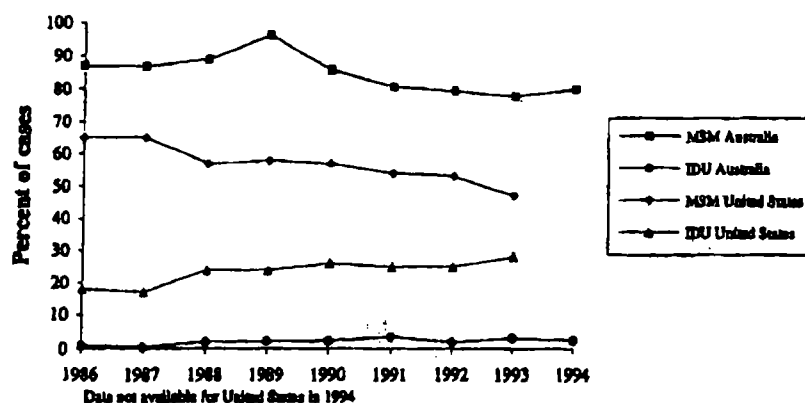
HIV prevalence of IDUs has been reported to range from 10% to 90% (Institute of Medicine 1996). In the 96 metropolitan areas of the United States, 500,000 are infected with HIV/AIDS cases in the United States in 1981 to 28% in 1993 attributed to men who have sex with men (Council and Institute of Medicine 1996). The Centers for Disease Control and Prevention (CDC) in the United States is even more IDU-centric, with 38% of incident HIV infection attributed to infections from IDUs to the general population.

With the realization of the need to move from HIV to control of AIDS (Crofts et al. n.d.), public health efforts to control HIV incidence among IDUs range from 38% in a single study to 38% in a single study of complications resulting from those infected than with hepatitis C are likely to

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declining slowly within a few years. The HIV epidemic started later in Australia than in the United States. Consequently, AIDS cases per head of population in the two countries converged after the early 1980s. However, as can be seen in Table 2, they began to diverge again after 1988, probably reflecting the growing HIV epidemic among IDUs in the United States and the relative lack of such an epidemic in Australia.

Figure 1
Percentage of Newly Diagnosed AIDS Cases by Risk Group, Australia and the United States, 1986-94



HIV prevalence of IDUs entering drug treatment facilities in the United States has been reported to range between 0% and 65% (National Research Council and Institute of Medicine 1995). It is estimated that 204,000 (14%) of the 1.5 million IDUs in the 96 metropolitan areas of the United States with a population over 500,000 are infected with HIV (Holmberg 1996:642-654). The proportion of annual AIDS cases in the United States attributed to injecting drug use increased from 12% in 1981 to 28% in 1993 with a corresponding decline in the proportion of cases attributed to men who have sex with men from 74% to 47% (National Research Council and Institute of Medicine 1995). More recent data from the United States Centers for Disease Control and Prevention suggest that the epidemic in the United States is even more IDU-dominated than the AIDS case rates suggest. Fifty percent of incident HIV infections are estimated to be occurring among IDUs, excluding infections from IDUs to their sex partners and offspring (Holmberg 1996:642-654).

With the realization that hepatitis C is more prevalent in Australia than HIV (Crofts et al. n.d.), public health attention in Australia regarding IDUs is turning from HIV to control of hepatitis C. The latter infection has an estimated annual incidence among IDUs ranging from 4% to 15% in three community studies and up to 38% in a single study of recidivist prison entrants (Feachem 1995). Although complications resulting from HIV occur earlier and affect a higher proportion of those infected than with hepatitis C, the health and economic costs of HIV and hepatitis C are likely to be substantial and may soon be roughly comparable in

Australia. This is due to the more protracted nature of hepatitis C complications, the five-fold greater prevalence, and the 10-fold greater incidence compared to HIV (Crofts et al. n.d.; Wodak and Crofts 1996:181-184). Hepatitis C is more infectious than HIV by an order of magnitude (Gerberding 1995:444-451). Thus, even minimal sharing of injection equipment is sufficient to sustain a high incidence of hepatitis C.

Table 2
Aids Cases per Million, Australia and the United States, 1982-1993

Year	Australia	United States	United States/ Australia
1982	0.1	6	60
1983	0.3	12	40
1984	2.6	24	9.2
1985	7.1	49	6.9
1986	14.5	74	5.1
1987	23.7	111	4.6
1988	31.9	138	4.3
1989	36.0	165	4.5
1990	38.6	185	4.7
1991	45.8	224	4.8
1992	43.9	285	6.4
1993	44.1	276	6.3

Source: Feachem 1995.

Risk Behavior

A recent review (Feachem 1995) of 47 Australian risk-behavior studies of IDUs conducted between 1984 and 1994 found that the proportion reporting sharing injection equipment in the past month declined steadily from over 90% of respondents recruited in three studies in 1985 to less than 20% of respondents recruited in three studies conducted in 1994.

Major changes in risk behaviors of injection drug users have also been reported in the United States (Centers for Disease Control 1990:273-276; Chitwood 1994:350). Although exclusion of social desirability bias is not possible, substantial risk reduction seems to have occurred in both countries. It is not possible to compare the magnitude of these changes.

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Sterile Syringe Availability

HIV prevention among a range of programs implemented of sterile injection equipment. An unofficial pilot needle exchange of needle exchange program states, followed by three others in 1993. Needle exchange in major population centers by protection of staff, something New South Wales (NSW) has been charged with aiding a specific individuals to register charged. NSW laws have equipment *per se* is no longer differences in each state but where necessary to protect

In fiscal year 1993-94, exchanged nationally, including for needle exchange in 199 likely to be an under-estimate exchange programs also in Australia in 1994-95, 71 pharmacies 40% of national

NSW is the most populous and accounts for over half the Epidemiology And Clinical F NSW in fiscal year 1993-94 syringes, generating an estimated return rate of 67% (Keys Young in 9 of 16 Health Areas in NSW dispensed (Review Working vending machines. Five hundred in a government scheme in million needles and syringes represented U.S.\$0.6 million paid in professional fees to protect IDU customers. The cost of distribution estimated at U.S.\$0.80 per needle and ten needle exchange (Review Working Party n.d. Young 1995). The NSW provision through needle exchange about 5 million to 7 to 9 million improving efficiency.

Strong community support community opinion surveys in

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Sterile Syringe Availability

HIV prevention among IDUs began early in Australia with a comprehensive range of programs implemented vigorously (Wodak 1992:549-562). The availability of sterile injection equipment was increased rapidly and inexpensively. After an unofficial pilot needle exchange program opened in Sydney in 1986, implementation of needle exchange programs began officially in 1987 in three of Australia's eight states, followed by three other states in 1988, one in 1989 and the remaining state in 1993. Needle exchange or pharmacy schemes were operating effectively in all major population centers by 1989. Establishment of needle exchange required legal protection of staff, something that has now been accomplished in all states. Under New South Wales (NSW) legislation prior to 1987, needle exchange staff could have been charged with aiding and abetting illicit drug use. New legislation permitted specific individuals to register to work in a needle exchange program and not be charged. NSW laws have been modified so that possession of used injection equipment *per se* is no longer regarded as an offence. There are minor technical differences in each state but legislation has been modified throughout the country where necessary to protect needle exchange staff from prosecution.

In fiscal year 1993-94, an estimated 10.3 million needles and syringes were exchanged nationally, including pharmacies (Feachem 1995). Total national funding for needle exchange in 1993-94 was estimated to be U.S.\$5.8 million, but this is likely to be an under-estimate because some officials believe that some needle exchange programs also obtain funds from other budgets (Feachem 1995). In Australia in 1994-95, 718 needle exchanges accounted for 60% and 3,392 pharmacies 40% of national syringe distribution (Review Working Party n.d.).

NSW is the most populous state (with over one-third of the national population) and accounts for over half the national cases of HIV infection (National Centre For Epidemiology And Clinical Research 1995b:17). U.S.\$3.9 million was allocated by NSW in fiscal year 1993-94, enabling the distribution of 3.4 million needles and syringes, generating an estimated 216,702 contact visits and achieving a syringe return rate of 67% (Keys Young 1995). By 1994-95, 15 vending machines installed in 9 of 16 Health Areas in NSW were responsible for 1.4% of needles and syringes dispensed (Review Working Party n.d.). Other states have been slower to introduce vending machines. Five hundred and twenty eight pharmacies in NSW participated in a government scheme in 1994-95 for distributing or selling an estimated 2.2 million needles and syringes at a cost to the state of U.S.\$1.1 million. This represented U.S.\$0.6 million paid to wholesalers for equipment and U.S.\$0.5 million paid in professional fees to pharmacists. An additional U.S.\$0.5 million was paid by IDU customers. The cost of distribution through the pharmacy scheme in NSW was estimated at U.S.\$0.80 per needle and syringe (Keys Young 1995). Three hundred and ten needle exchange programs provided 3.4 million needles and syringes (Review Working Party n.d.) at a cost of U.S.\$1.13 per needle and syringe (Keys Young 1995). The NSW Health Department plans to increase annual syringe provision through needle exchanges and pharmacies from a current annual level of about 5 million to 7 to 9 million by the year 2000, avoiding an increase in costs by improving efficiency.

