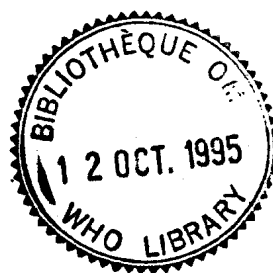

PROGRAMME ON
**SUBSTANCE
ABUSE**

Multi-City Study
on Drug Injecting
and Risk of
HIV Infection

A report prepared on behalf
of the WHO International
Collaborative Group



WORLD HEALTH ORGANIZATION

Abstract

In 1989 the World Health Organization initiated a comparative study of drug injecting behaviour and HIV infection which involved 13 cities (Athens, Bangkok, Berlin, Glasgow, London, Madrid, Naples, New York, Rome, Rio de Janeiro, Santos, Sydney and Toronto). Recruitment of 6390 drug injectors took place between October 1989 and March 1992, with most being recruited from outside of drug treatment settings.

This study was the largest international project of its kind. Apart from the wealth of data collected in each of the participating cities, the study has contributed much to the development of research methods, informing national policies, establishing international collaborative networks and placing drug injecting, HIV and related health and policy issues on the international agenda.

There is now substantial evidence from this and other studies that injecting drug users (IDUs) do change their behaviour in response to information about HIV/AIDS and with access to the means for behaviour change. Examining the context of drug injecting has helped to inform our understanding of factors which influence the spread of HIV infection among this population. The HIV epidemic among IDUs has been contained in communities which responded quickly to the threat. Specifically, prevention efforts in these cities included the widespread legal availability of sterile needles and syringes and the provision of outreach services to drug injectors which disseminated information and which built trust between injecting drug users and health workers. Other strategies found to be associated with low seroprevalence rates among IDUs in some cities included the distribution of bleach and the expansion of drug treatments, such as increasing access to methadone programmes, counselling and in-patient detoxification and rehabilitation services.

As the broader epidemic unfolds, it is evident that HIV transmission among and from IDUs plays a critical role. Transmission occurs through both drug injecting and sexual practices. It is apparent that some current local and international policies and practices are doing little to halt this epidemic and may actually be contributing to it, particularly in the developing world.

The study has raised a wide range of questions which calls for a further programme of research. The existing network of researchers established through this study is well positioned to build on the already gained experience and knowledge and to help in the directing of further research activities and priorities.

© World Health Organization, 1994.

This document is not a formal publication of the World Health Organization (WHO), and all rights are reserved by the Organization. The document may, however, be freely reviewed, abstracted, reproduced or translated, in part or in whole, but not for sale or for use in conjunction with commercial purposes.

The views expressed in documents by named authors are solely the responsibility of those authors.

Authors of this report:

Andrew Ball	WHO
Don C Des Jarlais	New York
Martin C Donoghoe	London
Samual R Friedman	New York
David Goldberg	Glasgow
Gillian M Hunter	London
Gerry V Stimson	London
Alex Wodak	Sydney

Principal Study Investigators:

Francisco I Bastos	Rio de Janeiro
Kachit Choopanya	Bangkok
Don C Des Jarlais	New York
David Goldberg	Glasgow
Dieter Kleiber	Berlin
Meni Malliori	Athens
Fabio C Mesquita	Santos
Peggy Millson	Toronto
Giovanni Rezza	Rome
Gerry V Stimson	London
Alex Wodak	Sydney
Victoria Zunzunegui Pastor	Madrid

Contents

Acknowledgements	1
-------------------------	----------

CHAPTERS

1 Executive Summary	3
2 Introduction: The International Problem of HIV Infection among Injecting Drug Users	7
3 Methodology	27
4 City Case Studies	35
5 HIV and Risk Behaviours	71
6 New Injectors and HIV Risk	109
7 The Structure of Stable Seroprevalence Epidemics among Injecting Drug Users	127
8 Conclusions and Recommendations	137

APPENDICES

1 Publications Eventuating from the Study (by City)	143
2 Contributors and Collaborating Agencies	169
3 Drug Injecting and Risk of HIV Infection Questionnaire	173
4 Environmental Questionnaire	203
5 Data Tables	209

Acknowledgements

The authors of this report would like to express their thanks to researchers, collaborators, interviewees and funders from all the cities participating in the study. We would also like to express thanks to the WHO Programme on Substance Abuse, Global Programme on AIDS, and the United Nations International Drug Control Programme, for financial support. Acknowledgements from each city are listed below.

Athens

We would like to thank all the drug users at the KETHEA therapeutic community, and all the prisoners who participated in the study. We would also like to thank the personnel of the aforementioned institutions, plus those of the Department of Hygiene and Epidemiology of Athens University Medical School, the personnel of the Department of Psychiatry, Eginition Hospital. Finally we want to express thanks to Dr N Angelopoulos, Dr N Tassopoulos, Mrs Litsa Vladhodmitropoulou and Mr John Arvanitis.

Bangkok

We are grateful to the Department of Health, Bangkok Metropolitan Administration, for funding the research. Individuals who worked on the project include Kachit Choopanya, Suphak Vanichseni, Suwanee Raktham and Wandee Sonchai.

Berlin

The research was undertaken under the responsibility of the Sozialpädagogische Institut, Berlin. We would like to express thanks to the German Federal Ministry of Health for funding the project and also all interviewers and drug users for participating in this study.

Glasgow

The main contributors to the study WHO/UNDCP Report (Dr Martin Frischer, Dr David Goldberg, Dr Steve Green and Dr Avril Taylor of the Scottish Centre for Infection and Environmental Health) would like to thank a number of people for their work on the study: the Information Technology Team at SCIEH including Mr Stuart Adams, Mr Mark Getty, Mr Andrew Millar, Mr William Smyth, and Mr John Tolland. Clerical and secretarial support was provided by Mrs Ellen Carragher and Mrs Shona Donald. Other contributors to the Glasgow 1990 dataset include Mr Michael Bloor, Dr Rob Covell, Mr Andrew Finlay, Mrs Eleanor Gallagher, Mrs Sally Haw and Dr Neil McKeganey. We would also like to thank the huge number of interviewers (too many to name) involved in the study, and the Medical Research Council and the World Health Organization for providing very generous financial support.

London

We are grateful for the Medical Research Council for funding this study, and John Parry and his staff at the Public Health Laboratory Service, Colindale, for undertaking all the HIV antibody tests. We would also like to express our thanks to all our fieldworkers, and staff of treatment agencies who allowed us access to their clients. We would also like to thank Hilary Monk and Steve Monk, for their help.

Madrid

We are grateful to Fondo de Investigaciones Sanitarias, Ministerio de Sanidad y Consumo, (Grant 90E 1258), and the Plan Municipal Contra las Drogas, Ayuntamiento de Madrid. We would also like to thank our interviewers who worked on the study: Justo Romero Bellido, Isabel M. Martinez Higuera, Angel Garcia Martin, Carmen Soto, M. Jesus Losada, Milagros Brunette, M. Jesus Moreno.

New York

We are grateful to the National Institute on Drug Abuse for funding the research (Grant DA03574). Staff who worked on the project include Don Des Jarlais, Samuel Friedman, Jo L Sothoran, John Weston and Russell Rockwell.

Rio de Janeiro

We would like to acknowledge NEPAD/UERJ (Nucleo de Estudos e Pesquisas em Atencao ao Uso de Droga da Universidade da Estado do Rio de Janeiro) for funding and support during the study period. We would also like to acknowledge FIOCRUZ (Fundacao Oswaldo Cruz) for the provision of facilities during the final phase of the project.

Rome

We would like to thank the Progetto AIDS, Istituto Superiore di Sanità, Ministero della Sanità and GPA/WHO for funding the project.

Santos

Thanks to Dr Andrew R Moss from the University of California, San Francisco as collaborator on the study. We are grateful to the following agencies and institutions for financial support: Fogarty Foundation, USA; National Program on STD/AIDS (Federal Government of Brasil) Secretaria e Saude de Higiene de Santos; LIM.01 HCFMUSP; FAPESP and the laboratory service of the School of Medicine in Santos.

Sydney

The main contributors, Dr A Wodak, Dr M Ross, Mr Aaron Stowe and Ms Margaret Kellaher wish to thank the respondents who gave their time to provide information and assistance, the interviewers who took care to collect the data carefully, our colleague researchers who provided advice and encouragement and the Commonwealth AIDS Research Grants Committee (CARG) who generously provided funding.

