

# Global Research Network Meeting on HIV Prevention in Drug-Using Populations

## Second Annual Meeting Report

August 26–28, 1999  
Atlanta, Georgia



National Institute on Drug Abuse  
National Institutes of Health  
U.S. Department of Health and Human Services

In collaboration with  
Office of AIDS Research, National Institutes of Health  
Centers for Disease Control and Prevention  
Joint United Nations Programme on HIV/AIDS  
World Health Organization Substance Abuse Department  
Health Canada



UNAIDS  
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## Preface

*Alan I. Leshner, Ph.D.*

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The National Institute on Drug Abuse (NIDA), National Institutes of Health (NIH), in collaboration with NIH's Office of AIDS Research (OAR), the U.S. Department of Health and Human Services (DHHS), the Centers for Disease Control and Prevention (CDC), Health Canada, the Joint United Nations Programme on HIV/AIDS (UNAIDS), and the World Health Organization (WHO) Programme on Substance Abuse, invited researchers from around the world to participate in the second annual meeting of the Global Research Network (GRN) on HIV Prevention in Drug-Using Populations. The meeting took place in Atlanta, Georgia (U.S.), from August 26–28, 1999. More than 64 researchers from 25 countries met to (1) identify emerging issues in the HIV/AIDS epidemic with implications for HIV, hepatitis B, and hepatitis C prevention; (2) discuss the nature, status, and effectiveness of HIV prevention efforts among injection drug users in different countries; and (3) increase research capacity through collaborative efforts, both nationally and internationally.

NIDA, in collaboration with OAR, DHHS, CDC, Health Canada, UNAIDS, and WHO, welcomed the opportunity to host the second annual meeting and to facilitate international cooperation and collaboration on research for the prevention of HIV among drug users. At the time of the GRN's inaugural meeting in 1998 in Geneva, Switzerland, 129 countries and territories reported injection drug use, and 103 countries reported HIV/AIDS associated with injection drug use. Six years earlier, in 1992, the numbers were 80 and 52, respectively. The increasing number of countries reporting injection drug use and HIV/AIDS associated with injection drug use is of great concern. Specifically, 134 countries now document injection drug use, and 114 report HIV/AIDS infection associated with it. The epidemic patterns in these 134 countries vary considerably as do their responses to those epidemics. One thing is clear, however. The epidemics are moving faster, and the virus is spreading more rapidly than our current capacity to implement prevention programs in populations that use injection drugs.

Delegates to the Atlanta conference expressed concern about the growing threat of an HIV/AIDS epidemic to the economies of the emerging countries of the world. Previously, many of those countries had little reported drug use. Now, their drug-using populations are rapidly expanding as a result of major political, social, and economic upheaval; unemployment; and the ever-growing influence of the larger world. Even in sub-Saharan Africa, which now has two-thirds of the world's AIDS cases, and where the majority of cases are the result of heterosexual transmission, there is a concern about growing injection drug use and the implications this might have for future HIV control programs. As Wodak (1999) reports in his paper, "as the 20th century draws to a close, HIV prevention among injection drug users has become a major international public health problem. Global heroin production [has been] trebling, and global cocaine production [has been] doubling every decade." Beyrer and his colleagues (2000) also recently reported that new outbreaks of HIV infection in injection drug users in India, the People's Republic of China, and Burma<sup>1</sup> appear linked to drug-trafficking groups, another indicator that drug-related HIV infection is on the rise.

New evidence-based findings reported at the Atlanta meeting expanded earlier reports that indicated that introducing interventions as early as possible, relying on multiple intervention strategies rather than a single strategy, and establishing supportive policies can all help prevent the spread of HIV/AIDS. Despite the progress in developing and implementing prevention interventions and the increasing communication among researchers about the effectiveness of intervention strategies, best practices, and supportive policies, HIV/AIDS epidemics among drug-using populations continue to occur.

Given the mounting evidence, the GRN must continue to focus on the challenges introduced in 1998: If we are ever to significantly reduce the tremendous impact of HIV/AIDS and avert new and emerging HIV epidemics in

<sup>1</sup> Burma is now known as Myanmar.

drug-using populations, we must take advantage of every opportunity to implement prevention strategies.

The third meeting of the network will be held in Durban, South Africa, in July 2000. This meeting will present new opportunities for collaboration in collectively addressing research and practical issues related to the prevention of HIV/AIDS in drug-using populations. The Fogarty International Center at NIH and the South African Medical Research Council will join the GRN as cosponsors for the third meeting. This global network of scientists and practitioners from both governmental and nongovernmental organizations, research institutes, and universities will help to guide future efforts in preventing and controlling the problems of drug abuse and HIV/AIDS. We are particularly pleased that much of the agenda will focus on the epidemiology of HIV/AIDS in, and the

prevention responses of, the African nations. We also are pleased that the GRN has elected to tap the expertise of its members to compile an Indicators Database to help characterize global prevention responses in drug-using populations. This unique database will fill an important gap in this field of research, will be linked with other databases, and will be disseminated to organizations and researchers around the world.

In closing, I thank all of you who participated in the Atlanta conference as well as those who are planning and who will participate in the next meeting of the Global Research Network on HIV Prevention in Drug-Using Populations. I especially want to commend everyone who continues to develop strategies and to engage on a daily basis in the struggle against HIV/AIDS in drug-using populations. ■

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## Meeting Highlights

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### Opening Remarks

Dr. Richard Needle, on behalf of Dr. Alan Leshner, Director of the National Institute on Drug Abuse (NIDA), National Institutes of Health (NIH), opened the meeting by welcoming the meeting participants. He discussed both the origins and the evolution of the Global Research Network on HIV Prevention in Drug-Using Populations (GRN) and its goals of preventing the further spread of HIV and other blood-borne diseases.

The GRN was established, in part, to increase understanding about the epidemic of HIV in drug-using populations by inviting network members to compile data and report on research findings at both the regional and country levels. By integrating the disciplines of epidemiology and ethnography, the network facilitates the exchange, dissemination, and diffusion of evidence-based data on HIV prevention responses. The GRN promotes utilization of these findings to establish the best practices for reducing HIV risk in drug-using populations and to prevent HIV transmission to other populations. The GRN also provides an international forum to encourage cross-national studies of the applicability and effectiveness of strategies to prevent HIV and other blood-borne diseases in drug-using populations.

Dr. Needle next introduced colleagues from the sponsoring organizations: Dr. Paul Gaist of the Office of AIDS Research, U.S. Department of Health and Human Services (OAR/DHHS); Dr. Eric Goosby of the U.S. Department of Health and Human Services; Dr. Stephen Jones of the Centers for Disease Control and Prevention (CDC); Dr. Werasit Sittitrai of the Joint United Nations Programme on HIV/AIDS (UNAIDS); Dr. Mary Jansen of the World Health Organization (WHO); and Dr. Donald Sutherland of Health Canada. Welcoming remarks also were made on

behalf of Ms. Sandra Thurman, Director of the White House Office of National AIDS Policy; Dr. Donna E. Shalala, Secretary of Health and Human Services; Dr. David Satcher, the U.S. Surgeon General; Dr. Jeffrey Koplan, Director, CDC; Drs. David Holtgrave and Helene Gayle, also of CDC; Dr. Peter Piot, Executive Director, UNAIDS; Dr. Gro Harlem Brundtland, Director-General, WHO; and Mr. Alan Rock, the Canadian Minister of Health.

In their introductory remarks, each speaker emphasized the need for a better understanding of the roles played by both injection and noninjection drug use in shaping the global HIV/AIDS pandemic and, indeed, in the transmission of all blood-borne diseases. Dr. Goosby stressed the importance of translating research findings into practical prevention and treatment interventions. He and other speakers called the delegates' attention to the global epidemic and the urgent need to respond rapidly to prevent the further spread of HIV, its progression to AIDS, and AIDS-related morbidity and mortality.

The key scientific objectives of the meeting were to discuss major HIV prevention programs from around the world, evaluate their implications, and identify factors in the public health environment that impede or facilitate implementation of HIV prevention policies. Participants discussed the global impact of the twin epidemics of drug abuse and HIV/AIDS, focusing on the regional, country, and local-level epidemiology and the prevention of the spread of HIV in drug-using populations. This year for the first time, other blood-borne diseases such as hepatitis B (HBV) and hepatitis C (HCV) were discussed in conjunction with HIV prevention.

## Global Epidemics of HIV, HBV, and HCV

Dr. Andrew Ball of WHO reported on the global epidemics of HIV. Dr. Ball noted that since the last meeting, despite regional variations in the contribution of injection drug use to the spread of HIV, injection drug use continues to be the major mode of HIV transmission in Eastern Europe, Southern Europe, central Asia, east Asia, north Africa, the Middle East, North America, and parts of South America, especially in countries close to regions of opium and heroin production and trafficking, such as Afghanistan, Pakistan, and the Islamic Republic of Iran. Even in countries where the major proportion of new cases of AIDS are heterosexually transmitted, rates of transmission from injection drug use are growing rapidly. The northern state of Manipur in India is such an example, with high, localized rates of HIV transmission among injection drug users (IDUs). Dr. Ball also reported that while a few cities have been successful in reversing and averting the epidemic, new outbreaks of HIV among IDUs continue to occur in cities such as Moscow, as well as in cities that had previously controlled the epidemic such as Toronto and Kathmandu.

Today, an estimated 33.6 million people live with HIV/AIDS, with 23.3 million of those living in sub-Saharan Africa. The most affected regions after sub-Saharan Africa are south and Southeast Asia. During 1998, 5.6 million people were newly infected with HIV, including 3.8 million in sub-Saharan Africa and 1.3 million in south and Southeast Asia. Since the start of the epidemic, an estimated 16.3 million people have died from AIDS, most of whom lived in sub-Saharan Africa.

In the inaugural meeting in Geneva in 1998, many delegates discussed the co-occurring epidemics of drug use, HIV, and HCV. In the Atlanta meeting, Dr. Nick Crofts was invited to report on the global epidemic of HCV. He noted that HCV prevalence is much higher globally than HIV prevalence, and that HCV is associated with duration of injecting among IDUs. Dr. Crofts reviewed the results from 98 published studies in different populations of IDUs and reported that HCV prevalence rates vary greatly around the world with the highest crude rates being reported in the United States (1,501 per 100,000) and Australia (1,040 per 100,000), and the lowest rates in the Netherlands (39 per 100,000). He noted that although a correlation exists between HCV and HIV, which varies greatly, HCV prevalence generally is extremely high no matter what the HIV prevalence is. He went on to identify prevention strategies designed to gain control of the HCV virus epidemic and address research questions.

## Regional and Country Epidemiology Reports

### *United States*

In his report to the GRN, Dr. Eric Goosby reported that between 1981 and June 1999, a total of 711,344 cases of AIDS were documented in the United States. From July 1998 to June 1999, more than 47,000 new cases of AIDS were reported. The primary modes of HIV transmission have been sexual intercourse and injection drug use, with almost half of the cases being reported in men who have sex with men and about 25 percent in IDUs. However, the early 1980s saw an increase in the use of powdered cocaine, and starting in the mid-1980s, crack cocaine use became prevalent in large metropolitan areas. A shift in the epidemiology reflects increasing proportions of HIV infection linked to heterosexual sex and decreasing proportions occurring in men who have sex with men. Of the estimated 40,000 new infections reported annually in the United States, about half are attributable to injection drug use. Since the beginning of the epidemic, HIV/AIDS has had a disproportionate effect on racial and ethnic minority populations. Dr. Goosby also discussed the prevention and treatment challenges that exist in an era of available therapies in the United States.

### *European Union Countries*

Mr. Lucas Wiessing reported on HIV transmission in the European Union (EU). The patterns of drug use he described for the EU are consistent with what occurred in the United States. Mr. Wiessing noted that there are an estimated 1 million to 1.5 million problematic drug users, of which 1 million would meet criteria for dependence. Most IDUs are injecting heroin, but evidence of amphetamine use also exists in Scandinavia. The heroin epidemic began in the late 1960s and 1970s, increased in the late 1970s and early 1980s coinciding with the introduction of HIV, then declined and stabilized in the 1990s. Within the EU, AIDS has affected mainly the southwestern countries of Spain, Italy, France, and Portugal, with IDUs comprising the largest risk group as of 1989. HIV prevalence ranges from 1 percent in the United Kingdom to over 30 percent in Spain. HCV is higher, with the numbers of those infected ranging from more than 50 percent to 92 percent in the prison population in Sweden.

### *Latin America*

Dr. Fabio Mesquita, Ms. Diana Rossi, Ms. Graciela Touzé, and Dr. Carlos Magis-Rodriguez reported on IDUs and HIV

in Latin America. A Phase II WHO study showed a large increase in crack use and extremely low prevalence rates for HIV and HCV among noninjection drug users. Ms. Rossi and colleagues reported specifically on the Southern Cone of Latin America where cocaine is the most frequently used drug, followed by amphetamines and alcohol. By June 1999, 18,471 AIDS cases were reported in the Southern Cone of Latin America, with more than 14,000 occurring in Argentina. Two patterns of HIV transmission have been noted in the Southern Cone: IDU transmission, with high expansion and prevalence, and heterosexual transmission, with low expansion and prevalence.

Ms. Touzé, in describing the activities of the Latin American Harm Reduction Network, reported 260,251 AIDS cases in Latin America as of June 1999, with most occurring in Brazil, México, and the Andean area. Cocaine injection is very popular in Rio de Janeiro and São Paulo, whereas snorting cocaine, smoking crack, and chewing coca leaves are popular in other areas of Latin America. Dr. Magis-Rodriguez and colleagues gave an update on the HIV epidemic in México. HIV incidence increased recently in the neighboring countries of Nicaragua, Venezuela, and Peru, and while México has a relatively low incidence rate of AIDS, this country also has the precursors to an AIDS epidemic in place. HIV cases are concentrated in the Federal District of the States of México and Jalisco, and among people ages 25–44.

### ***South and Southeast Asia***

Mr. Christian Kroll and colleagues reported on the number of IDUs in Asia: 50,000 in Nepal, 2.25 million in India, and 1.27 million in Thailand. Opiates are the drug of choice, except in India. Dr. Suresh Kumar reported that HIV prevalence rates among IDUs in India range from 2 percent in Calcutta State to 44.5 percent in Delhi, with drug use escalating in many areas of the country. Dr. Kumar also reported that injection drug use is the major mode of HIV transmission in many Asian countries, including Malaysia, Vietnam, Myanmar, and the northern states of India. Nepal is also showing evidence of HIV transmission among IDUs, and such transmission is suspected in Bangladesh and the “Golden Triangle” area at the intersection of Pakistan, Afghanistan, and Iran.

Dr. Zunyou Wu described the drug use trends and HIV epidemic in the People’s Republic of China. The number of registered drug users continues to increase in China (596,000 people in 1998). However, the Chinese government has determined drug control to be a priority, and the drug figures are considered to be underestimated. The actual number of drug users is estimated at 6 million. By 1995, all 31 provinces of China had reported drug use problems.

Eighty percent of drug users are under 30 years of age, and heroin is the drug of choice, although methamphetamine use is increasing in Guangdong Province. The first case of HIV related to injection drug use was reported in 1989, and, up until 1995, only one province had IDU-related HIV cases. As of 1999, 21 provinces reported IDU-related cases of HIV transmission. An epidemic has occurred lately in Guangdong, with prevalence among IDUs increasing from 0 in April 1998 to 34.1 percent in June 1999. Sentinel survey data reports indicate that overall prevalence of HIV in China increased from 0.3 percent in June 1998 to 0.8 percent in June 1999, then decreased to 0.4 percent in December 1999. Injection drug use was the major transmission route for HIV in China, accounting for 70–85 percent of HIV cases reported between 1985–1999.

### ***The Mediterranean Region***

Drs. Jihane Tawilah and Ahmad Mohit described the HIV and injection drug use trends in the Eastern Mediterranean region. Although HIV transmission among IDUs accounts for approximately 4 percent of all AIDS cases reported annually, with the majority originating from heterosexual contact, almost all countries in this region have reported HIV cases among IDUs. Although injection drug use has existed for some time in this region, the number of IDUs remains relatively low and is estimated to account for 10 to 17 percent of all users of illicit drugs in the region. Many countries are experiencing outbreaks among subgroups of sexually transmitted disease (STD) patients and IDUs. Since 1996, Iran also has experienced major outbreaks of HIV among IDUs in prisons. Overall, this area is experiencing a low-level epidemic, although IDUs are clearly leading other subgroups in terms of high HIV rates and have the potential for explosive outbreaks. The countries in this region serve as either producers (for example, Afghanistan) or as transit routes and consumers for a wide variety of substances, including an increase in heroin use. Data of the United Nations International Drug Control Programme (UNDCP) indicate that injectable forms of drugs are becoming increasingly available in this region, and that many of the drug injectors are young.

### ***Central and Eastern Europe***

Dr. Karl-Lorenz Dehne reported on central and southeastern Europe, including the 15 Newly Independent States (NIS). HIV prevalence was low until 1995, when it began spreading among IDUs in several NIS countries, starting in the Ukraine. In 1998, the number of new cases was smaller than in previous years, indicating possible saturation in high-prevalence cities. A new outbreak occurred in Moscow and other areas in early 1999, indicating a possible upturn of the incidence curve. Only

two of the NIS countries have no IDU-related HIV cases. Conversely, the HIV outbreaks of the former Communist countries of central Europe have not occurred through IDUs (with the exception of Poland) but through homosexual behavior. Poland's epidemic started among IDUs in the 1980s. Yugoslavia also has an old epidemic of IDU-related HIV transmission. The drug-using population is larger in the NIS than in central and southeastern Europe, although HIV prevalence is not uniformly high among the NIS. HIV does not appear to spread beyond IDUs and their sex partners, and there is little evidence to suggest a major spread of HIV via heterosexual sex as prevalence is not high among sex workers. Both HIV case reporting and prevalence data suggest that HIV is concentrated among IDUs in a growing number of cities in the NIS.

Dr. Judit Honti discussed the Central–Eastern European Harm Reduction Network. She reported that the economic collapse associated with the end of the Cold War introduced the illicit drug market to central and Eastern Europe. The percentage of the population injecting drugs was still growing in 1998, with IDUs reported in 27 countries. From 1995 to 1998 HIV cases increased 9-fold to 270,000, with Poland being the first country in the region to report cases of HIV-infected IDUs and their sex partners. As of 1998, 65 percent of AIDS cases in Poland occurred among IDUs, and 80 percent of cases in Ukraine occurred among IDUs; it was 74 percent in the Russian Federation and 85 percent in Moldova. Ms. Natalya Lukyanova reported that before 1995 in parts of the Ukraine, 70 percent of HIV infections were transmitted sexually; however, by end of 1996, 75 to 80 percent of the HIV transmissions occurred through IDUs.

### ***Africa***

Nowhere has the impact of the epidemic been more severe than in Africa. Two-thirds of all global AIDS cases have occurred in sub-Saharan Africa. Drs. Parry and Adelekan discussed the global crisis of HIV/AIDS and its impact on Africa. Dr. Charles Parry described South Africa's first epidemic as occurring in the early 1980s and being spread through homosexual transmission. The second epidemic, occurring since 1987, has been spread through heterosexual transmission. Eighty-five percent of HIV transmissions in South Africa are heterosexual, 10 percent vertical, and 5 percent homosexual. Infections in rural areas are spreading as quickly as in urban areas, especially among young women in their twenties. By the end of 1999, an estimated 11.5 percent of the population will be infected compared with 0.5 percent in 1990. There are very few IDUs in the region as most drugs are smoked. However, IDUs are an area of

concern; a 1991–1992 survey showed that IDUs were likely to be sex workers and female, and that they also used crack that was imported from Nigeria to increase business and hence their risk for HIV infection. Crack is also responsible for an increasing occurrence of unsafe sex and rape.

Dr. Moruf Adelekan reported on the HIV situation in sub-Saharan Africa. Heterosexual intercourse is the primary mode of HIV transmission. Female sex workers are most at risk, with noninjection drugs also playing a part in HIV transmission. Rapid assessment data from the UNDCP indicate that cannabis is the most widely used drug, and it is usually smoked but is also available in a paste, "hashish," and oil; two indigenous drugs were also identified: iboga (similar to LSD) and mudzepte. Cocaine and heroin are used in all 10 countries with the highest prevalence occurring in South Africa and the lowest in Ethiopia. The synthetic substances methaqualone, amphetamine-type substances, and "ecstasy" are used in some countries; solvents are used particularly by street children in Zimbabwe and Kenya. Pharmaceutical products are used in all countries. Dr. Adelekan also observed that injection drug use is only reported in Nigeria, South Africa, and Zimbabwe. Although IDUs are thought to be rare in sub-Saharan Africa, a WHO pilot study described IDUs as middle-class and widely traveled individuals who inject mainly in their homes and hotel rooms, making them harder to find. Although new equipment and needles are available, reuse commonly takes place, creating an environment for the easy transmission of HIV.

### **HIV Prevention Programs**

Dr. Werasit Sittitrai advised that the best research practice is continuous learning, feedback, reflection, and analysis of response to AIDS, specifically within developing countries. Also necessary is an assessment of the epidemic situation, examination of existing programs, testing of methods and models, and monitoring and evaluation research.

Dr. Diane Riley and colleagues reported that cities with low prevalence share three common factors: (1) they use community outreach and peer education, (2) they ensure easy access to clean syringes through needle exchange programs (NEPs) or pharmacies, and (3) they begin prevention programs early, before reaching 10 percent prevalence. Dr. Riley concluded that successful comprehensive harm-reduction programs are culturally sensitive, multifaceted, long term, and acknowledge that risk reduction is a social process.

## Regional and Country Prevention Reports

### *United States*

Dr. Stephen Jones stressed the need for a comprehensive approach involving multiple interventions. The proposed comprehensive approach is based on experiences in the United States, a country that has substantial resources invested in prevention and treatment. Dr. Jones reported that programs work best if tailored to the specific behaviors and risk patterns of target populations. A community-based strategy should include such proven components as HIV counseling and testing, provision of condoms, access to sterile injection equipment, and substance abuse treatment programs. Those measures should be combined with public education campaigns that reach large numbers of IDUs with multiple, reinforcing messages on prevention.

### *Australia*

Dr. Alex Wodak provided a thoughtful and objective review of the Australian experience, discussing the strengths, successes, weaknesses, and new challenges related to HIV prevention among drug-injecting populations. Australia introduced HIV prevention measures early and vigorously, and the epidemic was clearly contained. Explicit and credible education for IDUs began in 1985, and NEPs began in 1986. Methadone treatment continues to increase by 5 to 10 percent annually, and organized IDU groups have been working closely with the government. The strength of this prevention strategy is that HIV prevalence has been kept very low, thus averting an epidemic. The proportion of IDUs sharing needles continues to decline, as does the incidence of HCV among new IDUs. The components of this successful strategy are the implementation and expansion of public health measures such as NEPs, education, and trial injecting rooms. Threats to the ongoing success include an increasing number of drug deaths, a loss of HIV control because prevention programs are being cut, an increase in HIV and HCV among indigenous Australians, an increase in cocaine use, and the abandonment of harm reduction as a national policy. Opportunities to retain successful prevention measures include possible future control of HCV and defining drug use as a public health and social issue rather than just a law enforcement issue.

### *The European Union Countries*

Lucas Wiessing reported on the prevention strategies within the EU countries. The EU solicited information from member countries and summarized their prevention experiences in a table (see Mr. Wiessing's paper). Despite wide variability between and within countries, all 15 reported having NEPs (although low intensity was common). Fourteen countries reported programs for condom distribution and HIV testing and counseling, 12 reported HIV treatment programs, 11 reported HBV vaccination programs, and 11 reported HCV-specific activities. All 15 EU countries reported "substitution therapy"\* for opiate use, whereas 14 reported prevention measures in prisons. Innovative prevention activities are also in use, such as training IDUs to recognize initiation behavior and to decline requests to initiate non-IDUs.

Dr. Michael Farrell recommended a multidimensional approach to reducing harm as opposed to eliminating risk and provided examples of treatment modalities and risk-reduction strategies. Outcome studies have demonstrated the effectiveness of such programs, and duration and intensity of treatment have been shown to predict better outcomes. Dr. Farrell noted that access to treatment has been shown to differ by type of drug used. While pharmacotherapy appears to work well in Europe and the United States, access to affordable treatment for opiate dependence remains a major global challenge.

### *Latin America*

Ms. Rossi, Ms. Touzé, and Dr. Mesquita discussed prevention activities and the Latin American Harm Reduction Network (RELARD); they noted structural barriers that exist in implementing effective HIV prevention programs. The goals of RELARD are to reduce drug-related harm; make preventing HIV transmission a priority; promote harm reduction as an effective strategy; support the initiatives of grassroots organizations, nongovernmental organizations (NGOs), and governmental organizations; organize drug users; and generate a forum for drug use discussion. RELARD is a part of Global Voice and participates in international conferences. Its members are trained in rapid assessment and response.

\* According to research, persons undergoing maintenance treatment do not suffer the medical abnormalities and behavioral destabilization that rapid fluctuations in drug levels cause in heroin addicts. As used in maintenance treatment, methadone and LAAM are not heroin substitutes—they are safe and effective medications for opiate addiction. For these reasons, NIDA encourages use of the term "pharmacotherapy" or "medication" versus "opiate substitution" or "substitution therapy."

Harm reduction was developed in Brazil in 1989, and bleach distribution and outreach began there in 1993. A NEP began in Salvador (in the State of Bahia) in 1995, and 14 harm-reduction programs currently operate in Brazil, including NEPs and other services. In March 1998, NEPs were legalized for disease prevention, and in October 1998 the Brazilian Harm Reduction Network was established.

### ***South and Southeast Asia***

Mr. Kroll; and Drs. Wu, Zhao, Kumar, and colleagues discussed policies and HIV prevention in Asia. Mr. Kroll and his colleagues noted that law enforcement often makes it difficult to deal with what should be a public health issue, and that the threat of legal action hampers the effectiveness of interventions. Abstinence is the most immediately available form of treatment, and policymakers generally are opposed to pharmacotherapy and needle exchange. The process of policymaking is unclear, with complex bureaucratic impediments, a general lack of communication between researchers and the government, and decisions made that are political in nature rather than based on public health concerns.

Dr. Wu reported on the Chinese strategy of HIV prevention among IDUs. The government is very decisively calling for a war on drugs with a four-step process to assist addicts: (1) voluntary home-based treatment, (2) voluntary community-based treatment, (3) compulsory treatment (3–6 months), and (4) mandatory treatment by law enforcement. However, a 95 percent relapse rate exists for this last stage. The government sees needle exchange and methadone treatment as promoting drug use, so the only prevention measure being used is education. Dr. Wu discussed findings from a community-based intervention trial in 38 villages in the Yunnan Province. One year after the program began, there was a 1.66 percent reduction in HIV incidence among new drug users in the intervention area, compared with a 0.63 percent reduction in the control area. See Dr. Zhao and colleagues' report on heroin addicts in a community treatment program in China.

In his discussion of Asian prevention strategies, Dr. Kumar indicated that researchers must address the environmental issues of HIV transmission, most importantly poverty. Sharing needles and injection equipment is common in south Asia, although heterosexual sex also is a major mode of transmission. Community outreach services and NEPs in India are having positive effects on reducing the transmission of HIV, and Dr. Kumar noted five key areas for effective health promotion (Ball 1998): (1) strengthening community action, (2) creating supportive environments, (3) developing personal skills, (4) reorienting health services, and (5) building healthy public policy.

### ***Central–Eastern Europe and the Ukraine***

Dr. Judit Honti reported that in Central–Eastern Europe, much of the prevention and intervention funding comes from foreign organizations in the form of proactive harm-reduction programs. Some countries provide low-threshold services such as drop-in centers, outreach programs, and needle exchange. Pharmacotherapy such as methadone treatment is available in a number of countries such as Poland and Estonia and is being considered in several others such as Macedonia and Bulgaria. However, Dr. Honti stressed that international networking is the strategy for diffusion of harm reduction throughout the region. See Ms. Natalya Lukyanova's chapter for a report on harm-reduction and outreach activities in the Ukraine.