Strong community support for needle exchange has been demonstrated in two community opinion surveys in Australia. When a sample of 300 respondents in 1990

was asked "should we continue to have the needle exchange program in NSW?", 89.6% responded "yes" (Schwartzkopf et al. 1990). A representative sample of 400 respondents in Perth, Western Australia were interviewed by telephone before and after an information tape in 1993 (Lenton 1994). The proportion of respondents who supported provision of sterile needles to IDUs increased from 75.5% before the tape to 86.9% after the tape. Support for needle exchange by law enforcement proved to be indispensable for efficient operation and was obtained with little difficulty (with rare exceptions). The police's major contribution to this important public health achievement is increasingly being recognized.

Recent research demonstrated the success in establishing sterile syringe availability. In a similar four-city study in 1994, almost half (49.2%) of the respondents ($n=793$) had used a needle exchange in the previous month with respondents in Sydney (61.5%), Melbourne (57.7%), and Adelaide (54.5%) more likely to have attended than in Perth (22.2%), where services are less developed (Loxley et al. 1995). Needle exchange was the most frequently cited (43.1%) major source of sterile needles. Less than a third (30.8%) of respondents reported sometimes finding it difficult to obtain new injecting equipment. Acceptable disposal patterns were reported by the vast majority, with the most commonly cited means of discarding used injection equipment being in a closed container in the home garbage bin (42.2%), return to the needle exchange (32.2%), disposal bins (specially created to improve disposal practices) (10.5%) and public garbage bin (6.8%), whereas few reported throwing used needles and syringes in drains or public places (0.7%). Miscellaneous categories accounted for the remainder (7.6%) (Loxley et al. 1995). On the last injecting occasion, 90% of respondents reported using a sterile needle whereas 10% reported injecting with a used needle; only 3.8% reported sharing a needle with another person on the last injecting occasion (Loxley et al. 1995).

The important role of pharmacies in increasing the availability of sterile needles has been unjustly neglected. The population of IDUs attending needle exchange programs differs somewhat from that attending pharmacies. IDUs in Sydney attending needle exchange programs obtained more than twice as many syringes per month (109.3 vs. 49.8), injected with new syringes more frequently (79.6% vs. 65.8%), were less likely to inject with a syringe used by someone else (17.2% vs. 23.5%), and found it easier to obtain syringes than those who obtained their equipment from pharmacies (88.1% vs. 81.6% of the time). Attempts to increase the availability of injection equipment are more likely to be successful if outlets reflect the diversity of drug users (Wodak et al. n.d.).

The cost per life-year saved by needle exchange in Australia has been estimated to be between U.S.\$ 40 and U.S.\$ 5,600, with an estimate of U.S.\$280 considered most likely (Feachem 1995). In comparison, the cost per quality-adjusted life year saved by HIV medical treatment is estimated to be between U.S.\$36,000 and U.S.\$198,000 (Feachem 1995). Needle exchange programs are estimated to have prevented 2,900 HIV infections in Australia in 1991, saving an estimated U.S.\$214 million in treatment costs (Feachem 1995). These estimates were prepared without considering possible reductions in the transmission of hepatitis B or hepatitis C as a result of IDUs attending needle exchange (Hagan et al. 1995:1531-1537). From an

Australian perspective, need and associated with minimal

Needle exchange programs in the United States. Begun in 1986, the early history of need exchange programs was characterized by fractious encounters with law enforcement, exchanging syringes in 6 states, and the defendants convicted of possession of syringes. The programs engendered local business and law enforcement, local business community. The concerns of scarce program funds and a lack of drug treatment programs and exchange programs. The opposition to needle exchange programs was particularly vehement. Heated arguments over the need for a needle exchange program were a feature of many needle exchange programs.

Nonetheless, the programs were 37 needle exchange programs in 1986 to 68 by 1994. That year, approximately 50,000 syringes were distributed. Fifty-five of these 68 programs reported that more than 100,000 syringes were distributed in 1995:684-685).

Yet, even as the program remained vehemently opposed, funding for research on the need for a needle exchange program seemed to be demonstrated to reduce the need for it. There are now six federally funded programs to precisely those conclusions. Deficiency Syndrome 1993; National Research Satcher 1993; National Research Technology Assessment 1993. The federal government's recommendations recommended the lifting of the ban on needle exchange, suppressed by the government. *Washington Post* in February 1994. Opposition to needle exchange, maintaining the ban, a re-examination of the program. Americans support the program.

These policies have exacted a heavy toll of lost lives and resources that will be prevented in the United States. Australia. These infections and treatment costs (Lurie and D

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Australian perspective, needle exchange is now considered effective, cost-effective, and associated with minimal side-effects. It is rarely questioned.

Needle exchange programs have experienced a vastly different reception in the United States. Begun in 1986 as an act of civil disobedience by a former IDU, much of the early history of needle exchange programs in the United States was one of fractious encounters with the law. Indeed, by 1993 more than 30 arrests for exchanging syringes in 6 states had occurred (Lane 1993). In only two cases were the defendants convicted of syringe possession or distribution (Burris et al. 1996). The programs engendered opposition from a variety of quarters, including law enforcement, local businesses and residents, religious leaders, and the drug-treatment community. The concerns of the latter appear to focus upon potential competition for scarce program funds and a clash between the abstinence model adhered to by many drug treatment programs and the harm-reduction approach embodied in needle exchange programs. The opposition of African-American community leaders, who saw in needle exchange echoes of the notorious Tuskegee Syphilis Study, was particularly vehement. Heated physical encounters, pickets, and even fire bombings of needle exchange program vans occurred (Lane 1993). Even today, the legal status of many needle exchange programs remains unclear (Burris et al. 1996:1161-1166).

Nonetheless, the programs have continued to increase in number. By 1993 there were 37 needle exchange programs in the United States, and that number had risen to 68 by 1994. That year, programs existed in at least 46 cities in at least 21 states. Fifty-five of these 68 programs reported exchanging a total of almost 8 million syringes that year, more than triple the number exchanged in 1992 (Paone et al. 1995:684-685).

Yet, even as the programs grew in both number and size, the federal government remained vehemently opposed to the programs. In 1991 it removed a ban on federal funding for research on the programs, but retained a ban on federal funding for needle exchange program services (Lane 1993). That ban requires that the programs be demonstrated to reduce HIV transmission and not lead to increases in drug use. There are now six federally funded studies of needle exchange programs that came to precisely those conclusions (National Commission on Acquired Immune Deficiency Syndrome 1991; U.S. General Accounting Office 1993; Lurie 1993; Satcher 1993; National Research Council and Institute of Medicine 1995; Office of Technology Assessment 1995). Among these, the most noteworthy was a review by the federal government's own Centers for Disease Control and Prevention that recommended the lifting of the funding ban as long ago as 1993. That review was suppressed by the government, only seeing the light of day when it was leaked to the *Washington Post* in February 1995 (Schwartz 1995). Although purported public opposition to needle exchange programs is often cited by opponents to justify maintaining the ban, a recent national public opinion poll found that 66% of Americans support the programs (Henry J. Kaiser Family Foundation 1996).

These policies have exacted an enormous toll on the public, both in terms of lives lost and resources that will be expended to treat preventable HIV infections. One recent analysis found that between 4,000 and 10,000 HIV infections could have been prevented in the United States had the programs grown at the rate they did in Australia. These infections will ultimately exact up to half a billion U.S. dollars in treatment costs (Lurie and Drucker 1996). Cost-effectiveness analyses estimate that

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in most cases needle exchange programs can prevent an HIV infection for between U.S.\$4,000 and U.S.\$12,000 (Kahn 1993).

Needle exchange programs in the United States are further restricted by a network of state laws and pharmacy regulations (Gostin et al. 1996). The most stringent of these are the prescription laws, which exist in 10 states and the District of Columbia and require a physician's prescription to purchase or possess a syringe. (The only European country with such a law is Sweden; the French prescription law was revoked in 1987.) In July 1992, the state of Connecticut amended its prescription law so that it only applied to purchases of more than 10 syringes. An evaluation of that legal change demonstrated a 39% decrease in reported rates of syringe sharing (Groseclose et al. 1995). This suggests that it is through the combination of needle exchange programs and pharmacy sales, the approach adopted in Australia, that the greatest impact upon the HIV epidemic among IDUs is likely to be achieved. However, no states have since modified their paraphernalia laws.

Methadone Maintenance Treatment

There is now impressive evidence from behavioral, seroprevalence, and sero-incidence studies that methadone maintenance treatment substantially reduces the spread of HIV among IDUs (Capehorn and Ross 1995:685-698). The expansion of methadone maintenance treatment in Australia began in 1985, before this evidence was available, following endorsement of this treatment modality by senior national political leaders, including the Prime Minister.