Toronto

We would like to thank Ms Janet Rigby, the study coordinator; Dr Cyrus Dinyari, the research assistant; and Rose Gaudet, Raj Maharaj, Dana Meretsky, Susan Meretsky and Julia Schlossberg, the interviewers, for all their efforts in completing this project. Also thanks to all the community agencies and treatment centres for recruiting IDUs and for their support of the project in general. We acknowledge the National Health Research and Development Programme of Health, Canada, for providing the funding for this project and the city of Toronto Department of Public Health for their support of Drs Millson and Myers and of the project itself.

WHO

The project was initiated by the WHO Global Programme on AIDS (GPA) under the management of Manuel Carballo. The project then moved to the WHO Programme on Substance Abuse (PSA) in 1990 and was managed by Andrew Ball from 1992. Appreciation is given to those at WHO who supported the project including: Hans Emblad (Director of PSA), Mario Argandoña, Luz Bancalé, Paula Callejas, Patrick Kenya and Penny Ward. The design and formatting of this report was undertaken by Mark Forrest. Thanks are extended to the many other individuals in both PSA and GPA who ensured the success of their study.

Executive Summary

In 1989 the World Health Organization initiated a comparative study of drug injecting behaviour and HIV infection which involved 13 cities (Athens, Bangkok, Berlin, Glasgow, London, Madrid, Naples, New York, Rome, Rio de Janeiro, Santos, Sydney and Toronto). Recruitment of 6 390 drug injectors took place between October 1989 and March 1992, with most being recruited from outside of drug treatment settings.

This study was the largest international project of its kind. Apart from the wealth of data collected in each of the participating cities, the study has contributed much to the development of research methods, informing national policies, establishing international collaborative networks and placing drug injecting, HIV and related health and policy issues on the international agenda.

Background

There is now substantial evidence from this and other studies that injecting drug users (IDUs) do change their behaviour in response to information about HIV/AIDS and with access to the means for behaviour change. Nonetheless many policy makers may still believe the stereotype that IDUs do not change their behaviour, and then use this as a rationale for not implementing AIDS prevention programmes.

Examining the context of drug injecting has helped to inform our understanding of factors which influence the spread of HIV infection among this population. In work associated with this study, it has been reported that the HIV epidemic among IDUs has been contained in communities which responded quickly to the threat. Specifically, prevention efforts in these cities included the widespread legal availability of sterile needles and syringes and the provision of outreach services to drug injectors which disseminated information and which built trust between injecting drug users and health workers. Such outreach often incorporates the efforts of informal and formal drug user organizations. Other strategies found to be associated with low seroprevalence rates among IDUs in some cities included the distribution of bleach and the expansion of drug treatments, such as increasing access to methadone programmes, counselling and in-patient detoxification and rehabilitation services. Prevention efforts are much more likely to be effective if they are begun early.

The study was conceived in 1986-7, before there was much awareness of the problem of HIV infection among IDUs in developing countries. Bangkok, Rio de Janeiro and Santos were the only centres that participated from developing countries. Considering the dynamic changes in injecting behaviour and the rapid spread of HIV infection among drug injectors in many developing countries, and the emergence of new routes for drug transit, sites in Africa, Eastern Europe, Latin and South America, the Caribbean and parts of Asia should be included in any future studies. The limited resources and expertise available in some developing countries often precludes the use of quantitative methods

requiring large representative samples. Particular consideration should be given to the development and implementation of simple rapid assessment methods which can inform cost-effective and culturally appropriate interventions.

Particular attention should also be given to the transition from non-injecting to injecting drug use, since the ability to understand the reasons why, and the context in which users move to injecting, should lead to the development of more effectively targeted interventions. Similarly specific research should be undertaken to determine why certain communities experience high prevalence of drug injecting behaviour, whereas other similar and geographically close communities do not.

As the broader epidemic unfolds, it is evident that HIV transmission among and from IDUs plays a critical role. Transmission occurs through both drug injecting and sexual practices. It is apparent that some current local and international policies and practices are doing little to halt this epidemic and may actually be contributing to it, particularly in the developing world. Heightened control measures in certain regions have resulted in the establishment of new areas of drug crop cultivation and new centres for drug processing and new trafficking routes, thereby exposing new populations to injectable drugs and drug injecting practices.

The study has raised a wide range of questions which calls for a further programme of research. The existing network of researchers established through this study is well positioned to build on the already gained experience and knowledge and to help in the directing of further research activities and priorities.

Recommendations

The following recommendations relate to the results of this study and evidence from other associated studies.

Project Management

- Adequate resources should be provided for central coordination and management of data for multi-centre studies.
- There needs to be a continuity of commitment and support from within and between sponsoring international agencies for future activities in this field.
- Existing participating sites should be encouraged to undertake further data collection sweeps to look at trend data.
- New sites should be encouraged to build upon the standardized methodology and instruments when researching drug injecting and HIV infection.

Research Design

- Recognizing the poor level of understanding of the context of drug use, future studies should employ and integrate both qualitative and quantitative methodologies to describe better the contexts within which drug use occurs.
- Given the nature of the unfolding epidemic, there is need for greater involvement of researchers in developing countries and resources for appropriate training.
- Methodologies for research in drug-using and injecting populations require improvement to ensure that they are better able to inform the development and evaluation of interventions.

-
- Future research needs to include a focus on populations who are not in treatment and who have never been in treatment.
 - Future research needs to extend beyond HIV infection to include other blood-borne viral infections and other health consequences associated with drug injecting.
 - Future research developments need to include simple, affordable, repeatable and reliable methods for the monitoring and surveillance of blood-borne viral infections and risk behaviours.

Policies and Interventions

- Policies targeting drug injecting and HIV infection need to be more extensive and more effective. There is a need to raise levels of national and international awareness about drug injecting and associated HIV infection, and to simplify organizational responses because of the rapidly worsening global crisis of drug injecting and HIV infection.
- There is a need to reduce the number of people globally exposed to the risk of blood-borne viral infections. Programmes should be developed in order to decrease the rate at which people initiate and maintain drug injecting behaviour.
- In responding to the problem of drug injecting there needs to be a shift in commitment from law enforcement to strategies which focus on public health and social conditions.
- Campaigns to increase general and targeted AIDS awareness should be implemented in order to create environments which enable behavioural change to occur. Such campaigns should involve the target audience in their design, implementation and evaluation.
- Evidence from this study, in conjunction with other research, shows that HIV epidemics among drug injectors can be prevented. It is important to ensure that drug injectors have adequate and easy access to resources for behaviour change, such as sterile injecting equipment and the provision of outreach services which disseminate information and which build trust between injecting drug users and health workers. Early interventions are critical for prevention.
- There is a need to develop and maintain preventive interventions in areas of high HIV prevalence and HIV risk.
- Programmes to encourage risk reduction by new injectors need to be developed and established.
- Interventions should include a focus on high levels of sexual risk behaviour among IDUs and their partners.
- HIV testing programmes need to be established and extended so that IDUs may avail themselves of regular and repeated testing.
- Specific attention should be afforded to the problem of HIV transmission risk within prisons, among street children and out-of-school youth, and in other high risk settings.
- This report should be widely disseminated and utilized by WHO and UNDCP in encouraging Member States to undertake appropriate local research, implement effective interventions and develop national drug and HIV policies.

Introduction: The International Problem of HIV Infection among Injecting Drug Users

The micro transfusions that occur when two or more people use the same needles and syringes to inject illicit drugs are a relatively efficient means for transmitting infectious diseases. Nothing has illustrated this more tragically than the spread of human immunodeficiency virus (HIV, the cause of AIDS) among illicit drug injectors throughout the world. Figure 1 lists countries in which, at the time of writing, injecting drug use, and HIV infection among injecting drug users (IDUs) have been reported. HIV infection exists among IDUs in over 60 countries, and there are an additional 40 countries where injecting drug use has been reported, which are thus at high risk of developing HIV transmission among their IDUs (Des Jarlais et al. 1992a; Fazey, UNDCP, personal communication, 1994; Stimson, 1993).