### ***Africa***

Dr. Moruf Adelekan reported that most countries in sub-Saharan Africa have agencies set up to formulate drug policies, coordinate and supervise supply-and-demand reduction activities, and adhere to the United Nations international drug control treaties. Demand-reduction activities are focused on primary prevention, especially in schools, and on public awareness. Addiction treatment takes place mainly in psychiatric hospitals and often is not specifically targeted to drug treatment. Treatment follows a biosocial model and includes a team of health and social workers in which detoxification is an integral part of treatment. Pharmacotherapy is not practiced. Dr. Adelekan also stated that HIV control programs have been established in every country by international NGOs. They plan, implement, and coordinate epidemiological surveillance, public awareness campaigns for the general public as well as targeted groups, and the training of health care workers, thus ensuring adherence to WHO treatment guidelines. He further stated that future studies should assess the extent of injection drug use, risk factors associated with IDUs, other health consequences of injecting drugs, and prevalence of HIV, HBV, and HCV. He also recommended that the rapid assessment and response methodology be implemented in all countries.

In discussing South Africa, Dr. Charles Parry suggested focusing on the development and evaluation of interventions for substance abuse and risk behaviors among subpopulations, with an emphasis on alcohol use, crack use, and sexual behavior. According to Dr. Parry, the key focus should be on young people, substance abuse, and unsafe sexual practices. Interventions also should be targeted to those with AIDS to keep them from turning to substance abuse for relief from their disease. For South Africa, in particular, interventions should be developed to keep AIDS orphans from turning to drug use or the drug trade. Dr.

Parry suggested three main interventions: AZT for pregnant women, condom use, and treatment of STDs.

### **Barriers to Implementation of HIV Prevention Programs**

Many delegates this year commented on public policies and other specific barriers encountered in providing effective prevention activities to IDUs. In their paper, Dr. Diane Riley and Mr. Pat O'Hare referred to the comment made by Tawil, Verster, and O'Reilly in 1995, which is relevant today: "To date, AIDS prevention efforts around the world can be characterized as being too little, too late, and too narrow." Mr. Paul Deany reported that the lack of research and the inability to access existing research in a timely manner are barriers to harm reduction, especially in developing countries. Mr. Deany and others, including Mr. Allan Clear, Mr. Kroll, and Drs. Riley, Honti, and Wodak discussed additional barriers such as inadequate and inaccurate drug trends and HIV data, nonstandardized instruments, the dynamic and hidden nature of drug use (HBV, HCV, drug overdoses, abscesses), the trend toward injecting legal drugs, the vast and remote geography of drug users, language and cultural differences, the stigmatization of drug users, and the difficulty of rapid response. Mr. Deany also listed as barriers mounting economic crises that push HIV back as a priority, general lack of research funds, political pressure, reactive rather than proactive governments, a lack of strong international leadership, and the harshness of the global war on drugs. Mr. Kroll, Mr. Clear, and others commented on the tension between law enforcement and public health models.

Mr. Clear, of the Harm Reduction Coalition, reported on the legal limitations imposed at the end of the 1970s in the United States on the purchase and possession of syringes. He is critical of the lack of supportive policies to implement syringe exchange programs in the United States when a substantial body of research indicates that syringe exchange programs can prevent HIV infection in IDUs.

### **Research Directions and Challenges**

Dr. Gerry Stimson recommended a shift to the "new" public health. He discussed the limits of risk factor epidemiology in terms of social influences on human

behavior compared with HIV research that takes into account both the micro- and macrocommunity context of the disease and related behavior. The success of HIV research is that it has been influenced by those with the disease; it has been pragmatic, leading to the development of interventions based on achievable public health benefits; and it has remained aware that research has a global impact. For research to be truly effective, scientists must be aware of community development, advocacy, political science, and social marketing. Multicountry research highlights the relationship between national, structural, and community-level differences in the risk environment, and the difference in the nature of risk behaviors. It also tests the response environment of applying one intervention to another setting, allows examination of how diseases transcend geographical boundaries, and improves local research capacity.

Dr. Don Des Jarlais indicated a critical need for implementation of HIV programs for IDUs in many parts of the world, along with a critical need to evaluate those programs. In discussing research conducted in "resource-constrained settings," he recommended focusing on prevention at the community level as opposed to the individual level. The primary issue in evaluation should be keeping the rate of HIV transmission low (prevalence <5 percent).

### **Summary**

As evidenced in the highlights above and subsequent papers, the delegates focused their presentations and dialogue around the synthesis of research on prevention strategies, the translation of findings and planning on the use of science-based best practices for HIV prevention, and the stimulation and finding of support for cross-sectional prevention research. This administrative report includes considerable attention to regional and country epidemiological profiles and some descriptive information about prevention. The Third Annual Meeting is expected to continue to provide epidemiological data about the global nature of the epidemic and the changing dynamics of the interrelated epidemics of drug abuse, HIV/AIDS, and other blood-borne diseases such as HCV and HBV. It will also continue to report on prevention issues and practices and the effect of the HIV/AIDS epidemic. ■

## Epidemiology and Prevention of HIV in Drug-Using Populations: Global Perspective

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By the end of 1999<sup>1</sup> it was estimated that there were 33.6 million people in the world living with HIV/AIDS. About 23.3 million of these were living in sub-Saharan Africa, while 6 million were living in south and Southeast Asia. During 1999 5.6 million people were newly infected with HIV; 3.8 million of these lived in sub-Saharan Africa, and 1.3 million lived in south and Southeast Asia. Since the beginning of the epidemic, an estimated 16.3 million people have died from AIDS.

By the end of May 1999, 134 countries and territories had documented cases of injection drug use compared with only 80 in 1992. Of this same group, 114 had reported HIV infection associated with drug injecting in 1999 compared with only 52 in 1992 (figure 1). Injection drug use is the major mode of HIV transmission in Eastern Europe, Western Europe, central Asia, east Asia, north Africa, the Middle East, North America, and parts of South America (table 1).<sup>2</sup> It is apparent that the role of injection drug use in determining the nature and extent of regional and local epidemics varies greatly.

In sub-Saharan Africa, where two-thirds of the people with HIV/AIDS live, injection drug use continues to play a minor role in an epidemic driven by heterosexual transmission. However, increasing rates of injection drug use in countries in western and southern Africa, such as Nigeria and South Africa, require careful monitoring. The role of noninjected drugs, particularly alcohol, in contributing to the epidemic by increasing high-risk sexual practices warrants special attention.

Injection drug use is the major mode of HIV transmission in north Africa and the Middle East. Whereas data from this region are extremely limited, and HIV prevalence is generally low, increasing rates of injection drug use are being reported in countries close to regions where opium and heroin production and trafficking occur, such as Afghanistan, Pakistan, and the Islamic Republic of Iran.

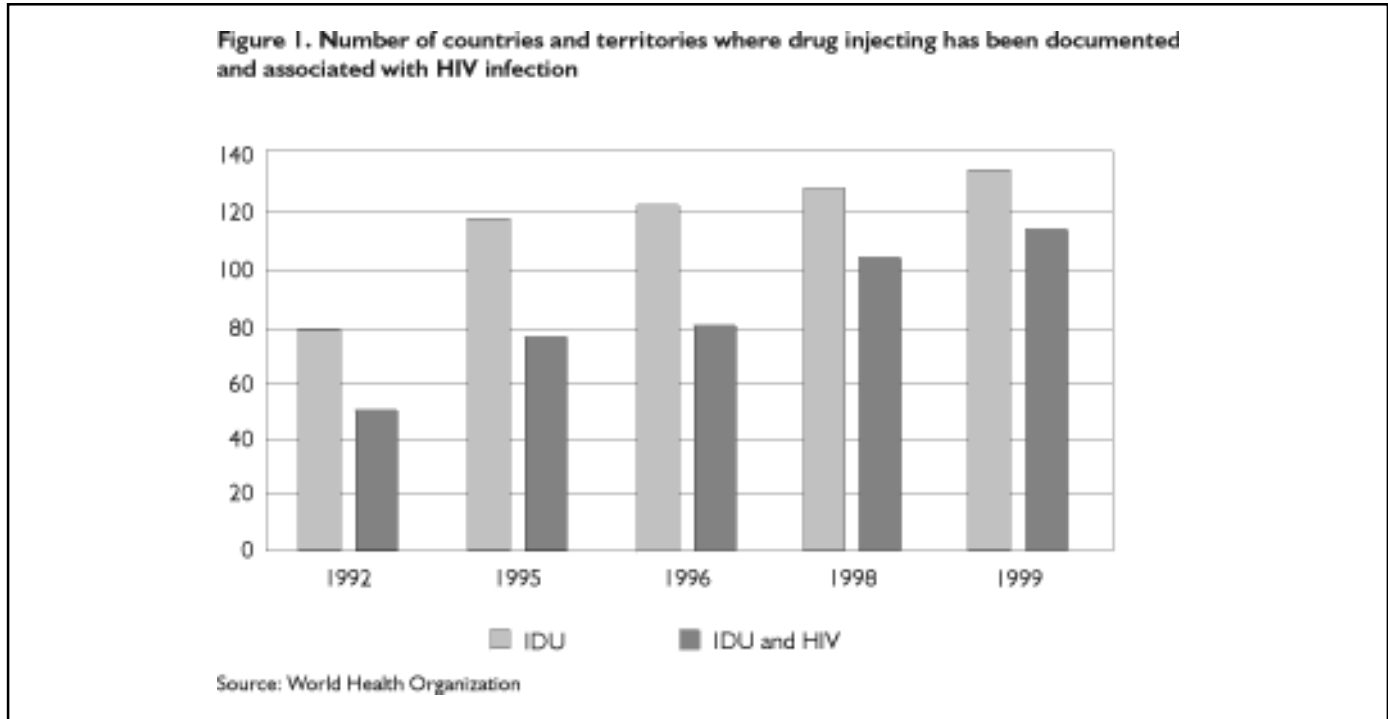
In south and Southeast Asia, the main mode of transmission is heterosexual, although in some countries and districts injection drug use is the major driving force. The localized nature of HIV epidemics among injection drug users (IDUs) can be demonstrated by the example of the State of Manipur in India. Although Manipur had only 0.2 percent of India's population in 1998, it accounted for 8 percent of the total number of HIV-infected people in India. Whereas 75 percent of HIV infections in Manipur are among IDUs, throughout the rest of India the pattern is very different—heterosexual transmission accounts for 74 percent of cases. Manipur has an HIV seroprevalence rate of 2,664 per 1 million people compared with 94 per 1 million for all of India. There is now evidence that HIV is spreading from IDUs to the general population, with increasing seroprevalence rates among pregnant women. HIV is also spreading among IDUs in surrounding states, such as Mizoram and Nagaland, and to the Chittagong region of Bangladesh. HIV prevalence among the estimated 15,000 IDUs in Manipur is estimated to be 80 percent.

Elsewhere in the region other localized epidemics are being reported. For example, it is estimated that in 1998 IDUs accounted for 77 percent of new HIV infections in Malaysia and 62 percent in Vietnam. Whereas the epidemic in Vietnam was initially concentrated in the southern part of the country in Ho Chi Minh City and Da Nang, in the past 3 years it has spread to the north, with HIV prevalence rates among IDUs in Quang Ninh climbing from 0 to 40 percent within 1 year. Rapid situation assessments are being planned for a number of provinces in Indonesia in response to increasing concerns about the potential for rapid spread of HIV associated with injection drug use.

In east Asia the HIV epidemic continues to be driven by injection drug use. This is particularly true in the People's Republic of China, where it is estimated that 69 percent of all new HIV infections in 1998 occurred among IDUs. The

<sup>1</sup> Figures have been updated to end of 1999.

<sup>2</sup> Table 1 has been updated to the end of 1999.



epidemic was originally localized in the southern province of Yunnan, which borders on Myanmar, but is now spreading to other regions of the country.

In Latin America, injection drug use is playing an important role in the HIV epidemics of Brazil and the Southern Cone countries. Drug injecting is the major mode of transmission in Argentina, responsible for 42 percent of all AIDS cases. In Uruguay, IDUs account for 33 percent of AIDS cases; in Brazil it is 26 percent. Furthermore, 40 percent of AIDS cases due to vertical transmission in Uruguay involve female IDUs. In Buenos Aires, Argentina, various studies have indicated seroprevalence rates of between 42 to 70 percent among IDUs.

In North America, injection drug use now accounts for a major proportion of new HIV infections, particularly in poor urban minority communities. In Canada, for example, it was estimated that for 1996, 49 percent of new HIV infections occurred among IDUs compared with only 8 percent for the period of 1984–1986. Whereas only 8.4 percent of IDUs tested positive for HIV between 1985 to 1994, this figure increased to 33.2 percent by 1997. In Western Europe the HIV epidemic among IDUs is most concentrated in the south, where IDUs account for an estimated 66 percent of AIDS cases in Spain, 64 percent in Italy, and 61 percent in Portugal.

Epidemics of HIV among IDUs have reached dramatic proportions throughout Eastern Europe, central Asia, and

the Newly Independent States. In fact these regions recorded the highest incidence rates of HIV infection globally during the early part of 1999. In 1998 it was estimated that IDUs accounted for 90 percent of new HIV infections in Russia, 84 percent in Moldova, 77 percent in Ukraine, and 71 percent in Latvia. IDUs account for an estimated 50 percent of AIDS cases in Georgia, Kazakhstan, and the former Yugoslavia. The number of new cases of HIV infection in Russia for the first 6 months of 1999 is equal to the total number of new cases reported in Russia for all of 1998. Most of these cases have been reported from the Moscow region among IDUs, where just a year previously few infections had been reported. However, HIV is also spreading to more remote regions, as demonstrated by an epidemic among IDUs in the Siberian city of Irkutsk in 1999.

There are many limitations with the epidemiological data available on drug use and associated HIV infection. Very few countries are able to provide reliable national-level data, and for many countries there are no data. Few of the countries that report HIV statistics provide information on mode of transmission. In most countries, information on HIV prevalence among IDUs is based on HIV testing in very specific settings in a limited number of cities or in specific drug-using populations. Therefore, such information rarely provides a national-level picture of the phenomenon. In an effort to address these deficiencies, the Joint United Nations Programme on HIV/AIDS (UNAIDS), in association with the World Health

**Table 1. Regional HIV/AIDS statistics and features, December 1999**

	<i>Epidemic started</i>	<i>Adults and children living with HIV/AIDS</i>	<i>Adults and children newly infected with HIV</i>	<i>Adult prevalence rate* (percent)</i>	<i>HIV-positive women (percent)</i>	<i>Main mode(s) of HIV/AIDS transmission**</i>
Sub-Saharan Africa	late 70s–early 80s	23.3 million	3.8 million	8.0	55	Het
North Africa and Middle East	late 80s	220,000	19,000	0.13	20	IDU, Het
South and Southeast Asia	late 80s	6 million	1.3 million	0.69	30	Het
East Asia and Pacific	late 80s	530,000	120,000	0.068	15	IDU, Het, MSM
Latin America	late 70s–early 80s	1.3 million	150,000	0.57	20	MSM, IDU, Het
Caribbean	late 70s–early 80s	360,000	57,000	1.96	35	Het, MSM
Eastern Europe and Central Asia	early 90s	360,000	95,000	0.14	20	IDU, MSM
Western Europe	late 70s–early 80s	520,000	30,000	0.25	20	MSM, IDU
North America	late 70s–early 80s	920,000	44,000	0.56	20	MSM, IDU, Het
Australia and New Zealand	late 70s–early 80s	12,000	500	0.1	10	MSM, IDU
<b>Worldwide</b>		<b>33.6 million</b>	<b>5.6 million</b>	<b>1.1</b>	<b>46</b>	

\* The proportion of adults (15 to 49 years of age) living with HIV/AIDS in 1999 using 1998 population numbers

\*\* Het: heterosexual transmission; IDU: transmission through injection drug use; MSM: sexual transmission among men who have sex with men  
Sources: Joint United Nations Programme on HIV/AIDS and World Health Organization

Organization (WHO) and the United Nations International Drug Control Programme (UNDCP), is attempting to develop an epidemiological global overview of the role that injection drug use is playing in HIV epidemics. Data from different sources are being analyzed to provide reasonable HIV incidence and prevalence estimates for all countries. It is not unusual to see that official government figures may differ significantly from those reported through various research and surveillance efforts.

At the 1998 meeting of the Global Research Network on HIV Prevention in Drug-Using Populations, data were presented on the explosive HIV epidemics among IDUs

over the past 20 years. The data began with the epidemics in New York City in 1980, continued with the spread of HIV epidemics in various regions, and showed that in the past few years epidemics among IDUs have severely impacted the former Soviet Republics. New epidemics continue to emerge, as witnessed in Moscow in 1999. At the same time there have been encouraging signs from some cities that have been successful in reversing the epidemic (such as New York City and Edinburgh) and from those that have averted the epidemic altogether (including London and Sydney). However, recent data from some cities like Toronto and Kathmandu, where the epidemic had been

contained for a number of years, indicate that HIV prevalence is rising.

These different scenarios of prevented, reversed, and explosive epidemics, occurring at the same time in different regions, shed light on the dynamic nature of the epidemic among IDUs. They also point out the inadequacy of current understanding of the epidemic and the failure of decisionmakers to apply lessons learned over the past 20 years. Whereas effective HIV prevention interventions exist, in most countries researchers and public health officials have failed to influence the policies and programming that are necessary for their appropriate implementation.

The Global Research Network has an important role to play in promoting research that will support the development and implementation of effective public health interventions for preventing HIV infection in drug-using populations. It needs to move beyond the collection and analysis of HIV incidence and prevalence data to examining the risk behaviors and environments that facilitate rapid spread of HIV. This requires the utilization of multiple research methods, the tapping of multiple data sources, and the partnership of different professional disciplines. The research agenda needs to address multiple levels, ranging from individual behaviors and social networks to the local risk environment and macroenvironment.

There is a wealth of research that has already been undertaken or is in progress. The WHO Drug Injecting Project is using a multimethod approach to investigate risk behaviors and environments, including rapid assessment and response methods, behavioral surveys, and HIV prevalence

studies. The WHO/UNAIDS Substance Use and Sexual Risk Behavior Project uses similar methods to investigate sexual risk practices associated with substance use. The Asian Harm Reduction Network, in its report, "The Hidden Epidemic," aims to describe the HIV epidemic in countries of the Asian region and to map policy and program responses. The UNAIDS Intercountry Team for Asia and the Pacific has just completed a study on the effects of government policies and legislation on HIV vulnerability among drug users in seven Asian countries.

Research is also targeting specific interventions. For example, WHO is examining the role of opioid agonist pharmacotherapy in the prevention of HIV infection among IDUs. Euro-Methworks is monitoring the use of methadone globally and has developed a directory on methadone treatment policies and services around the world. The European Monitoring Centre for Drugs and Drug Addiction has reported on the range of different HIV prevention strategies being implemented in European Union countries. The International Pharmaceutical Federation has undertaken a survey of pharmacists in more than 50 countries to identify the scope of pharmacy-based HIV prevention services for IDUs, ranging from pharmacies as a point of information and education, through their role in the sale and provision of injecting equipment and in the dispensing of methadone and buprenorphine.

The Global Research Network is ideally positioned to steer the international research agenda, to facilitate collaboration between researchers and across countries and disciplines, and to build the evidence base necessary to develop, promote, and implement effective HIV prevention interventions among drug-using populations. ■

# Epidemiology and Control of Hepatitis C Virus Infection Among Injection Drug Users

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The hepatitis C virus (HCV) is hyperendemic among injection drug users (IDUs) in all parts of the world. Table 1 shows cumulated seroprevalences of HCV and HIV in different regions, from 98 published studies in different populations of IDUs, at different times, and using different methodologies; this provides an impressionistic picture. Regional HCV prevalences range from 60 percent in Australasia to 87 percent in Latin America. There is some mild correlation with HIV prevalence, which is much more varied, but in general HCV prevalence is extremely high no matter what the prevalence of HIV.

Despite the similarities in HCV seroprevalence among IDUs, estimates of overall HCV prevalence vary widely around the world. Table 2 shows some crude rates calculated from published estimates in some countries. This extreme variation does not simply reflect the numbers of IDUs—far more likely is the variation in assumptions and methods used to develop such estimates.

HCV infection in IDUs is associated with a number of factors, the strongest of which is duration of injecting. Age is also positively associated, but in general, simply because of its relationship with duration of injecting. Hepatitis B virus (HBV) is also associated with HCV, but IDUs exposed to both HCV and HBV are commonly exposed to HCV well before exposure to HBV. Where an IDU has been exposed to only one of these viruses, it is much more likely to have been HCV. This is because of the much higher proportion of IDUs in any injecting network who are infectious for HCV than for HBV. There are associations with injecting particular drugs; where cocaine is not injected, the primary injecting of heroin and other opiates is associated more strongly with HCV infection than is the primary injecting of amphetamines. However, the injecting of cocaine is more strongly associated with where it occurs; those most at risk are those who inject multiple drugs. Frequency of injecting has been associated with HCV in some studies, with evidence of negative associations with smoking heroin (as opposed to injecting it), and with lower rates among homosexual IDUs among whom frequency of injecting is low. Sharing needles and syringes (N&S) has been associated with HCV in some studies, surprisingly few

except that prevalences are so high as to make HCV seropositivity a poor discriminator in many populations of IDUs. This is also the case with regard to the number of IDUs with whom equipment is shared.

In relation to the associations of HCV with primary use of particular drugs, there are several possible explanations, including the following:

- The frequency of injecting: Opiates are *on average* injected more frequently than are amphetamines although the variance is greater with stimulants; and the increased risk with cocaine may be at least partly explained by the very high frequency of injecting;
- Different injecting networks associated with the prime use of different drugs have different degrees of risk behaviors for HCV; or
- There are other behavioral differences, perhaps associated with drug effects.

To date, there are no published studies examining this association or testing any of these hypotheses.

In many places, there have been reports of extremely high incidences of HCV among young IDUs in the first few months or years after beginning to inject. However, there is enormous variation in these incidences in published studies; this is indicated in table 3 by a crude estimation of the length of time to 50 percent prevalence by duration of injecting. In Baltimore (United States), Belgium, and France, time to 50 percent prevalence after beginning to inject was much less than 1 year; in Australia, New Zealand, and England, it was 5 years or more. This would seem to correlate generally with the existence (or otherwise) and reach of harm-reduction programs in these countries, including needle exchange and methadone maintenance.

Several studies have found HCV exposure among IDUs who reported no history of sharing N&S. This raises the possibility that the virus is commonly transmitted between IDUs on equipment or surfaces other than N&S. Other evidence which points in the same direction includes HCV

**Table 1. Seroprevalence of HCV and HIV among IDUs globally**

Region	Number of studies	N tested	HCV+ (percent)	HIV+ (percent)
Asia	12	1,982	79.8	65.9
Australasia	13	3,820	59.9	3.5
Europe	55	8,653	69.4	17.8
North America	16	7,335	77.6	9.7
South America	2	344	86.9	62.0
<b>Total</b>	<b>98</b>	<b>22,134</b>	<b>71.7</b>	<b>[17.6]</b>

**Table 2. Crude rates from HCV prevalence estimates in different countries**

	Estimated N exposed (median)	Crude rate (per 100,000)
United States	4,000,000	1,501
Australia	190,000	1,040
Canada	240,000	833
Portugal	46,500	471
Greece	28,000	261
Italy	140,000	244
Sweden	21,000	237
France	85,000	146
Denmark	7,500	144
United Kingdom	75,000	128
Luxembourg	500	123
Austria	7,500	94
Belgium	8,250	82
Germany	55,000	66
Finland	3,000	59
Netherlands	6,000	39

outbreaks in hematology and hemodialysis units; video observations of possible routes of blood-borne transmission among IDUs other than overt N&S sharing; the discovery of HCV RNA on other equipment (swabs, water, spoons, filters, tourniquets); and observations that the frequency of sharing this other equipment is very high.

Two cohort studies have found that the incidence of HCV infection is higher in those IDUs who report sharing N&S but is still appreciable in those who report no such sharing (table 4). It is unclear how important the sharing of equipment other than N&S is to the HCV epidemic among IDUs; where there is much N&S sharing, perhaps not very, but where there is little sharing it may be very important.

**Australia: Declining Incidence of HCV Among IDUs?**

Despite high rates of transmission of HCV among IDUs in Australia, there is increasing evidence of declines in incidence in a variety of settings and populations. A review of behavioral research among IDUs in Australia found a substantial decline in self-reported N&S sharing, from almost 100 percent in 1984 to around 20 percent in 1994 (Crofts et al. 1995). Reconstruction of the incidence of HBV and HCV among IDUs from prevalence data collected in 1993–1994 found a substantial decline in the incidence of HBV from around 12 cases per 100 per year to around 3 cases per 100 per year. There was a less substantial decline in HCV incidence in Melbourne and Sydney, from around 18 cases per 100 per year to around 13 cases per 100 per year, from 1980–1983 through 1987–1989 (Crofts et al. 1977). An open prospective field cohort of IDUs in Melbourne from 1990 through 1995 observed a decline in HCV incidence from 16 to 8 cases per 100 per year (Crofts and Aitken 1998). HCV prevalence among first-time

**Table 3. Prevalence of HCV among IDUs by duration of injecting**

Location	Lower duration	Prevalence	Upper duration	Prevalence	Time to 50% prevalence	Reference
Belgium	<1 m <12 m	45 75	>3 m	92	1.1 m	Denis et al. 1997
Baltimore (U.S.)	0–4 m 5–8 m	47 72	5–6 m	82	4 m	Garfein et al. 1996
France	>6 m	33	2+ m	90	9 m	Lucidarne et al. 1994
Baltimore	<1 y	64.7			9 m	Garfein et al. 1996
Spain	<1 y	69	4–8 m	87	9 m	Bolumar et al. 1996
Dublin (Ireland)	<2 y	70	>2 y	95	1.5 y	Smyth et al. 1995
Sydney (Aust.)	<3 y	26	>10 y	94	5.5 y	van Beek et al. 1994
Italy	<4 y	40	>8 y	91	5.0 y	Galeazzi et al. 1995
New Zealand	<4 y	53			3.7 y	Robinson et al. 1995
Spain	<4 y	78.9	8+ y	90	2.5 y	Bolumar et al. 1996
New Zealand	<5 y	73.5	>10 y	92.5	3.4 y	Chetwynd 1995
New Zealand	<5 y	35.6	>10 y	86.7	7.0 y	Kemp et al. 1998
England	<2 y	6.6	9+ y	41.2	19 y	Hickman et al. 1998

m = month  
y = year

attenders at a methadone maintenance general practice in Melbourne declined from 75 percent in 1991 to 50 percent in 1995 (Crofts et al. 1995). In the national monitoring of blood-borne viruses among N&S exchange program attenders, HCV prevalence among those who had been injecting for less than 2 years declined from 21 percent in 1995 to 12 percent in 1997 (Macdonald et al. 1999).

### Outstanding Research Questions

An increased understanding of the epidemiology of HCV among IDUs is necessary for better control of the epidemic. From this overview of current understanding, several questions stand out.

- What factors or circumstances differentiate between situations of high incidence and those of low incidence,

especially among young and new IDUs, for example, between Belgium and Baltimore on the one hand, and England, Australia, and New Zealand on the other?

- What factors differentiate between those IDUs infected with HCV early in their injecting careers, say within the first year of injecting, and those IDUs infected later in their careers, say after 10 years?
- What proportion of IDUs develop jaundice with acute HCV infection? This information is necessary to estimate the number of new HCV infections occurring among IDUs from observations of the number of cases of clinical jaundice. Clearly this proportion is lower for IDUs than that quoted for transfusion recipients.
- What is the natural history of chronic HCV infection in IDUs? Again, indications are that it is substantially more benign than among transfusion recipients.