The establishment of a needle exchange system across the country should be seen in the context of the implementation, expansion, and improvement of a range of HIV prevention strategies (Wodak 1992:549-562). For example, methadone maintenance is now available in all but one state in Australia. The number of patients receiving methadone maintenance treatment has increased from 2,000 in 1985 (Ward et al. 1992) to almost 15,000 in 1994 (Department of Human Services and Health 1994). From June 1986 to June 1992, the proportion of methadone patients on private programs in Australia increased from 39% to 52% (Department of Human Services and Health 1994). Most private methadone treatment in Australia is provided by general practitioners.

The situation in the United States has been markedly different. Despite strong support from prestigious scientific bodies in the United States such as the American Medical Association and the American Public Health Association, there has been no similar expansion of methadone maintenance treatment. Between 1987 and 1992, there was only a 28% increase in the number of methadone patients, and most of that increase occurred in the private not-for-profit sector (Rettig and Yarmolinsky 1995). It is estimated that only 15% of U.S. IDUs are in treatment on any given day (Wiley and Samuel 1989:71-78).

Even those methadone treatment programs that do exist in the United States fail to adhere to accepted treatment practices. A national random sample of 172 methadone treatment units conducted in 1988 documented significant variations in methadone treatment practices. Twenty-five percent of units set upper limits on methadone dose levels of 20 to 60 milligrams per day (mg/day), many do not notify patients of their dosage levels, and 50% of units encourage detoxification within 6

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months of enrollment (D'Aunreault 1993). It has been shown in a number of re-

Education of IDUs

The effectiveness of education in reducing risk behavior of IDUs has been demonstrated in a number of studies. Reduced risk behavior of IDUs has been shown to be associated with information early in the epidemic, improved attitudes, and reduced risk behavior (Coates 1994:1371-89). Education is a sufficient condition. Behavior change is achieved with peers as by direct impact or through a peer prove or disprove.

In Australia, education of IDUs was the first education campaign to be initiated by the wife of the then Prime Minister. She has been involved in the design and implementation of abstinence and harm reduction programs but not at the expense of injection equipment.

In the United States, education of IDUs has a profound influence on risk behavior, dominated by the promotion of abstinence. Providing practical advice to a person who will not abstain. This approach, initiated by former

Even the now relatively weak influence of the prevailing ideology. Although safer than a bleached one, it resulted in the Federal government's efficacy of bleach outreach h-

Organizations of IDUs

Organizations of IDUs in Australia (Friedman et al. 1993) and the United States (Friedman et al. 1993) many interact with government officials. An invaluable link between IDUs and government with important information strategies. Drug users in NSW (New South Wales) container (Fitpack) used for disposal of equipment. These containers are used for decreasing the disposal of equivalent organizations ex-

Discussion

Can policies and programs be developed in Australia and the United States to control the HIV epidemic among IDUs?

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months of enrollment (D'Aunno and Vaughn 1992:253-258). These practices have been shown in a number of research studies to generally result in poor outcomes.

Education of IDUs

The effectiveness of education of IDUs as an HIV prevention strategy is unclear. Reduced risk behavior of IDUs seemed to follow minimal dissemination of information early in the epidemic. However, clear links among increased knowledge, improved attitudes, and reduced risk behavior have not been demonstrated (Choi and Coates 1994:1371-89). Education seems to be more a necessary rather than a sufficient condition. Behavior change may be influenced as much by informal contact with peers as by direct impact of education campaigns, although this is difficult to prove or disprove.

In Australia, education of IDUs about AIDS has been explicit and credible. The first education campaign to warn IDUs to "never, ever share needles" was launched by the wife of the then Prime Minister in 1987. IDUs and their organizations have been involved in the design and implementation of education campaigns. Promotion of abstinence is considered to have a role in reducing the spread of blood-borne viruses but not at the expense of the more achievable objective of reducing sharing of injection equipment.

In the United States, education programs promoted at the Federal level, which have a profound influence on state and local educational programs, have been dominated by the promotion of abstinence. Campaigns have often refrained from providing practical advice to avoid HIV infection to the majority of IDUs who cannot or will not abstain. This approach was exemplified by the well-known "Just Say No" campaign, initiated by former First Lady Nancy Reagan.

Even the now relatively widely accepted bleach outreach programs reflected the prevailing ideology. Although by definition a new syringe would almost have to be safer than a bleached one, opposition to the provision of sterile syringes to IDUs resulted in the Federal government's favoring of bleach outreach. Ironically, the efficacy of bleach outreach has now been called into question (Curran et al. 1993).

Organizations of IDUs

Organizations of IDUs now exist in a number of countries in Europe and Australia (Friedman et al. 1993:S263-S269). Some receive government funding and many interact with government officials. IDU organizations in Australia form an invaluable link between IDUs and government officials. This provides bureaucrats with important information for development and implementation of prevention strategies. Drug users in NSW were involved, for example, in the design of a special container (Fitpack) used for pharmacy sale and exchange of sterile injecting equipment. These containers were successful in increasing return rates and decreasing the disposal of used injection equipment in public places. A few equivalent organizations exist in the United States but none are recognized by government officials.

Discussion

Can policies and programs to prevent the spread of HIV infection among IDUs in Australia and the United States explain the dramatically different courses of the

epidemic in the two countries? Although categorical proof is virtually impossible, the circumstantial evidence that the course of the epidemic was altered in Australia by timely intervention is now overwhelming.

What are the competing explanations for the persisting low levels of HIV infection among Australian IDUs? The possibility that an epidemic has occurred but been overlooked despite a decade of high quality surveillance can be dismissed. Surveillance of HIV among IDUs in Australia includes collation of almost all laboratory test results. This is still possible because the testing system requires laboratories to report all results. This surveillance system includes results from a very wide range of sources including anonymous testing centers, needle exchanges, prisons, and methadone clinics. Did HIV fail to spread among IDUs in Australia because infection did not occur in overlapping risk groups? This explanation can also be rejected as there is ample evidence of HIV infection among male IDUs with a history of sexual contact with other males (Feachem 1995). Has there been insufficient time for this epidemic to reach detectable size? A decade is more than enough time for an explosive epidemic to occur, as most strikingly documented in New York City (Des Jarlais and Friedman 1990), Bangkok (Weniger et al. 1991:S71-S85), Manipur (Sarkar et al. 1993), and other cities (Des Jarlais et al. 1995:1226-1231). There is no reason to believe that the HIV strain present in Australia is less infectious by blood-to-blood spread than that in the United States (both countries have predominantly HIV-B strain epidemics) or that differing host susceptibilities can explain the epidemiological patterns observed. Is the limited HIV epidemic among IDUs in Australia the result of lack of mixing between at-risk populations? Most Australian IDUs live in large cities in what is one of the most urbanized countries in the world.

The most parsimonious explanation for the different epidemic courses in the two countries is the adoption of harm-reduction policies and the implementation of other prevention programs in Australia. Policies in Australia were implemented early and generally with vigor; these policies included AIDS education, needle exchange programs, and the expansion of methadone treatment.

The case for the effectiveness of Australian policies and programs becomes even stronger when the United States is considered a "control" country. Only 68 needle exchange programs existed in the United States in 1994, despite IDU HIV prevalence as high as 50% for over a decade. The capacity of methadone programs has only been increased slightly over the course of the epidemic. Explicit education for IDUs now exists, but only at the margins and only when provided by a small and enthusiastic band of urban guerrillas. Enthusiasm for prohibition continues unabated, at least in political circles, limiting the availability of sterile injection equipment and ensuring the continuation of shooting galleries that perpetuate the epidemic. Control of HIV among IDUs requires an acceptance of this population as part of the community. Although this has arguably been accomplished to a significant degree in Australia, IDUs in the United States remain unworthy of consideration in mainstream national discourse.

Despite some striking differences, in a recent study demographic characteristics and risk behaviors of IDUs in Sydney and New York were remarkably similar overall (World Health Organization 1994). HIV seroprevalence was 2% among IDUs in Sydney and 48% among IDUs in New York City. The most plausible explanation

for the substantial difference in the two countries is the pre-consequently discrepant imple

Early implementation of associated with persistently 1995:1226-1231; Stimson 19 exchange programs and HIV se the world with serial data on average seroprevalence at the st that subsequently introduced At the end of the periods of lower in locations with a nee 21%). The average annual in number of subjects sampled, 0.2% in the cities with, the measurement of HIV seropre difficult to envisage any syste Indeed, the "noise" introduc results toward the null. Furt control over the epidemic can declined from 55% in 1986 health interventions helped to inevitable continuing epidem

At present, epidemic spr (Feachem 1995). A target of year 2000. Needle exchange HIV is considered vulnerable equipment is considered par noted above, there is some evi of hepatitis B and C (Hagan drug injectors may have de readily available (Feachem 1

After a decade of intern among IDUs, we can conclud been identified and, in some liberal democracies respon adopting prevention program strategies existed, in some c in their IDU populations. T persuade authorities to adop where epidemics continue.

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for the substantial difference in spread of HIV among drug injecting populations in the two countries is the profound difference in policy environments and the consequently discrepant implementation of prevention strategies.