Current Epidemiology

Figure 1

World map, showing countries with injecting drug use and with HIV infection among IDUs

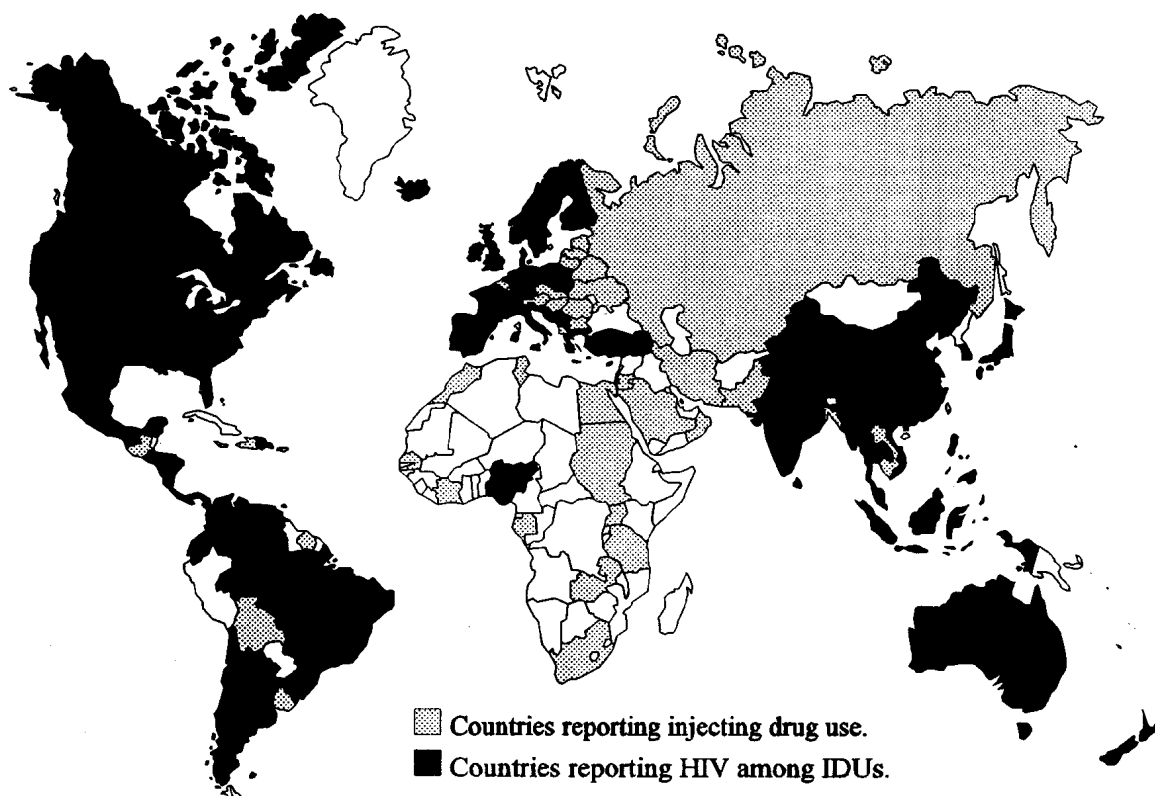


Table 1.

Countries reporting injecting drug use; countries also reporting injecting HIV among IDUs (in bold).

AFRICA	ASIA	EUROPE
Côte d'Ivoire	Azerbaijan	Albania
Egypt	Bahrain	Austria
Gabon	Bangladesh	Belarus
Mauritius	China	Belgium
Morocco	Hong Kong	Bulgaria
Nigeria	India	Croatia
Senegal	Indonesia	Cyprus
South Africa	Iran	Czech Republic
Sudan	Iraq	Denmark
United Republic of Tanzania	Israel	Estonia
Tunisia	Japan	Finland
Uganda	Jordan	France
Zambia	Kazakhstan	Germany
	Kuwait	Greece
AMERICAS	Kyrgyzstan	Hungary
Argentina	Lao People's Democratic Republic	Iceland
Bahamas	Macao	Ireland
Bermuda	Malaysia	Italy
Bolivia	Myanmar	Latvia
Brazil	Nepal	Lithuania
Canada	Oman	Luxembourg
Chile	Pakistan	Malta
Colombia	Philippines	Monaco
Costa Rica	Republic of Korea	Netherlands
Dominican Republic	Saudi Arabia	Norway
Ecuador	Singapore	Poland
El Salvador	Sri Lanka	Portugal
Guatemala	Syrian Arab Republic	Romania
Haiti	Taiwan	Russian Federation
Honduras	Thailand	San Marino
Jamaica	Turkmenistan	Slovak Republic
Mexico	Viet Nam	Slovenia
Nicaragua		Spain
Panama	OCEANIA	Sweden
Puerto Rico	Australia	Switzerland
Suriname	Fiji	Turkey
Uruguay	Guam	Ukraine
United States of America	New Caledonia	United Kingdom
Venezuela	New Zealand	Yugoslavia

The spread of injecting drug use and of HIV among IDUs throughout the world raises fundamental questions about the role of psychoactive drug use in both developed and developing societies, and also about the extent to which drug injection and other risk behaviours can be modified to prevent HIV infection. The need to implement programmes to prevent HIV infection among IDUs also raises fundamental questions about how to modify the behaviour of public health and political leaders (Des Jarlais and Friedman, 1993).

Once HIV has become established in a local population of IDUs, the drug injectors then become a source for both heterosexual and perinatal transmission of HIV. Indeed, in most developed countries, IDUs are the most common source for both heterosexual and perinatal transmission of HIV (Centers for Disease Control and Prevention, 1993; WHO-EC Collaborating Centre on AIDS, 1993.) Changing the sexual behaviour of IDUs to prevent sexual transmission has been one of the more difficult challenges for HIV/AIDS prevention. (For a review of the heterosexual transmission of HIV from injecting drug users, see Friedman et al., 1993).

Another important aspect of HIV infection among injecting drug users is that the outcomes of HIV infection among IDUs and their sexual partners extend beyond the opportunistic infections and Kaposi's sarcoma that have traditionally been used as defining conditions for a diagnosis of full AIDS. The original US Centers for Disease Control surveillance definition of AIDS was developed primarily from studies of homo/bisexual men, and thus did not incorporate the physical manifestations of HIV infection that are particularly important in injecting drug users (Des Jarlais et al., 1992b; Stoneburner et al., 1988).

Table 2 lists diseases which may occur more frequently and/or with greater severity among injecting drug users who are infected with HIV. The United States CDC surveillance definition was revised in 1987 and 1993 to incorporate these additional conditions. The 1993 revision also includes a CD4 cell count of <200 cells/microliter as full AIDS, even in the absence of any clinical symptoms (Des Jarlais et al., 1992b). This revision is a move towards using severe HIV-related immunosuppression as the conceptual basis for diagnosing AIDS. It has not, however, been accepted in other countries, and may not be practical in areas where HIV antibody test kits or expensive machines for determining CD4 cell counts are not available. As a consequence, in many developing countries the prevalence of AIDS is markedly underestimated.

Table 2.
Increased HIV-related "Non-AIDS" infections among injecting drug users

	Incidence	Severity	Reference
Bacterial Pneumonia	Yes	Yes	Selwyn ¹ et al. 1988
Tuberculosis	Yes	Yes	Stoneburner ² et al. 1988
Endocarditis	Yes	Yes	Stoneburner ² et al. 1988
Vaginal Candidiasis	?	?	
Cervical Cancer	?	yes-?	Vermund ³ et al. 1991
Pelvic Inflammatory Disease	?	Yes-?	Minkoff & DeHovitz ⁴ 1991

¹ Selwyn PA, Feingold AR, Hartel D, et al.: Increased risk of bacterial pneumonia in HIV-infected intravenous drug users without AIDS. *AIDS* 1988, 2:267-272.

² Stoneburner RL, Des Jarlais DC, Benezra D, et al.: A larger spectrum of severe HIV-l-related disease in intravenous drug users in New York City. *Science* 1988, 242:916-919.

³ Vermund SH, Kelley KF, Klein RS, et al.: High risk of human papillomavirus infection and cervical squamous intraepithelial lesions among women with symptomatic human immunodeficiency virus infection. *Am J Obstet Gynecol* 1991, 165:392-400.

⁴ Minkoff HL, DeHovitz JA: Care of women infected with the human immunodeficiency virus. *JAMA* 1991, 266:2253-2258.