**Table 4. HCV incidence among IDUs with regard to sharing injection equipment other than N&S**

	Annual HCV incidence	
	Victorian IDU Cohort Study	Kirketon Road Centre
Among equipment "sharers"	16.9	30.2
Among "non-sharers"	4.3	11.9

- Is promotion of transition to noninjecting routes of administration of illicit drugs among IDUs a feasible strategy for control of HCV?
- How can treatments for chronic HCV infection and vaccines against HCV and HBV best be delivered to IDUs?

There is a need for a more systematic process of estimating the number of people infected with HCV in different populations so that comparisons will highlight differences in epidemiology that are worth investigating.

**Gaining Control of the HCV Epidemic Among IDUs**

Control of the HCV epidemic in Western countries will not be achieved until transmission is controlled among IDUs. To date, HIV prevention measures among IDUs have, in some countries, prevented outbreaks of HIV, significantly reduced the incidence of HBV, and eradicated hepatitis D.

They may also have reduced the incidence of HCV, but very high incidences continue to be described in different populations of IDUs.

Multiple strategies will be needed to prevent transmission among IDUs. These will include the following:

- Primary prevention of drug use
- Prevention of transition to injecting
- Education of IDUs about HCV infection and how to avoid it
- Appropriate and effective treatment for chronic HCV infection
- Effective prophylactic vaccines
- Mechanisms for delivery of treatment and vaccines to IDUs
- Measures to counter discrimination
- Diversion of IDUs to noncustodial sentencing options
- Measures to prevent transmission of HCV in prisons

A major debate has occurred between the proponents of expansion of current prevention measures, especially the distribution and disposal of sterile injecting equipment, and those who believe that new measures will be necessary, in particular, the promotion of noninjecting routes of administration. Clearly both measures will be necessary. Expansion of needle distribution programs so that they are proportionate to the vastly higher prevalence of HCV would seem to be the more urgent strategy. ■

# The HIV Epidemic Among Injection Drug Users in Central and Eastern Europe: Update

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## Introduction

This article constitutes an update on the epidemiological characteristics and trends of the HIV epidemic in central and Eastern Europe, Turkey, and the former Soviet states of central Asia. The main points addressed include (1) the differences between countries and regions regarding risk, vulnerability, and current infection levels of HIV; (2) the extent of the spread of HIV infection, via sexual intercourse, from injection drug users (IDUs) to the heterosexual population at large; and (3) the demographic characteristics of the spread of HIV. The emphasis of this paper is on 1997 and 1998, the 2 most recent years for which data are available. Some developments from 1999 will also be touched upon.

## Data Sources

This review draws from multiple sources including national HIV surveillance data; published research; unpublished assessment and consultant reports for the Joint United Nations Programme on HIV/AIDS (UNAIDS), World Health Organization (WHO), and United Nations International Drug Control Programme (UNDCP); UNAIDS/WHO Country Epidemiological Fact Sheets; and international conference reports.

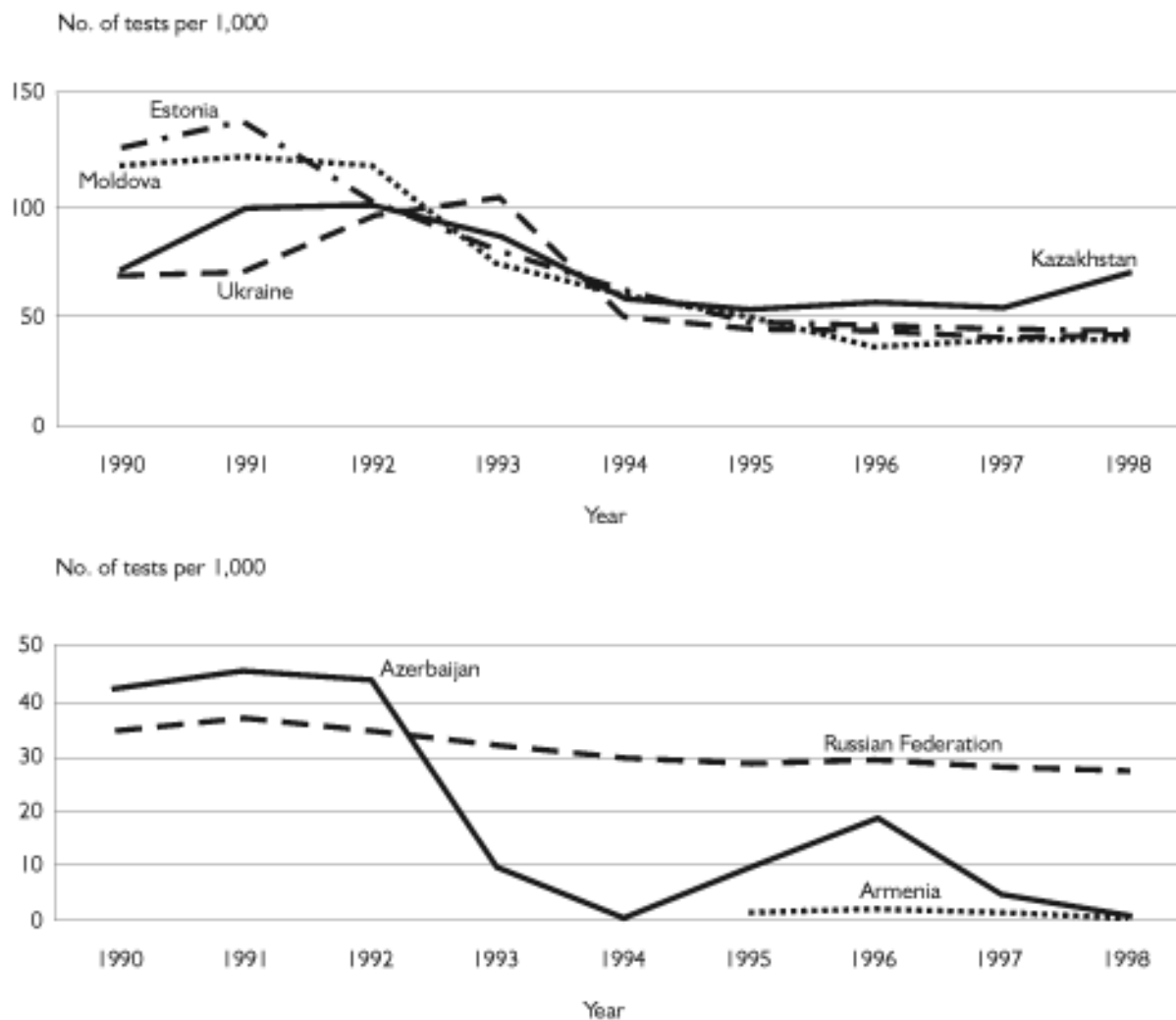
National AIDS program managers as well as UNAIDS Focal Points were contacted and requested to provide national HIV surveillance data, including breakdowns of reported HIV cases by transmission category and year of report. In the majority of the countries concerned, including the 15 Newly Independent States (NIS), HIV case reports are the result of large-scale testing and a two-stage registration process. Since the early 1990s, testing policies have gradually changed. Pregnant women and specific occupational groups are no longer routinely tested as testing has been made voluntary, except for blood donors. The total number of tests decreased in countries such as Moldova,

Ukraine, Russia, and Kazakhstan at the beginning of the 1990s and has only slightly decreased further since then. In other countries, such as Azerbaijan and Tajikistan, the number of tests has significantly declined due to shortages of test kits (figure 1).

Routine screening of high-risk groups, including patients with sexually transmitted diseases (STDs), prisoners, and drug users in contact with health or police authorities continues throughout most of the region. In some countries, including those most affected by the HIV epidemic, the detection of HIV outbreaks among IDUs was followed by increased efforts to test IDUs who had not previously been in contact with health authorities or police. Voluntary (confidential or anonymous) testing is also provided in the region but accounts for only a small proportion of both tests and registered positive test results.

In most countries, including the 15 successor states of the Soviet Union, HIV case reporting has traditionally involved two stages: recording all screening test results; and referral to a health institution for confirmation of a positive test result, history-taking, advice, and official registration. Even originally anonymous tests may lose anonymity on confirmation of a positive test result since results are reported by name. The clinic visit is also important. On the basis of the interviews there, patients are reclassified according to transmission category. For instance, prison inmates, occupational groups, and pregnant women are reclassified as drug users or as infected via homosexual or heterosexual intercourse. Except for Ukraine, which switched to laboratory reporting during 1996 and 1997, HIV reporting is usually based on cases registered by physicians. Failure to refer cases for registration may therefore lead to falsely low numbers of reported HIV cases and a biased distribution of registered cases by transmission category.

Figure 1. Rates of HIV tests per 1,000 individuals per year in selected Newly Independent States

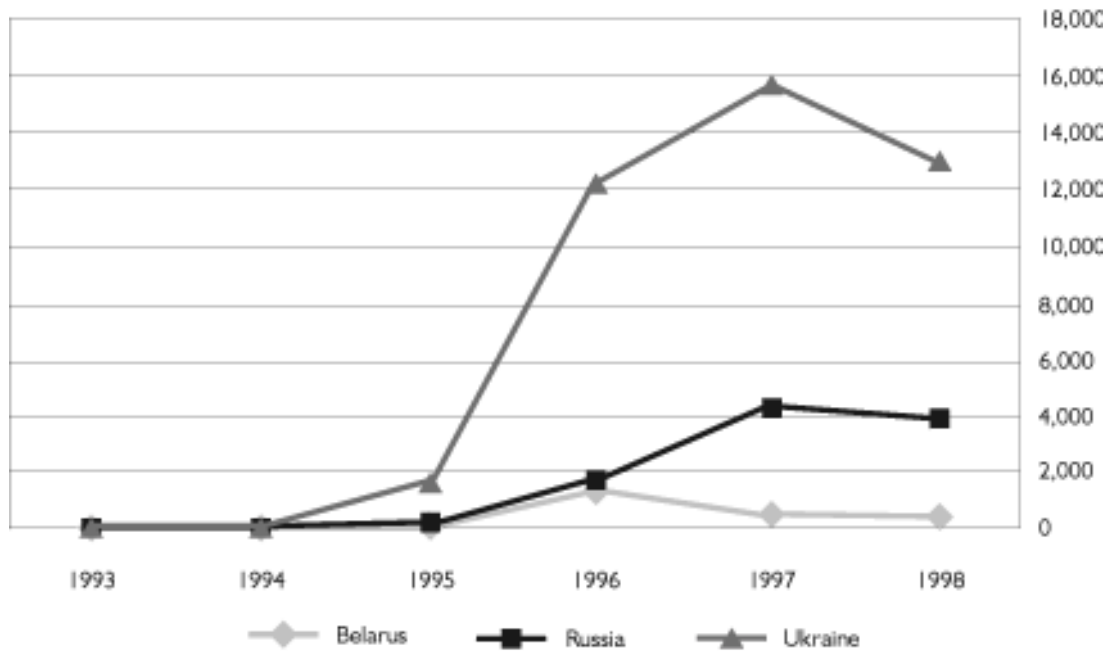


Source: European Centre for the Epidemiological Monitoring of AIDS, St. Maurice, France, 1999

The HIV case reporting data presented in this chapter are likely to be an underestimate of the true extent of HIV infection in the region. Nevertheless, given the relative uniformity and, with exceptions, stability of testing and reporting procedures in the region, case reports may be considered to *roughly* reflect the pace of HIV's spread and the geographical diffusion of the epidemic. In some of the worst affected cities, policies have been less stable with local authorities. In Ukraine and Belarus, for example, authorities first reacted to the detection of HIV among IDUs with intensified testing and later on increasingly promoted voluntary testing instead.

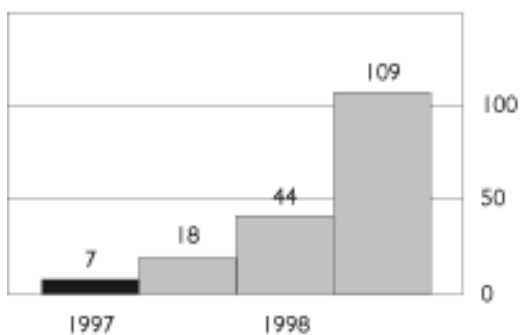
Data on the size, location, and characteristics of IDU populations were compiled from rapid assessment and other reports commissioned by UNAIDS and UNDCP. Estimates of the size of IDU populations are almost exclusively based on guesstimates by experts and key informants and hardly ever on more scientific methods, such as nomination, mapping, or capture-recapture. Depending on the political interest to magnify or minimize the extent of the epidemic, available IDU figures might therefore be inflated or deflated.

Figure 2. Number of new HIV infections in three Newly Independent States by year of report



Sources: Ministries of Health of Belarus, Russia, and Ukraine; UNAIDS/WHO Epidemiological Fact Sheets in HIV/AIDS and Sexually Transmitted Diseases for Belarus, Russia, and Ukraine, 1998

Figure 3. Reported HIV cases in Latvia, by half year, 1997–1998



Sources: Ministry of Health, Latvia; UNAIDS/WHO Epidemiological Fact Sheet on HIV/AIDS and Sexually Transmitted Diseases, Latvia, 1998

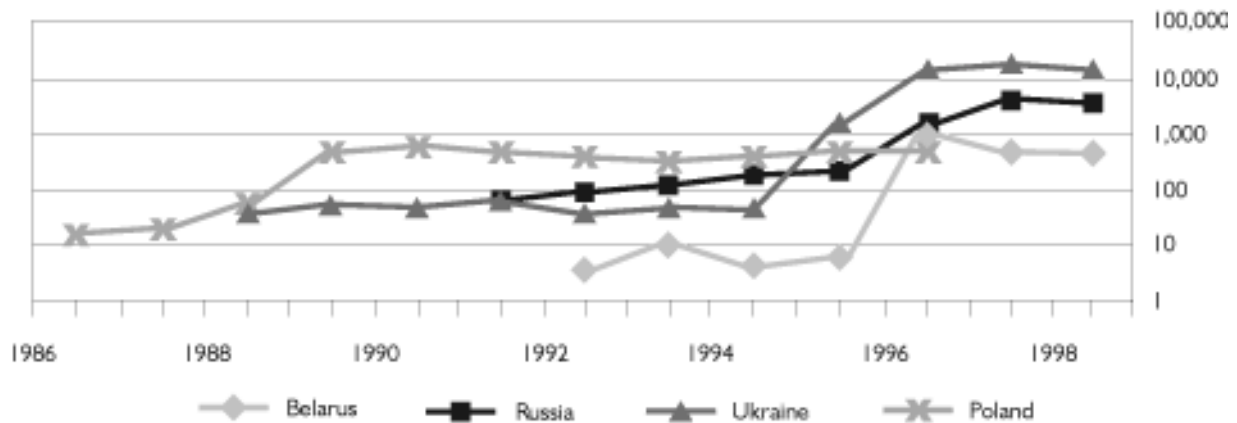
### HIV Case Reporting Data Show Rapid Spread Among IDUs in Cities of the NIS

HIV prevalence was very low in the region until 1995 when HIV started spreading among IDUs in the cities of several

NIS countries, including Ukraine, Belarus, Russia, Moldova, and Kazakhstan. The first outbreaks were reported in 1995 in the southern Ukrainian cities of Odesa and Nikolayev and were followed in 1996, 1997, and 1998, by a further spread of the virus in the same country, as well as by outbreaks in Svetlogorsk in Belarus; in Chisinau and Baltsi, two major cities of Moldova; in a prison in Temirtau in Kazakhstan; and an increasing number of cities in Russia. Some of these outbreaks are well documented: Kaliningrad in January 1996, Krasnodar in February, Nizhny Novgorod in March, Tumen in April, Rostov in June, Tver in January 1997, and Tula in April 1997.

In 1998 the total number of new infections reported was smaller than that reported in previous years (figure 2). This may be partially due to the particularities of testing practices. It may, however, also suggest that the epidemic reached a saturation point in high-prevalence cities such as Odesa, Svetlogorsk, and Kaliningrad, which account for between 25 to 80 percent of registered cases in their countries, and that new and perhaps more scattered IDU populations in other cities were becoming infected only gradually.

Figure 4. Recently reported HIV infections in three Newly Independent States and Poland by year of report



Sources: Ministries of Health of Belarus, Russia, Ukraine, and Poland; UNAIDS/WHO Epidemiological Fact Sheets on HIV/AIDS and Sexually Transmitted Diseases, Belarus, Russia, Ukraine, and Poland, 1998

In early 1999 a new outbreak with several thousand infections was reported from Moscow, which together with new, smaller-scale outbreaks, including those in Irkutsk in Siberia, and further spread of the virus in cities previously affected, is likely to result in an upturn of the Russian HIV incidence curve in 1999.

In 1997 and 1998 the first cases of HIV among IDUs were detected in the adjacent Baltic States, the Caucasus, and three or four of the central Asian countries other than Kazakhstan, and this led to a rapid increase in the total number of cases reported by these countries. The absolute number of HIV cases in these countries is still small (<100, except for Latvia) (figure 3), but IDUs account for the majority of new cases and about 50 percent of the cumulative cases. In early 1999, Estonia and Turkmenistan were the only successor states of the Soviet Union where no HIV infections had been officially reported at all among IDUs.

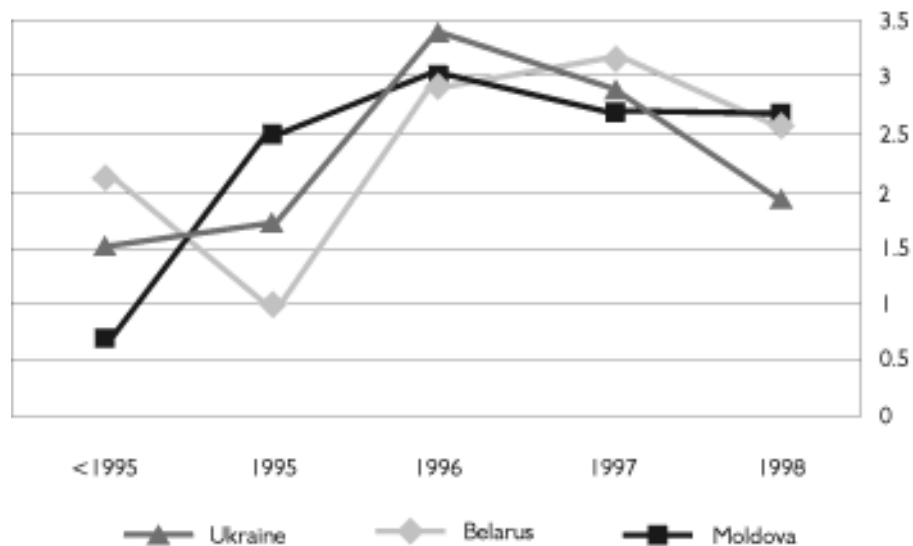
The former Communist countries of central Europe have so far escaped a major HIV epidemic driven by drug use. By the end of 1998, only 2, 6, 12, 17, and 30 drug users had been registered as HIV-positive in the five countries of Slovakia, Hungary, Slovenia, Czech Republic, and Croatia, respectively. Except for Poland, where infections among IDUs have dominated since the late 1980s, homosexual and bisexual men continue to be the most severely affected population group in this subregion. The total number of reported infections has remained relatively low, and except for men who have sex with men (MSM) in some capital

cities, there is little evidence to suggest a significant or rapid spread of HIV among any population group.

The Polish epidemic is relatively well documented. HIV was already spreading among Polish IDUs in the late 1980s, with the number of newly reported HIV infections among IDUs increasing from 12 in 1988 to 411 in 1989, peaking at 653 in 1990. Since then, between 350 and 600 new HIV infections among IDUs are reported every year. The epidemic curves of the NIS may well continue to be similar to that of Poland, although at higher infection levels and occurring 7 to 8 years later (figure 4).

In the Balkan countries, heterosexual transmission of HIV has most frequently been reported. Migrants such as Albanian male returnees from Italy and Turkish men from Germany may contribute to maintaining a certain (low) level of heterosexual transmission, but homosexuality is severely stigmatized, and transmission among MSM may be underreported. Except for Yugoslavia (Serbia and Montenegro), which has experienced an old epidemic among drug users similar to that in Poland, injection drug-use-associated HIV infection has so far remained the exception in the Balkan countries, as it has in central Europe. By the end of 1998, only 3, 4, and 9 cases had been reported from Romania, the former Yugoslav Republic of Macedonia, and Bulgaria, respectively. Albania remains the only country in this subregion where no injection drug-use-associated case of HIV infection has been reported so far. Table 1 summarizes HIV case reporting and the proportion of IDUs among all cases of HIV infection in the region.

Figure 5. Male-to-female ratios of HIV cases in three Newly Independent States by year



Sources: Ministries of Health of Ukraine, Belarus, and Moldova; UNAIDS/WHO Global HIV/AIDS and STD Surveillance Fact Sheets, 1998

### Drug Use Patterns and Trends and HIV Prevalence Rates Among IDUs

Confirming case reporting data, information on injection drug use and HIV prevalence among drug users collected from a variety of sources shows that (1) large and increasing numbers of IDUs in the region are at risk of infection; (2) although injection drug use is spreading throughout the region, the relative size of drug-using populations is larger in the NIS than in central and southeastern Europe; (3) HIV prevalence among IDU populations in the NIS is patchy (not uniformly high); and (4) HIV prevalence among IDUs in central and southeastern Europe (except for Poland and Yugoslavia) is still very low.

Prevalence rates calculated from both estimated and registered numbers of drug users show significant differences between IDU populations in the NIS and central and southeastern Europe. While more than 10 per 1,000 people are estimated to inject drugs in Russia, Ukraine, Kazakhstan, and Georgia, and in certain cities, such as Odesa and Svetlogorsk, it is up to 50 or even 70 per 1,000 people, estimates tend to put prevalence rates in central Europe at less than 2 per 1,000 people. Even in relatively heavily affected cities in central Europe, such as Warsaw in Poland and Split in Croatia, hardly more than 0.5 percent of the population are believed to inject drugs (table 2, see page 22).

The number of IDUs registered by the police and health services tends to be 10 times lower but is consistent with the estimates. HIV rates in the population are higher in the NIS than in central and Eastern Europe (table 3, see page 23). Higher prevalences seem to correspond with the use of homemade opiates, whereas in countries where heroin is the most commonly used injectable drug, the number of IDUs seems to be lower.

HIV prevalence among IDUs is highest (60 to 70 percent) in cities where large numbers of HIV-infected IDUs have been reported, including Nikolayev in Ukraine, Svetlogorsk in Belarus, and Kaliningrad in Russia. Countrywide, only between 7 and 9 percent and between 0.4 and 0.7 percent of registered IDUs were found to be HIV infected in the two most affected countries, Ukraine and Russia, respectively. Very large numbers of IDUs remain HIV negative but are at increasing risk of infection as the epidemic continues to spread (table 4), see page 24.

Prevalence rates of more than 40 to 50 percent were reported from samples taken in Polish cities and in Belgrade, Yugoslavia, in the mid-1990s. Otherwise, HIV prevalence among IDUs in central and southeastern Europe has been consistently low (<1 percent).

**Table 1. Cumulative number of reported HIV infections and proportion of IDUs among all HIV cases**

Country	Cumulative number of reported HIV infections by December 31, 1998	Cumulative rate of HIV infection per 100,000, December 31, 1998	IDUs among all HIV cases, 1998 (percent)
Albania	39	1.2	0
Armenia	76	2.0	13
Azerbaijan	103	1.4	41
Belarus	2,341	22.7	83
Bosnia-Herzegovina	N/A	N/A	N/A
Bulgaria	248	3.0	4
Croatia	374	7.8	8
Czech Republic	392	3.8	4
Estonia	84	5.6	0
Georgia	73	1.3	66
Hungary	772	7.5	1
Kazakhstan	815	4.9	80
Kyrgyzstan	27	0.6	22
Latvia	251	10.0	49
Lithuania	135	3.6	49
Moldova	879	20.2	84
Poland	5,591	14.4	64
Romania	690 <sup>#</sup>	3.0	0.1
Russian Federation	10,952 <sup>*</sup>	7.1	47
Slovakia	99	1.7	2
Slovenia	142	7.1	8
Tajikistan	4	0.2	100
T.F.Y.R. of Macedonia	45	2.2	9
Turkey	864	1.4	10
Turkmenistan	1	0.0	0
Ukraine	24,483 <sup>**</sup>	47.5	79
Uzbekistan	24	0.1	4
Yugoslavia	713 <sup>#</sup>	6.8	52 <sup>#</sup>
<b>Total</b>	<b>50,217</b>	<b>10.5</b>	<b>64</b>

N/A = not available; <sup>#</sup> = AIDS cases; <sup>\*</sup> = At least 2,000 HIV cases among IDUs not yet officially registered; <sup>§</sup> = Adult cases only; <sup>\*\*</sup> = At least 16,000 other cases were not yet officially registered

Sources: UNAIDS/WHO Epidemiological Fact Sheets on HIV/AIDS and Sexually Transmitted Diseases 1998; Pokrovskiy, Ladnaia et al. 1999

### The Extent of Heterosexual Infection

There is little evidence to suggest a major spread of HIV in the heterosexual population. First of all, HIV prevalence among low-risk population groups such as blood donors and pregnant women is still below 1 percent, even in the

most affected countries (tables 5 and 6, see page 26). Secondly, HIV prevalence among sex workers, arguably the most vulnerable group after IDUs, remains low throughout the region, with only one major exception among opiate-injecting sex workers in Kaliningrad (table 7, see page 27). According to key informants, the prevalence rates of about

**Table 2. Estimated size of IDU populations and IDU prevalence per 1,000 individual**

<i>Country</i>	<i>Year</i>	<i>Number of IDUs</i>	<i>Prevalence per 1,000</i>
Croatia	1994	6,000–8,000	1.2–1.6
Georgia	1997	50,000–150,000	9.2–27.7
Hungary	1994	30,000–70,000	2.9–6.8
Kazakhstan	1998	200,000	12.0
Kyrgyzstan	1998	20,000	4.4
Poland	1995	40,000–80,000	1.0–2.0
Romania	1997	6,200	0.2
Russia	1997	1,000,000–2,500,000	6.7–16.8
Slovenia	1995–1996	1,000–4,000	0.5–2.0
Tajikistan	1998	120,000	20.5
Turkmenistan	1998	9,000	2.0
Ukraine	1997	600,000–700,000	11.6–13.6
Uzbekistan	1998	200,000	8.8
<i>City</i>			
Almaty, Kazakhstan	1998	12,000–40,000	10–34
Bishkek, Kyrgyzstan	1998	14,000–15,000	23–26
Ljubljana, Slovenia	1992	400	0.7
Odesa, Ukraine	1998	35,000–60,000	30–48
Split, Croatia	1994	1,200	4.0
Svetlogorsk, Belarus	1997	5,000	69.4
Warsaw, Poland	1996	10,000	6.3

Source: UNDCP, UNAIDS rapid assessment reports

0.6 percent in patients with sexually transmitted illnesses (STI) and “promiscuous” persons in Ukraine may well be due to injection drug use rather than sexual transmission.

Finally, male-to-female sex ratios of reported HIV cases have only gradually declined, less so than they would have typically in situations where heterosexual transmission is becoming dominant. Even in the most affected country, Ukraine, males continue to account for two-thirds of all cases (figure 5, see page 20). In high-prevalence cities including Svetlogorsk and Odesa, as well as countries such as Belarus, Moldova, Kazakhstan, and Ukraine, IDUs, who

are between 65 and 95 percent male, account for the overwhelming majority of HIV cases, about 80 percent.