Early implementation of harm-reduction policies and programs has been associated with persistently low HIV seroprevalences (Des Jarlais et al. 1995:1226-1231; Stimson 1996:1085-1088). A recent ecological study of needle exchange programs and HIV seroprevalence among IDUs involved 29 cities around the world with serial data on HIV seroprevalence (Hurley et al. 1996:56-60). The average seroprevalence at the start of the period of study was about 3% in both cities that subsequently introduced needle exchange programs and in those that did not. At the end of the periods of study, the average seroprevalence was considerably lower in locations with a needle exchange program than in those without (6% vs. 21%). The average annual increase in seroprevalence, weighted according to the number of subjects sampled, was 3.6% in the needle exchange cities without, and 0.2% in the cities with, the programs. Although a standard methodology for measurement of HIV seroprevalence between and within cities was not used, it is difficult to envisage any systematic design flaw capable of producing these results. Indeed, the "noise" introduced by varying sampling techniques would bias the results toward the null. Furthermore, the Edinburgh experience reminds us that control over the epidemic can even be regained. Seroprevalence of Edinburgh IDUs declined from 55% in 1986 to 20% by 1992, suggesting that the range of public health interventions helped to reduce risk behavior in IDUs and averted an otherwise inevitable continuing epidemic (Stimson 1995:699-716).

At present, epidemic spread of HIV among Australian IDUs seems unlikely (Feachem 1995). A target of 7 to 9 million syringes has been set for NSW for the year 2000. Needle exchange is being expanded in Australia not because control of HIV is considered vulnerable, but because increased availability of sterile injecting equipment is considered part of the response required to control hepatitis C. As noted above, there is some evidence that needle exchange may decrease the incidence of hepatitis B and C (Hagan et al. 1995:1531-1537). Hepatitis C incidence among drug injectors may have declined in Australia since sterile syringes have become readily available (Feachem 1995).

After a decade of international and national efforts to control HIV infection among IDUs, we can conclude that sufficiently effective policies and programs have been identified and, in some locations, implemented with success. Many western liberal democracies responded to the HIV epidemic among IDUs by promptly adopting prevention programs well before any evidence of the effectiveness of these strategies existed, in some cases long before HIV was detected at significant levels in their IDU populations. The major remaining gap in our knowledge is how to persuade authorities to adopt effective programs in countries like the United States where epidemics continue.

AIDS is a public health crisis that demands open discussion and swift action. Neither of these can be said to characterize the United States response to the epidemic. Current implementation of needle exchange programs in the United States, although encouraging by the poor standards established early in the epidemic, is homeopathic in comparison with "the dose of intervention" likely to be required to control HIV infection. Federal funding seems unlikely to materialize at this stage for

reasons unrelated to science or public health. As scientific support for the effectiveness and safety of needle exchange programs becomes more and more impressive, criteria for proof appear to be raised.

Australia provides a national case study demonstrating that early and vigorous implementation of prevention strategies are effective in controlling HIV among IDUs. This is of particular importance in the United States because HIV incidence and prevalence among IDUs is still low in many parts of the country. Given the many significant similarities and the relatively minor differences between Australia and the United States described in the first part of this paper, conclusions based on the Australian experience are likely to be generalizable to the United States.

It is important to consider why these noteworthy differences in implementation of prevention strategies have developed and why they have persisted despite growing scientific support for the type of approach adopted in Australia. The conclusion seems inescapable that these policies are rooted in fundamentally different philosophies. HIV prevention policy for IDUs in the United States is rooted in the War on Drugs, whereas the Australian approach is based on harm reduction. The emphasis on supply reduction in the United States has been a major factor in the obstruction of needle exchange and methadone program expansion. In contrast, explicit adoption of harm reduction in Australia facilitated the early adoption and vigorous implementation of these policies. The prevention of what could have been a large epidemic of HIV among IDUs in Australia appears to have been averted.

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A TALE OF TWO COUNTRIES: ATTEMPTS TO CONTROL HIV AMONG INJECTING DRUG USERS IN AUSTRALIA AND THE UNITED STATES

Alex Wodak

Peter Lurie

Prevalence of injectable drug use is surprisingly similar in Australia and the United States. HIV prevalence among injection drug users (IDUs) is less than 5% in Australia and about 14% in the United States. IDUs accounted for 2.5% of AIDS cases in Australia in 1994 and 28% in the United States in 1993. Harm reduction was officially adopted in Australia in 1985 but has been explicitly rejected by the U.S. government. In 1994, needle programs exchanged over 10 million syringes from over 4,000 outlets in Australia while 55 needle exchange programs in the United States exchanged almost eight million syringes. Since 1985, methadone maintenance expanded almost ten-fold in Australia but barely increased in the United States. Timely and vigorous adoption of harm reduction strategies in Australia and the relative lack of such programs in the United States is the most plausible explanation for the good control of HIV among IDUs in Australia and poor control in the United States.

Introduction

The HIV pandemic has taken remarkably different courses in different countries. In recent years, there has been increasing interest in ecological studies to elucidate policies that might underlie these differences (Des Jarlais et al. 1995:1226-1231; Stimson 1995:699-716; Kaldor et al. 1993:175-184). This paper compares and contrasts the experience of two countries, Australia and the United States, both beset in the early 1980s by impending epidemics of HIV among injecting drug users (IDUs).

HIV was already well established among IDUs in New York City (Des Jarlais et al. 1989:1008-1012) before AIDS was first recognized in 1981. Despite an increasingly impressive body of data appearing during the 1990s confirming the effectiveness of needle exchange as an HIV prevention strategy and the lack of adverse consequences in terms of increased drug use (U.S. Government Accounting Office 1993; Lurie et al. 1993; National Research Council 1995), policy responses in the United States have been tardy, partial and cautious. In contrast, HIV

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prevention policies in Australia were influenced by a desire to be "roughly right rather than perfectly wrong". Adoption of the needle exchange concept in Australia in 1987 and subsequent vigorous implementation was based on the notion that it was inherently plausible that removing potentially HIV-infected syringes from circulation and replacing them with sterile injection equipment would reduce HIV infection. These programs were adopted at a time when there was no evidence of significant HIV infection among IDUs in Australia and minimal data supporting the effectiveness of needle exchange as an HIV prevention strategy.

From the outset, Australia's response to HIV was grounded on sound public health principles with the explicit acceptance of harm reduction at the most senior political level (Commonwealth Department of Community Services and Health 1989; Wodak 1992:549-562). Consistent support has been provided by all major political parties. A spirit of partnership also prevailed among government officials, clinicians, researchers, and community groups. This remarkable, collegial relationship provided a solid foundation for impressive achievements in public health, clinical care, and bio-medical research. Australia's policy response to HIV/AIDS has remained remarkably open. National HIV/AIDS strategy has been set for two 3-year periods. A comprehensive evaluation of the Second Strategy has been published (Feachem 1995), and a Third Strategy formulated (Commonwealth Department of Health and Family Services 1996).

A major new national approach to drugs, placing far more emphasis on public health and less on interdiction, was adopted in Australia in April 1985 (Blewett 1987), before the consequences of an uncontrolled epidemic of HIV infection among IDUs was fully appreciated. Thus, when the enormous health, social, and economic costs of the HIV epidemic in New York City and the critical role of IDUs in the dynamics of the epidemic became evident in late 1985 (Weinberg and Murray 1987:1469-1473) Australia could respond with greater flexibility in the selection and implementation of policies to prevent HIV infection among IDUs. Although there have been a number of major official reviews of HIV prevention among IDUs in the United States, the effect on policies and programs involving IDUs has always been subordinated to policy commitments to reduce the supply of illicit drugs.

AIDS was perceived as a major public health problem in Australia as early as 1983. The experience of the epidemic in the United States had a profound impact on Australia's response to HIV. First, most of the earliest AIDS cases diagnosed in Australia were men with a history of homosexual contact who had lived for some years in the United States, suggesting that they had become infected with HIV in the United States (although this is difficult to prove). Second, when the potential magnitude of the epidemic became apparent, politicians and senior officials looked to the United States for guidance and leadership. Third, the far-reaching effects of the uncontrolled HIV epidemic among IDUs in New York City convinced Australian policy makers that similar results could ensue if Australian authorities did not promote policy change more actively than in the United States. Unfortunately, the United States has scarcely benefited from the knowledge gained in some other countries about the effectiveness of measures capable of controlling the epidemic among IDUs and, in the area of needle exchange research in particular, there have often been suggestions that the foreign data are somehow not applicable in the United States.

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When comparing differences. Similar history as a repository culture, and economic history of excessive capita gross national Bank 1993:299). A million population differences include been associated with excess United States less and Salkeld 1996:233 populations. The United history of slavery. The Australian population considerable. The 1990 time as having been speaking countries.