Regardless of the specific surveillance definition used to diagnose AIDS, it is critical to note that HIV infection often leads to a very wide variety of clinical manifestations among injecting drug users. Some of these symptoms, such as increased tuberculosis, can then become considerable public health problems in themselves (Curtis et al., in press; Des Jarlais, Friedman & Ward, 1994; Friedman et al., 1993; Stoneburner et al., 1988).

The international spread of injecting

Why injection drug use has spread to so many industrialized and developing countries is a subject which urgently requires additional research. Three comments may provide a useful perspective. First, many other aspects of "United States/Western culture", from t-shirts and blue jeans to fast food, have been adopted in many different countries. Simply because heroin, cocaine and amphetamine injection are illegal does not mean that they cannot be easily transported from one culture to another. Second, many developing countries are producers of illicit drugs or transit countries for their distribution en route to developed countries. Third, the illegal nature of heroin and cocaine use in itself probably contributes to injection as a preferred route of administration (Des Jarlais, Courtwright & Joseph, 1991; Stimson, 1993). The severe legal restrictions on these drugs greatly increases their cost to the non-medical user. Injection of the drugs provides both an intense drug effect and maximizes the amount of the drug that actually enters the brain. Persons who use drugs intranasally (sniffing) and/or through smoking typically report that they need to purchase only one-third as much of the drug to maintain a "habit" if they inject, rather than using other routes of administration. The injectable forms of

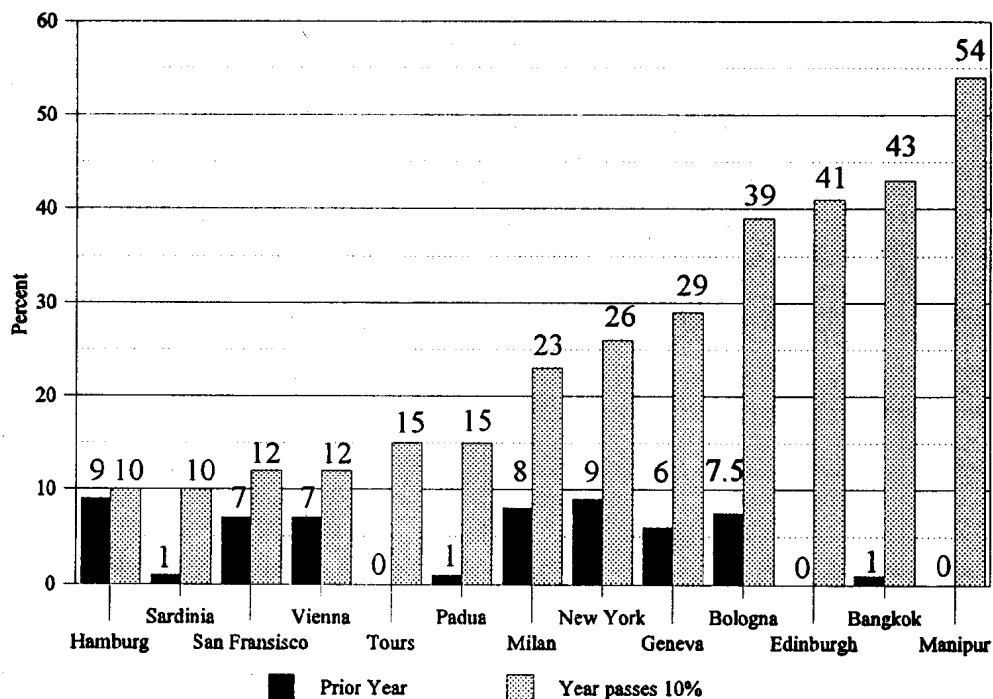
opiates and coca products also are much more concentrated than “traditional” forms such as opium or coca tea. The reduced volume of the injectable forms greatly facilitates illicit distribution (Des Jarlais et al., 1992a; Des Jarlais & Friedman, 1993).

The introduction of HIV into injecting populations

There appear to be two common methods of introducing HIV into local populations of injecting drug users. Firstly HIV may be introduced through “bridge groups” such as men-who-have-sex-with-men and who also inject drugs. This appears to have happened in many different cities, from New York to Rio de Janeiro to Sydney (Des Jarlais et al., 1989; Lima et al., in press; Ross et al., 1992). Second, contrary to the stereotype that IDUs rarely leave their home areas, travel by IDUs is actually fairly frequent. Some of the travel is along drug distribution routes, and may be associated with the transport of drugs.

HIV has spread outward from the Golden Triangle area of southeast Asia (the area where Laos, Myanmar and Thailand meet); westward into northeast India, southward into Malaysia and Vietnam, and eastward across southern China towards Hong Kong (Wodak, Fisher & Crafts 1993; Vichai Poshychinda 1993; Stimson 1994, submitted). In addition to travel associated with the distribution system of the drug trade, there is also “drug tourism”, whereby drug users travel to different cities in order to obtain drugs more easily or to purchase drugs at lower cost. It is also important to note that persons who inject illicit drugs do many things other than injecting, and may travel for a wide variety of reasons - to search for work, to visit family and friends, even for vacations or business trips

Figure 2
Seroprevalence among drug injectors in the year before
and the year in which it reached 10%.



Data for Edinburgh compare first half-years Of 1983 and 1984, for Bangkok, the second half-years of 1987 and 1988; and for Manipur, January through September 1989 and October 1989 through June 1990. Source: Friedman, S.R. & Des Jarlais, D.C. (1991) HIV among Drug Injectors: The Epidemic and the response, *AIDS Care*. 3 (3) 239-250.

Once HIV has been introduced into a local community of IDUs, there is the possibility of extremely rapid spread. Rapid increases in HIV seroprevalence (the number or percentage of IDUs who have been infected with HIV) have been observed on cities in both developed and developing countries. (See Figure 2, taken from Friedman and Des Jarlais, 1991, with bars representing seroprevalence before and after 10% in different cities.) In some areas, such as Bangkok in Thailand, Edinburgh in Scotland, and the state of Manipur, India, HIV seroprevalence has gone from introduction of the virus, to 40% or more HIV positive within a period of two years or less (Weniger et al., 1991; Sarkar et al., 1993; Robertson 1990). Since this figure was prepared, additional data indicate that equal or more rapid spread has occurred in Yunnan, China (Zheng et al., 1993) and in many sites in Myanmar (Department of Health, Union of Myanmar, 1993).

The role of “shooting galleries”, “dealers’ works” and “professional injectors”

Rapid spread of HIV within a local population of IDUs has frequently been associated with high risk injection behaviour: use of “shooting galleries”, “dealers’ works” and “professionals injectors”. Shooting galleries are locations where drug injectors rent needles and syringes, inject with them, and then return them to the operator of the gallery for rental to the next injector. Payment to the person operating the gallery may be in cash, or in drugs if the operator also injects. Dealer’s works refers to the needles and syringes that a drug seller will often provide to his or her customers. Both the needles and syringes in shooting galleries and the dealer’s works may be used by dozens of drug injectors - until the needle becomes too bent or dull for more injections, or the needle or syringe become clogged with dried blood. “Professional injectors” are paid by IDUs to administer injections, often to many people during the day, using one set of injecting equipment.

Shooting galleries, dealers’ works and professional injectors provide the opportunity for rapid and efficient mixing within an IDU population. Viral transmission is facilitated by the fact that the large numbers of persons using the same needles and syringes do not need to have any close social relationships with each other - which means that HIV can spread across groups who otherwise would be isolated from each other (Des Jarlais, Friedman & Ward, 1993; 1994).

In the pre-AIDS era, shooting galleries and dealers’ works filled several positive functions within IDU subcultures. They provided a source of needles and syringes, which were often scarce because of restrictions on the sale or possession of drug injection equipment. Using shooting galleries or dealer’s works also meant that the IDUs did not have to carry around or store their own injection equipment. IDUs in many different countries are reluctant to carry needles and syringes because police would accurately take this to be a signal that the person carrying the injection equipment was likely to be engaged in illegal activities.

When AIDS was first noted among injecting drug users, there was tremendous scepticism about the ability of persons who continued to inject to change their behaviour. This was based primarily on a stereotype that IDUs were not at all concerned about their health. Fortunately this stereotype does not apply to the great majority of IDUs throughout the world. A wide variety of AIDS prevention programmes for IDUs have now been implemented in many different countries (Des Jarlais & Friedman, 1992). Table 3 (see page 20) lists a sample of the research studies assessing these prevention programmes.