#### **Age Data**

As in other regions, the HIV epidemic mainly affects young adults in their twenties. Between 5 and 20 percent of those diagnosed as HIV infected are under 20 years of age, and between 20 and 40 percent are 20 to 24 years of age. In countries where IDUs account for the majority of cases, such as Moldova, Belarus, and Russia, HIV-infected persons are younger than in the Czech Republic, Bulgaria, and

**Table 3. Registered IDUs in selected Eastern European countries and cities**

Country	Year	Number	Rate per 1,000 individuals (percent)
Croatia	1998	2,200	0.5
Kazakhstan	1997	26,000	1.6
Kyrgyzstan	1998	5,000	1.1
Macedonia	1997	2,566	1.2
Poland	1994	17,000	0.4
Russia (Ministry of Internal Affairs)	1997	250,000	1.6
Slovakia	1997	1,200	0.2
Ukraine	1997	82,000	1.6
Uzbekistan	1998	15,000	0.7
<i>City</i>			
Bishkek, Kyrgyzstan	1998	1,400	3.4
Kraków, Poland	1996	2,000	2.2
Ljubljana, Slovenia	1996 (1992 data)	64	0.2
Odesa, Ukraine	1999	6,274	5.0
Split, Croatia	1997	620	1.3

Turkey where sexual transmission, both homosexual and heterosexual, is more important.

Among HIV-infected IDU populations, the age distribution varies considerably, with 65 percent in Kaliningrad, for instance, and 50 percent in Moldova being under 25 years of age. A tabulation of different drug-using populations (largely HIV-negative) also shows that in some cities up to 25 percent are teenagers and another 40 percent are young adults between the ages of 20 and 25. In St. Petersburg, the proportion of teenagers and young adults in the IDU population reached by the needle exchange program increased significantly between 1997 and 1998 (figure 6, see page 26). If only IDUs with a short history of injection drug use are considered, the proportion of those under 25 who are HIV infected rises to between 70 and 80 percent (figure 7, see page 25).

### Summary and Conclusion

Both HIV case reporting and prevalence data suggest that the epidemic is still highly concentrated in IDU populations in an increasing number of cities in the NIS. HIV infections

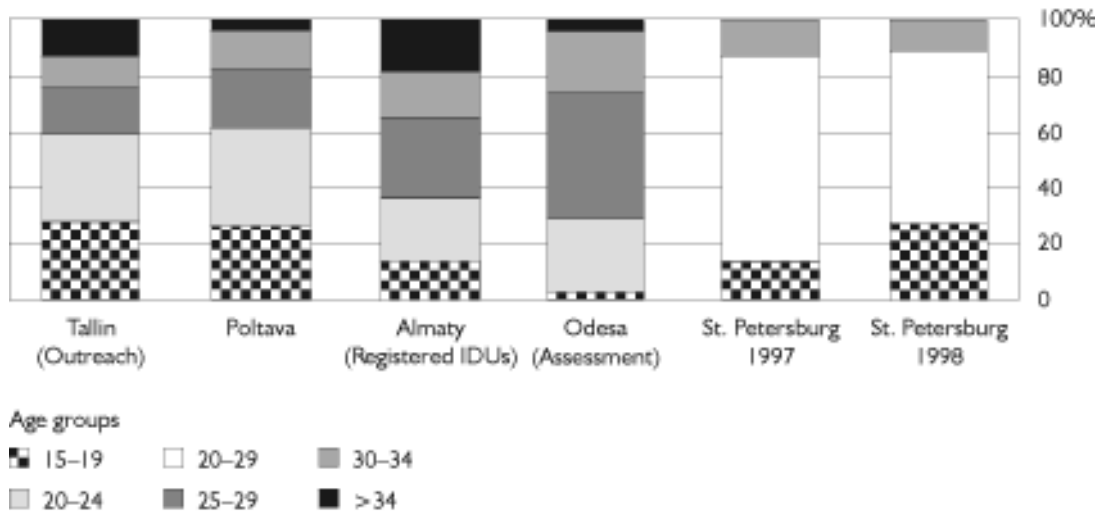
remain rare in some cities and in IDU populations in the NIS, in IDU populations in central and southeastern European countries (other than Poland and Yugoslavia), and in virtually all other population groups in central and Eastern Europe and central Asia. This includes sex workers and STI patients. Possible exceptions are the relatively small networks of homosexual men in capital cities that were not discussed in this report because of the scarcity of data. Given the very large number of drug users in the NIS susceptible to HIV infection, there is considerable potential for a further spread of the epidemic in this population group. The number of IDUs and the potential for rapid spread of HIV is also increasing in central and southeastern Europe. HIV prevention among drug users (and perhaps drug control) should therefore remain the cornerstone of any regional strategy.

Currently, there is insufficient evidence to suggest a significant or rapid spread of HIV from IDUs into the general heterosexual population, although the potential for such a spread can obviously not be excluded for the future. There is probably a significant overlap of IDU and sex

**Table 4. HIV prevalence among drug users, different surveys and testing periods**

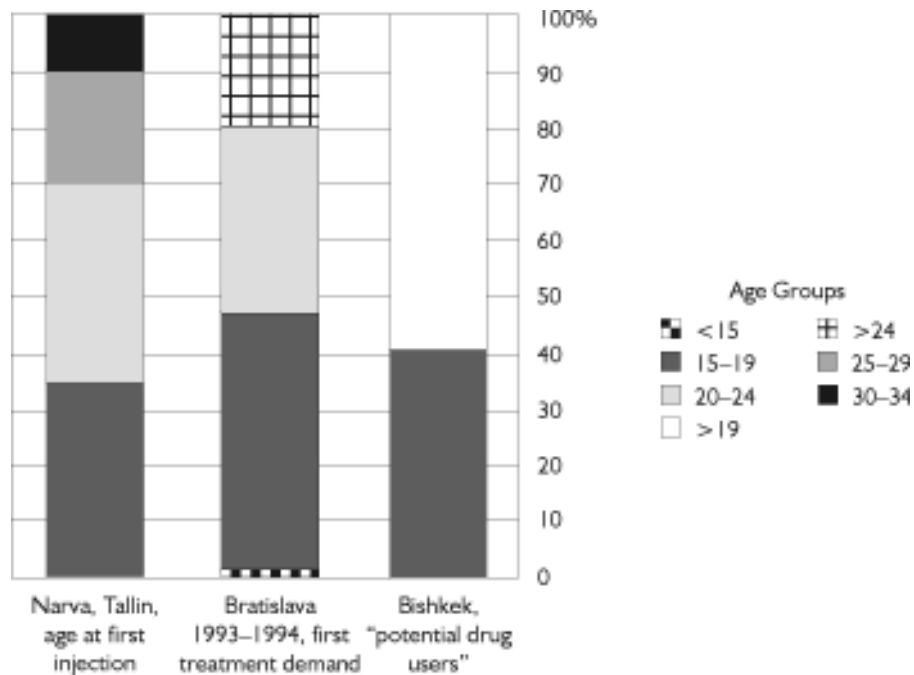
<i>Place</i>	<i>Year</i>	<i>Characteristics</i>	<i>Number tested</i>	<i>Prevalence (percent)</i>
Armenia, Yerevan	1996	Registered IDUs	122	0.0
Belarus, Svetlogorsk	1998	Blood residues in exchanged needles and syringes, IDUs attending outreach	?	67
Bulgaria	1999	Blood residues	328	2.8
Croatia	1994–1998	Registered IDUs in treatment	>2,500	0.8
Czech Republic	1996	Long-term addicts	?	0.0
Prague	1996	Long-term addicts	?	0.1
Estonia	1997	Registered IDUs	106	0.0
Hungary	1998	IDUs in treatment	325	0.0
Latvia	1998	Registered IDUs	310	11
Poland, Szczecin	1996	IDUs in treatment	58	50
Warsaw	1994	Detoxification patients	205	46
Warsaw	1995–1997	Detoxification patients	?	<15
Russia	1997	Registered IDUs	175,248	0.7
Russia	1998	Registered IDUs	224,862	0.4
Kaliningrad	1997	Arrested opiate-injecting sex workers	300	65
St. Petersburg	1998	IDUs attending outreach	1,500	0.3
Slovakia	1986–1998	Registered IDUs	2,898	0.0
Slovenia	1995–1997	Methadone patients	419	0.2
Turkey, Istanbul	1996	?	400	0.0
Ukraine	1998	Registered IDUs	64,968	8.6
Ukraine	1st quarter 1999	Registered IDUs	13,385	7.8
Odesa	1997	Arrested IDUs	?	31
Nikolayev	1997	Arrested IDUs	?	57
Yugoslavia, Belgrade	1987–1997	Drug addicts	1,696	10.7
Belgrade	1988–1992	Registered IDUs	?	44

**Figure 6. Age distribution of selected IDU populations**



Sources: Médecins du Monde 1999; Nolimal and Jerman 1996; Nociar (Council of Europe); UNAIDS and Almaty City Centre 1998; Kumar 1998; Protopopov and Zaporozhets 1997

**Figure 7. Age distribution of IDUs with a short history of injection drug use**



**Table 5. HIV prevalence in different population groups in Russia, 1998**

<i>Population group</i>	<i>Number of tests</i>	<i>Prevalence (percent)</i>
STI patients	1,497,253	0.02
Blood donors	3,768,943	0.002
Pregnant women	2,444,006	0.005

Sources: Pokrovskiy, Savtchenko et al. 1999; Kruglov 1999

**Table 6. HIV prevalence in different population groups in Ukraine, 1998**

<i>Population group</i>	<i>Number of tests</i>	<i>Prevalence (percent)</i>
STI patients	213,251	0.56
Blood donors	1,145,989	0.07
Pregnant women	463,240	0.12

Sources: Pokrovskiy, Savtchenko et al. 1999; Kruglov 1999

**Table 7. HIV prevalence among sex workers, different surveys**

<i>Place</i>	<i>Year</i>	<i>Characteristics</i>	<i>Number tested</i>	<i>Prevalence (percent)</i>
Belarus	1998	Women with multiple sex partners	1,800	0.0
Estonia	1997–1998	Sex workers	681	0.0
Kazakhstan	1998	Registered sex workers	222	0.0
Latvia, Riga	1998	Sex workers	198	0.0
Poland	1995	Registered sex workers	539	0.2
Katowice	1996	Mainly drug-injecting sex workers	44	2.3
Russia	1998	Promiscuous persons	172,927	0.02
St. Petersburg	1998	Heroin-injecting sex workers	83	0.0
Moscow	1999	Sex workers tested at STI clinic	550	0.6
Kaliningrad	1997	Opiate-injecting sex workers	300	65
Slovakia	1985–1998	Prostitutes	1,154	0.3
Turkey, Istanbul	1996	Unregistered non-Turkish prostitutes (Romanians, Ukrainians, Russians)	2,000	0.2
Istanbul	1996	Registered Turkish prostitutes	3,000	0.0
Ukraine	1998	Promiscuous persons	54,166	0.6
Odesa	1998	Sex workers at drop-in center	240	2.5

Sources: UNAIDS/WHO Epidemiological Fact Sheets, Belarus, Estonia, Latvia, Kazakhstan, and Slovakia; Dehne et al. 1996

worker populations in the NIS (data not presented here), but there is little information on sexual behavior and networking. While strategies and interventions aiming to reduce sexual transmission and vulnerability to unsafe sex and violence should reach *all* of those in the region who are vulnerable, perhaps there should be a focus on sex workers and their clients.

There is little doubt that the epidemic mainly concerns young people as the vast majority of those who are HIV-infected are in their twenties. However, if risk environments and risk behaviors instead of manifest infections are considered, it becomes clear that adolescents rather than young adults should be at the center of attention. The majority of IDUs start engaging in risk behaviors as teenagers.

Socioeconomic correlates of HIV infection, drug use, and STIs, have not been described and analyzed in this report. Nevertheless, there would appear to be sufficient evidence to suggest that both HIV and injection drug use are particularly prevalent (and the concerned populations are the youngest) in cities and regions where the economic crisis has hit hardest. Young towns like Svetlogorsk and port cities such as Kaliningrad and Odesa appear to be the most vulnerable because unemployment affects the majority of young people and because drug resupply is easy and continuous given the geographic location. This situation would appear to call for a comprehensive, geographically

focused strategy that not only addresses risk factors and behaviors but the underlying social and economic determinants of the various epidemics.

To respond rationally to the rapidly expanding dual epidemics, especially in the NIS, research will have to address economic questions regarding drug markets and the financial sustainability of interventions. The following are but a few of the questions that have arisen from recent epidemiological reports and project assessments:

- What are the socioeconomic determinants of high IDU prevalence and the potentially large HIV epidemics associated with it? Can IDU populations be mapped?
- Does the risk of HIV infection differ between IDUs who continue with “kitchen” production of opiates and those who buy drugs from dealers following “garage” and “factory” production? What are the implications for prevention?
- What are the social and economic determinants, and what are the exact behavioral correlates and consequences for prevention of the opiate-to-heroin transitions currently seen in the NIS?
- With needle and syringe exchange being the most important prevention program element in the NIS, what are the options for assuring the financial sustainability of such programs? ■

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## Central–Eastern European Harm Reduction Network Report

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The history of drug use and the HIV/AIDS epidemic in the Central–Eastern European and Newly Independent States (CEE/NIS) was deeply affected by the 1989 collapse of the economic and political system that formerly prevailed in the region. The Cold War era artificially produced an isolated Eastern Bloc, stretching geographically from the Berlin Wall in Germany to include the People's Republic of China. Until recently, this artificial border, the so-called Iron Curtain, separated the CEE/NIS region from the twin epidemics of injection drug use and HIV infection.

Some forms of locally prepared illicit drugs have been in use since the 1980s, including “kompot” in Poland (an injectable liquid containing opiates) and “poppy tea” in Hungary (a beverage extracted from poppy straw). Abuse of legal substances has been widespread and included nonmedical use of codeine, inhalation of organic solvents among teenagers, and abuse of tranquilizers and alcohol among the middle-aged population. The lifting of the Iron Curtain in 1989 created a market for drugs such as heroin and amphetamines which were smuggled through or directed to CEE/NIS countries.

### **The Prevalence of Drug Use in the Region**

The prevalence of injection drug use has increased in the CEE/NIS region. According to data from the World Health Organization (WHO), 27 countries from the region had reported injection drug use by 1998 (Ball, Rana, and Dehne 1998). Estimates suggest that more than 1 percent of the total population inject drugs in Russia, Ukraine, Kazakhstan, and Georgia (MAP Symposium 1998). In certain cities, such as Svetlogorsk in Belarus and Odesa in Ukraine, an estimated 5 percent of the total population inject drugs. The same estimates show 0.2 percent of the population in Central Europe injecting drugs.

New ways of drug preparation and distribution appeared, such as the use of “chorny” in Russia, which is heroin diluted in human blood and distributed in syringes (A. Galyabin, personal communication, 1997). Many injection drug users (IDUs) are youths, especially among Roma minorities, who started injecting between the ages of 10 and 12 (Richi, personal communication, 1997). Drugs of choice include heroin and amphetamines, although drugs are often produced domestically and distributed among user groups (e.g., raw opium, obtained by cutting the green poppy heads). In general drugs are not very expensive, and syringes are easily available through pharmacies (DeJong et al. 1998).

### **Transmission and Prevalence of HIV**

The most likely routes of HIV transmission among IDUs are sharing needles and drugs (MAP Symposium 1998). “Frontloading” (DeJong et al. 1998) has been reported in Poland. In Russia, chorny has been distributed in preloaded syringes and diluted in human blood to stabilize the acidity. Communal drug containers are used for kompot in Poland (M. Zygaldo, personal communication). The sharing of spoons or other mixing containers is also reported.

Prior to 1995, 90 percent of new AIDS cases within Europe occurred in Western Europe (Hamers et al. 1998). Mass screening of people at risk in the CEE/NIS region showed extremely low levels of HIV infection, with 30,000 cases reported among a population of 450 million (United Nations 1998b, pp. 15-18). By 1998, 21 CEE/NIS countries reported HIV infection among IDUs (Ball, Rana, and Dehne 1998). By the end of 1998, 270,000 adults and children in the region were living with HIV/AIDS (United Nations 1998c); 80,000 new infections were reported that

year. Policies for HIV control are based on large-scale testing for HIV in the general population, compulsory testing of vulnerable groups, registration, and the isolation and exclusion of HIV-positive individuals (DeJong et al. 1998).

The first HIV outbreaks in the CEE/NIS region were reported in the cities of Odesa and Nikolayev in the Ukraine; Kaliningrad, Krasnodar, and Nizhny Novgorod in Russia; Svetlogorsk in Belarus; and Chisinau in Moldova. A recent outbreak was reported in Moscow, Russia. The first country in which HIV infection occurred predominantly among IDUs and their sexual partners was Poland, beginning in the early 1990s. In Warsaw, Poland, 60 percent of IDUs are currently HIV positive, and in 1998, 65 percent of HIV-positive persons in that city were IDUs (United Nations Development Programme, Warsaw 1998).

The economic collapse and international migration within the countries of the former Soviet Union facilitated an explosion of the HIV epidemic. In the Ukraine, 44 persons tested HIV positive in 1994. Four years later, an estimated 110,000 persons were infected with the virus (United Nations 1998a), 80 percent of whom were IDUs. In the Russian Federation the number of persons testing HIV positive increased from 158 in 1994 to 4,400 by the end of 1997 (United Nations 1998a). Of the latter, 74 percent were IDUs. Overall, an estimated 40,000 people live with HIV in Russia. The first known occurrences of IDU-related HIV infection in Moldova (Rhodes et al. 1999) consisted of 16 cases reported in 1992. By 1999, the number of HIV cases there had increased to 979. Of this number, 24 have overt AIDS, and 85 percent are IDUs (N. Chebotarenco, personal communication). Similar figures were reported from Svetlogorsk and Mogil'ov in Belarus.

### **Harm-Reduction Programs**

International organizations, such as the Joint United Nations Programme on HIV/AIDS (UNAIDS), United Nations Development Programme (UNDP) Poland, WHO, Soros Foundation, Médecins Sans Frontières (MSF), and Médecins du Monde (MDM) all reacted to the rapid spread of HIV in CEE/NIS. Pilot programs of outreach, peer education, syringe exchange, and low-threshold services for drug users were started in those cities with high HIV incidence among IDUs.

### **Preventive Measures**

Preventive measures were set up in the Ukrainian cities of Nikolayev, Poltava, Odesa, and Kiev. A Russian-language Website designed in Kiev provides information on alcohol

and drugs (<http://www.adic.org.ua/users/doctors/hr.htm>). The Poltava Anti-AIDS Charitable Foundation also developed a Website (<http://members.xoom.com/AAF/>). In Chisinau, Moldova, two programs started with funding from the Open Society Institute (OSI) and UNAIDS and involve publishing a harm-reduction newsletter in Russian. To date, seven issues have been distributed among IDUs as well as governmental and nongovernmental officials. In Poland, harm-reduction programs were initiated with UNDP and OSI funding, and a Polish Harm Reduction Network has since been formed consisting of needle exchange programs for seven cities: Kraków, Katowice, Pulawy, Jelenia Góra, Legnica, Wrocław (Breslau [in German]), and Brzeg Dolny. Outreach programs were started in the Russian Federation cities of Yaroslavl, Moscow, and St. Petersburg with OSI, MSF, and MDM funding. A rapid assessment and response program started in 1998 (Burrows et al. 1998) in several Russian cities. In Belarus, harm-reduction programs started in Svetlogorsk, Vitebsk, and Mogil'ov. The Lindesmith Center is planning a rapid expansion of its harm-reduction programs in Russia, Ukraine, Kazakhstan, Kyrgyzstan to approximately 25 to 30 by the end of 1999.

Foreign funds were also allocated in the Central-European, Balkan and Baltic regions to set up preventive measures and proactive interventions. These measures are characterized as harm reduction, an approach that is still discouraged by policymakers despite the fact that such interventions help prevent HIV, hepatitis, drug overdoses, and other consequences of drug use.

### **Substitution Therapy**

The first methadone treatment program in Poland was started in 1992 as a research project, and it provided methadone maintenance treatment (MMT) only to HIV-positive drug users. Revised regulations accepted MMT as a treatment for opiate addiction when prescribed by psychiatrists and infectious disease specialists. In Slovenia, MMT was introduced in 1994, and in the following year substitution programs started in 11 drug treatment centers. In Lithuania, MMT began in 1995 as a high-threshold service; new regulations adopted in 1997 have made MMT available to opiate-addicted patients in the care of psychiatrists and general practitioners. MMT programs began recently in Estonia and Latvia. In Russia, where methadone is a prohibited drug, the opiate agonist Stadol (butorphanol) is provided in the Yaroslavl Outpatient Drug Clinic. Most CEE countries consider MMT a harm-reduction measure. MMT is being reconsidered by the Czech government, and has been available since the mid-1990s in Macedonia, the Slovak Republic, and Bulgaria.

**Table 1. Proportion of IDUs among HIV-positive cases in CEE/NIS**

	No. of registered HIV cases 1998	Proportion of IDUs among HIV cases (percent)
Belarus	2,341	83
Kazakhstan	815	80
Moldova	879	84
Ukraine	24,483	79
Russia	11,000	47
Poland	5,591	64

### ***Low-Threshold Services***

Low-threshold drop-in centers, outreach programs, and needle exchange programs were adopted as harm-reduction programs in the mid-1990s in countries with low HIV incidence. The availability of foreign funding, strengthening of the civil sector, computer use, and the liberalization of information dissemination were crucial in facilitating the spread of the harm-reduction approach. Some projects are extensions of existing drug services, such as the *Monar Kraków* in Poland which was originally a therapeutic community. In Klaipeda, Lithuania, and Szeged, Hungary, abstinence-oriented treatment centers increased the scope of their services to include needle exchange as a satellite project. In other cases, civil organizations were established to provide low-threshold services; among these are the SANANIM in Prague, Czech Republic; the Vozvrasheniye Foundation in St. Petersburg, Russia; the Shapagat in Temirtau, Kazakhstan; the Stigma in Slovenia; and the Charitable Anti-AIDS Fund in Poltava, Ukraine.

### ***Obstacles to Effective Programs***

In countries of the region with low HIV rates, drug abuse service programs experienced high relapse and dropout rates by patients following repeated unsuccessful attempts at abstinence. Drug abuse treatment services emerged within the former system's centralized, highly bureaucratic policymaking environment and lacked communication with the community. Policies toward drug consumption and possession are in general highly repressive. The health care system provides services within psychiatric facilities; the availability of residential treatment facilities is limited. Legislation prohibits or severely restricts interventions incorrectly perceived as promoting drug use, such as needle exchange, harm-reduction education regarding injection drug use, and agonist substitution therapies. Some countries, such as Macedonia and Croatia, have become

characterized by open drug use; elsewhere, drug use has remained clandestine, and illegal shooting houses serve as gathering places for drug injection. In the prevailing hostile political environment, drug users are difficult to reach through regular channels. The total number of reported HIV infections has remained relatively low, as well as the estimated size of the population injecting drugs.

### **International Networking**

International networking is a major strategy for introducing and diffusing harm-reduction approaches in hostile social and political environments. In June 1997 a meeting was held in Warsaw, Poland, to found a network of professionals and programs engaged in delivering harm-reduction services in the CEE/NIS region. The goal of this network was to support public health and medical professionals in their efforts to serve the needs of drug users residing in the region. This idea was conceived by the health professionals whose activities are conducted far from the corridors of power where policy is formulated. Later, the International Harm Reduction Development Program (IHRD) of the Lindesmith Center, Open Society Institute–New York, and UNAIDS joined with these harm-reduction professionals to cosponsor the meeting. The initiators of this meeting were seeking to found a network that could influence local, national, and regional policies, and improve the delivery of services to drug users and their communities. The Central–Eastern European Harm Reduction Network (CEEHRN) has developed a list-serv ([list@ceehrn.org](mailto:list@ceehrn.org)) and a Web page ([www.ceehrn.org](http://www.ceehrn.org)) and edits a regular newsletter. All materials are issued in both English and Russian, since Russian is the official language in most of the region. The Network also provides information and advocacy on harm reduction to national and international bodies. The membership consists of individual members and member organizations from the CEE/NIS region and supporting members from other regions. The following countries have provided a total of 66 individual and program members: Albania, Azerbaijan, Belarus, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Macedonia, Moldova, Poland, Russia, Slovakia, Slovenia, and Ukraine.

### **Perspectives**

Considerable evidence demonstrates that well-designed intervention programs can decrease the spread of HIV infection among IDUs. Needs include (1) additional funding to ensure sustainable programs, (2) further behavioral and epidemiological research to improve access to services, and (3) policy changes to increase coverage and ensure sustainability. ■

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## Outreach Activity Among Injection Drug Users in Odesa and Nikolayev

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According to operational data (seromonitoring), as of June 1, 1999, 46,609 HIV infections were reported in Ukraine. Of them, 27,145 were officially registered, and injection drug users (IDUs) accounted for 21,119 of this number. However, the real figure seems to be much higher.

Before 1995, 70 percent of all HIV transmissions were sexual. By the end of 1996, however, 75 to 80 percent of HIV infections were transmitted through the injection of drugs. In 1998 four cases of infection through blood transfusion occurred. Seventy-eight percent of all infections occurred in individuals between the ages of 15 to 29.

The following areas suffer most from HIV/AIDS disease, with the largest number of infected individuals: Donezk (6,072), followed by Dnepropetrovsk (5,611), Odesa (4,444), Nikolayev (1,932), Zaporozhye (815), Kharkiv (779), Cherkasy (606), Lugansk (642) and Poltava (640) regions; Crimean Republic (1,684); and Kiev (905), and Sevastopol (349) cities.

IDUs comprise the largest risk group, and working with them requires special programs. The most effective HIV/AIDS prevention programs for IDUs were started in Odesa, Nikolayev, Poltava, Kharkiv, Simferopol, and Kiev. Programs are focused on harm-reduction strategies, outreach work, support groups for people living with HIV and drug users, and consultations for IDUs and female sex workers (FSWs).

I would like to draw your attention to programs implemented in the southern regions of Ukraine—Odesa and Nikolayev—and after the research among IDUs that led to the outreach activity. Most of the programs implemented in this region are funded by international donors and are the first examples of formative research in the drug abuse and AIDS fields.

The aim of the current programs in the southern region is to build the capacity of the local nongovernmental organizations (NGOs) to prevent HIV/AIDS among IDUs and FSWs. Conducting and analyzing the qualitative research among IDUs in Nikolayev and Odesa helped

implement the current outreach work and prevention interventions among the target groups of both cities.

Thirty-six in-depth interviews among IDUs and FSWs were performed by the trained staff of the Nikolayev and Odesa NGOs. The goal of the research was to identify the level of knowledge and attitudes of the IDUs to the HIV/AIDS problems. The analysis of these interviews is the basis for the outreach activity in these two cities. The objectives of this study are

1. To define the level of information about HIV/AIDS; attitudes toward the problem; and personal interest in the reduction of the risk of HIV/AIDS; and
2. To identify the main barriers to behavior change in the target groups.

The analysis of the 36 interviews showed that most of the IDUs were men under the age of 35 and that most were unemployed, lived in poor conditions, and had a secondary educational background.

They had different reasons for starting to use drugs depending on the age at which they began. The ages at which drug use started fell primarily between 14–15 and 17–18 years of age. They began using drugs because they were curious (mainly among men under 20), under stress (mainly for women and men over 20), and wished to experience new feelings or be “fashionable.” They were also affected by their reference group, or peer pressure. Some were also forced to use drugs and were physically abused. Most of the drug users started with “light” drugs and then after some time took up injecting opiates.

The main drug that was injected was dimethylmorphine, which is a homemade liquid substance made from poppy straw. In some regions drug users inject ephedrone, which is processed from ephedrine but has stronger withdrawal symptoms. IDUs may inject drugs at home but sometimes will use them close to where the drugs are sold. To obtain drugs, female IDUs may have unprotected sex with multiple partners.