In this paper we will epidemiologies of drug next compare the different interventions for IDUs treatment, education, and

Epidemiology of Drug

A survey conducted using comparable methods amphetamine was 60% consumption of cocaine Australia were the most

The Australian sample of five larger states, 158 through 19 year olds. The probability sample of the to derive a sample of 32

The major findings are It seems clear, therefore, to account for differences

Epidemiology of HIV

A large body of research prevalence of HIV infection do not report male-to-male survey involving 1005 of attendees with no history (Feachem 1995) HIV 1.3% when men with a

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When comparing Australia and the United States, similarities outweigh the differences. Similarities include geographic size, major language spoken, colonial history as a repository for prisoners from the United Kingdom, major religions, culture, and economic, political, and legal systems. Both countries have a long history of extensive immigration. Living standards are comparable, although per capita gross national product is almost one-third higher in the United States (World Bank 1993:239). Australia has a population of 17.3 million, about $\frac{1}{15}$ the 252.7 million population of the United States (World Bank 1993:239). Other major differences include health and welfare systems. Universal health care in Australia is associated with excellent health outcomes from relatively modest inputs, while the United States has less impressive outcomes despite one-third higher inputs (Taylor and Salkeld 1996:233-240). Extreme poverty is rare in Australia outside aboriginal populations. The United States has a higher proportion of citizens of color, and a history of slavery. The proportion of citizens of color and the diversity of the Australian population has increased substantially in recent decades and is now considerable. The 1991 Australian census identified 22.3% of the population at that time as having been born overseas and 12.9% as having been born in non-English speaking countries.

In this paper we first examine the differences and similarities between the epidemiologies of drug use and HIV/AIDS in Australia and the United States. We next compare the differing policy responses to a variety of HIV prevention interventions for IDUs: provision of sterile syringes, methadone maintenance treatment, education of IDUs, and formation of IDU organizations.

Epidemiology of Drug Use

A survey conducted in Australia and the United States in 1991 (Makkai 1994) using comparable methodologies concluded that consumption of tobacco, heroin, and amphetamines was broadly similar in the two countries. A four-fold greater consumption of cocaine in the United States and higher alcohol consumption in Australia were the most striking differences.

The Australian sample of 2,483 was stratified with 400 respondents from each of five larger states, 156 from each of three smaller states and over sampling of 14 through 19 year olds. The United States Household survey used a multistage area probability sample of the civilian non-institutionalized population aged 12 and over to derive a sample of 32,000.

The major findings are shown in table 1.

It seems clear, therefore, that differences in drug consumption alone are unlikely to account for differences in the epidemiology of HIV/AIDS.

Epidemiology of HIV/AIDS

A large body of published and unpublished data consistently indicate low prevalence of HIV infection, generally less than 5%, among IDUs in Australia who do not report male-to-male sexual contact (Kaldor et al. 1993:175-184). A 1995 survey involving 1,005 attenders at 21 needle exchanges in all states found that 1.0% of attenders with no history of male-to-male sexual contact were HIV-positive (Feachem 1995). HIV seroprevalence in a 1994 four-city study of 792 IDUs was 1.3% when men with a history of having had sex with men were excluded (Loxley

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et al. 1995). HIV prevalence in Australian prison entrants between 1990 and 1994 was less than 0.5% (Feachem 1995), although the prevalence of inmates with a history of injecting was 46% in one large Australian study (Crofts et al. 1-995:285-288).

Table 1
Reported Drug Use (1991)

	Percentage	
	Australia N=2,479	United States N=31,550
Heroin (female) lifetime	1.4	0.8
Heroin (male) lifetime	2.3	1.9
Cocaine (female) lifetime	2.1	9.3
Cocaine (male) lifetime	4.4	14.8
Amphetamine (female) lifetime	4.9	6.1
Amphetamine (male) lifetime	10.0	8.5
Tobacco lifetime	74.8	74.4
Tobacco every day	23.0	24.9
Alcohol lifetime	92.6	86.7
Alcohol 1 day a week	53.3	25.2
Alcohol regularly, age 14 to 17 years	20	12
Heavy drinker	17.3	7.6

Source: Makkai 1994.

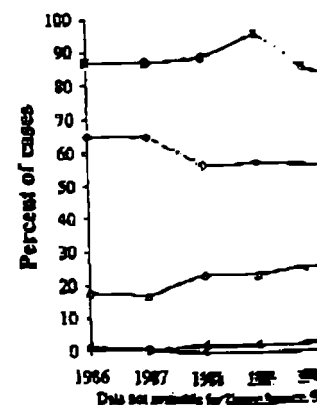
HIV infection is reportable in Australia. Of the 12,024 reported HIV infections of known exposure category in Australia by the end of 1994, 9,740 (81.0%) were attributed to homosexual and bisexual contact, 360 (3.0%) to a combination of homosexual and bisexual contact and injecting drug use, and 592 (4.9%) to injecting drug use (Feachem 1995). Thus 38% of the reported HIV infections among IDUs in Australia through the end of 1994 also had a history of male homosexual contact and may well have been infected sexually. Figure 1 shows a slow increase from a low base in the proportion of newly diagnosed AIDS cases attributed to injecting drug use in Australia in contrast with the inexorable increase in the United States in the period 1986-94.

The annual incidence of HIV in Australia rapidly reached a peak estimated at about 3,000 cases per year in 1984 (Feachem 1995) and thereafter declined sharply. The number of incident cases of HIV infection in Australia in 1993 was estimated to be only 480 (Feachem 1995). AIDS incidence in Australia was 45.8 per million population in 1991, 43.9 in 1992, and 44.1 in 1993 (Feachem 1995). Annual incidence appears to have reached a plateau in the mid-1990s and is expected to start

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declining slowly within a few years in the United States. Consequently, countries converged after the war began to diverge again after 1988 among IDUs in the United States and Australia.

Percentage of Newly Diagnosed AIDS Cases



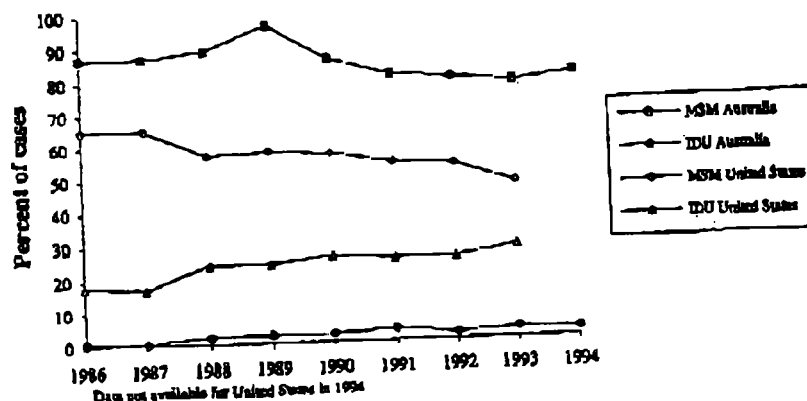
HIV prevalence of IDUs has been reported to range between 10% and 50% (Institute of Medicine 1995). In the 96 metropolitan areas with 500,000 or more people, 10% of IDUs in the United States are infected with HIV. In 1981 to 28% in 1993 were attributed to men who have sex with men. The Council and Institute of Medicine Centers for Disease Control and Prevention in the United States is even more IDU-dominated. Of incident HIV infections, 25% are attributed to IDUs in their sex.

With the realization that IDUs are a high-risk group (Crofts et al. n.d.), public health efforts have shifted from HIV to control of hepatitis C. The incidence among IDUs ranging from 10% to 38% in a single study of complications resulting from hepatitis C are likely to be as high as those infected with HIV.

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declining slowly within a few years. The HIV epidemic started later in Australia than in the United States. Consequently, AIDS cases per head of population in the two countries converged after the early 1980s. However, as can be seen in Table 2, they began to diverge again after 1988, probably reflecting the growing HIV epidemic among IDUs in the United States and the relative lack of such an epidemic in Australia.

Figure 1
Percentage of Newly Diagnosed AIDS Cases by Risk Group, Australia and the United States, 1986-94



HIV prevalence of IDUs entering drug treatment facilities in the United States has been reported to range between 0% and 65% (National Research Council and Institute of Medicine 1995). It is estimated that 204,000 (14%) of the 1.5 million IDUs in the 96 metropolitan areas of the United States with a population over 500,000 are infected with HIV (Holmberg 1996:642-654). The proportion of annual AIDS cases in the United States attributed to injecting drug use increased from 12% in 1981 to 28% in 1993 with a corresponding decline in the proportion of cases attributed to men who have sex with men from 74% to 47% (National Research Council and Institute of Medicine 1995). More recent data from the United States Centers for Disease Control and Prevention suggest that the epidemic in the United States is even more IDU-dominated than the AIDS case rates suggest. Fifty percent of incident HIV infections are estimated to be occurring among IDUs, excluding infections from IDUs to their sex partners and offspring (Holmberg 1996:642-654).

With the realization that hepatitis C is more prevalent in Australia than HIV (Crofts et al. n.d.), public health attention in Australia regarding IDUs is turning from HIV to control of hepatitis C. The latter infection has an estimated annual incidence among IDUs ranging from 4% to 15% in three community studies and up to 38% in a single study of recidivist prison entrants (Feachem 1995). Although complications resulting from HIV occur earlier and affect a higher proportion of those infected than with hepatitis C, the health and economic costs of HIV and hepatitis C are likely to be substantial and may soon be roughly comparable in

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Australia. This is due to the more protracted nature of hepatitis C complications, the five-fold greater prevalence, and the 10-fold greater incidence compared to HIV (Crofts et al. n.d.; Wodak and Crofts 1996:181-184). Hepatitis C is more infectious than HIV by an order of magnitude (Gerberding 1995:444-451). Thus, even minimal sharing of injection equipment is sufficient to sustain a high incidence of hepatitis C.