Prevention of HIV among IDUs

Effectiveness of prevention programmes

It is extremely difficult to compare the effectiveness of the different AIDS prevention programmes for IDUs. First, in cities such as New York, IDUs changed their HIV risk behaviour prior to any kind of formal prevention programme, but rather from knowledge obtained through the mass media and the oral communication networks of the IDU subculture (Friedman et al., 1987). One cannot, therefore, make the assumption that AIDS risk behaviour will remain stable in the absence of formal prevention programmes. Moreover, the actual prevention programmes to date have usually included multiple components, without any realistic way of separating these components. The research designs for assessing prevention programmes have varied, from retrospective case histories to random assignment experiments. The outcome variables have typically been changes in self-reported risk behaviour - often measured in different units - and only rarely has actual HIV transmission been used as an outcome measure. Despite these formidable methodological problems, a set of generalizations can be tentatively drawn with respect to developing effective AIDS prevention programmes for IDUs.

Prevention programmes should be based on these generalizations:

- IDUs are quite capable of rapidly learning the basic facts regarding HIV transmission and how to reduce the possibility of transmission.
- Programmes should provide the means for behaviour change as well as information about HIV/AIDS - for example, drug misuse treatment for persons wishing to reduce their use of addictive drugs, access to sterile injection equipment for those likely to continue injecting drugs, and condom distribution to reduce sexual transmission of HIV.
- Programmes are more likely to be effective if they include outreach to IDUs in the community and/or participation by drug users' own organizations (such as exist in many European countries, Australia, Brazil, Canada and the United States).
- Programmes should offer IDUs choices as to how they will make a next step to reduce the chances of HIV transmission, rather than assuming all IDUs need to adopt a single method of behaviour change.
- Programmes are likely to be more broadly effective (i.e. across more than one city) if they receive high level political endorsement (as was the case in Australia, Canada and the United Kingdom).

- While almost all programmes appear to have led to some risk reduction, no single programme and no combination of programmes have produced risk elimination in any population of IDUs.

Making prevention programmes effective

Given the real but less than complete risk reduction among IDUs in response to AIDS prevention activities, determining how effective prevention can be becomes an important question. There is now evidence that if prevention activities are begun early enough - before 5% of the IDUs in the local area are infected - rapid transmission of HIV can be averted. Data from Glasgow (Scotland), Lund (Sweden), Tacoma, WA (USA), Toronto (Canada) and Sydney (Australia) all show that HIV was indeed introduced into the population of IDUs in these cities, but that seroprevalence has remained low and stable, for at least four years in each city (Des Jarlais et al., submitted). (The data from Glasgow, Toronto and Sydney were collected as part of this WHO study.) Seroprevalence has remained at less than two per cent in Glasgow and Lund, and at less than five per cent among heterosexual IDUs in Tacoma, Toronto and Sydney.

While stable low seroprevalence does not mean a total absence of new HIV infections, it does show that no "epidemic" of HIV has occurred among IDUs in these cities, and that heterosexual and perinatal transmission of HIV is also minimal.

In each of these cities, AIDS prevention activities were initiated when HIV seroprevalence was low and included community outreach to build trust between healthcare workers and IDUs. Each of these cities also provided good access to sterile injection equipment for IDUs, through syringe-exchanges, over-the-counter sales, or both.

Residual risk behaviour

There is still a substantial residual amount of HIV risk behaviour among IDUs in these five cities, with approximately half of the IDUs interviewed reporting that they at least occasionally inject with needles and syringes that had been used by others. Most of the continuing unsafe injection, however, appears to be contained within small friendship groups, rather than occurring in the efficient mixing situations such as shooting galleries or dealer's works.

The residual levels of risk behaviour may lead to some new HIV infections among IDUs in these five cities. The data from these cities do demonstrate, however, that rapid transmission of HIV is not inevitable, and that preventing epidemics of HIV transmission among IDUs should be considered a realistic public health goal.

Reversing the epidemic

Reversing a well-established epidemic of HIV among IDUs (where HIV seroprevalence has reached moderate to high levels) appears to be a much more difficult task than preventing an epidemic. However, research has shown that IDUs in high seroprevalence areas will change their behaviour to reduce the risk of HIV transmission. Studies in San Francisco (Watters et al., 1994), Bangkok (Choopanya et al., 1991), Milan (Nicolosi et al., 1990) and New York (Des Jarlais et al., 1994) have all shown large scale risk reduction by IDUs followed by reduced rates of new HIV infections

(seroincidence) and stabilization of HIV seroprevalence among the local population of IDUs. (The Bangkok and New York data were collected as part of the WHO study.) In Edinburgh, prevalence decreased from about 50% in 1986 to 20% by 1993. (Bath et al., 1993)

Stabilization of HIV seroprevalence in these cities has occurred with a rough balance between new infection and the loss to the population of HIV infected drug users through death or discontinuation of drug injection. Cities with a high HIV seroprevalence tend to have relatively high death rates among the infected IDUs - for example, the death rate in New York is approximately four per cent per year (Des Jarlais et al., 1994). The estimated rates of new infections among IDUs in these high seroprevalence cities range from four to 10 new infections per 100 person-years at risk (among HIV-seronegative IDUs).

The situation in Amsterdam may best illustrate the difficulties in attempting to undo a well-established HIV epidemic among IDUs. HIV seroprevalence among IDUs in Amsterdam had already reached approximately 30% by the mid-1980s when the HIV antibody test became available and the first seroprevalence studies were conducted. Public health officials quickly mounted a large scale multi-component AIDS prevention programme for IDUs. This included enlisting the local drug users' group, a large scale syringe-exchange programme (where used needles and syringes are exchanged for new ones at no cost), over-the-counter sales of needles and syringes, and readily available drug abuse treatment for all IDUs wishing to enter treatment. (The major criticism of the Amsterdam AIDS prevention programme has been that many of the methadone maintenance programmes in the city provided methadone at dosages well below the optimally effective dosage.)

The epidemic in Amsterdam - a case study

The AIDS prevention programmes in Amsterdam have led to very large-scale reductions in the frequency of unsafe injections and to important but lesser reductions in unsafe sexual activities among IDUs. The rate of new HIV infections among IDUs in Amsterdam has declined from a peak of approximately eight per 100 person-years at risk during the early - mid 1980s to a current rate of approximately four per 100 person-years at risk (van Haastrecht et al., 1991). This reduction in the rate of new infections is impressive, but the current rate is still much higher than desirable.

When the background HIV seroprevalence among IDUs is high, even low levels of drug-injection risk behaviour are likely to lead to new infections. Additionally, although sexual intercourse is much less efficient at transmitting HIV than unsafe drug injections, the high percentage of HIV-infected IDUs greatly increases the likelihood of sexual transmission among IDUs and from IDUs to persons who do not inject drugs. In all developed country cities where HIV has become well-established among IDUs, the IDUs are the predominant source for both heterosexual and perinatal transmission of HIV.

Reversing well-established HIV epidemics among IDUs may require more than asking IDUs to practise safer injection and safer sex. It also requires attempts to reduce the numbers of people who inject illicit drugs. The latter could be facilitated by providing drug abuse treatment to those who already inject drugs, and by implementing programmes to reduce the numbers of persons who begin to inject illicit drugs. Recent studies in Edinburgh have shown that a large percentage of those previously injecting drugs are

now in-treatment and not injecting, and others not in-treatment are maintaining themselves on orally administered narcotics rather than by injecting (Haw and Taylor, 1933). The Edinburgh Community Drug Prevention Service collaborates to provide treatment, mostly based on methadone maintenance programmes, in the offices of local general practitioners.

Reducing the numbers of persons who begin to inject illicit drugs could not only provide for reduced HIV transmission but could also achieve other public health and social goals. Relatively little research has been conducted on methods for reducing initiation into drug use. Indeed, this may be the least studied aspect of preventing HIV infection among IDUs. One thing clear from the limited evidence to date is that knowledge of, and a concern about, AIDS is not a sufficient condition to prevent persons from starting (or returning to) illicit drug injection. In one New York study (Des Jarlais et al., 1992c), persons who were using heroin and cocaine intranasally were provided with extensive AIDS education, including HIV counselling and testing. Nonetheless, during a mean nine-month follow-up period, one-quarter of the group injected illicit drugs. Having a close personal relationship with an injecting drug user was strongly associated with the subject's injecting during this period.