The main ways IDUs access drugs are through buying processed drugs from the dealers or raw drugs they prepare on their own. In most cases the dealers sell the raw poppy straw as well as the liquid opiates. Drug dealers or IDUs often boil the liquid drug in a “common pot” and then distribute the processed product among many users. IDUs also buy drugs from dealers in syringes that have already been used and have not been disinfected.

Knowledge about HIV/AIDS among IDUs is very limited. Most consider AIDS synonymous with death and are aware only that HIV is transmitted sexually or through the blood. They know little about the symptoms of AIDS or the course of the disease. The main ways they receive information about AIDS are through the mass media, prevention brochures and leaflets received from the outreach workers, and verbal information from the project representatives or counselors. The volume of this information is small.

Half of the drug users knew about AIDS before they started to use the drugs, but they did not view AIDS as a threat to their own lives. The rest of the IDUs learned about AIDS after they started to inject drugs. They thought, however, that it was not a problem in Ukraine because they had only heard about such cases in the United States. At present, most of the IDUs fear AIDS, but some of them view the possibility of getting HIV/AIDS with a certain amount of fatalism. This passive acceptance of AIDS may explain why they often share the same syringe with several different people.

Most of the IDUs have HIV-positive friends who were infected through the use of dirty syringes or a common pot. The attitude of the rest of the IDUs to these people can be one of sympathy and understanding because they

are “the people from their community,” or it can be negative because HIV-positive people remind IDUs that they too could be in that position some day. Many drug users also believe the rumors that HIV-positive drug users deliberately try to infect others by sharing their syringes.

### Lessons Learned

- The main barriers to implementing HIV/AIDS prevention programs among IDUs are
  - The fatalism that IDUs have about their lives and their ability to manage their own lives;
  - IDUs’ anger at the present society, which never accepts drug users as normal healthy persons; and
  - IDUs’ ignorance about the process of disinfection; many think cold water or urine is enough to disinfect a syringe.
- The most effective way to distribute information among IDUs is the through their peers or families.
- The fear of death can also affect behavior; most of the respondents started to think about death after a close friend had died of AIDS.
- As a result of the current program implementation, we learned that qualitative research is the main primary step following program implementation. For an accurate assessment of the situation, the information about IDUs has to be collected from different sources. Such principles as confidentiality and trusting relationships are crucial when working with people addicted to drugs and people with HIV. These principles help professionals to provide appropriate preventive measures. ■

# Prevention of HIV, HBV, and HCV in Injection Drug Users in the European Union

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## Introduction

This presentation aims to give a general overview of HIV, hepatitis B (HBV), and hepatitis C (HCV) prevention in injection drug users (IDUs) in the countries of the European Union (EU). It begins by briefly sketching the situation regarding problem drug use, injection drug use, and the spread of infectious diseases among IDUs. While the epidemiology of infectious diseases in IDUs has been relatively well studied, less information is available on prevention responses. At the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), preliminary attempts have started to collect such data, and these are discussed in more detail.

## The Heroin Epidemic in Europe

The epidemic of problem drug use in Europe has mainly been a heroin epidemic. It began in the late 1960s in small groups of youths or “hippies.” The main increase in use probably occurred toward the end of the 1970s and during the 1980s. In the northern Scandinavian countries, however, problem drug use consists mostly of amphetamine injectors and was originally associated with criminal gangs. There are at present an estimated 1 million to 1.5 million problem drug users, of which possibly 1 million would meet standard criteria for dependence. Of the total population of 375 million in the EU, this gives a rate of 2.7 to 4.0 per 1,000 residents of all ages, or 3.2 to 6.6 per 1,000 residents, ages 15 to 54. Estimates for individual countries are still not very reliable but suggest that relevant although not dramatic differences exist. The point estimates per country range from a low of 2.75 per 1,000 in the 15 to 54 age range in Austria, Germany, and Sweden, to highs of 6.6 in the United Kingdom (UK), 7.7 in Italy, and 8.4 in Luxembourg; however confidence limits are very wide or even not available (EMCDDA 1999a).

## Injection Drug Use

The initial epidemic wave of heroin use consisted almost entirely of injection drug use. In some countries, other routes of administration appeared during the late 1970s and the 1980s, such as smoking or “chasing the dragon” (inhaling

the vapor of heated heroin), which in the Netherlands was introduced by Surinamese immigrants. During the 1990s, injecting declined strongly in the Netherlands and Spain but much less so in other countries. In more recent years data from opiate users in treatment indicate that these declines have stabilized. Reasons for the declines are not well established but may include changes in the availability, purity, type, and price of heroin as well as fear of AIDS (De la Fuente et al. 1997). Data are available on rates of injecting among opiate users entering treatment for the first time (1996–1998). These show large differences, ranging from 0.14 in the Netherlands to 0.88 in Luxembourg (EMCDDA 1999a), with a weighted average rate of 0.55. If this rate of current injecting could be applied to all problem drug users, which may not be the case, then there would be about 800,000 active IDUs in the EU.

## Drug-Related Infectious Diseases

The large heroin epidemic that struck Europe at the end of the 1970s and during the 1980s coincided with the introduction of HIV. There was a large population of susceptible young heroin users who were just starting to inject, and possibly had less stable injecting partnerships. It has been shown that young and newly starting IDUs run higher risks (Fennema et al. 1997). This, in combination with the total lack of awareness of HIV transmission during these years, is among the reasons for the high infection rates in IDUs in many countries. AIDS reporting data show that the countries that were mainly affected are those in southwestern Europe, mainly Spain, Italy, and France. Portugal, where the epidemic began later, currently has the highest AIDS incidence and is the only country where incidence is still rising. IDUs became the largest risk group for AIDS, surpassing homosexual men in 1989. AIDS incidence has strongly declined since about 1996 due to the new highly active antiretroviral treatments, and it has become more difficult to interpret epidemiologically. Back-calculation estimates of historical HIV incidence suggest that the main peak of infections occurred in most countries between 1985 and 1989. However, stratification by birth cohort shows that infections have continued to occur in the

youngest age groups, despite the overall decline in incidence in the 1990s.

Seroprevalence data on HIV in IDUs from 1996 to 1998 indicate large differences in infection rates between countries (EMCDDA 1999a). Even if comparisons have to be made with caution due to methodological differences, these data suggest that HIV prevalence may range from a low of 1 percent in the UK to more than 10 percent in the Netherlands and Portugal, to more than 15 percent in France and Italy, and possibly to more than 30 percent in Spain. New increases are still occurring. A very high local prevalence (48 percent) was found in Lisbon, Portugal, in 1998 and 1999, while HIV notifications in Finland have indicated a strong increase among IDUs since the middle of 1998. The situation for HCV infection is even worse. Although data sources are not as good for HCV, most point to infection rates well over 50 percent, with a high of 92 percent infected among a sample of IDUs in Sweden (Krook et al. 1997).

### **Brief Overview of Prevention Measures**

Table 1 gives a very crude overview of prevention measures in EU member states. This table is based on information in national reports the EMCDDA receives yearly from the national focal points. This information was complemented with data from some selected experts. From this overview, it appears that prevention measures are being implemented in all countries, although in the northern region of the EU (Sweden and Finland) measures seem more limited. Clean syringes seem to be widely available. All countries have syringe exchange programs, and pharmacies sell syringes without prescriptions in most countries except Finland, Ireland, and Sweden. Spain, Portugal, France, and Italy, which were most affected by HIV in IDUs, actively implemented prevention measures during the 1990s. UK and the Netherlands implemented prevention measures during the 1980s. In the case of the UK, this happened in time to help prevent a large epidemic (Stimson 1996). Of the 15 EU member states, all report having syringe exchange programs, 12 report that needles are easily obtained through pharmacies, 14 report that condoms are being distributed and that HIV counseling and testing is available, 12 report that HIV treatment is available, 11 report that HBV vaccinations are offered to IDUs, 11 report specific action on HCV, 15 report substitution therapy for opiate users (which among other positive health effects reduces injecting), and 14 report prevention measures in prisons. It appears that, at the end of the 1990s, harm reduction has become standard practice in the EU, although the quality of such measures and the extent of coverage remain largely unknown.

### **Some Examples of Prevention Activities and Their Possible Effects**

There are several examples of large and apparently successful introductions of prevention programs in the EU. A large-scale inventory of syringe exchange programs in France, Italy, and Spain found that the introduction of such programs in these countries greatly increased after 1993 (PESESUD 1998). However, important variability between and within countries was observed for all performance indicators, and low intensity of sterile syringe distribution was frequently reported. In Italy, syringe-dispensing machines have been introduced, although the total number of about 300 dispensers nationally for an estimated population of 200,000–300,000 IDUs seems insufficient. In Portugal a national program has been set up to exchange sterile syringes and give information to IDUs through pharmacies (ANF and CNLCS 1997). A total of 2,474 pharmacies nationwide are reported to participate. Between October 1993 and December 1997, a total of 11,734,905 syringes were exchanged. The number of exchanges has remained more or less stable over time.

In France, substitution treatment of opiate users has greatly increased in recent years. As methadone has long been illegal, the first substance widely used has been buprenorphine (Subutex). In the early 1990s, only an estimated 50 opiate users were receiving methadone. Currently about 60,000 opiate users are on buprenorphine, and another 5,000 are on methadone (EMCDDA 1999b). Another important prevention tool is the “Stéribox,” a kit containing sterile injecting equipment, which is sold nationally through pharmacies. Recently the “Stéricup” has been added, a sterile heroin cooker to prevent spread of HCV and HBV (OFDT 1999).

Prisons have been called “the motor of the HIV epidemic,” but awareness of the need for prevention programs in them is increasing. A European network of experts found that HIV tests are available for prisoners on admission in all EU countries, and participation is mostly reported to be voluntary. However, it found a large difference in rates of participation depending on the way tests were offered. Drug testing is performed in all countries, as a disciplinary measure or in a therapeutic setting. Prison policies on drug treatment or substitution programs vary greatly between EU countries. Pilot studies on needle exchange in prisons are being carried out in Germany and Spain. Bleach or sterilization tablets are available in Denmark, Finland, France, Germany, Greece, Italy, and Scotland. Condoms and lubricants are not always available (Scotland), or are available only on prescription (England and Wales), which may be a large barriers for inmates. IDUs were also

**Table I. Harm-reduction measures in EU member states, as described by Focal Points, 1999**

Country	Syringe-exchange programs	Unrestricted access to syringes in pharmacies	Availability/distribution of condoms	HIV counseling and testing	HIV treatment	Hepatitis B vaccination	Hepatitis C action	Substitution therapy	Measures available to prisoners
Austria	Many, via low-threshold services	Yes, sold nationally	Via low-threshold services	Via low-threshold and other services	Yes	Yes	Information and testing	Yes	Information and condoms
Belgium	Some	Yes	Yes	Via NGOs	Yes	Yes	Some measures	Since 1990	HIV testing
Denmark	Yes	Yes	Yes	Yes	—	—	Testing	Yes	Information
Finland	Few, Helsinki	Recently restricted	Rare	Rare	—	Experimental	Information	Limited	HIV testing
France	86	Yes	Yes	Yes	Since 1996	Experimental in prisons	Testing	Since 1993	Testing, vaccinations
Germany	In most cities, via low-threshold and outreach services	Yes, cheap	Yes, including in prostitution projects	Yes	—	—	—	Increase since 1992	Methadone
Greece	Yes, and via low-threshold and outreach services	Yes	Yes	Yes	Yes	Yes	Testing	Since 1996	Information plus testing
Ireland	Yes	No	Yes	Yes	Yes	Yes	Information and screening	Yes	Information
Italy	All regions, mostly from machines	Yes	Yes	Yes	Yes, free	Yes (5–6%)	Screening (60% tested)	Yes	Information plus testing; methadone; bleach for cleaning needles
Luxembourg	Yes, via low-threshold services	Yes, but "expensive"	Yes, via outreach services	Yes, via outreach services	Yes	—	—	Yes	Information plus methadone
Netherlands	Yes	Yes	Yes	Yes	Yes	Pilot	Experimental treatment	Yes	Information
Portugal	Yes	Yes	Yes	Yes	Yes	Yes	—	Yes	Information, testing, condoms, methadone, vaccinations
Spain	Yes, via low-threshold services	Yes	Yes	Yes	Yes	In prisons	Testing	Yes	Information, testing, vaccinations, methadone
Sweden	2	No	Yes	Yes	Yes	Yes	—	Yes	Information and HIV testing
UK	Yes >300	Yes >2,000	Yes	Yes	Yes	Info, testing?	Information for pregnant women	Yes	—

Source: EMCDDA 1999

interviewed. Of all IDUs, the rate of those reporting a previous HIV test ranged from 73 percent in France to 96 percent in Spain. Rates of self-reported vaccination against HBV (individuals who report having received all injections) ranged from 6 percent in Sweden to 36 percent in Spain, while the rate of reporting a previous HCV test ranged from 50 percent in Belgium to 89 percent in Spain and Sweden (ENHPP 1998).

Another innovative prevention activity involves training active IDUs to recognize demands for the initiation of non-IDUs and to decline such requests (Hunt et al. 1998). Other options include stimulating "transitions" to other routes of administration than injection, such as "chasing the dragon" and anal administration. The authors concluded that by incorporating such interventions into drug work it may be possible to reduce the number of people who begin injecting.

A study on HCV in Glasgow recently demonstrated that seroprevalence of HCV in young IDUs has fallen, possibly because of needle and syringe exchange programs (Goldberg, Cameron, and McMenamin 1998). The study compared the prevalence of antibody against HCV (anti-HCV) among IDUs in Glasgow in 1990 (when Glasgow's needle and syringe exchange program had become established) with

that in 1995. The prevalence of anti-HCV fell from 90 to 77 percent between 1990 and 1995 among IDUs of all ages; it fell from 92 percent to 29 percent among IDUs ages 15 to 19, and from 91 to 65 percent among IDUs ages 20 to 24. This study suggests that the incidence of HCV infection among young IDUs fell in the early to mid-1990s, after the establishment of Glasgow's needle and syringe exchange scheme between 1988 and 1990.

## Conclusion

In conclusion, important changes have recently taken place in Europe regarding harm reduction. In only a few years time, all EU member states have introduced preventive measures to minimize the consequences of injection drug use. However, little is still known about the intensity and quality (provision, utilization, coverage) of existing services. In Spain, France, and Italy, the countries most affected by HIV, many of the needle and syringe exchange programs still have a very limited volume or short hours despite their rapid introduction in the population after 1993. Therefore, in order to assess the responses at the macro (EU) level, it is important to collect more extensive and quantitative data on harm-reduction measures. Infection rates of HIV, HCV, and HBV in IDUs in Europe are still unacceptably high. ■

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# HIV and Injection Drug Abuse in Countries of the Eastern Mediterranean Region of the World Health Organization

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## Introduction

Injection drug use and HIV appear as emerging health and socioeconomic problems in most countries of the Regional Office of the Eastern Mediterranean (EMRO) of the World Health Organization (WHO), which extends from Morocco in the west to Pakistan in the east.

This region has a population of more than 400 million, representing 7 percent of the world's population, with important representation of youth. This is a region that contains affluent, oil-producing Arab countries as well as some that are among the least developed in the world, such as the Republic of Yemen. It is evident that such a large view of the Middle East cuts across diverse civilizations, cultures, socioeconomic situations, and geographic areas. Nevertheless, there are some unifying characteristics, such as the Arabic language, which is spoken by 50 percent of the people living in 80 percent of the countries, and the religion of Islam, which is believed to be practiced by 90 percent of the people.

Population mobility is another important feature of this region. Many people are faced with stressful events and conflicts that create a large number of internal and external refugees. Economically motivated migration to and from the countries of this region establishes significant linkages with parts of Africa, Europe, and east Asia. In addition, the past few years have witnessed rapid growth of the urban population with an important element of rural-to-urban migration in many countries.

Although no reliable estimate of the number of drug users exists, it can be said with certainty that millions from this region are afflicted with drugs in one way or another. One of the major issues affecting the drug scene in general and the abuse of narcotics in particular is the condition of Afghanistan. The countries most affected by narcotic drugs originating in this country are Afghanistan itself, the Islamic

Republic of Iran, and Pakistan. Substance abuse also exists in other parts of the Eastern Mediterranean Region (EMR) and is increasingly becoming a concern in many countries, including Bahrain, Cyprus, Egypt, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Saudi Arabia, Syria, and Tunisia.

The recent introduction of HIV in this part of the world has warranted concerns about injection drug users (IDUs), especially because almost all of the countries in the region have reported HIV transmission through injection drug use. At least one country has documented repeated local outbreaks of HIV among IDUs.

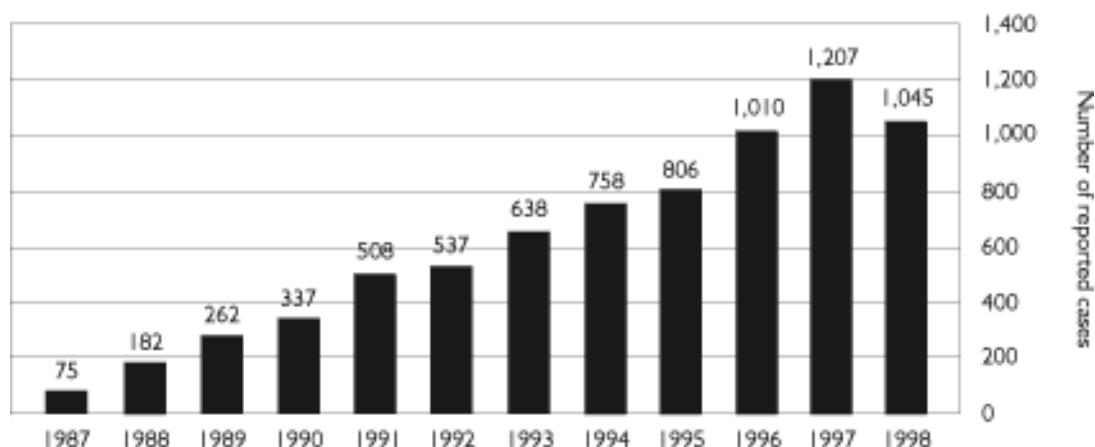
## Changing Patterns of the HIV/AIDS Epidemic in the Eastern Mediterranean Region

HIV continues to spread in this region, at a slower rate than in other parts of the world, but steadily nevertheless. Around 210,000 people in the region are estimated to be living with HIV, a little less than 1 percent of worldwide estimates. A cumulative total of 7,424 AIDS cases were reported by the end of 1998. Although the first reported AIDS cases date back to 1979, most of the cases are recent with 45 percent of all new cases being registered in only the last 3 years. Thirty-seven percent of all reported AIDS cases have occurred among young people, ages 15–29. Men are affected more than women.

Figure 1 shows the annual distribution of new AIDS cases in EMR from 1987 to 1998. The increasing trend is obvious. The observed drop in reported cases in 1998 is only a reflection of changes in reporting policies in two countries and difficulties gathering data in Djibouti.

Information about high-risk sexual practices and other HIV-related behaviors remains a sensitive matter in this region.

Figure 1. Reported AIDS cases in the EMR by year, 1987–1998



Source: World Health Organization

Nevertheless, heterosexual transmission is the main mode of HIV transmission, while injection drug use represents a nonnegligible 4 percent of all AIDS cases reported annually since 1990. Perinatal transmission accounted for 3 percent of all reported AIDS cases in 1998. Transmission by contaminated blood and blood products remains an issue in only a few countries where coverage for blood safety and infection control has been persistently suboptimal.

Countries of EMR are affected differently by the emerging HIV/AIDS epidemic. In a few the epidemic seems to have taken off while in others the number of new AIDS cases has remained stable over the years. Djibouti remains the most affected country in the region and already exhibits the features of a generalized HIV epidemic.<sup>1,2</sup> In Sudan, newly reported AIDS cases doubled in 1998 compared with 1997, while the risk of HIV in pregnant women, still the best indicator of HIV infection in the general population, was noted to be 2.9 percent in 1997. In Lebanon, the number of reported AIDS cases has increased fourfold in 1998 compared with 1997.

In other countries, the HIV epidemic remains invisible in the general population while the virus is gaining a foothold in specific groups, mainly patients with sexually transmitted diseases (STDs) and IDUs. This is a serious warning about

the changing pattern of the epidemic in the region, which may not continue to be immune to the HIV epidemic. Moreover, repeated isolated outbreaks of HIV have been registered in several countries. These include cases of dialyzed patients in Egypt and children in Libya, where recently 370 pediatric cases were reported. These are mainly due to poor practices in infection control and blood safety. HIV outbreaks have occurred in Iran among IDUs, especially those in prisons. In addition, considerable HIV transmission occurs endogenously, and the increasing prevalence of HIV among groups such as pregnant women and blood donors means that the virus is becoming increasingly present in the community as a whole.

### Overview of Substance Abuse in the Countries of the Eastern Mediterranean Region

Member States of WHO/EMRO face a diverse group of drug-abuse-related problems. On the supply side, many countries of this region are either producers of different substances with abuse potential or transit routes for such substances to the world markets. On the demand side, with the exception of alcohol, which is consumed relatively less than in other parts of the world, a disproportionately high quantity of a diverse group of substances is consumed in this region.

<sup>1</sup> HIV epidemics are defined in three stages: low level, concentrated, and generalized. A low-level HIV epidemic is one where HIV prevalence has not consistently exceeded 5 percent in any defined subpopulation. In a concentrated epidemic, HIV prevalence is consistently more than 5 percent in at least one defined subpopulation and remains below 1 percent in pregnant women in urban areas. In a generalized epidemic, HIV prevalence is consistently more than 1 percent in pregnant women nationwide.

<sup>2</sup> Djibouti has an annual AIDS incidence rate of almost 7 per 10,000. HIV prevalence rates reach as high as 22 percent in patients with STDs, 27 percent in prostitutes, and 2.9 percent in pregnant women.

The following is a brief analysis of the answers received to a questionnaire that was provided by the WHO Regional Office.

- The use of cannabis and narcotics is most common. Oral barbiturates, street drugs, and prescription drugs come next. Cannabis is both produced and used in most of the countries of the region. Narcotics are mainly produced in Afghanistan, and cultivation and production of opium and heroin synthesis are rapidly increasing there. According to a United Nations International Drug Control Programme report (UNDCP 1999) the production of narcotics in the first 9 months of 1999 showed a 120 percent increase compared with the whole year of 1998. Cocaine use is less common in this region, but the more affluent and relatively less populated countries like Bahrain, Cyprus, Kuwait, Kingdom of Saudi Arabia, and United Arab Emirates should be vigilant to the possibility of its emergence as a major problem. Barbiturates and prescription drugs are also used in many countries. Tunisia reports a special problem with anticholinergic, antiparkinsonian agents like trihexylphenidyl.
- In most countries of the region substance use disorders and addiction are regarded as a disease, but there are certain countries where addiction, in one way or another, is regarded as a crime. One of these countries, Iran, is in the process of adopting more medically oriented policies to deal with the issue. They have already started both outpatient and inpatient facilities for those drug users who come for treatment voluntarily. Most countries report that the treatment of those with addictions is done under medical supervision and in medical facilities, but almost all the facilities are centralized, inpatient settings where services are almost exclusively limited to detoxification. Even where outpatient treatments exist, there is little or no real rehabilitation involved. Not much reliable information exists regarding relapse rates, but judging from a few studies done with different methodologies, it is high. For those afflicted with substance use disorders, an integration of services within general and primary health care systems either does not exist or is in its very early stages and facing a number of problems.
- The reported number of persons afflicted with the disorders of substance use show a level of discrepancy between countries that seems to be significant. This points to the need for developing a unified regional information system.
- Injection drug use and related cases of HIV transmission are reported by all but two countries of the region. The results of two rapid assessment studies done in

Egypt and Iran, and the reports from Bahrain, Kuwait, Pakistan, and other countries, show that the danger of HIV transmission through injection drug use is quite alarming.

- The countries report that the major determining factors for substance use disorders in the region are, in order of importance,
  1. Cross-border supply
  2. Youth problems
  3. Cultural policies
  4. Economic issues
  5. Powerful interest groups
  6. Political issues
  7. Internal production
- Major constraints to combat substance use disorders, in order of importance, are identified by the countries as
  1. Multiple decisionmaking centers with little or no coordination
  2. Unchecked supply
  3. Lack of or insufficient resources
  4. Special interest groups
  5. Lack of public education
- The most important resources to combat substance use disorders are identified as
  1. Religion and faith
  2. Sports
  3. Media
  4. General health system
  5. Universities
  6. Schools
  7. Medical and psychiatric facilities

### **HIV and Injection Drug Use in the Eastern Mediterranean Region**

HIV transmission through injection drug use has been reported in all the countries of the region except Sudan and the Republic of Yemen. From 1989 through 1998, a cumulative total of 295 IDUs with AIDS was reported to the WHO/EMRO, which is equal to about 4 percent of the total AIDS cases. The number of HIV-infected IDUs reported between 1993–1998 was 992, representing 5 percent of the total number of HIV cases reported for the same period.

In this early-stage, low-level HIV epidemic, the transmission of HIV among IDUs has a significant influence on the changing patterns of the overall epidemic in EMR. Few countries of the region have been able to carry out HIV epidemiological serosurveys on specific groups.

Looking at HIV trends from the overall data in EMR, it is interesting to note that HIV prevalence among IDUs

**Table 1. HIV and IDU statistics in selected EMR countries, 1998**

Country	Population in thousands	Reported cumulative no. of HIV infections in 1998	Cumulative HIV infections per 100,000 population	No. of HIV-infected IDUs	IDUs among the total cases of HIV (percent)
Iran	60,776	145	0.2	44	30.3
Cyprus	741	19	2.6	2	10.5
Libya	4,664	36	0.8	2	5.6
Bahrain	620	143	23.1	3	2.1
Egypt	61,452	118	0.2	0	0.0
Kuwait	1,809	67	3.7	0	0.0
Syria	15,100	23	0.2	0	0.0

Source: World Health Organization

remains the highest compared to patients with STDs or those who have received blood and blood products. The sharp rise in the rates observed in 1996 and 1997 reflects the occurrence of a drug-related outbreak in Iran, mainly among prisoners, that will be discussed later. The displayed HIV rates may appear relatively small as they occur against a background of a low-level epidemic. Nevertheless, they indicate clearly that IDUs in EMR are more vulnerable to HIV compared to the other two risk groups. They also show that the drug-related spread of HIV can rapidly take on significant dimensions and threaten the countries as well as the region with explosive outbreaks. In the early stages of the epidemic, the countries of EMR had succeeded somehow in curtailing the first wave of HIV transmission, which was mainly due to contaminated blood. At present, there is good reason to believe that injection drug use may fuel the next wave of HIV transmission in the region and that containing the epidemic will be more difficult.

Statistics are far from being complete in EMR, however, table 1 shows some of the available data from countries that carried out HIV serosurveillance in 1998: Iran, Cyprus, Libya, Bahrain, Egypt, Kuwait, and Syria.

In 1998, IDUs accounted for 30 percent of all HIV infections reported in Iran. In the same year, 2 out of 19 new HIV infections were found among IDUs in Cyprus, and 2 out of 36 were found among IDUs in Libya. No new

HIV infections were detected among IDUs in Egypt, Kuwait, or Syria.

In Iran, before 1996, the overall number of new HIV infections ranged annually between 18 and 52. One to three cases resulting from drug use had seemed to be negligible.<sup>3</sup> In 1996, the number of HIV-infected IDUs suddenly rose to 157, and the total number of new HIV infections increased threefold compared with its highest previous level. Only 1 year later, in 1997, the level of HIV infection among drug users grew almost fourfold and had obviously fueled the HIV outbreak. This sudden outbreak started to subside in 1998, but the number of new HIV infections still did not return to baseline level. Factors behind this acute spread of the infection among IDUs are not well documented, but the effect of the drug-taking behaviors of prisoners was certainly the most critical. HIV prevalence rates in this group of IDUs rose as high as 5.7 percent in 1996, while in some prisons it rose as high as 50 percent among IDUs. Data on prisoners who were not IDUs were not included.