Table 2
Aids Cases per Million, Australia and the United States, 1982-1993

Year	Australia	United States	United States/ Australia
1982	0.1	6	60
1983	0.3	12	40
1984	2.6	24	9.2
1985	7.1	49	6.9
1986	14.5	74	5.1
1987	23.7	111	4.6
1988	31.9	138	4.3
1989	36.0	165	4.5
1990	38.6	185	4.7
1991	45.8	224	4.8
1992	43.9	285	6.4
1993	44.1	276	6.3

Source: Feachem 1995.

Risk Behavior

A recent review (Feachem 1995) of 47 Australian risk-behavior studies of IDUs conducted between 1984 and 1994 found that the proportion reporting sharing injection equipment in the past month declined steadily from over 90% of respondents recruited in three studies in 1985 to less than 20% of respondents recruited in three studies conducted in 1994.

Major changes in risk behaviors of injection drug users have also been reported in the United States (Centers for Disease Control 1990:273-276; Chitwood 1994:350). Although exclusion of social desirability bias is not possible, substantial risk reduction seems to have occurred in both countries. It is not possible to compare the magnitude of these changes.

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Sterile Syringe Availability

HIV prevention among IDUs in a range of programs implemented with of sterile injection equipment. An unofficial pilot needle exchange program of needle exchange programs has been states, followed by first state in 1993. Needle exchange is the major population zones by 1993. protection of staff, screening for New South Wales (NSW) has been charged with aiming at the specific individuals to register and charged. NSW has been charged equipment per se is no longer a differences in each state but where necessary to protect health.

In fiscal year 1993-94, 100,000 exchanged nationally, including for needle exchange in 1993-94 likely to be an under-estimate. exchange programs also exist Australia in 1994-95. The pharmacies 40% of national supply.

NSW is the most prominent and accounts for over half the Epidemiology And Clinical Rates NSW in fiscal year 1993-94, 100,000 syringes, generating an estimated return rate of 67% (Kerr Young in 9 of 16 Health Areas in NSW dispensed (Review Working Party vending machines. Five hundred in a government scheme of 10 million needles and syringes represented U.S.\$0.6 million paid in professional fees to IDU customers. The cost of an estimated at U.S.\$0.80 per needle and ten needle exchange in (Review Working Party Kerr Young 1995). The NSW provision through needle exchange about 5 million to 7 to 10 million improving efficiency.

Strong community support community opinion surveys

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Sterile Syringe Availability

HIV prevention among IDUs began early in Australia with a comprehensive range of programs implemented vigorously (Wodak 1992:549-562). The availability of sterile injection equipment was increased rapidly and inexpensively. After an unofficial pilot needle exchange program opened in Sydney in 1986, implementation of needle exchange programs began officially in 1987 in three of Australia's eight states, followed by three other states in 1988, one in 1989 and the remaining state in 1993. Needle exchange or pharmacy schemes were operating effectively in all major population centers by 1989. Establishment of needle exchange required legal protection of staff, something that has now been accomplished in all states. Under New South Wales (NSW) legislation prior to 1987, needle exchange staff could have been charged with aiding and abetting illicit drug use. New legislation permitted specific individuals to register to work in a needle exchange program and not be charged. NSW laws have been modified so that possession of used injection equipment *per se* is no longer regarded as an offence. There are minor technical differences in each state but legislation has been modified throughout the country where necessary to protect needle exchange staff from prosecution.

In fiscal year 1993-94, an estimated 10.3 million needles and syringes were exchanged nationally, including pharmacies (Feachem 1995). Total national funding for needle exchange in 1993-94 was estimated to be U.S.\$5.8 million, but this is likely to be an under-estimate because some officials believe that some needle exchange programs also obtain funds from other budgets (Feachem 1995). In Australia in 1994-95, 718 needle exchanges accounted for 60% and 3,392 pharmacies 40% of national syringe distribution (Review Working Party n.d.).

NSW is the most populous state (with over one-third of the national population) and accounts for over half the national cases of HIV infection (National Centre For Epidemiology And Clinical Research 1995b:17). U.S.\$3.9 million was allocated by NSW in fiscal year 1993-94, enabling the distribution of 3.4 million needles and syringes, generating an estimated 216,702 contact visits and achieving a syringe return rate of 67% (Keys Young 1995). By 1994-95, 15 vending machines installed in 9 of 16 Health Areas in NSW were responsible for 1.4% of needles and syringes dispensed (Review Working Party n.d.). Other states have been slower to introduce vending machines. Five hundred and twenty eight pharmacies in NSW participated in a government scheme in 1994-95 for distributing or selling an estimated 2.2 million needles and syringes at a cost to the state of U.S.\$1.1 million. This represented U.S.\$0.6 million paid to wholesalers for equipment and U.S.\$0.5 million paid in professional fees to pharmacists. An additional U.S.\$0.5 million was paid by IDU customers. The cost of distribution through the pharmacy scheme in NSW was estimated at U.S.\$0.80 per needle and syringe (Keys Young 1995). Three hundred and ten needle exchange programs provided 3.4 million needles and syringes (Review Working Party n.d.) at a cost of U.S.\$1.13 per needle and syringe (Keys Young 1995). The NSW Health Department plans to increase annual syringe provision through needle exchanges and pharmacies from a current annual level of about 5 million to 7 to 9 million by the year 2000, avoiding an increase in costs by improving efficiency.

Strong community support for needle exchange has been demonstrated in two community opinion surveys in Australia. When a sample of 300 respondents in 1990

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was asked "should we continue to have the needle exchange program in NSW?", 89.6% responded "yes" (Schwartzkopf et al. 1990). A representative sample of 400 respondents in Perth, Western Australia were interviewed by telephone before and after an information tape in 1993 (Lenton 1994). The proportion of respondents who supported provision of sterile needles to IDUs increased from 75.5% before the tape to 86.9% after the tape. Support for needle exchange by law enforcement proved to be indispensable for efficient operation and was obtained with little difficulty (with rare exceptions). The police's major contribution to this important public health achievement is increasingly being recognized.

Recent research demonstrated the success in establishing sterile syringe availability. In a similar four-city study in 1994, almost half (49.2%) of the respondents ($n=793$) had used a needle exchange in the previous month with respondents in Sydney (61.5%), Melbourne (57.7%), and Adelaide (54.5%) more likely to have attended than in Perth (22.2%), where services are less developed (Loxley et al. 1995). Needle exchange was the most frequently cited (43.1%) major source of sterile needles. Less than a third (30.8%) of respondents reported sometimes finding it difficult to obtain new injecting equipment. Acceptable disposal patterns were reported by the vast majority, with the most commonly cited means of discarding used injection equipment being in a closed container in the home garbage bin (42.2%), return to the needle exchange (32.2%), disposal bins (specially created to improve disposal practices) (10.5%) and public garbage bin (6.8%), whereas few reported throwing used needles and syringes in drains or public places (0.7%). Miscellaneous categories accounted for the remainder (7.6%) (Loxley et al. 1995). On the last injecting occasion, 90% of respondents reported using a sterile needle whereas 10% reported injecting with a used needle; only 3.8% reported sharing a needle with another person on the last injecting occasion (Loxley et al. 1995).

The important role of pharmacies in increasing the availability of sterile needles has been unjustly neglected. The population of IDUs attending needle exchange programs differs somewhat from that attending pharmacies. IDUs in Sydney attending needle exchange programs obtained more than twice as many syringes per month (109.3 vs. 49.8), injected with new syringes more frequently (79.6% vs. 65.8%), were less likely to inject with a syringe used by someone else (17.2% vs. 23.5%), and found it easier to obtain syringes than those who obtained their equipment from pharmacies (88.1% vs. 81.6% of the time). Attempts to increase the availability of injection equipment are more likely to be successful if outlets reflect the diversity of drug users (Wodak et al. n.d.).

The cost per life-year saved by needle exchange in Australia has been estimated to be between U.S.\$ 40 and U.S.\$ 5,600, with an estimate of U.S.\$280 considered most likely (Feachem 1995). In comparison, the cost per quality-adjusted life year saved by HIV medical treatment is estimated to be between U.S.\$36,000 and U.S.\$198,000 (Feachem 1995). Needle exchange programs are estimated to have prevented 2,900 HIV infections in Australia in 1991, saving an estimated U.S.\$214 million in treatment costs (Feachem 1995). These estimates were prepared without considering possible reductions in the transmission of hepatitis B or hepatitis C as a result of IDUs attending needle exchange (Hagan et al. 1995:1531-1537). From an

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Australian perspective and associated with needle exchange programs.

Needle exchange programs in the United States began in the early 1980s as a response to the fraction of the early injection drug use community exchanging syringes. The programs emerged as a result of law enforcement, local community, and drug treatment programs. The exchange programs saw in needle exchange a particularly important role in the reduction of needle exchange programs of many needle exchange programs.