Transmission of HIV among IDUs has already become a public health catastrophe in many different countries where even the most optimistic current predictions suggest increased illicit drug injection and transmission of HIV among IDUs.

There are three types of obstacles to preventing further transmission of HIV among IDUs. In some countries, a simple lack of economic resources is the major obstacle. It clearly will be very difficult to provide sterile injection equipment to IDUs in societies where it is not yet possible to provide sterile injection equipment for injections in healthcare settings. Household bleach has been tried as a method for disinfecting injecting equipment used by groups of IDUs. While bleach is a relatively strong disinfectant for open surfaces, the most recent studies of the use of bleach to prevent HIV transmission among IDUs have failed to show any protective effect of bleach (Curran, Scheckel & Millstein, 1993). Some of the difficulties probably lie in the need for a relatively long contact time (30 seconds or longer) using full strength bleach in the needle and syringe (NIDA, 1993).

Policy Conclusions

There are also areas in which greater knowledge of drug injection and sexual behaviour is needed for the prevention of HIV transmission. Present behaviour change technologies appear adequate for controlling HIV transmission, but a new generation of risk-reduction programmes may be needed to reverse the situation in high seroprevalence areas. Such programmes may need to include greatly increased availability of sterile injection equipment among IDUs, as well as ready availability of drug abuse treatment and interventions to reduce the number of persons starting to inject psychoactive drugs. Encouraging non-injecting forms of drug use has been suggested as a possible means for preventing the spread of HIV infection among IDUs.

The biggest obstacle to reducing the spread of HIV infection among IDUs throughout the world is, however, neither a lack of resources nor a lack of knowledge, but a lack of political will to utilize already existing knowledge. Many programmes for preventing

HIV infection among IDUs have reasonable evidence for their effectiveness, but remain highly politically controversial in both industrialized and developing nations. Syringe exchange, over-the-counter sale of injection equipment and methadone maintenance are among the most controversial programmes for reducing HIV transmission among IDUs.

The specific policy problems in implementing prevention programmes vary from country to country. Some national governments have yet to acknowledge that they have injecting drug use. Others acknowledge injecting drug use but do not recognize the potential for HIV transmission among their IDUs. Still others will only implement abstinence-oriented programmes. All evidence to date suggests an urgent need for a variety of programmes to prevent the further spread of HIV among injecting drug users.

This report should provide a basis for policy makers all over the world to implement effective programmes to slow the spread of HIV infection, both by reducing drug injecting and helping current injectors reduce their risk behaviour. The data presented in this report indicate that there has already been some behaviour change among IDUs. To be effective, programmes not only have to be adequately financially resourced, but also sensitive to the cultural norms and values of the populations of different countries, and those of drug users within these societies. It is essential that governments are sympathetic to, and support, what initially appear to be controversial policies towards drug use.

References

- Choopanya, K., et al. (1991). Risk Factors and HIV Seropositivity among Injecting Drug Users in Bangkok. *AIDS*, 5 (12), 1509-1513.
- Centers for Disease Control and Prevention. (1993). *HIV/AIDS Surveillance*, Atlanta GA: Centers for Disease Control, September 30, 1993.
- Curran, J.W., Scheckel, L.W., & Millstein, R.A. (1993). *HIV/AIDS Prevention Bulletin* [letter]. Atlanta, GA: U.S. Dept. of Health and Human Services: CDC, Center for Substance Abuse Services, National Institute on Drug Abuse, April 19.
- Curtis, R., et al. (1994, in press). TB Among Injecting Drug Users: Effects of Current Strategies and Implications for Directly Observed Therapy. *Public Health Reports*.
- Department of Health, Union of Myanmar. (1993) AIDS Prevention and Control Programme, Sentinel Surveillance Data, March.
- Des Jarlais, D.C., et al. (1989). HIV-1 Infection among Intravenous Drug Users in Manhattan. *Journal of the American Medical Association*, 261 (7), 1008-1012.
- Des Jarlais, D.C., Abdul-Quader, A., & Tross, S. (1991). The Next Problem: Maintenance of AIDS Risk Reduction among Intravenous Drug Users. *International Journal of the Addictions*, 26 (12), 1279-1292.

- Des Jarlais, D.C., Courtwright, D.T., & Joseph, H. (1991). The Transition from Opium Smoking to Heroin Injection in the United States. *AIDS & Public Policy Journal*, 6 (2), 88-90.
- Des Jarlais, D.C., & Friedman, S.R. (1992). AIDS Prevention Programs for Injecting Drug Users. In G.P. Wormser (Ed.), *AIDS and Other Manifestations of HIV Infection*. Second Edition. (pp. 645-658). New York: Raven Press, Ltd.
- Des Jarlais, et al. (1992^a). International Epidemiology of HIV and AIDS among Injecting Drug Users. *AIDS*, 6 (10), 1053-1068.
- Des Jarlais, D.C., et al. (1992^b). Implications of the Revised Surveillance Definition: AIDS among New York City Drug Users. *American Journal of Public Health*, 82 (11), 1531-1533.
- Des Jarlais, D.C., et al. (1992^c). AIDS and the Transition to Illicit Drug Injection: Results of a Randomized Trial Prevention Program. *British Journal of Addiction*, 87 (3), 493-498.
- Des Jarlais, D.C., & Friedman, S.R. (1993). Critical Issues Regarding AIDS among Injecting Drug Users. *Bulletin on Narcotics*, 45 (1), 61-75.
- Des Jarlais, D.C., Friedman, S.R., & Ward, T.P. (1993). Harm Reduction: A Public Health Response to the AIDS Epidemic among Injecting Drug Users. *Annual Review of Public Health*, 14, 413-450.
- Des Jarlais, D.C., Friedman, S.R. & Ward, T.P. (1994). HIV and Injecting Drug Users: Special Considerations. In: Broder, S., Merigan Jr., T.C. & Bolognesi, D. (eds.), *Textbook of AIDS Medicine* (pp. 183-191). Baltimore: Williams & Wilkins.
- Des Jarlais, et al. (1994). Continuity and Change Within an HIV Epidemic: Injecting Drug Users in New York City, 1984 Through 1992. *Journal of the American Medical Association*, 271 (2), 121-127.
- Des Jarlais, D.C., et al. (submitted, 1994). Characteristics of 'Prevented' HIV Epidemics among Injecting Drug Users. *The Lancet*.
- Frieden, T.R., et al. (1993). The Emergence of Drug-Resistant Tuberculosis in New York City. *New England Journal of Medicine*, 328, 521-526.
- Friedman, S.R., Des Jarlais, D.C., Sotheran, J.L., Garber, J., Cohen, H., & Smith, D. (1987). AIDS and Self-Organization among Intravenous Drug Users. *International Journal of the Addictions*, 22, 201-219.
- Friedman, S.R., & Des Jarlais, D.C. (1991). HIV among Drug Injectors: The Epidemic and the Response. *AIDS Care*, 3 (3), 239-250.
- Friedman, S.R., et al. (1993). Drug Injectors and Heterosexual AIDS. In: L. Sherr (ed.), *AIDS and the Heterosexual Population* (pp. 41-65). Chur, Switzerland: Harwood Academic Publishers.