Another country of interest to the problem of injection drug use and HIV is Pakistan. However, because of the absence of systematic surveillance activity in that country, the picture is still sketchy. The prevalence of HIV was reported to be 5.4 percent among 703 IDUs who were tested in 1995. In the same year in Lahore, in a sample of 310 drug users attending a major psychiatric center,

<sup>3</sup> This represented results of HIV serosurveys on IDUs accessible mainly in drug treatment and rehabilitation centers but also in prisons. Data on other prisoners who were not drug addicts were not included.

11.5 percent were found to be HIV seropositive (UNAIDS 1996).

### **Determinants of HIV Transmission Among Injection Drug Users in EMR**

Factors that influence HIV transmission among drug users in EMR and its impact on sexual transmission of HIV were not subject to any particular examination, and thus the available information is far from complete.

First, there is a need to understand the general context of illicit drug use in which injection drug use is evolving and the factors behind the changing patterns of drug use which range from traditional methods to injecting. Recent studies supported by the UNDCP in Egypt, Iran, and Lebanon indicate that the magnitude, profile, and future of the drug abuse problem are not to be underestimated. By most conservative estimates, the number of drug-addicted individuals is counted in the millions in this part of the world. A considerable proportion of these individuals injects drugs.

A few published reports reveal that injection drug use has existed for some time in the region (Stimson, Des Jarlais, and Ball 1998). Examples are given from Egypt, Saudi Arabia, and Bahrain. At present, the number of IDUs seems to be relatively low, estimated to be between 10 and 17 percent of all users of illicit drugs in this region. However, considering the health and social hazards caused by this mode of drug consumption, this proportion remains significant. Moreover, it is believed that a rapid shift to injection drugs is happening. This is because drugs in their injectable form are becoming increasingly available, possibly due to more local production or trafficking, such as heroin production and transit in Pakistan. In Iran, the proportion of heroin users among those attending outpatient drug treatment units was as high as 25 percent in 1996–1997 (Department of Prevention 1997). A significant proportion of the 38 percent of those addicted to drugs who were interviewed in the streets of Beirut in 1994 used heroin, and 78 percent used cocaine (UNDCP 1994). Recently in Egypt it was reported that around 300 tons of heroin and 500,000 tons of opium were being seized annually because of intensified efforts to control the drug supply (Conference on “Preventing the Youth From the Dangers of Illicit Drugs,” oral communication, Cairo, Egypt, June 16–17, 1999). Consequently, drug prices have tripled, which may influence the consumption of drugs toward more injection drug use.

As in other places in the world, young populations represent the core of groups who are more vulnerable to

drug addiction and unsafe sexual practices. This is a fact well illustrated in studies carried out on drug users in EMR. In an appraisal study done in Lebanon, the mean age of drug users was 26, while in Egypt the large majority of interviewed drug users were under 35. Around 17,000 students in one province in Iran, who had either one or both parents addicted to drugs, were reported to be at risk of drug use and/or trafficking, involvement in other crimes, or subject to rape. These significant findings are the result of a risk assessment study that was carried out on families who had presented for treatment in the country’s Welfare Organization (Jalili and Haidari 1998).

Few reports describe the psychosocial background of drug users in EMR. The majority of the IDUs in a 1994 assessment in Lebanon were single, divorced, or lived with partners outside of marriage (UNDCP 1994). Forty percent were students or unemployed and were financially dependent on close family members. Most came from disrupted families. They lacked information about the health hazards related to their drug use practices and where to seek help. Most IDUs thought treatment was unaffordable. The civil war seems to have had an important impact on initiating illicit drug use; a significant number of interviewees began taking drugs after 1990 at the end of the civil unrest. This is not surprising considering the social deprivation and limited professional and social expectations that were witnessed by youth during the war and postwar periods in Lebanon. Thirty-five percent of IDUs have been arrested and incarcerated. For those who were unable to access treatment and social reintegration as well as secure income, drug dealing became their major survival strategy.

Mobility of the population in various forms could represent an added element of concern for HIV/AIDS and drug use in this region. In Iran, for example, a very active passenger and goods movement is observed making the link between Turkey to the west toward the Far East as well as with neighboring countries affected by drugs, such as Afghanistan, Turkmenistan, Uzbekistan, and Tajikistan to the east. Truck traffic also passes through Teheran in the center of the country, then links to provinces in the south near the Persian Gulf. This observation needs further study and confirmation.

Migrant workers seem to be at increased risk for drug-associated problems as was the case in Tunisia. For instance, injection drug use is not very common in Tunisia but is thought to occur more often among Tunisians working abroad (UNDCP 1999). In Italy, it was found that most IDUs from north African countries started injection drug use after they arrived in the country.

In addition, the relationship of the current spread of HIV within the prison environment poses problems for public health in addition to the social, judicial, and political aspects. More information is needed from prisons to increase knowledge about the sexual and injecting drug use practices of IDUs while they are in prison and after they return to their families and the community.

**Behavioral Aspects Related to HIV and Injection Drug Use in EMR**

Little is known about the beliefs, practices, and behaviors of IDUs that place them at higher risk of acquiring HIV. Findings from a 1994 study in Egypt by the National AIDS

Programme indicate that religion has little influence on most of the drug-addicted individuals who were interviewed in a rehabilitation center. They had very low education levels, and promiscuous sexual behavior and multiple sex partners were not uncommon. Those who injected drugs often shared and used unclean needles. Their knowledge of HIV/AIDS prevention was poor. Similar results were noted among Lebanese drug users. The large majority of them did not inject drugs, but those who did had the tendency to share needles in a drug-sharing fraternity ritual. They had a strong denial concerning their risk of acquiring HIV and a strong misconception about the risk of transmission by casual contact (UNDCP 1999). ■

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## Policies Related to Drug Use and HIV/AIDS in Asia

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This study identifies some of the factors that facilitate or impede the development and implementation of policies and programs for preventing the transmission of HIV among drug users. The countries studied through interviews and reviews of literature were the People's Republic of China, India, Malaysia, Myanmar, Nepal, Thailand, and Vietnam.

### Extent of the Problem

Drug abuse poses a significant public problem in Asia. There are about 540,000 drug abusers in China alone according to National Narcotics Control Commission (NNCC) estimates. Estimates of the numbers of drug users in the above-mentioned countries range from 50,000 in Nepal to 2.25 million in India. Thailand ranks second to India with 1.27 million drug users. Opiates constitute the drug of choice among Asian users in all of these countries except India, where fewer than 25 percent of drug abusers prefer opiates.

Drug abusers who self-administer drugs through injections are at particularly high risk for health problems. Among opiate users, the highest rates of injection drug use occur in China, Thailand, and Nepal. The rate of injection drug use of opiates in India is 25 to 30 percent overall but reaches approximately 60 percent in Delhi and 90 percent in Manipur.

### Legal Policy

The data contained in the last two columns of table 1 illustrate a common policy problem in Asia. The second to the last column shows the percentage of people who are infected with HIV who are also injection drug users (IDUs). The last column shows the percentage of IDUs who have tested HIV-positive. Both types of data provide useful information. The former approach, however, is typical of studies conducted by public health officials, while the latter approach is generally employed by the law enforcement community. One might assume that public health authorities would most likely take the lead in addressing the

drug use problem if percentages in the second to last column were high, whereas drug control agencies would be more heavily involved if percentages in the last column were higher.

Despite the general trend of the statistics presented in table 1, drug use is an offense per se in all the countries studied. The threat of legal consequences hampers the effectiveness of outreach programs for IDUs, making it difficult to address the issue of IDU-related HIV infection, which is, after all, a public health problem. In addition, although possession of needles and syringes is unlawful only in Myanmar, police in India, Malaysia, and Nepal nevertheless arrest people for possessing these implements. Such discrepancies between the stated policy and actual practice are an additional stumbling block to AIDS prevention efforts.

### Treatment Policy

Treatment is abstinence-oriented in China, Malaysia, Myanmar, and Vietnam. In India there is some substitution treatment. Although current government policy in Vietnam favors abstinence-oriented treatment, some small-scale substitution and needle and syringe exchange programs exist. Methadone is provided for detoxification in China and Thailand and sometimes in India and Malaysia.

Policymakers are usually opposed to substitution therapy that involves the use of agents such as methadone or buprenorphine beyond the detoxification stage. Substitution programs are not available in China, Malaysia, or Myanmar. Substitution therapy is available on a limited scale in India, Nepal, and Thailand, and Vietnam has instituted a pilot program.

Policymakers also usually oppose needle exchange programs. Among the countries studied, such programs are found only in Vietnam and to a limited extent in India and Nepal.

**Table 1. Drug use and HIV/AIDS among injection drug users, 1999**

	Estimated number		IDUs (percent)	Number of HIV infections		AIDS cases confirmed	IDU/HIV infected (percent)	HIV+/IDU (percent)
	Drug users	Opiate users		Estimated	Confirmed			
China	540,000 <sup>1</sup>	Majority	66 <sup>2</sup>	400,000	12,580 <sup>3</sup>	417	69.4 <sup>4</sup>	No data
India	2.25 million	500,000	25–30 <sup>5</sup>	3–5 million <sup>6</sup>	75,000	5,204	7.3 <sup>7</sup>	60–80
Delhi			59					
Manipur			80–90					
Malaysia	300,000	200,000	50	49,494	23,571 <sup>8</sup>	2,354	77	10–27
Myanmar	67,489 <sup>9</sup> 300,000*	Majority	30	440,000 <sup>10</sup>	21,535	2,854	20–30	62 <sup>11</sup>
Nepal	40–50,000	Majority	75–96 <sup>12</sup>	27,000	1,262	213 <sup>13</sup>	13	45
Thailand	1,270,000 <sup>14</sup>	219,391 <sup>15</sup>	60 <sup>16</sup>	850,000		5,836	5.25	30–40
Vietnam	90,000 <sup>17</sup> 185,000 <sup>18</sup>	Majority	No data	75,000– 80,000 <sup>19</sup>	12,410 <sup>20</sup>	2,404	65.5	17

1 Registered drug users (China's Battle Against Narcotics)

2 NNCC briefing data

3 National Programme for the Prevention and Control of AIDS 1998

4 Sentinel surveillance data (Ministry of Disease Control, Ministry of Health, China)

5 Percentage of total

6 National AIDS Control Organization (NACO) 1997–1998

7 NACO 1997–1998

8 November 1997

9 Registered drug users (CCDAC)

10 Estimated by the United Nations Development Programme and Joint United Nations Programme on HIV/AIDS

11 Sentinel surveillance data, September 1998

12 Percentage of those seeking treatment

13 March 1999

14 Data of 1993: 32% inhalants, 26% marijuana, 20% amphetamines (Thai Development and Research Institute [TDRI] 1995)

15 TDRI study of 1995, data of 1993

16 Number of drug users in treatment (Asian Harm Reduction Network, "The hidden epidemic")

17 Registered drug users (Vietnam Drug Control Committee)

18 Estimate by the Ministry of Labour, Invalides and Social Affairs, Vietnam

19 National AIDS Programme, Vietnam

20 Sentinel surveillance data 1999

\* Unofficial estimate

Most governments are very interested in peer-led education programs. Because it is a new approach, however, peer programs currently have only a limited scope.

An important policy question is whether drug abuse prevention strategies are included in a country's national HIV/AIDS prevention plan. This study found that only China and Vietnam addressed the drug issue adequately in their national AIDS programs. Thailand's national AIDS program plan does not address drug abuse at all, perhaps because only 3.5 percent of all people who are HIV-positive are drug users. All of the study countries had national drug plans, and Vietnam was the only one in which the plan addressed the issue of HIV/AIDS.

## Policy Formulation

It is difficult to determine how policies are made in the study countries, or who makes them. Policymakers in the Asia-Pacific region tend to base decisions on international guidelines, treaties, and conventions. Many of these agreements focus on the Single Convention on Narcotic Drugs, 1961, with its 1972 amendments, which stipulates that narcotics, including methadone and buprenorphine, may be used for medical purposes only. Thus, substitution programs in Bangkok, Thailand, are conducted for 40 days followed by a 5-day interruption and then another 40-day treatment period. Use of a narcotic for longer than 40 days at a time would not qualify as medical use.

An additional problem is that the complex administrative bureaucracies in the study countries impede policy development. There is a lack of coordination between the agencies that develop policies and those that supervise and implement them. In principle, each of these countries has a national drug control agency and a national HIV/AIDS control agency. The reality is far more complicated. For example, India has four ministries involved in drug control and one involved in HIV/AIDS prevention. The situations in Pakistan and China are equally complicated, making it difficult to determine accountability or even to access information. The lack of communication between drug control and public health personnel is so profound that officials from the two types of agencies often meet for the first time at international conferences.

Finally, much policy is based on political considerations rather than scientific evidence. Policymakers are influenced

not only by their constituencies but also by the policies instituted in neighboring countries. For example, it would be very difficult for one of the countries in the Asia-Pacific region to start a large-scale national substitution program without having the consent of the countries on its borders. Thus, any change in policies involves considering many factors.

Despite obstacles, progress has been made in the area of injection drug use and HIV harm reduction in Asia, and some momentum has been created through international meetings. There is reason to hope that governments gradually will come to consider needle exchange programs, pilot projects on harm reduction, and substitution therapy. It would be unfortunate not to take this opportunity to move forward on these issues. ■

## Injection Drug Use and HIV Infection in South Asia: Opportunities and Challenges for Prevention Efforts

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Injection drug use is a problem of global dimensions, with major significance for the spread of HIV-1 infection. In south Asia, heterosexual transmission is the primary route of HIV transmission, and the contribution of injection drug use to this problem is increasing. This article addresses issues regarding HIV transmission in south Asia through injection drug use, current HIV prevention efforts targeted to injection drug users (IDUs), and lessons learned from these and other efforts.

### The Issue

Of all the ways that HIV can be transmitted, directly injecting a substance contaminated with HIV into the bloodstream is by far the most efficient transmission route. Therefore, the issue of HIV transmission through injection drug use is of great significance in the fight against AIDS, particularly as it becomes apparent that this type of drug use is a problem seen around the world. Of the 129 countries and territories reporting injection drug use, 103 have identified HIV infection associated with such behavior (Ball, Rana, and Dehne 1998). In many parts of Asia, including Malaysia, Vietnam, Myanmar, the Yunnan Province of the People's Republic of China, and the northeastern states of India, injection drug use is the major mode of HIV transmission.

Together, drug injecting and HIV form an explosive combination. For example, in Manipur in northeastern India, the first seropositive drug injector was not detected until October 1989. Within 3 months, 9 percent of IDUs were found to be HIV-positive, and in the following 3 months the prevalence rate increased to 56 percent—a rise from 0 to 56 percent within 6 months (Sarkar et al. 1994).

In India, the mid-1980s witnessed an epidemic of heroin injecting in the northeastern states of Manipur, Nagaland, and Mizoram (Naik et al. 1991; Sarkar et al. 1991). During the 1990s, a new epidemic of pharmaceutical drug injecting, notably with buprenorphine, occurred in the major cities of India (Chowdhury and Chowdhury 1990; Lal 1991; Singh et

al. 1992; Basu et al. 1994; Kumar and Daniels 1994; Panda et al. 1997; Kumar, Mudaliar, and Daniels 1998).

Injection drug use is escalating in India and is documented in many cities, including Delhi, Chennai, Calcutta, Mumbai, Imphal, Cochin, Thiruvananthapuram, Pune, Ahmedabad, Amritsar, Chandigarh, Goa, Trichy, and Bangalore. The drugs injected include heroin, including its adulterated form (brown sugar); buprenorphine (Tidigesic); diazepam (Calmose); chlorpheneramine maleate (Avil); promethazine (Phenargan); pentazocine (Fortwin); and dextropropoxyphene (Spasmo Proxyvan). The use of “cocktails” containing combinations of various pharmaceuticals is popular among IDUs. For example, in Chennai a vocabulary exists for these combinations, such as “CAT” for a combination containing Calmose, Avil, and Tidigesic.

In 1998, a series of five rapid situation assessments (RSAs) of injection drug use were undertaken, targeting the metropolitan cities of Mumbai, Calcutta, Delhi, Chennai, and Imphal (Dorabjee and Sampson 2000). In Manipur, it is estimated that there are about 15,000–20,000 IDUs. The estimated numbers of IDUs in the other cities are as follows: 25,000–30,000 in Delhi; 38,000 in Mumbai; 10,000–15,000 in Calcutta; and 10,000–15,000 in Chennai. The lowest seroprevalence rate for IDUs (2 percent) has been reported from Calcutta; Mumbai records a seroprevalence rate of 7.3 percent (State AIDS Cell 1998). And a recent study at Chennai reveals a 20 percent HIV seroprevalence rate for IDUs (Kumar et al. 2000). The street-recruited drug users in Delhi have a seroprevalence rate of 44.5 percent (Dorabjee and Sampson 1998).

In Nepal a number of heroin users have shifted to injecting synthetic drugs and psychotropic substances due to the high cost of heroin and the easy availability and low prices of these alternative substances. Of the 1,276 cumulative HIV infections reported through April 30, 1999, 161 cases were related to injection drug use (Shrestha 1999). In Bangladesh, use of injectable buprenorphine is on the rise (Ahmed and

Ara 1997), and the IDUs in this country also appear to be engaging in high-risk sexual behavior (Chowdhury, Islam, and Rasul 1997). A study from Lahore also reports that injection drug use is on the increase. Transmission by those who inject drugs may also be a factor near a second major heroin-producing area, the "Golden Crescent," where the Pakistan Northwest Frontier meets the Badakhshan area of Afghanistan and the Baluchistan area of Iran (Riehm, background paper, 1996).

To discourage the broader diffusion of injection drug use to new social groups, it is necessary to understand the factors that facilitate this form of drug use. Key factors include the cost of heroin, the impurity of the drug, the rate of police arrests (Panda et al. 1997), and the social acceptance or normalization of injection drug use. Drug injecting and other HIV-transmission risk behaviors may be influenced by the "risk environment" and by local drug use settings. For example, the majority of drug users in cities are poor and dwell in slum areas. Many drug users are employed in the transportation, seaport, and fishing industries, or as casual unskilled laborers. Opiate use among street children is also very high. In certain geographical locations, the number of settings associated with drug use and the number of subpopulations who typically engage in drug use have increased.

It is necessary to track changes in behavioral risk over time to contain the spread of HIV. Many of the problems of HIV transmission among IDUs are linked to poverty; inadequate housing; unhygienic surroundings; the lack of access to primary health care, clean water, sterile syringes, and positive social opportunities; and high levels of demoralization. Without addressing these environmental issues, it is doubtful that the full potential of HIV interventions for IDUs will be realized. Needle sharing, both direct and indirect, is common among IDUs in south Asia (Chowdhury, Islam, and Rasul 1997; Kumar et al. 2000; Dorabjee and Sampson 2000), primarily in shooting locations and dealers' places, and is facilitated by drug users being in states of withdrawal. Of heroin injectors and buprenorphine injectors, the two important groups of injectors in India, Nepal, and Bangladesh, heroin users typically have more chaotic lifestyles, inject frequently, have more drug-using network members, share during withdrawal states, frequent shooting locations, use the dealer's location to inject, and face increased threats of arrest. In contrast, many buprenorphine IDUs manage their drug use without serious crises (Kumar et al. 2000).

Sexual risk behavior is equally important to consider when assessing the risk environment. The HIV epidemic is largely driven by heterosexual transmission in India (NACO 1999), where unprotected sex and commercial sex

are common and there is a high prevalence of sexually transmitted infections among IDUs (Chowdhury, Islam, and Rasul 1997; Kumar et al. 2000). Alcohol consumption and intoxication also are associated with high-risk behaviors that must be addressed in HIV prevention programs for drug users (Latkin et al. 1994; Kumar et al. 1998).

### **HIV Prevention Efforts for IDUs**

With the increased recognition of the potential for an HIV epidemic among drug users, some nongovernmental organizations (NGOs) in south Asia have spearheaded community-based HIV prevention activities for IDUs. Community outreach education, peer outreach programs incorporating needle exchange, primary health care, sublingual buprenorphine substitution, and other interventions have been successfully implemented in the region.

Community outreach has provided a major opportunity for HIV prevention specialists to contact and work with the hard-to-reach populations. Community outreach services have been evaluated and found to produce significant changes in injection-drug-risk behaviors. However, investigators have found that sexual risk behavior is more difficult to change (Kumar et al. 1998). Manipur and a few other northeastern states of India have established outreach activities for drug users (Hangzo et al. 1997). Community outreach services are also operational in the Indian cities of Chennai, Calcutta, Mumbai, New Delhi, and Bangalore. NGO-supported community outreach programs for drug users are operational in Bangladesh and Nepal as well.

In India, needle exchange programs (NEPs) are operational in the northeastern states of Delhi, Calcutta, and Chennai. An evaluation of an experimental NEP has shown that this form of intervention significantly promotes positive behavior change (Kumar and Daniels 1995). In Nepal, the NGO Lifesaving and Lifegiving Society provided needle exchange and primary health care to 650 of Kathmandu's 1,500 IDUs. Among the IDUs participating in the program, the mean frequency of injecting fell from 24 injections per week shortly before the start of the program to 17 injections per week in 1994. The most significant effect is that HIV prevalence among IDUs in Kathmandu has remained low at less than 2 percent (Maharjan et al. 1994).

Another intervention targeted to IDUs involves substitution treatment with sublingual buprenorphine. While in India the increased availability of injectable buprenorphine has led to a rise in injection drug use, the use of sublingual forms of buprenorphine may lead to a reduction in HIV transmission for IDUs. Although

methadone is not yet available in India as a substitute drug, sublingual buprenorphine (0.4 mg and 2 mg) is available. This substance has recently been approved by the Drug Controller of India for use in De-Addiction Centers, and community-based substitution therapy with sublingual buprenorphine has been implemented in New Delhi (Dorabjee and Sampson 1998). This intervention program has proven attractive to the out-of-treatment opioid-dependent population in New Delhi. Recently, a drug substitution program with sublingual buprenorphine was implemented in Chennai by two NGOs, with support from the European Commission. However, as relapse rates for these opioid users following treatment has been proven to be high (Kumar 1998), treatment service providers should consider reorienting their programs toward more pragmatic public health-oriented approaches, such as those noted in this article.

In addition to the interventions noted above, other HIV prevention efforts have been undertaken in south Asia. Recently, network-based interventions have been used to promote risk reduction among drug users. In Chennai, personal network-based interventions have been conducted with IDUs. Establishing organizations of IDUs also can have a considerable positive impact, and in some countries drug users' organizations have been found to be very helpful in the fight against HIV/AIDS. In India, attempts are being made to facilitate the Drug Users Organization in New Delhi.

In spite of the successful impact of HIV prevention strategies implemented by some NGOs in the region, recent trends indicate that HIV infection is increasing alarmingly among IDUs. Without adequate policy support and governmental endorsement for these and other HIV prevention activities, it is impossible to impact successfully the majority of drug-using populations. Of critical importance is the establishment of policies that support public health approaches, promoting individual and community risk reduction.

### Lessons Learned

There is an opportunity to predict and prevent rapid HIV spread among IDUs in south Asia. Models that work well

have been implemented in the region, and the challenge is to target interventions to all in need of such services. Though found to be effective, HIV intervention programs are reaching only a small proportion of IDUs. For example, in Kathmandu, Nepal, where a continued low prevalence of less than 2 percent HIV infection among IDUs was attributed to the early introduction of needle exchanges and other HIV prevention interventions (Peak et al. 1995), recent reports suggest an increase to 50 percent prevalence among a sample of 165 IDUs (Gurubacharya et al. 1998). Moreover, because community interventions in India are conducted solely by NGOs, the challenge for this country is to increase the number of available programs to a scale commensurate with the magnitude of the problem. The critical factor in the control of the HIV epidemic among IDUs would be the initiation of large-scale behavioral change and risk reduction interventions while HIV seroprevalence is still at very low levels (Des Jarlais et al. 1998). Comprehensive HIV prevention requires multilevel interventions and multisectorial involvement, ensuring the quality of services provided (e.g., maintaining an adequate supply of sterile syringes and an adequate dose of buprenorphine). Access to health and welfare services, community outreach to the majority of the drug-using population, and other efforts may only partially contain HIV transmission.

The spread of HIV among IDUs has no national boundary, and lessons learned in one region should provide opportunities to understand the micro- and macro-risk environment and design appropriate interventions for drug users in south Asia. It is important to design public health responses to HIV infection associated with injection drug use that incorporates the five key areas for effective health promotion: Strengthening community action (community outreach and peer education), creating supportive environments (community advisory boards and community participation to deal with barriers and obstacles for prevention), developing personal skills (risk management by drug users and training for outreach workers), reorienting health services (home-based substitution therapy), and building healthy public policy (Ball 1998). Behavioral research addressing the above critical issues is urgently needed to effectively contain the HIV epidemic among the drug-using population in south Asia. ■

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## Preventing HIV Infection Among Injection Drug Users in China

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The epidemic of drug use and the infection with the human immunodeficiency virus (HIV) associated with injection drug use are health problems that plague the entire globe. The People's Republic of China is no exception to this. Drug use and HIV (through infected needles) continue to spread rapidly throughout the country (Wu 1999a; Yin 1999). Efforts are being made to combat these unfortunate public health problems, but the task is daunting. This paper reviews the current trends of drug use, injection drug use, and HIV infection among injection drug users (IDUs) in China. Current policies and practices for controlling such drug use and for controlling the spread of HIV among IDUs are also discussed.

### Trends of Drug Use and Injection Drug Use

Although strong actions have been taken by governments and communities at different levels across China, the number of drug users and the number of places reported to have drug use problems continue to increase (Wang 1999). Table 1 summarizes the documented number of drug users according to the National Narcotic Control Committee (NNCC) in China.

There is a surveillance system to monitor the dynamic changes in drug use in China. The system consists mainly of the public security departments at different levels. The number of drug users is enumerated in each community at the grassroots level by a community leader and then reported to upper-level officials on an annual basis. In the countryside, the number of drug users is reported from village to township, from township to county (or city within the county), from county to prefecture, and finally to the province. In cities, the numbers are reported from neighborhood communities to street communities, from street communities to district communities, and from there to cities or provinces. After that, each province or city has the reported numbers entered into a computer and electronically transferred to the Office of the NNCC. This computer database contains the drug users' name, address, residency status, gender, age, ethnicity, marital status, education level, year when drugs were first used, type of drugs formerly and currently used, and modes of drug administration.

**Table 1. Documented drug users in China from 1990-1998**

Year	Registered number of drug users
1990	70,000
1992	148,000
1993	250,000
1994	380,000
1995	520,000
1998	596,000

Source: National Narcotic Control Committee 1999

Current figures for drug use in China are profoundly inaccurate; actual drug use is far greater than the numbers officially recorded. There are essentially two reasons for this underreporting. First, drug use is often an intimate behavior known about only by peers or family members. A community leader usually cannot enumerate all drug users in the community, and such underreporting is a problem in urban areas particularly. Second, drug use control has been made a priority by the government at different levels of its infrastructure. Successful control of drug use in communities is an indicator of achievement. But such success must first be greeted with hesitation; increase of drug use is often interpreted as a failure on the part of government, so what appears to be successful control of drug use may, in fact, be nothing of the sort. In other words, community leaders are frequently reluctant to report the actual figures they enumerate for fear of repercussions from above. Thus, the number of documented drug users reported by the NNCC is unfortunately, but understandably, conservative. Experts recently estimated that the actual number of drug users in China by the end of 1998 was about 6 million. Officials from the NNCC and other government sectors have accepted this estimation.