Nonetheless, the number of needle exchange programs increased from 37 in 1984 to 68 by 1994. The number of syringes that were exchanged in 1995:684-685.

Yet, even as the programs remained vehemently opposed to funding for research in the needle exchange programs, it can be demonstrated to many. There are now no programs to precisely those programs. Deficiency Syndrome (HIV) Satcher 1993. National Institute on Technology Assessment (NITA) the federal government recommended the suppression of the Washington Post in February 1994. opposition to needle exchange, maintaining the law, a new Americans support the program.

These policies have lost and resources that will be recent analysis found that have prevented in the United States Australia. These infections and treatment costs (Lurie and Dwyer).

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Australian perspective, needle exchange is now considered effective, cost-effective, and associated with minimal side-effects. It is rarely questioned.

Needle exchange programs have experienced a vastly different reception in the United States. Begun in 1986 as an act of civil disobedience by a former IDU, much of the early history of needle exchange programs in the United States was one of fractious encounters with the law. Indeed, by 1993 more than 30 arrests for exchanging syringes in 6 states had occurred (Lane 1993). In only two cases were the defendants convicted of syringe possession or distribution (Burris et al. 1996). The programs engendered opposition from a variety of quarters, including law enforcement, local businesses and residents, religious leaders, and the drug-treatment community. The concerns of the latter appear to focus upon potential competition for scarce program funds and a clash between the abstinence model adhered to by many drug treatment programs and the harm-reduction approach embodied in needle exchange programs. The opposition of African-American community leaders, who saw in needle exchange echoes of the notorious Tuskegee Syphilis Study, was particularly vehement. Heated physical encounters, pickets, and even fire bombings of needle exchange program vans occurred (Lane 1993). Even today, the legal status of many needle exchange programs remains unclear (Burris et al. 1996:1161-1166).

Nonetheless, the programs have continued to increase in number. By 1993 there were 37 needle exchange programs in the United States, and that number had risen to 68 by 1994. That year, programs existed in at least 46 cities in at least 21 states. Fifty-five of these 68 programs reported exchanging a total of almost 8 million syringes that year, more than triple the number exchanged in 1992 (Paone et al. 1995:684-685).

Yet, even as the programs grew in both number and size, the federal government remained vehemently opposed to the programs. In 1991 it removed a ban on federal funding for research on the programs, but retained a ban on federal funding for needle exchange program services (Lane 1993). That ban requires that the programs be demonstrated to reduce HIV transmission and not lead to increases in drug use. There are now six federally funded studies of needle exchange programs that came to precisely those conclusions (National Commission on Acquired Immune Deficiency Syndrome 1991; U.S. General Accounting Office 1993; Lurie 1993; Satcher 1993; National Research Council and Institute of Medicine 1995; Office of Technology Assessment 1995). Among these, the most noteworthy was a review by the federal government's own Centers for Disease Control and Prevention that recommended the lifting of the funding ban as long ago as 1993. That review was suppressed by the government, only seeing the light of day when it was leaked to the *Washington Post* in February 1995 (Schwartz 1995). Although purported public opposition to needle exchange programs is often cited by opponents to justify maintaining the ban, a recent national public opinion poll found that 66% of Americans support the programs (Henry J. Kaiser Family Foundation 1996).

These policies have exacted an enormous toll on the public, both in terms of lives lost and resources that will be expended to treat preventable HIV infections. One recent analysis found that between 4,000 and 10,000 HIV infections could have been prevented in the United States had the programs grown at the rate they did in Australia. These infections will ultimately exact up to half a billion U.S. dollars in treatment costs (Lurie and Drucker 1996). Cost-effectiveness analyses estimate that

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in most cases needle exchange programs can prevent an HIV infection for between U.S.\$4,000 and U.S.\$12,000 (Kahn 1993).

Needle exchange programs in the United States are further restricted by a network of state laws and pharmacy regulations (Gostin et al. 1996). The most stringent of these are the prescription laws, which exist in 10 states and the District of Columbia and require a physician's prescription to purchase or possess a syringe. (The only European country with such a law is Sweden; the French prescription law was revoked in 1987.) In July 1992, the state of Connecticut amended its prescription law so that it only applied to purchases of more than 10 syringes. An evaluation of that legal change demonstrated a 39% decrease in reported rates of syringe sharing (Groscclose et al. 1995). This suggests that it is through the combination of needle exchange programs and pharmacy sales, the approach adopted in Australia, that the greatest impact upon the HIV epidemic among IDUs is likely to be achieved. However, no states have since modified their paraphernalia laws.

Methadone Maintenance Treatment

There is now impressive evidence from behavioral, seroprevalence, and sero-incidence studies that methadone maintenance treatment substantially reduces the spread of HIV among IDUs (Capehorn and Ross 1995:685-698). The expansion of methadone maintenance treatment in Australia began in 1985, before this evidence was available, following endorsement of this treatment modality by senior national political leaders, including the Prime Minister.

The establishment of a needle exchange system across the country should be seen in the context of the implementation, expansion, and improvement of a range of HIV prevention strategies (Wodak 1992:549-562). For example, methadone maintenance is now available in all but one state in Australia. The number of patients receiving methadone maintenance treatment has increased from 2,000 in 1985 (Ward et al. 1992) to almost 15,000 in 1994 (Department of Human Services and Health 1994). From June 1986 to June 1992, the proportion of methadone patients on private programs in Australia increased from 39% to 52% (Department of Human Services and Health 1994). Most private methadone treatment in Australia is provided by general practitioners.

The situation in the United States has been markedly different. Despite strong support from prestigious scientific bodies in the United States such as the American Medical Association and the American Public Health Association, there has been no similar expansion of methadone maintenance treatment. Between 1987 and 1992, there was only a 28% increase in the number of methadone patients, and most of that increase occurred in the private not-for-profit sector (Rettig and Yarmolinsky 1995). It is estimated that only 15% of U.S. IDUs are in treatment on any given day (Wiley and Samuel 1989:71-78).

Even those methadone treatment programs that do exist in the United States fail to adhere to accepted treatment practices. A national random sample of 172 methadone treatment units conducted in 1988 documented significant variations in methadone treatment practices. Twenty-five percent of units set upper limits on methadone dose levels of 20 to 60 milligrams per day (mg/day), many do not notify patients of their dosage levels, and 50% of units encourage detoxification within 6

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months of enrollment
been shown in a number of studies

Education of IDUs

The effectiveness of education programs has been demonstrated in a number of studies. Reduced risk behavior, increased knowledge, and improved attitudes have been observed. Coates 1994:137-94. Education programs are most effective when they are conducted in a safe and sufficient condition, with peers as by the community, and prove or disprove.

In Australia, the first education campaign was initiated by the wife of the Prime Minister. She has been involved in the development of abstinence is the best strategy to reduce the spread of viruses but not a sufficient condition of injection equipment.

In the United States, the campaign has a profound impact on the community, dominated by the government, providing practical advice on how to use or will not abstain. The campaign, initiated by the government, has been successful in reducing the spread of HIV.

Even the new campaign, which is based on the prevailing ideology, is safer than a bleach campaign. It resulted in the Federal Government's efficacy of bleach.

Organizations of IDUs

Organizations of IDUs in Australia (Friedman et al. 1994) have many interact with government officials, an invaluable link between the community with important information strategies. Drug users are provided with a container (Fitpack) for injecting equipment. These programs are decreasing the disease and equivalent organizations and government officials.

Discussion

Can policies and programs in Australia and the United States be compared?

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months of enrollment (D'Aunno and Vaughn 1992:253-258). These practices have been shown in a number of research studies to generally result in poor outcomes.

Education of IDUs

The effectiveness of education of IDUs as an HIV prevention strategy is unclear. Reduced risk behavior of IDUs seemed to follow minimal dissemination of information early in the epidemic. However, clear links among increased knowledge, improved attitudes, and reduced risk behavior have not been demonstrated (Choi and Coates 1994:1371-89). Education seems to be more a necessary rather than a sufficient condition. Behavior change may be influenced as much by informal contact with peers as by direct impact of education campaigns, although this is difficult to prove or disprove.

In Australia, education of IDUs about AIDS has been explicit and credible. The first education campaign to warn IDUs to "never, ever share needles" was launched by the wife of the then Prime Minister in 1987. IDUs and their organizations have been involved in the design and implementation of education campaigns. Promotion of abstinence is considered to have a role in reducing the spread of blood-borne viruses but not at the expense of the more achievable objective of reducing sharing of injection equipment.

In the United States, education programs promoted at the Federal level, which have a profound influence on state and local educational programs, have been dominated by the promotion of abstinence. Campaigns have often refrained from providing practical advice to avoid HIV infection to the majority of IDUs who cannot or will not abstain. This approach was exemplified by the well-known "Just Say No" campaign, initiated by former First Lady Nancy Reagan.

Even the now relatively widely accepted bleach outreach programs reflected the prevailing ideology. Although by definition a new syringe would almost have to be safer than a bleached one, opposition to the provision of sterile syringes to IDUs resulted in the Federal government's favoring of bleach outreach. Ironically, the efficacy of bleach outreach has now been called into question (Curran et al. 1993).