- Haw, S., & Taylor, A. (1993). Can Prescribing Policy Influence Patterns of Drug-Taking and Methods of Drug Administration? *AIDS*, 7, 598-600.
- Lima, E.S., et al. (1994, in press). Risk Factors for HIV-1 Seroprevalence among Drug Injectors in the Cocaine-Using Environment of Rio de Janeiro. *Addiction*.
- National Institute on Drug Abuse (NIDA) (1993) *Community Alert Bulletin*. NIDA US Department of Health and Human Services. March 25.
- Nicolosi, A., et al. (1990). Incidence and Risk Factors of HIV Infection: A Prospective Study of Seronegative Drug Users from Milan and Northern Italy, 1987-1989. *Epidemiology*, 1, 453-459.
- Ross, M.W., et al. (1992). Differences Across Sexual Orientation on HIV Risk Behaviours in Injecting Drug Users. *AIDS Care*, 4, 139-48.
- Simpson, D.D., Savage, L.J. & Sells, S.B. (Eds.) (1978). *Data Book on Drug Treatment Outcomes: Follow-up Study of 1969-1972 Admissions to the Drug Abuse Reporting Program (DARP) (Report 78-10)*. Fort Worth, TX: Institute of Behavior Research, Texas Christian University.
- Stimson, G. V. (1993) The Global Diffusion of Injecting Drug Use: Implications for HIV Infection. *Bulletin on Narcotics*, 45, 3-17.
- Stimson, G. V. (1994) Reconstruction of sub-regional diffusion of HIV infection among injecting drug users in South-East Asia: implications for early intervention. Letter to AIDS (in press)
- Stoneburner, et al. (1988). A Larger Spectrum of Severe HIV-1-Related Disease in Intravenous Drug Users in New York City. *Science*, 242, 916-919.
- van Haastrecht, H.J.A., et al. (1991). The Course of the HIV Epidemic among Intravenous Drug Users in Amsterdam, the Netherlands. *American Journal of Public Health*, 81:59-62.
- Vichai Poshyachinda (1993) Drug injecting and HIV infection among the population of drug abusers in Asia. *Bulletin on Narcotics*, XLV,1,77-90.
- Watters, J.K., et al. (1994). Syringe and Needle Exchange As HIV/AIDS Prevention For Injection Drug Users. *Journal of the American Medical Association*, 271, 115-120.
- WHO-EC Collaborating Centre on AIDS. (1993). *AIDS Surveillance in Europe: Quarterly Report No. 40*. Saint-Maurice, France: WHO-EC Collaborating Centre, September 30.
- Wodak A, Fisher R & Crofts N. (1993) An evolving public health crisis: HIV infection among injecting drugs users in developing countries. In N Heather, A Wodak, E Nadelmann & P O'Hare (eds) *Psychoactive drugs & harm reduction: from faith to science*. London: Whurr Publishers, 280-294.
- Zheng X, et al. (1993) Rapid Spread of HIV among drug users and their wives in Southwest China. *IX International Conference on AIDS*, Berlin 1993, abstract no. P0 CO8 2766

Table 3. Results from studies of various types of AIDS prevention programmes For IDUs

Author	Sample	Mechanism of Change	Results
Klee ¹ et al. AIDS Care 1991	North-West of England: 169 IDUs (46 female, 123 male) re-contacted for structured questionnaire 6 to 9 months after previous interview as part of larger (n = 303) sample.	Unspecified, although overall AIDS awareness was high, and many subjects had already sought HIV testing on their own initiative.	<u>Changes from intake to follow-up:</u> 32/169 (19%) had stopped all drug use; 29/137 (21%) had switched from injecting to other modes of drug-taking; 46 subjects were borrowing used equipment less frequently, or not at all; 50 subjects were passing on used equipment less frequently, or not at all.
Neaigus ² et al. AIDS Education & Prevention 1990	New York City: 121 street- recruited IDUs (65% male, 35% female) re-interviewed at a mean of 4.5 months after intake. 58% Black, 31% Latino, 11% White.	Outreach intervention including AIDS information, condom distribution, and referral to HIV testing.	<u>Changes from intake to follow-up:</u> 44% (vs. 22% at intake) had not injected within the previous 30 days; Of 68 subjects still injecting at follow-up, percent of injections at shooting galleries declined from 13% to 7%
Martin ³ et al. AIDS Care 1990	Verona, Italy: Out of 189 subjects at intake, 73 IDUs (21 HIV+, 52 HIV-) interviewed 6 months after HIV testing and counseling, and AIDS education session.	Audiovisual presentation, 25 minutes in length, in which subjects were "not exhorted to change behaviour but rather encouraged to carefully eval- uate risks."	<u>Changes from intake to follow-up:</u> Needle sharing declined from 66/189 (35%) to 9/73 (12.3%). At-risk sex during previous six months declined from 38.6% to 32.9%. Average number of at-risk encounters declined from 23.7 to 18.9—for HIV+, from 25.2 to 16.3; Average % of times using condoms during at-risk encounters increased from 48.7% to 70.2%.
Hart ⁴ et al. AIDS 1989	London, UK: 133 clients of the syringe-exchange scheme of Middlesex Hospital interviewed one month after entry, with 76 contacted for 3-month follow-up.	Syringe exchange with AIDS education.	<u>Changes from intake to follow-up:</u> Frequency of injections per month declined from a median of 56 to a median of 48.5; Percent sharing equipment declined from 32/133 (15%) to 17/76 (11%).

Table 3 (cont.). Results from studies of various types of AIDS prevention programmes for IDUs

Author	Sample	Mechanism of Change	Results
Kall & Olin ⁵ AIDS 1990	Stockholm, Sweden: Two groups of IDUs detained at the Remand Prison were interviewed and given HIV serum tests: 156 subjects from May-Sept. 1987; 268 subjects from July-Dec. 1988. A majority used amphetamine as their main drug.	No specific intervention, but overall AIDS awareness was high, as indicated by the fact that 80% of subjects during 1987 interview period had already been tested for HIV.	Differences between 1987 and 1988 samples: 1987: 15% never shared needles; 1988: 27% never shared needles. 1987: 16% of HIV - subset never shared; 1988: 26% of HIV - subset never shared. In a subset of 39 subjects who participated in both years, 21 (54%) shared less often.
Watters ⁶ et al. (San Fran '90: F.C.106)	San Francisco, CA: 2,114 IDUs interviewed and HIV tested in six cross-sections from 1986 to 1989. Convenience samples drawn from 3 detox clinics and 3 street locales.	An aggressive prevention campaign directed at IDUs from mid-1986 and thereafter, including street outreach and bleach distribution.	Changes from 1986 to 1989: 1986: 8.8% reported no needle sharing; 1989: 34.5% reported no needle sharing. 1986: 13% reported safe needle-hygiene; 1989: 73.3% reported safe needle-hygiene. Among subset of needle-sharers, 3% reported bleach use in '86, 85.8% in 1989.
Stephens ⁷ et al. AJPH 1991	Cleveland, OH: 322 IDUs were interviewed about risk behaviours prior to, and again 3 to 5 months after, an educational intervention.	Educational intervention presented in one-on-one format by professional health educator, typically lasting 45 minutes to an hour—including bleach demonstration and other risk reduction.	Changes from intake to follow-up: % sharing works declined from 67.4 to 24.3; % injecting drugs declined from 92.2 to 70.5; Among the subset still injecting, % using bleach increased from 33.5 to 62.2.
Nicolosi ⁸ et al. Br J Addict 1991	Northern Italy: Out of 933 IDUs—64% enrolled from detox clinics, 36% from other clinics—460 participated in at least two follow-up interviews, at a mean of 10.4 months after enrollment.	In addition to a national mass-media campaign since 1988, an intervention involving HIV counseling and testing was administered to the detox patients.	At intake, all 933 subjects were injecting; At follow-up, 128/460 (28%) had stopped injecting. At intake, 71.7% of subjects shared needles; At follow-up, only 214/460 (46.5%) shared.

Table 3 (cont.). Results from studies of various types of AIDS prevention programmes for IDUs

Author	Sample	Mechanism of Change	Results
Pomeroy ⁹ et al. (Florence '91: W.C.3314)	Dublin, Ireland: 60 IDUs (47 male, 13 female) in a methadone program interviewed regarding previous and present behaviour.	Methadone program and overall AIDS awareness.	While 58 (97%) admitted to previously having shared needles, only 13 (22%) reported sharing within the previous six months.
Haemmig ¹⁰ et al. (Florence '91: W.C.3366)	Bern, Switzerland: 113 IDUs were given an anonymous, self-administered questionnaire at a street site.	Sterile injection equipment freely available. Moreover, modes of HIV transmission were correctly identified by >90%.	Within the past 3 years, 30% shared needles, but only 14% in the past 6 months. 55% said they would never borrow, and 67% said they would never lend equipment.
Tross ¹¹ et al. (Florence '91: W.D.4115)	New York, NY: 420 IDUs at a Lower East Side outreach program storefront were interviewed and then re-interviewed four months later.	Outreach intervention based on self-efficacy and social peer support models, using ex-IDU outreach workers.	% sharing needles decreased from 74% at intake to 33% at follow-up.
Donoghoe ¹² et al. AIDS Care 1989	UK multisite: Questionnaire survey, with re-interview after 2 to 4 months, of 142 clients (120 male, 20 female) of syringe exchanges.	Syringe exchange AIDS education	<u>Changes from intake to follow-up:</u> Number of sexual partners: No partner—23% to 31%; Multiple partners—26% to 21%; Regular partner—49% to 52%. Any condom use: 38% to 30%. Non-IDU partner: 36% to 39%; 46% to 55% for sexually active subset.