**Table 2. Proportion of injection drug users among all drug users in the HIV sentinel sites in China, 1996–1999**

Name of sentinel site	1996		1997		1998		1999	
	April–June (percent)	Oct.–Dec. (percent)	April–June (percent)	Oct.–Dec. (percent)	April–June (percent)	Oct.–Dec. (percent)	April–June (percent)	Oct.–Dec. (percent)
Gansu	4.0	5.9	6.9	8.3	31.4	13.3	16.5	16.0
Guangdong	65.5	81.5	78.3	73.1	84.7	84.3	72.1	83.4
Guangxi	86	94.0	93.8	88.1	91.3	85.0	84.0	82.3
Guizhou	10.1	20.4	15.0	19.0	Changed to Guizhou-1 and Guizhou-2 sites			
Neimeng	1.6	0.5	2.8	0.9	0.8	3.7	6.4	10.3
Shaanxi	0	0.2	3.9	3.2	6.5	0.4	0.8	12.4
Sichuan	69.9	69.2	15.8	16.7	Changed to Sichuan-1 and Sichuan-2 sites			
Xinjiang	56.1	62.8	Changed to Wulumuqi and Yining sites					
Chongqing			79.8	80.3	76.5	84.6	85.5	86.0
Hubei			16.3	13.6	24.7	42.7	39.3	36.4
Qinghai			38.5	31.5	76.8	81.5	84.6	84.2
Wulumuqi			58.3	62.3	68.8	61.5	62.5	64.8
Yining			98.1	86.8	93.3	92.9	ND	93.0
Fujian					31.4	26.6	52.9	54.5
Guizhou-1					16.0	18.9	18.8	23.8
Guizhou-2					66.3	63.7	54.7	53.3
Sichuan-1					24.9	32.8	21.6	22.8
Sichuan-2					68.0	53.0	78.8	70.4
Ningxia					18.0	22.7	22.8	18.9
Shanxi					9.0	13.8	7.6	6.8
Jiangxi						87.9	90.5	81.3
<b>Total</b>	<b>43.8</b>	<b>42.1</b>	<b>42.5</b>	<b>41.6</b>	<b>40.84</b>	<b>61.5</b>	<b>49.7</b>	<b>53.3</b>

Source: Ministry of Health, National Center for AIDS Prevention and Control 1997, 1998, 1999, 2000

Although the reported numbers of documented drug users were conservative, the sharp increasing trend does, in fact, appear to reflect the true trend of the drug use problem in China. In early 1980 drug use was limited only to Yunnan, the southwestern province bordering Myanmar. Since then the number of counties reporting a drug use problem has

increased dramatically in Yunnan as well as in other provinces such as Guangxi, Guizhou, Xinjiang, and Guangdong. Beginning with the 1980s and continuing to the present, the use of drugs has spread very rapidly throughout the country. In 1995 all 31 provinces, including the major cities and autonomous regions in China, reported

**Table 3. Percentage of injection drug users (IDUs) who shared injection equipment over the past 6 months among IDUs in HIV sentinel sites in China, 1996–1999**

Name of sentinel site	1997		1998		1999	
	April–June	Oct.–Dec.	April–June	Oct.–Dec.	April–June	Oct.–Dec.
Chongqing	61.5	50.9	24.7	52.5	31.7	43.0
Gansu	0	3.6	10.0	18.9	24.2	22.5
Guangdong	30.0	53.9	58.5	55.7	28.4	30.5
Guangxi	ND	62.7	67.1	66.2	59.5	60.3
Guizhou	26.7	37.3	Changed to Guizhou-1 and Guizhou-2 sites			
Hubei	0	0	1.3	0.7	0	0
Neimeng	1/7	1/3	0	10.0	37.5	37.0
Qinghai	54.5	46.0	50.0	50.0	63.5	67.5
Shaanxi	0	0	0	0	1/2	22.6
Sichuan	3.2	88.1	Changed to Sichuan-1 and Sichuan-2 sites			
Wulumuqi	ND	100	100	100	100	100
Yining	ND	53.9	90.5	98.9	ND	78.8
Guizhou-1			32.8	43.0	51.4	34.7
Guizhou-2			15.3	25.0	27.1	43.5
Fujian			14.9	16.2	16.2	27.4
Ningxia			19.4	14.0	15.3	16.4
Shanxi			39.1	25.0	0	26.1
Sichuan-1			17.3	26.8	25.9	12.3
Sichuan-2			24.7	35.3	41.2	40.3
Jiangxi				74.2	84.9	93.9
<b>Total</b>	<b>20.6</b>	<b>60.6</b>	<b>24.7</b>	<b>50.0</b>	<b>31.7</b>	<b>37.0</b>

ND: No data

Source: Ministry of Health, National Center for AIDS Prevention and Control 1998, 1999, 2000

drug use problems. Several provinces had more than 10,000 documented drug users. By 1998 the total number of counties reporting drug use problems had increased to 2,033, among them 140 counties having more than 1,000 documented drug users. About 80 percent of the total number of documented drug users in China were between 15 to 29 years of age (Wang 1999).

Heroin is the drug most commonly used by drug users in China; nearly all areas of the country report its use to be prevalent. Heroin is most often smuggled into China through Yunnan Province, either from Myanmar, Laos, or Vietnam. Methamphetamine is relatively new to drug users in China. It is almost exclusively used by drug users in Guangdong Province, particularly in those cities close to

**Table 4. The number of counties in Yunnan Province and the number of provinces in China that reported HIV infection among IDUs from 1989 to 1999**

Year	Number of provinces that reported HIV infection among IDUs in China	Number of counties in Yunnan Province that reported HIV infection among IDUs
1989	1	3
1990	1	11
1991	1	14
1992	1	15
1993	1	17
1994	1	22
1995	3	36
1996	8	66
1997	12	90
1998	16	102
1999	21	107

Source: Ministry of Health, Yunnan Anti-Epidemic Station 1999

Hong Kong and Marco. There is a strong belief that methamphetamine enters China through these two localities. Few other provinces have reported wide use of methamphetamine by drug users. In Guangdong Province using methamphetamine is much cheaper than using heroin. As a result, it is estimated that most methamphetamine users take it two to three times per day; at current prices, this works out to 30 Chinese yuan, or US\$3.61. Similarly frequent use of heroin, by contrast, costs 100 Chinese yuan, or US\$12.05—quite a hefty sum for the average Yunnan Province user. As financial considerations are a significant factor in determining which drug to take, it is not surprising that methamphetamine use has become so prevalent.

Injection drug use is common among drug users. Table 2 summarizes the proportion of IDUs among all drug users in the HIV sentinel surveillance program in China, from 1996 to 1999 (Ministry of Health 1997; 1998; 1999; 2000). The overall average proportion of injection drug use increased from 43.8 percent in April–June 1996 to 53.3 percent in October–December 1999, an almost 10 percent difference. Figures vary across sites and across provinces. Over the 4-year period studied, the proportion of injection drug use in some sites started high and continued as such. Guangdong, Guangxi, and Chongqing sites, and Wurumuqi and Yining in Xinjiang are a few examples. Of these,

Guangxi and Yining are the two sites with the highest proportion of IDUs, both consistently above 82 percent. In other sites, injection drug use began at a low level but increased slowly and steadily. Such sites include Gansu Province, where injection drug use rose from 4.0 percent in April–June 1996 to 16 percent in October–December 1999; Neimeng, with a rise from 1.6 percent to 10.3 percent; and Shaanxi; where use changed from 0 to 12.4 percent. The most rapid increase occurred in Qinghai where injection drug use rose from 38.5 percent in April–June 1997 to 84.2 percent in October–December 1999.

Sharing injecting equipment is a common behavior among IDUs. Table 3 shows the proportion of IDUs over the past 3 years who shared injection equipment in HIV sentinel sites throughout China. The level of sharing increased from 20.6 percent in April–June 1997 to 37.0 percent in October–December 1999 (Ministry of Health 1998; 1999; 2000), nearly doubling the previous proportion. Figures varied greatly across sentinel sites. In Wurumuqi, it appears that nearly all users shared their equipment. Guangxi, Yining, and Jiangxi were other sites with a high proportion of IDUs sharing injecting equipment, ranging 53.9 to 93.9 percent. Even in other sites where there was little sharing previously, increases were reported; sharing in Gansu rose from 0 to 22.5 percent; in Shaanxi, sharing rose from 0 to 22.6 percent.

**Table 5. Prevalence of HIV infection among IDUs in sentinel sites in China, 1998–1999**

Sentinel sites	April–June 1998		Oct.–Dec. 1998		April–June 1999		Oct.–Dec. 1999	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Chongqing	235	0	236	0	224	0.9	228	0
Fujian	93	1.1	68	0	148	0	146	0
Gansu	50	0	53	0	66	1.5	40	2.5
Guangdong	188	0	97	11.3	88	34.1	246	17.5
Guangxi	365	11.0	340	14.7	326	12.9	292	13.0
Guizhou-1	64	1.6	79	2.5	72	2.8	98	3.1
Guizhou-2	59	1.7	72	0	140	0.7	147	1.4
Hubei	325	0	135	0.7	157	0	91	0
Hunan	307	0.3	322	1.6	247	1.6	251	0
Jiangxi	255	0	248	0.4	371	0	278	0.4
Neimeng	2	—	10	0	16	0	27	0
Ningxia	93	2.2	57	1.8	59	3.4	61	1.6
Qinghai	181	0.3	154	0	148	0.6	191	0
Shaanxi	21	0	1	0	2	0	31	0
Shanxi	23	0	52	0	24	0	23	0
Sichuan-1	75	6.7	82	8.5	54	0	57	0
Sichuan-2	170	7.1	133	4.5	182	1.1	176	1.1
Wurumuqi	267	40.4	246	43.1	250	40.4	259	35.5
Yining	168	85.1	92	83.7	ND	ND	373	81.8
<b>Total (Median)</b>	<b>2,943</b>	<b>0.3</b>	<b>2,447</b>	<b>0.7</b>	<b>2,574</b>	<b>0.8</b>	<b>3,015</b>	<b>0.4</b>

ND: No data

Source: Ministry of Health, National Center for AIDS Prevention and Control 1999, 2000

**Table 6. Risk factors for HIV infection in China**

<i>Risk factors</i>	<i>1998 (percent)</i>	<i>1999 (percent)</i>	<i>Cumulative total (percent)</i>
Injection drug use	78.43	72.92	70.85
Heterosexual contact	6.56	6.20	6.60
Homosexual/bisexual contact	0.09	0	0.15
Vertical transmission	0.09	0	0.07
Blood	0.76	0.71	0.41
Others	6.23	5.42	3.81
Unknown	7.83	14.76	18.11
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

Source: Ministry of Health, National Center for AIDS Prevention and Control 2000

### Epidemic of HIV Among IDUs

The first incidence of HIV infection and AIDS was reported in China in 1985. The first HIV infection associated with drug injecting was reported in 1989. Before 1995, only one province, Yunnan, reported HIV infection among IDUs. HIV infection among the drug-using population has since spread very rapidly. Table 4 summarizes the number of provinces in China and the number of counties in Yunnan that reported HIV infection among IDUs from 1989 to 1999 (Wu 1999*a*; Wu 1999*b*). The number of provinces that reported HIV among the IDU population increased from 1 before 1995 to 21 in 1999. Among the 128 counties in Yunnan Province alone, the number reporting HIV infection among the IDUs increased from 3 in 1989 to 107 in 1999; only 21 counties in Yunnan reported no cases of HIV infection among IDUs.

Yunnan, Xinjiang, Guangxi, Sichuan, and Guangdong are five provinces that have been hit heavily by the HIV epidemic. Outbreaks among IDUs were traced in these provinces from 1995 to 1999. An epidemic of HIV infection among IDUs in Guangdong was recorded in the past 18 months. The total number of newly identified HIV infections in 1999 alone was 1.5 times higher in Guangdong than the cumulative total number of infections reported from 1990 to 1998 (Guangdong Anti-Epidemic Station 2000). HIV prevalence increased from 0 in April–June 1998, to 11.3 percent in October–December 1998, to 34.1 percent in April–June 1999 (Ministry of Health 2000; Guangdong Anti-Epidemic Station 2000).

In 1995, with support from the World Health Organization (WHO), China set up an HIV sentinel surveillance system. Targeted groups for the sentinel survey of HIV infections were drug users, sexually transmitted disease patients, sex workers, and truck drivers (Wu 1999*a*). Table 5 shows HIV prevalence among IDUs in the sentinel sites from 1998 to 1999 (Ministry of Health 1999; 2000). The overall prevalence of HIV infection increased from 0.3 percent in April–June 1998 to 0.8 percent in April–June 1999 but decreased to 0.4 percent in October–December 1999. The most significant increase was found in Guangdong Province. The infection rate of HIV among IDUs in other regions like Guangxi may further increase; Guangxi had 60 percent of IDUs reporting that they shared injecting equipment, and the HIV infection rate was already 11 to 15 percent. The high prevalence of sharing injecting equipment among IDUs in Jiangxi and Qinghai (table 3) predicts that the HIV infection rate will also increase soon since HIV has already been introduced into this population (table 5).

Injection drug use is the major transmission route for HIV infection in China (table 6) (Ministry of Health 1999; 2000). It accounted for 70.85 percent of reported HIV infections in China between 1985–1999. In 1998 and 1999, it accounted for 78.43 percent and 72.92 percent of total reported cases, respectively. It is predicted that injection drug use will continue to be the major route of HIV transmission for at least 2–3 years.

## Drug Policy and Current Practices

Since the early 1980s, controlling the drug use epidemic has been one of the priorities on the agenda of leaders throughout all levels of government in China. Several regulations regarding the use of drugs were issued during the 1980s and 1990s. Criminalizing the use of drugs, strict punishment of drug smugglers, and an outpouring of strong emotions in support of controlling drug use were reflected in the government responses to drug use problems. In 1997 more detailed items related to drug use were put into the new Constitution.

In 1998 the NNCC organized a large exhibition on the battle against drugs with the theme “Refuse Drugs and Value Your Life.” Jiang Zheming, Li Peng, Zhu Rongji, and other top officials from the Chinese government attended the exhibition. The event was successful on many fronts. Most importantly, it sent a strong message—the government was declaring war against drug use in China.

All levels of government in China have strengthened agencies and manpower for drug control. In civil reforms started in 1999, for example, many government departments at the central level were cut; however, law enforcement departments for the control of drugs were strengthened. A new Bureau of Narcotics Control was set up within the Ministry of Public Security with about 60 officers. At the provincial level, particularly provinces with severe drug use problems, such as Yunnan, manpower for drug control was also increased. Yunnan, in fact, now has the largest amount of manpower resources for drug control in China; its provincial Bureau of Narcotics Control has 120 officers, twice that of the national bureau.

China is very proud of its history for successfully eradicating the drug abuse problem between the 1950s and 1970s. Strong policy commitments from newly established governments, tremendous government efforts, high expectations, enthusiasm among the general public, and the isolation of China from the rest of world contributed to this successful eradication of the drug use problem. But can these same strategies and measures of the 1950s and 1970s be used now to effectively control the rapid increase of drug use in China?

The “prohibition of *planting, smuggling, peddling* and *using* drugs” (Ma 1993) that was so effective for drug control in the 1950s through 1970s appears to be obsolete. Although it was believed that the policy had some impact on slowing the rapidly increasing trend of drug use in China, drug use continues to increase at a steady rate across the country.

For control of drug use today, attention has now been put on current drug users. Efforts have been devoted to persuading them to stop using drugs and to assist them in isolating themselves from the drug-using community. An official regulation for assisting drug users to stop using drugs was set up. It requires four stages of treatment for drug users. The first stage is called “voluntary home-based assistance to quit.” When a user experiments with drugs, family and community supports are required to help the experimenter stop such drug use. The second stage is “voluntary community-based treatment.” If the first stage does not prove effective, the user will then be referred to a community-based treatment center either by himself/herself or with family members; the patient remains in the center anywhere from 10 to 60 days. Voluntary community-based treatment centers are usually located either in administrative villages or in a township.

If the second stage fails, the users will be referred to a compulsory treatment service operated by narcotics control agencies. This compulsory treatment lasts from 3 to 6 months. Failing this, users are referred to a mandatory treatment operated by law enforcement agencies. But at these final stages, treatment has not proven successful; the average relapse rate is about 95 percent for drug users who received compulsory or mandatory treatment (Wang 1999).

The lessons of the past 20 years tell us that traditional strategies were not effective when used in the 1980s and 1990s. Social environments and norms changed, as did the drugs used and the extent to which drug users admitted using drugs. Therefore, new strategies for the future must take all of these factors into consideration. And in fact, innovative strategies and programs to control drug use problems are currently being tried. Drug-demand reduction has been emphasized in drug control policies and actions. Integrating drug-demand reduction and drug-supply reduction into overall community development has been demonstrated to be effective in controlling the drug use problem and other related social problems.

Drs. Wu, Detels, and their colleagues provide a good example (Wu et al. 1999). They have launched a community-based intervention trial among 38 villages in southern Yunnan Province. Villages were matched and allocated to an intervention or control area. Strategies included recruiting village leaders, teachers, women leaders, and youth leaders to participate in the development and initiation of the program. Training workshops and regular meetings for village leaders and others were organized. Games and videos with drug prevention messages were played, and classes to improve literacy and agricultural yield

were conducted. School programs were implemented that included didactic work, visits to detoxification centers, and participation in drug intervention activities.

The results of these efforts have been promising. Surveys on drug use, knowledge of HIV/AIDS, and attitudes toward drugs were conducted before and 1 year after implementation of the community intervention program. They reflected a reduction of 1.66 percent in the incidence of new drug users (from 3.54 percent to 1.88 percent) in the intervention area and 0.63 percent (from 2.13 percent to 1.50 percent) in the control area. The reduction was highest among young men, ages 15–19 (482 percent) and 20–29 (151 percent); single men (306 percent); illiterate men (506 percent); and the Jingpo minority group (304 percent) (Wang 1999).

Using these findings as an incentive, and with support from the United Nations International Drug Control Programme (UNDCP) and other organizations, the Yunnan Bureau of Narcotics Control, Yunnan Institute of Drug Abuse, and other agencies jointly launched several community-based drug prevention programs in schools, urban communities, and rural communities (Wu 2000). Similar results were found—community-based programs were effective in controlling drug use and its related crimes. Now, the Yunnan Government has formulated a provincial policy based on these pilot projects to implement these strategies across the province.

### **HIV/AIDS Control Policy and Current Practices**

International experiments have demonstrated that harm-reduction strategies using either a needle exchange program or methadone maintenance program, plus education, are effective in reducing HIV transmission among drug users. Unfortunately, these effective strategies have not yet been implemented to control HIV infections among IDUs in China.

There are legal and ethical reasons for this. Providing needles and syringes to drug users is interpreted by many officials as helping drug users to use drugs; in other words, the belief is that it promotes the very thing it is trying to prevent, and therefore, needle exchange programs are viewed as an illegal behavior. This interpretation hampers

needle exchange programs in China. Similar logic hampers other related programs. Methadone is defined as an illegal drug by the United Nations as well as by the NNCC. For example, methadone maintenance programs are viewed as using one illegal drug to replace another, despite their proven effectiveness in treatment. It is therefore illegal to set up methadone maintenance programs in China.

Given these legal barriers, the only program currently available to target IDUs in reducing HIV infection is education. Yet, it has been demonstrated that education alone cannot stop HIV transmission among IDUs. And unfortunately, even education programs targeting drug users have not been fully implemented.

### **Needle Social Marketing Strategy**

One strategy that has been implemented is “needle social marketing.” “Social marketing” is a misinterpreted concept in China. The major reason behind this misunderstanding comes from the emphasis on the word “marketing.” Fortunately this misunderstanding contributed to government officials accepting needle social marketing as a national strategy for reducing HIV transmission among IDUs in China.

The Department for International Development in the United Kingdom recently signed a £15 million contract with the Chinese government to support HIV/AIDS control in the Yunnan and Sichuan Provinces. The needle social marketing strategy and measures were proposed for targeting IDUs as one of the major components for reducing HIV transmission in these provinces. The effectiveness of such a strategy will be seen in a few years.

### **Summary**

The epidemic of HIV continues to spread among the drug-using population in China. So far, there is no single effective program that is believed to be effective in reducing HIV transmission, particularly among IDUs. Current laws and regulations hamper effective prevention intervention programs. The needle social marketing strategy offers a new hope to curb the epidemic; it remains to be seen whether this strategy will prove effective. ■

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# The Therapeutic Community-Based Rehabilitation Program in the Treatment of Individuals Addicted to Heroin in a Correction Camp—An Experience From Hunan

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## Overview

To establish a rehabilitation model in correction camps, a therapeutic community-based (TC) rehabilitation program was employed in the detoxification branch of a correction camp in Hunan Province. With 102 individuals addicted to heroin in the entrance branch serving as the controls, a total of 96 individuals with heroin addiction in the detoxification branch took part in the TC-based rehabilitation program that lasted at least 6 months. Emphasizing the target group's participation and practice, a variety of tools were implemented to shape the subjects' behaviors and thoughts. They were trained in life skills that were needed to prevent relapse and maintain abstinence. The follow-up results showed that the TC-based program had a significant positive outcome in decreasing drug abuse, improving family and social functioning, decreasing criminal activities, and improving psychological health.

Drug dependence is a chronic, relapsing disorder, and rehabilitation is a long process that starts with giving up the abused drugs, correcting behavior and interpersonal relationships, and finally maintaining abstinence for a long time (Marlatt et al. 1988; Gossop et al. 1989; Bradley et al. 1989). The rehabilitation process of drug dependence is related to psychosocial and biological factors. However, most pharmacotherapeutic programs have failed to incorporate psychosocial interventions. As a result, relapse rates have been very high (Paul and Lynne 1996; Stephanie 1995). To have a high abstinence rate, it is necessary to integrate psychosocial intervention with the drug abuse treatment (Paul and Lynne 1996). Many detoxification centers now provide psychosocial treatment. It is effective in increasing the patient's compliance to treatment and decreasing drug use and criminal activity. With increasing knowledge about drug dependence, the importance of a

rehabilitation program is increasingly being recognized as necessary to maintain positive treatment outcomes (O'Brien and Biase 1992).

TC programs were designed for people addicted to drugs who have significant psychosocial deficits and antisocial patterns and significant histories of criminal behavior. Research on the treatment outcome and effectiveness of the TC modality has consistently found subject behavior improved over pre-TC status. The TC modality was introduced in China in 1992, but the high dropout rate blocked drug-addicted individuals from benefiting from it. By using the successful experiences of others for reference, the authors designed a TC-based rehabilitation program for heroin-addicted individuals in correction camps. Between October 1998 and September 1999, 96 heroin-addicted individuals in the detoxification branch of a correction camp in Hunan Province took part in the TC-based rehabilitation program that lasted for at least 6 months.

## Methods

### *Subjects*

The subjects were 198 individuals addicted to heroin in a correction camp in Hunan Province. The rehabilitation group had 96 individuals who were assigned to the detoxification branch between October 1998 and September 1999, and the control group had 102 individuals in the entrance branch during the same time period. All subjects met the DSM-IV criteria for heroin dependence; those who had serious physical and psychiatric diseases were excluded.

**Measures**

1. **Drug History Instrument:** All subjects completed a drug history instrument designed by the authors at intake. It included demographic data, drug history, treatment history, and some psychosocial factors related to addiction.
2. **Check-up System:** The check-up system was established by the correction camp to monitor and score the residents' general behaviors each month. It included the following behaviors: environmental sanitation, behavior and speech, participation activities, labor, punishment and praise, and so on. The class committee and at least two supervisors reviewed the scores which reflected the residents' general behavior in the past month.
3. **Addiction Severity Index (ASI):** The ASI is a structured clinical research interview designed by McLellan and colleagues (1980) to provide information about areas of a patient's life in which there is often dysfunction associated with drugs. The potential problem areas are medical issues, legal issues, drugs, alcohol, employment, family and social issues, and mental health. In each area, questions were asked to measure the number, extent, and duration of symptoms in the patient's lifetime and in the past 30 days. Sets of objective and subjective items from each of the problem areas were standardized and totaled to produce a composite score that reflects the problem severity in each area (McLellan et al. 1980; McLellan et al. 1985). ASI, a reliable, valid measure of addiction severity, is one of the most commonly used evaluation instruments in clinical studies of substance abuse disorders. Some items were revised according to the individual's situation in the correction camp, and some items related to abstinence and relapse and the use of life skills were increased. Each subject received the ASI interview at intake, at 3 months after discharge from the camp, and again at 6 months after discharge. The baseline information is based on information collected 30 days before the individual entered the camp.
4. **Treatment plan, treatment process, assignment, feedback from the residents, and so on in the rehabilitation group.**

**Procedure**

The rehabilitation group received the TC-based rehabilitation program described below, and the control group received the regular corrective training provided by the camp in which work-correction is the main approach.

**1. The Process of the TC-based Rehabilitation Program**

The authors took as examples the successful experiences of others and some principles of TC models. In the context of the correction camp, they increased the treatment intensity and treatment period and designed a comprehensive rehabilitation program for patients with heroin addiction.

The targeted group followed a military-style routine in a closed and harmonious community, in which the supervisor played the role of motivator and guide and acted as a role model. Everyone was considered a family member in this community and was expected to participate and offer mutual support and help. There was a chain of command that included a monitor; a committee member in charge of learning, culture, and sports; a group leader; and a dormitory leader. The residents' daily lives followed a rigorous schedule and regulations. There was a check-up system to apprise their behavior, thus urging the residents to get rid of their unhealthy behaviors and encourage keeping healthy behaviors. The supervisor participated in the rehabilitation program and took charge of the resident's daily life. A graduate student and some professional experts from the Mental Health Institute of the Hunan Medical University and the World Health Organization (WHO) Collaborative Research Center for Drug Abuse also participated in the rehabilitation training courses.

The rehabilitation training included a variety of activities, such as morning meetings, seminars, group activities, behavior shaping, life skills training, family member meetings, entertainment, sports, labor, etc. According to the residents' needs and focusing on patient participation and practice, a variety of tools were implemented such as interpretation, demonstrations, case discussions, videotaping, role-plays, psychological dramas, games, practicing, assignments, etc. The community rehabilitation program ran for a different period of time, which varied from 6 to 24 months according to the resident's detention period.

**2. The Rehabilitation Training Course**

Knowledge related to drug abuse and the rehabilitation process was provided to residents. The authors implemented a variety of tools to shape residents' behaviors and thoughts and trained residents in a variety of life skills needed to prevent relapse and maintain abstinence. Topics included the consequences of drug abuse, the reasons for drug abuse and relapse, the therapeutic modality and the importance of rehabilitation treatment, ways to correct wrong thoughts and improper coping styles related to drug

**Table 1. The subjects' demographic characteristics**

	Rehabilitation group <i>n</i> = 96 (percent)	Control group <i>n</i> = 102 (percent)	P value
Age (years)	21.96±3.23	22.36±4.02	>0.05
Education			
Illiterate	7 (7.3)	5 (4.9)	>0.05
≤6 years	19 (19.8)	23 (22.5)	>0.05
6 to 9 years	51 (53.1)	57 (55.9)	>0.05
>9 years	20 (20.8)	16 (15.7)	>0.05
Marriage status			
Single	49 (51.0)	63 (61.8)	>0.05
Married	13 (13.5)	12 (11.8)	>0.05
Divorced	11 (11.5)	15 (14.7)	>0.05
Cohabiting	12 (12.5)	11 (10.8)	>0.05
Remarried	5 (5.2)	7 (6.9)	>0.05
Occupation			
Unemployed	58 (7.9)	64 (6.3)	>0.05
Staff member	18 (18.8)	16 (15.7)	>0.05
Self-employed	22 (22.9)	20 (19.6)	>0.05

abuse, coping with stress, relapse prevention and coping with drug craving, keeping a healthy psychological status, coping with spare time, assertiveness, finding the important things in life, coping with negative emotions, seeking help, relaxation exercises, communication, coping with temptation, friendship, coping with unemployment, resolving problems, delaying desires, replacement of drugs, social and family support, knowledge of law, and so on.