Organizations of IDUs

Organizations of IDUs now exist in a number of countries in Europe and Australia (Friedman et al. 1993:S263-S269). Some receive government funding and many interact with government officials. IDU organizations in Australia form an invaluable link between IDUs and government officials. This provides bureaucrats with important information for development and implementation of prevention strategies. Drug users in NSW were involved, for example, in the design of a special container (Fitpack) used for pharmacy sale and exchange of sterile injecting equipment. These containers were successful in increasing return rates and decreasing the disposal of used injection equipment in public places. A few equivalent organizations exist in the United States but none are recognized by government officials.

Discussion

Can policies and programs to prevent the spread of HIV infection among IDUs in Australia and the United States explain the dramatically different courses of the

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epidemic in the two countries? Although categorical proof is virtually impossible, the circumstantial evidence that the course of the epidemic was altered in Australia by timely intervention is now overwhelming.

What are the competing explanations for the persisting low levels of HIV infection among Australian IDUs? The possibility that an epidemic has occurred but been overlooked despite a decade of high quality surveillance can be dismissed. Surveillance of HIV among IDUs in Australia includes collation of almost all laboratory test results. This is still possible because the testing system requires laboratories to report all results. This surveillance system includes results from a very wide range of sources including anonymous testing centers, needle exchanges, prisons, and methadone clinics. Did HIV fail to spread among IDUs in Australia because infection did not occur in overlapping risk groups? This explanation can also be rejected as there is ample evidence of HIV infection among male IDUs with a history of sexual contact with other males (Feachem 1995). Has there been insufficient time for this epidemic to reach detectable size? A decade is more than enough time for an explosive epidemic to occur, as most strikingly documented in New York City (Des Jarlais and Friedman 1990), Bangkok (Weniger et al. 1991:S71-S85), Manipur (Sarkar et al. 1993), and other cities (Des Jarlais et al. 1995:1226-1231). There is no reason to believe that the HIV strain present in Australia is less infectious by blood-to-blood spread than that in the United States (both countries have predominantly HIV B strain epidemics) or that differing host susceptibilities can explain the epidemiological patterns observed. Is the limited HIV epidemic among IDUs in Australia the result of lack of mixing between at-risk populations? Most Australian IDUs live in large cities in what is one of the most urbanized countries in the world.

The most parsimonious explanation for the different epidemic courses in the two countries is the adoption of harm-reduction policies and the implementation of other prevention programs in Australia. Policies in Australia were implemented early and generally with vigor; these policies included AIDS education, needle exchange programs, and the expansion of methadone treatment.

The case for the effectiveness of Australian policies and programs becomes even stronger when the United States is considered a "control" country. Only 68 needle exchange programs existed in the United States in 1994, despite IDU HIV prevalence as high as 50% for over a decade. The capacity of methadone programs has only been increased slightly over the course of the epidemic. Explicit education for IDUs now exists, but only at the margins and only when provided by a small and enthusiastic band of urban guerrillas. Enthusiasm for prohibition continues unabated, at least in political circles, limiting the availability of sterile injection equipment and ensuring the continuation of shooting galleries that perpetuate the epidemic. Control of HIV among IDUs requires an acceptance of this population as part of the community. Although this has arguably been accomplished to a significant degree in Australia, IDUs in the United States remain unworthy of consideration in mainstream national discourse.

Despite some striking differences, in a recent study demographic characteristics and risk behaviors of IDUs in Sydney and New York were remarkably similar overall (World Health Organization 1994). HIV seroprevalence was 2% among IDUs in Sydney and 48% among IDUs in New York City. The most plausible explanation

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for the sustained low level of all the two countries is the implementation of early intervention programs.

Early intervention programs associated with the 1985-1995 needle exchange program in the world were the average prevalence of HIV that subsequent to the At the end of the epidemic lower in prevalence (21%). The number of IDUs with HIV 0.2% in the United States measurement of HIV is difficult to compare. Indeed, the "new" results show a control over the epidemic declined from 1985 to health intervention was inevitable.

At present, the epidemic (Feachem 1995) in the year 2000, the HIV is considered a major equipment is noted above the of hepatitis B and drug injections readily available.

After a decade among IDUs, it has been identified as a liberal democratic adopting prevention strategies in their IDU population persuade authorities where epidemics.

AIDS is a chronic epidemic. Current control although homeopathic control HIV infection.

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for the substantial difference in spread of HIV among drug injecting populations in the two countries is the profound difference in policy environments and the consequently discrepant implementation of prevention strategies.

Early implementation of harm-reduction policies and programs has been associated with persistently low HIV seroprevalences (Des Jarlais et al. 1995:1226-1231; Stimson 1996:1085-1088). A recent ecological study of needle exchange programs and HIV seroprevalence among IDUs involved 29 cities around the world with serial data on HIV seroprevalence (Hurley et al. 1996:56-60). The average seroprevalence at the start of the period of study was about 3% in both cities that subsequently introduced needle exchange programs and in those that did not. At the end of the periods of study, the average seroprevalence was considerably lower in locations with a needle exchange program than in those without (6% vs. 21%). The average annual increase in seroprevalence, weighted according to the number of subjects sampled, was 3.6% in the needle exchange cities without, and 0.2% in the cities with the programs. Although a standard methodology for measurement of HIV seroprevalence between and within cities was not used, it is difficult to envisage any systematic design flaw capable of producing these results. Indeed, the "noise" introduced by varying sampling techniques would bias the results toward the null. Furthermore, the Edinburgh experience reminds us that control over the epidemic can even be regained. Seroprevalence of Edinburgh IDUs declined from 55% in 1986 to 20% by 1992, suggesting that the range of public health interventions helped to reduce risk behavior in IDUs and averted an otherwise inevitable continuing epidemic (Stimson 1995:699-716).

At present, epidemic spread of HIV among Australian IDUs seems unlikely (Feachem 1995). A target of 7 to 9 million syringes has been set for NSW for the year 2000. Needle exchange is being expanded in Australia not because control of HIV is considered vulnerable, but because increased availability of sterile injecting equipment is considered part of the response required to control hepatitis C. As noted above, there is some evidence that needle exchange may decrease the incidence of hepatitis B and C (Hagan et al. 1995:1531-1537). Hepatitis C incidence among drug injectors may have declined in Australia since sterile syringes have become readily available (Feachem 1995).

After a decade of international and national efforts to control HIV infection among IDUs, we can conclude that sufficiently effective policies and programs have been identified and, in some locations, implemented with success. Many western liberal democracies responded to the HIV epidemic among IDUs by promptly adopting prevention programs well before any evidence of the effectiveness of these strategies existed, in some cases long before HIV was detected at significant levels in their IDU populations. The major remaining gap in our knowledge is how to persuade authorities to adopt effective programs in countries like the United States where epidemics continue.

AIDS is a public health crisis that demands open discussion and swift action. Neither of these can be said to characterize the United States response to the epidemic. Current implementation of needle exchange programs in the United States, although encouraging by the poor standards established early in the epidemic, is homeopathic in comparison with "the dose of intervention" likely to be required to control HIV infection. Federal funding seems unlikely to materialize at this stage for

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reasons unrelated to science or public health. As scientific support for the effectiveness and safety of needle exchange programs becomes more and more impressive, criteria for proof appear to be raised.

Australia provides a national case study demonstrating that early and vigorous implementation of prevention strategies are effective in controlling HIV among IDUs. This is of particular importance in the United States because HIV incidence and prevalence among IDUs is still low in many parts of the country. Given the many significant similarities and the relatively minor differences between Australia and the United States described in the first part of this paper, conclusions based on the Australian experience are likely to be generalizable to the United States.

It is important to consider why these noteworthy differences in implementation of prevention strategies have developed and why they have persisted despite growing scientific support for the type of approach adopted in Australia. The conclusion seems inescapable that these policies are rooted in fundamentally different philosophies. HIV prevention policy for IDUs in the United States is rooted in the War on Drugs, whereas the Australian approach is based on harm reduction. The emphasis on supply reduction in the United States has been a major factor in the obstruction of needle exchange and methadone program expansion. In contrast, explicit adoption of harm reduction in Australia facilitated the early adoption and vigorous implementation of these policies. The prevention of what could have been a large epidemic of HIV among IDUs in Australia appears to have been averted.

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The aims of this study were to among a group of transvestites identify HIV-related risk behaviors. A total of 46 transvestites were assessed regarding drug use percent tested positive for antil only factor statistically relate risk behaviors, including un changes, were reported by a given that they engage in bot primarily heterosexual male c heterosexual spread of HIV. suggest that transvestite sex i infection and that intervention unique.

Introduction

In 1990, the Community Re Abuse (NIDA) established the C Based Outreach/Intervention R research program were to: (1) me seroprevalence and seroincidence the efficacy of controlled experim or reduce HIV risk behaviors; a issues and implement intervention Data collection had begun on the i program had grown to a total of Juan to Rio de Janeiro.

The Rio de Janeiro site was fu and AIDS in Brazil. As illustrated

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