Table 3 (cont.). Results from studies of various types of AIDS prevention programmes for IDUs

Author	Sample	Mechanism of Change	Results
Wyd ¹³ et al. (Florence '91: W.C.3106)	Edinburgh, Scotland: 115 HIV+ IDUs and their heterosexual partners—30 of the couples both HIV+, 85 couples serologically discordant—were interviewed every six months over a 3-year period about their sexual histories since 1983.	HIV testing and repeated counselling.	Report any condom use: 2% in 1983, 48% in 1989; Couples reporting a pregnancy: 23/89 (26%) in 1987, 9/78 (11.5%) in 1989.
Friedman ¹⁴ et al. (Florence '91: W.D.54)	Brooklyn, NY: 243 IDUs (158 males, 85 females) who were sexually active during 6 months before intake and mean 7.8 months before follow-up. 43% Black, 41% Latino, 16% white—also, 26% prostitutes.	Peer pressure for risk reduction mobilized through group meetings, one-on-one counseling, and while distributing condoms, bleach, etc.	<u>Changes from intake to follow-up:</u> Percent always using condoms—24% to 33%; Mean proportion of sex acts in which condom was used—39% to 48%; Of 185 not always using condoms at intake, 39 (21%) were always using condoms at follow-up. <u>Group attendance in re: always using condoms:</u> 51% of attenders vs. 25% of non-attenders always used condoms; among prostitutes, 61% of attenders vs. 32% of non-attenders always used condoms; Among non-prostitutes, 42% of attenders vs. 26% of non-attenders always used condoms.
Liebman & Sepulveda-Irene ¹⁵ (NADR Conf. presentation, 1989)	Philadelphia, PA: Community Health Outreach Workers made contact with 6,629 high-risk individuals (54% IDUs, 9% prostitutes, sexual partners of IDUs—71% male; 57% Black, 28% Hispanic 14% white	Face-to-face conversation about AIDS risk and referral to treatment and services in the course of distributing condoms and bleach kits.	82% of all contacts accepted condoms; 90% of prostitutes accepted condoms; 84% of males accepted condoms; 74% of females accepted condoms.

Table 3 (cont.). Results from studies of various types of AIDS prevention programmes for IDUs

Author	Sample	Mechanism of Change	Results
Poole ¹⁶ et al. (Montreal '89; W.D.P.53)	San Francisco, CA: Project AWARE followed up 40 HIV+ females at 6- and 12-month intervals. 16 were IDUs, 16 had an HIV+ sex partner, 4 had a high-risk partner, 3 had no identified risk.	Social influence through peer group organization.	Changes from intake to follow-up: Average number of sex partners— from 5.2 to 2.1 (6 mo.) to 4.0 (12 mo.); Percent with fewer partners— 40% (6 mo.), 50% (12 mo.); Percent abstinent—3.5% (6 mo.), 8% (12 mo.) Percent having vaginal sex without condom— from 75% to 37% (6 mo.) to 37% (12 mo.).
Vanichseni ¹⁷ et al. J AIDS in press	Bangkok, Thailand: 601 in-treatment IDUs: 336 with no previous HIV test (NPT), 73 who had tested positive (PT+), 148 who had tested negative (PT-).	HIV testing and counselling.	Frequency of condom use w/ primary partner: Always—PT+ 29%; PT- 11%; NPT 9%; Sometimes—PT+ 43%; PT- 17%; NPT 20%; Never—PT+ 29%; PT- 71%; NPT 72%. Any contraception in past 6 months: PT+ 89%; PT- 73%; NPT 60%. Frequency of condom use w/ casual partner: Always—PT+ 57%; PT- 30%; NPT 33%; Sometimes—PT+ 14%; PT- 22%; NPT 22%; Never—PT+ 29%; PT- 48%; NPT 46%.
Jain ¹⁸ et al. (Montreal '89; W.D.P.79)	Sacramento, CA: 671 IDUs recruited from treatment programmes, hospital and jail. 150 of these returned for follow-up.	Intensive education/prevention program targeted to IDUs and their sexual partners, including HIV testing.	Changes from intake to follow-up: % never using condoms—from 68% to 62%; % often or always using condoms— from 22% to 26%; Average number of sex partners, last 6 mos: from 11 to 5.6.

- ¹ Klee H, et al: Risk reduction among injecting drug users: Changes in the sharing of injection equipment and in condom use. *AIDS Care* 1991, 3:63-73.
- ² Neaigus A, Sufian M, Friedman SR, et al.: Effects of outreach intervention on risk reduction among intravenous drug users. *AIDS Education and Prevention* 1990, 2:253-271.
- ³ Martin GS, et al.: Behavioural change in injecting drug users: Evaluation of an HIV/AIDS education programme. *AIDS* 1990, 2:275-279.
- ⁴ Hart GJ, et al.: Evaluation of needle exchange in central London: Behaviour change and anti-HIV status over one year. *AIDS* 1989, 3:261-265.
- ⁵ Kall K, Olin R: HIV status and changes in risk behavior among intravenous drug users in Stockholm 1987-88. *AIDS* 1990, 4:153-157.
- ⁶ Watters JK, et al.: Epidemiology and prevention of HIV in intravenous drug users in San Francisco, 1986-1989. *VI International Conference on AIDS*. San Francisco, CA, June 1990 [abstract#F.C.106].
- ⁷ Stephens RC, Feucht TE & Roman SW: Effects of an intervention program on AIDS-related drug and needle behavior among intravenous drug users. *Am J Public Health* 1991, 81:568-571.
- ⁸ Nicolosi A, et al.: Positive modification of injecting behavior among intravenous heroin users from Milan and Northern Italy 1987-1989. *Br J Addict* 1991, 86:91-102.
- ⁹ Pomeroy L, O'Connor J & Barry J: Needle sharing and sexual behavior amongst attendees at a methadone program in Dublin. *VII International Conference on AIDS*. Florence, July 1991 [abstract #W.C.3314].
- ¹⁰ Haemmig RB, Minder Nejedly M & Malinverni R: Needle sharing and condom use among heavy intravenous drug users (IVDU) in Bern, Switzerland. *VII International Conference on AIDS*. Florence, July 1991 [abstract #W.C.3366].
- ¹¹ Tross S, et al.: Determinants of needle-sharing change in street-recruited New York city IV drug users. *VII International Conference on AIDS*. Florence, July 1991 [abstract #W.D.4115].
- ¹² Donoghoe MC, et al.: Sexual behaviour of injecting drug users and associated risks of HIV infection for non-injecting partners. *AIDS Care* 1989, 1:103-109.
- ¹³ Wyld R, et al.: Changes in sexual behavior amongst drug users: Edinburgh 1983-89. *VII International Conference on AIDS*. Florence, July 1991 [abstract #W.C.3106].

- ¹⁴ Friedman SR, et al.: Peer mobilization and widespread condom use by drug injectors. *VII International Conference on AIDS*. Florence, July 1991 [abstract #W.D.54].
- ¹⁵ Liebman J & Sepulveda-Irene B: Effectiveness of street outreach as an AIDS-prevention strategy for IV drug users, their sexual partners, and prostitutes in Philadelphia. Presented at the First Annual National AIDS Demonstration Research Conference, Bethesda, MD, 1989.
- ¹⁶ Poole LE, et al.: Behavior changes to reduce HIV transmission risk in a prospective study of seropositive women. *V International Conference on AIDS*. Montreal, June 1989 [abstract #W.D.P.53].
- ¹⁷ Vanichseni S, et al.: HIV testing and sexual behavior among drug injectors in Bangkok, Thailand. *J AIDS* (in press).
- ¹⁸ Jain S, Flynn N & Bailey V.: IVDU and AIDS: More resistance to changing their sexual than their needle-sharing practices. *V International Conference on AIDS*. Montreal, June 1989 [abstract #W.D.P.79].