### **Follow-up**

Accompanied by the police, all subjects were interviewed at follow-up. The authors also interviewed subjects with their families or with the police in charge to obtain reliable information. Those who claimed abstinence had to take a urine test for morphine for confirmation. Subject reports that contradicted the urine tests were excluded for statistical purposes.

### **Analysis**

All data were analyzed by SPSS-PC 7.5 for Windows; paired *t* tests were used to determine the significance of the difference in means between baseline and follow-up for the same group. The researchers performed independent sample *t* tests to measure the differences between the mean scores of the two groups at follow-up and determine the

difference between the two group's abstinence rates with the chi-square tests.

## **Results**

### **Subjects Characteristics**

All subjects were males with Han nationality, and 188 of the 198 subjects came from Hunan Province; the others were from Guizhou, Guangdong, and Hubei Provinces. The subjects' demographic data are presented in table 1.

All subjects completed the detoxification period, and most recent drug use was 52.14 days before intake. Most individuals (89.9 percent) received an average of  $2.12 \pm 1.14$  sessions of detoxification by pharmacotherapy. The average detoxification period was  $20.23 \pm 40.25$  days, and the average abstinence period was  $10.25 \pm 24.34$  days. The reasons for relapse after previous detoxification were, from most important to least important: drug craving; encountered drugs or drug-addicted persons; physical condition; insomnia; emotional problems, such as anxiety, depression, and boredom; and outside pressures. The drug use history is presented in table 2.

The rehabilitation group resembled the control group closely in terms of demographic data, drug use, and

**Table 2. Subjects' drug use history**

	Rehabilitation group <i>n</i> = 96 (percent)	Control group <i>n</i> = 102 (percent)	P value
Drug use in months	44.37±12.76	41.11±14.23	>0.05
Injection drug use	83 (86.4)	90 (88.2)	>0.05
Criminal history	64 (66.7)	59 (57.8)	>0.05
Detoxification sessions	2.31±1.02	1.93±1.36	>0.05
Reason for detoxification			
Pressure	32 (37.2)	37 (40.2)	>0.05
Imprisonment	30 (34.9)	28 (30.4)	>0.05
Economic condition	15 (17.4)	17 (18.5)	>0.05
Physical condition	6 (7.0)	7 (7.6)	>0.05
Other reasons	3 (3.5)	3 (3.3)	>0.05

treatment history ( $P>0.05$ ), which indicated that the two groups were comparable.

### **Feedback From the Residents**

In the beginning of the rehabilitation training, it was difficult for residents to join the training activities. Only a few committee members (about 10 percent) actively participated in the training. Most residents (90 percent) were very passive, unfriendly to the researchers, and did not think researchers could help and understand them. Step by step, the residents' attitudes changed, and they participated actively in the training activities. A month after rehabilitation training, 85 percent of residents completed the assignments conscientiously. The residents' feedback showed that 70 percent of them thought the researchers truly wanted to help them; 65 percent felt that the TC-based program was useful and practical, enriched their daily lives, and left them no time to consider drugs. Eighty percent of the residents were confident they could maintain abstinence after being discharged.

### **Changes in Residents' Behavior**

After receiving a period of rehabilitation training, some of the residents' behavioral styles changed. For example, 90 percent of subjects were accustomed to saying "hello" when they met others, and 70 percent of subjects replied "thanks" when others helped them. The check-up system scores showed that the unwanted behaviors declined by 15 percent, and the encouraged behaviors increased by 24 percent 1 month after the TC-based training program

began. It indicated that they conscientiously obeyed the rules and regulations, had normal daily routines, and improved their work efficiency.

### **Preliminary Follow-up Results**

To assess the rehabilitation program's efficacy, the authors followed the subjects who had been discharged. Eighty-six residents were followed for 3 months after they were discharged from the correction camp during the period of August 1998 and February 1999. Of the 86 subjects, 39 were in the rehabilitation group, and 47 were in the control group. Of the 39 subjects in the rehabilitation group, 11 (28.2 percent) were dropouts; of the 47 subjects in the control group, 13 (27.7 percent) were dropouts. The 62 subjects in the rehabilitation and control groups who were followed closely resembled the group of subjects who dropped out in terms of demographic data and drug use and treatment history ( $P>0.05$ ). They were not different from subjects who were still in the correction camp ( $P>0.05$ ). The baseline ASI scores showed no significant differences between the two groups. The 3-month follow-up evaluation showed that drug use habits, family and social functions, criminal activity, and emotional states were improved after rehabilitation training as opposed to pretraining. Compared to the control group at the 3-month follow-up, the rehabilitation group also showed significant improvement in all the areas just mentioned and in mental health. Four of the 17 subjects who claimed abstinence from drugs confessed to using drugs after having positive urine tests for morphine; the remaining 13 were confirmed abstinent by negative urine test results. Although the

**Table 3. The 3-month follow-up outcomes of the rehabilitation and control groups**

	Baseline score of rehabilitation group n = 28	Control group follow-up n = 34	Rehabilitation group follow-up n = 28
<b>ASI scores</b>			
Drug use composite	0.6±0.2**	0.5±0.2 <sup>#</sup>	0.2±0.1
Days of heroin use	26.5±13.6**	22.5±10.2	18.6±9.5
Medical composite	0.2±0.1	0.2±0.2	0.2±0.3
Days of medical problems	5.8±2.4	6.3±4.8	7.1±5.4
Employment composite	0.5±0.6	0.6±0.5	0.4±0.3
Days worked	8.6±4.2	9.1±5.3	7.8±10.2
Income (yuan)	200±82.3	325±100.2	300±142
Legal composite	0.4±0.3**	0.3±0.2 <sup>#</sup>	0.1±0.1
Incidents of criminal activity	9.6±6.7**	4.2±1.8 <sup>#</sup>	1.2±1.4
Family and social composite	0.5±0.2**	0.4±0.2 <sup>#</sup>	0.2±0.1
Incidents of problems with family	6.2±4.6**	4.2±4.0	2.6±2.0
Incidents of problems with others	1.2±0.8	3.6±1.8*	2.3±2.1
Psychiatric composite	0.2±0.1	0.3±0.2 <sup>#</sup>	0.1±0.1
Days of anxiety	10.6±7.2**	8.6±6.2 <sup>#</sup>	1.3±1.2
Days of depression	8.3±2.6**	9.4±5.7 <sup>#</sup>	3.5±2.1
Three-month abstinence rate	—	4 (11.7%)	9 (32.1%)

Note: Compared to the condition of the same group before entering the correction camp, \*\*:  $P < 0.01$  and \*:  $P < 0.05$ . Compared to the condition of the control group, <sup>#</sup>:  $P < 0.01$  and <sup>#</sup>:  $P < 0.05$ .

3-month abstinence rate (9 individuals, 32.1 percent) in the rehabilitation group was higher than that of the control group (4 individuals, 11.7 percent), there was no statistically significant difference between the two groups. This may be due to the relatively small number of subjects in the sample. The results are shown in detail in table 3 and figures 1 and 2.

The 13 subjects who maintained abstinence during the 3 months stated that the major reasons for success were (1) keeping away from drugs and drug-addicted friends (9 subjects, 69.2 percent), (2) enriching their lives and having spiritual sustenance (2 subjects, 15.4 percent), and (3) taking responsibility (2 subjects, 15.4 percent). The reasons for relapse were encountering drugs or drug-addicted persons (30 subjects, 61.2 percent), boredom (6 subjects, 12.2 percent), craving (10 subjects, 20.4 percent), stress (2 subjects, 4.1 percent), and pressures from family and friends (1 subject, 2.0 percent). Eleven (39.3 percent) of the 28 rehabilitation subjects thought the rehabilitation training was very effective, 12 (42.9 percent) claimed it was effective, 3 (10.7 percent) thought it had some effect, and 2 (7.1 percent) said it had no effect on them. The three most useful skills learned were coping with craving (78.6 percent),

how to gain family and social supports (67.9 percent), and how to refuse drugs (60.7 percent).

### Discussion

Drug abuse is related to many factors and affects many areas of the lives of those addicted to drugs. Rehabilitation is a long process that starts with the person giving up the abused drugs, correcting his/her behavior and interpersonal relationships, and finally maintaining abstinence and social functioning for a long time. In the process of progressing to rehabilitation, individuals often experience one or more lapses of drug use that may or may not develop into drug relapse (Daley and Marlatt 1992, pp. 533–542). Lapse may stop and progress to rehabilitation. The traditional unidimensional view focusing on abstinence did not include psychosocial factors that account for a large part of the outcome variables. These days experts tend to accept the multidimensional view to measure the outcomes (Kosten, Rounsaville, and Kleber 1987). The methadone-maintained and harm-reduction programs are based on this view. The multidimensional view includes medical, psychological, employment, legal, and family or social problems as

Figure 1. The 3-month follow-up outcomes of the rehabilitation and control groups

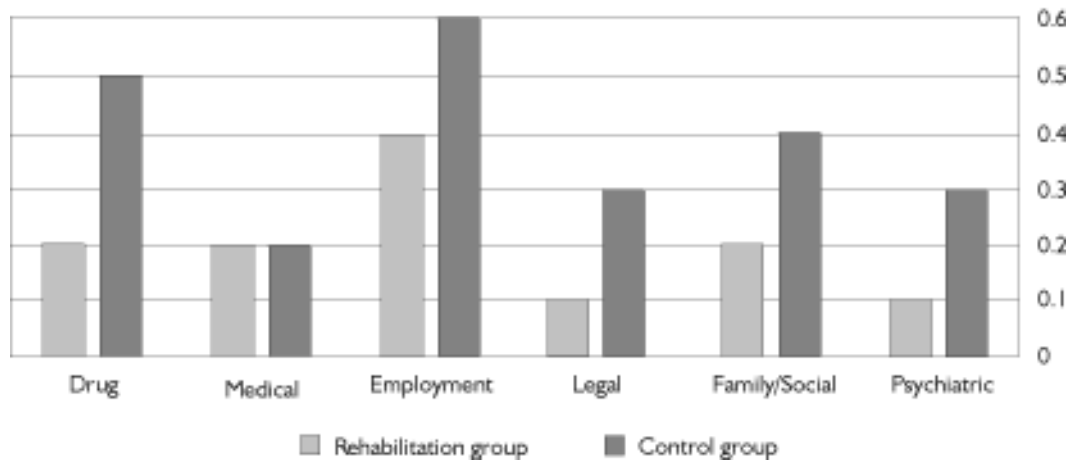
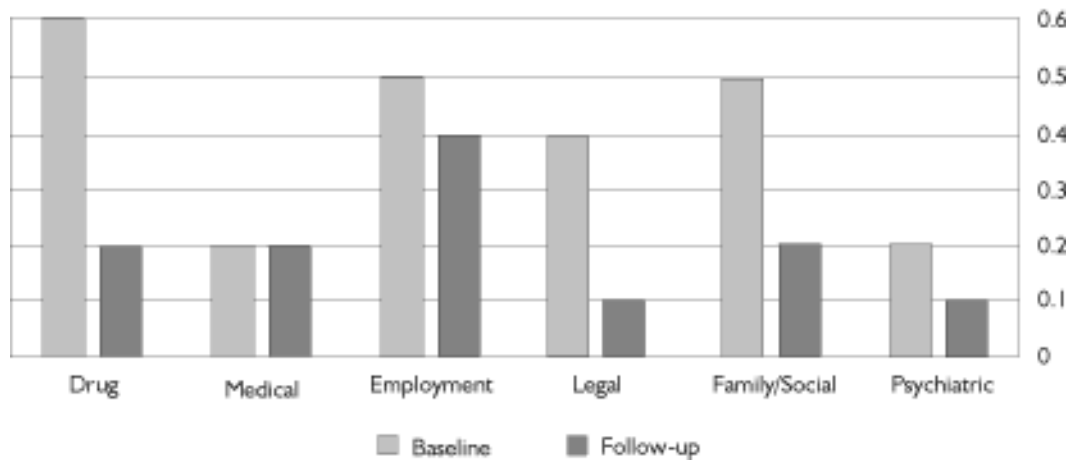


Figure 2. ASI scores of the rehabilitation group at baseline and at the 3-month follow-up



important outcome measures. Studies have proved that the above-mentioned areas may not necessarily improve with sustained abstinence or may improve without abstinence, so the multidimensional view may better reflect the drug abuser's outcomes (Rounsaville et al. 1982). Although the abstinence rate in our follow-up results did not show significant differences between the rehabilitation and control groups, the improvement in drug use, family and social functioning, criminal activity, and mental health show that TC-based rehabilitation is effective in promoting drug rehabilitation.

TC is a treatment model for drug abuse; it is a kind of self-help organization of residents. TC encourages those

addicted to drugs to reform their lives, correct problematic thinking and behaviors, improve their interpersonal relationships, and be responsible for themselves as part of the community.

Many drug-addicted individuals are put into jails or correction camps where drugs are forbidden. They live in the correction camp, where they have to follow a military-style routine, for 1 to 2 years, and this presents a good chance for rehabilitation training. With consideration given to the situation of the correction camp, the authors increased the treatment effectiveness and treatment period and designed a comprehensive TC-based rehabilitation program for those dependent on heroin. This was the first

time that TC was implemented in a correction camp in China.

The residents had to live in the TC for more than 6 months. TC has been proven an effective treatment model (O'Brien and Biase 1992, pp. 446–457), and was introduced in early 1992 in China. Because of the lower participation rate and the high dropout rate, it is difficult to carry out large-scale TC in this population.

This TC-based rehabilitation program was designed according to the subjects' needs. The experts gave the training course, and the supervisors participated in it. The target group's involvement and practice was stressed, the treatment effectiveness and treatment periods were increased, and various tools were used to train them in life skills, so it achieved success to some extent. The 3-month follow-up results showed that drug use, family and social functioning, criminal activity, and mental health were improved. But there were also some shortcomings—the treatment period was short and variable, there was no

aftercare program to reinforce the positive outcomes, and the staff could not provide help and advice quickly when individuals were in high-risk situations; so the relapse rate (67.9 percent) was still high. A longer follow-up period is needed to draw conclusions about the outcomes.

To achieve a desired outcome, it is necessary to solve some problems. The first is the change in the role of the supervisory staff; they are not simply supervisors and should play different roles in different situations to increase the residents' motivation to conscientiously change themselves. The second is how to gain the residents' confidence. The trainer's skills are also important, for example, methods for encouraging the residents to participate in the program are indispensable. Last of all, how can the positive outcomes be increased, and how can residents apply the skills they learn to their real lives? Increasing the abstinence rate and improving social functioning is rehabilitation's final goal. Every social effort should be mobilized to provide aftercare services in the future. ■

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## HIV Prevention in Injection Drug Users in the Southern Cone of Latin America

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HIV infection introduced through injection drug use has become a problem of global significance and proportions. Each year, growing numbers of individuals around the world are infected with the virus in this manner. South America is no exception. Argentina, Brazil, and Uruguay are the countries where injection drug use is most diffused.

Whereas previous prevention efforts targeted either illicit drug use or HIV, current attention is now being given to preventing the infection specifically when acquired by means of injecting. This article addresses these new efforts in the Southern Cone countries—Argentina, Chile, Paraguay and Uruguay—by discussing their methodologies and effectiveness and identifying potential solutions to the obstacles hindering more successful outcomes.

### **Epidemiological Context**

In the Southern Cone countries, cocaine is the most frequently injected substance, followed by amphetamines and alcohol. In Argentina, morphine, LSD, and anesthetics are also used as injected substances. Yet, despite the prevalence of such injecting, very little information exists regarding the facts surrounding drug injecting and drug preparation practices. This lack of information persists in spite of the common knowledge that in countries like Argentina, the shared use of syringes, and especially the sharing of the water the recipient uses to dilute the drug, is still frequent.

The cumulative number of AIDS cases reported in the Southern Cone countries amounted to 18,471 as of June 1999 (Joint United Nations Programme on HIV/AIDS [UNAIDS], World Health Organization, and Pan American Health Organization 1999). Argentina had by far the highest number of these cases, over 14,402, while Paraguay had the least, a modest 424 cases; Chile and Uruguay had 2,526 and 1,119 cases, respectively.

Considering routes of transmission of HIV infection in the cumulative number of AIDS cases in the Southern Cone, injection drug users (IDUs) represented 34.2 percent of all cases, individuals engaging in homosexual and bisexual practices represented 33.0 percent, those engaging in heterosexual practices about 20.7 percent, and cases of mother-to-child transmission about 5.8 percent.

Nevertheless, the routes of transmission of HIV infection in the AIDS cases of these countries follow internal dynamics of the epidemic that can be understood in two ways. In Argentina and Uruguay, the rate of IDU transmission is high (41 percent and 26.50 percent, respectively), and that route of transmission has characterized the trend that the spread of the epidemic is now following. In addition, there has been a quick increase in heterosexual and mother-to-child transmissions, as well as a drastic reduction in the male-to-female ratio of AIDS cases compared with the first years of the epidemic. In Argentina, 20.2 percent of AIDS cases are attributed to heterosexual transmission and 6.8 percent to mother-to-child transmission; the ratio of male-to-female AIDS cases is 2.6:1. In Uruguay, heterosexual transmission is responsible for 36.1 percent of all cases and mother-to-child transmission for 4.2 percent; the ratio of male-to-female cases is 3.8:1. Meanwhile, in Chile and Paraguay, sexual transmission predominates; IDU transmission is still moderate in both countries (4.2 percent and 11 percent, respectively) (Ministerio de Salud y Acción Social de Argentina 1999; Ministerio de Salud de Chile and CONASIDA 1999; Ministerio de Salud Pública de Uruguay 1999; Ministerio de Salud Pública y Bienestar Social de Paraguay 1999; Berriolo et al. 1997).

Despite their similar beginnings in the 1980s, the HIV/AIDS epidemic among IDUs in the four countries of the Southern Cone has followed different trends and assumed two different patterns. The first pattern has been characterized by low cumulative incidence and a low rate of

expansion, as one can observe in Chile and Paraguay; the second pattern, seen in Argentina and Uruguay, has been characterized by high cumulative incidences compared with most countries of the continent and a high rate of expansion.

### **Current Policies**

The region's policies and laws related to drug use are characterized by very low tolerance. Legal sanctions are the most frequent mechanisms adopted by local authorities, and strategies are focused on repression, primary prevention, compulsory drug treatment, and abstinence. Since the 1970s, the resolutions and drug policies of international organizations, and particularly that of the United States, have had an important influence on drug policies in the Southern Cone (Rossi 1993; PREVER 1994).

Assistance services for drug users in the region are based on abstinence models, and their principal goal is to stop drug use. At the same time many of the nongovernmental organizations (NGOs) involved in providing assistance foster the isolation of the person who enters the rehabilitation program. There are diverse proposals—from psychiatric to religious—for treatment approaches. There are not enough treatment programs for drug users in the region, except in Argentina.

In the four countries of the Southern Cone, the national drug control policies are decided in governmental departments that report to each country's president. In the legal arena, the four countries have specific drug acts and complementary legislation that are sustained in the international resolutions of the United Nations Convention Against Illicit Traffic in Narcotic Drugs and Psychotropic Substances, which was signed in Vienna in 1988, and in the Anti-Drug Strategy in the Hemisphere to control drugs, approved by the Organization of American States in 1997 (CICAD 1996).

Regarding HIV/AIDS preventive interventions, sterile injecting equipment is sold through pharmacies but is not always available for drug users. The only pharmacy-based prevention project in the region oriented to IDUs was carried out in Buenos Aires, Argentina, by the NGO Intercambios with governmental support. In this project, the pharmacists were encouraged to sell syringes to drug users and to recommend bleach for cleaning injecting equipment. There are still no needle exchange programs in the region. In Argentina, syringes and condoms are distributed under the auspices of a research and intervention project developed by Intercambios. Also in Argentina, the University of Rosario is developing a pilot substitution

program for opiate users (Cymerman et al. 1998; Siri and Inchaurreaga 1999).

There are still no community-based drug user organizations. Outreach services are not very frequent in these countries, except in some instances in Argentina and in Chile where there is more experience with this type of methodology.

Possibilities and alternatives for intervention and prevention have not been considered as national drug policies; harm-reduction strategies in particular are frequently misunderstood and perceived as promoting illegal drug use. It should be noted that because Catholicism exerts a tremendously profound influence throughout the Southern Cone, condom distribution is not viewed as a method of HIV prevention likely to be accepted as a governmental policy (CICAD 1996; Ministerio de Salud de Chile 1995; Touzé et al. 1999; Touzé and Rossi 1993).

### **New Projects**

In spite of this situation, preventive projects oriented to IDUs have been supported by governmental agencies. The development of research and intervention projects related to HIV prevention began in 1998 in the Southern Cone and were supported by UNAIDS. There are also three national projects oriented to IDUs in Argentina, Paraguay, and Uruguay, located in the capital of each country. Most of these projects are carried out by NGOs in collaboration with national AIDS programs. There are also other research initiatives in Chile and in the city of Rosario, Argentina (UNAIDS Theme Group Argentina; UNAIDS Theme Group Paraguay; UNAIDS Theme Group Uruguay).

#### ***Argentina***

The project in Argentina works with IDUs who are not in drug treatment programs using the Rapid Assessment and Response (RAR) methodology. The objectives of the study developed since September 1998 are (1) to assess the drug use situation in relation to HIV infection in Argentina, (2) to learn the IDUs' profile in the city of Buenos Aires, (3) to analyze the best international practices in HIV/AIDS prevention among IDUs and adapt it to the situation and profile of IDUs in Buenos Aires, and (4) to develop a pilot project of HIV transmission risk reduction among IDUs in Buenos Aires.

Information from more than 50 published studies has been gathered. Sources include research project plans, programs, reports, and diffusion materials; statistical data from

governmental and nongovernmental institutions; laws, ordinances, and resolutions; and journalistic material.

To build the IDUs' history and profile in Buenos Aires, interviews of 60 key informants were conducted. At the same time, 60 in-depth interviews of IDUs were made with the snowball technique, which made it possible to reach IDU networks located in poor neighborhoods on the periphery of Buenos Aires. The questionnaire used in the interviews gathered information about gender, age, residence in the city, marital status, living circumstances, children, friends, education level, sources of income, health care and health problems, legal problems, drug use practices, injection drug use, sexual practices, and preventive measures.

In Argentina harm-reduction interventions have begun in an area where highly vulnerable populations live on the periphery of Buenos Aires; networks with health care services are being created here to improve the access of IDUs to these interventions. Informative material is distributed, as are condoms and syringes.

Other studies using the RAR methodology have been developed in the city of Rosario and in Buenos Aires Province.

### **Paraguay**

In Paraguay the project works with imprisoned IDUs, IDUs in treatment programs, and sex workers. A survey was developed, and 50 IDUs who gave consent to participating in a seroprevalence study have been interviewed.

The objectives of the study are (1) to describe the situation relating to HIV infection among IDUs in three vulnerable populations—sex workers, IDUs, and imprisoned people; (2) to develop, define, and promote preventive measures in the three mentioned populations; (3) to train selected groups to develop preventive interventions after the end of the project; and (4) to propose intervention guides for a national AIDS preventive program among IDUs. The questionnaire used in the survey gathered information about sociodemographic characteristics, the characteristics of drug injecting behavior, and attitudes and expectations related to drug use and health care.

### **Uruguay**

In Uruguay a research project was developed on behavior, attitudes, and practices related to drug use and AIDS in the general population and among sex workers in the city of Montevideo. The objectives of the study, which has been in development since July 1998, are (1) to assess the association

of psychoactive substance use and injection drug use with the extent and nature of risk behavior, including sexual risk behavior, related to the HIV/AIDS infection; (2) to analyze the perception of sex workers about their situation and about health care issues; and (3) to evaluate social tolerance toward persons living with AIDS and drug users.

One questionnaire was used to interview 400 persons in the general population; another one was used with 300 sex workers in Montevideo. It gathered information about sociodemographic characteristics, health care, characteristics of sexual behavior, characteristics of drug use and injecting behavior, and attitudes related to drug users and persons living with AIDS. A seroprevalence test was offered to all interviewees. Nearly 50 percent of the general population and of sex workers agreed to be tested for HIV.

### **Chile**

Chile is developing a research project with national funds to study HIV/AIDS risk perception among IDUs.

### **Conclusions**

To continue with research and intervention among IDUs in the Southern Cone, a regional project was developed in January 1998. The project, "Prevention of HIV Infection in Injecting Drug Users in the Southern Cone," was initiated by the UNAIDS Southern Cone and the National AIDS Programs of Argentina, Chile, Paraguay, and Uruguay. NGOs from each country are taking part as well: Intercambios from Argentina, Programa Caleta Sur from Chile, PREVER from Paraguay, and Instituto de Investigación y Desarrollo from Uruguay. The project will run for 3 years and will be located in major cities in each country: Buenos Aires (Argentina); Santiago (Chile); Asunción (Paraguay); and Montevideo (Uruguay). Regional coordination will be in hands of the Southern Cone's UNAIDS adviser (Aguayo et al. 1998).

The regional project has set the following objectives: (1) to build a common approach in the Southern Cone toward the HIV/AIDS epidemics and IDUs; (2) to promote a wider response to the problem, including the participation of NGOs and social and governmental organizations; (3) to study attitudes, perceptions, and practices of IDUs and their sexual partners; and (4) to promote and develop interventions to reduce the risk of HIV infection among IDUs, their sexual partners, and their children.

National and international agencies, such as UNAIDS, the United Nations International Drug Control Programme, and the Spanish Government, are interested in this project. It has funds from UNAIDS to develop the activities planned

for the first 6 months. UNAIDS, however, needs funds from other agencies such as NIDA in the United States, in order to continue the project.

Conditions have been created in the region to develop knowledge and interventions in connection with the prevention of HIV and other diseases in IDUs.

Simultaneous projects in the region allow a better acceptance of interventions. Nevertheless, it has become necessary to extend similar studies to other cities in the region, to continue with the promotion of the needed articulation between research and intervention, and to guarantee the existence of the necessary funds. ■

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## The Role of the Latin American Harm Reduction Network in HIV Prevention in Drug-Using Populations

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### Overview

The spread of the AIDS epidemic is an important public health problem in Latin America. Although there are big differences in the epidemic's trends in the region, injection drug use represents a very significant route of transmission in several countries. Successful prevention efforts are being developed, and the implementation of harm-reduction strategies is increasing to control the HIV/AIDS epidemic. Nevertheless, there are still gaps between research and intervention, and there is a need to improve institutional support.

The Latin American Harm Reduction Network (RELARD) was founded in São Paulo in January 1998. Representatives of six countries participated in its foundation (Brazil, Argentina, Uruguay, Paraguay, Chile, and Colombia), and currently, 11 countries are involved. The main objective of RELARD is to promote action toward the reduction of drug-related harm, with priority given to the prevention of HIV/AIDS transmission in the context of public health, human rights, and citizenship in Latin America. Since its foundation, RELARD has encouraged links between research and intervention and has improved cooperation within the region and with other regions as part of the Global Voice network.

RELARD has improved national networks and encouraged discussion on harm-reduction strategies. It has also contributed to capacity-building by promoting its members' attendance at several international events and by providing training in rapid assessment and response, a

methodology that has been developed in some countries. RELARD has strengthened cooperation between persons and organizations working in Latin America.

RELARD has become a key instrument for the dissemination of literature, best practices, and research findings. HIV prevention efforts in Latin America have to face prejudice and misinformation, and RELARD is playing a role in this challenge.

### The AIDS Epidemic and Drug Use in the Context of Latin America

Latin America is one of the regions in the developing world where inequality is more dramatic. Poverty remains a major problem, with some 37 percent of the population living below the poverty line and 16 percent in extreme poverty. In countries such as Bolivia, Guatemala, and Haiti, more than 70 percent of households live in poverty.

According to the World Bank's data, the economic growth of Latin America and the Caribbean was projected to fall to 2.9 percent during 1998 and the current account balance to deteriorate further to 3.5 percent of the gross domestic product (GDP) (World Bank 1998).

The East Asian financial crisis hurt the region's economic growth and balance of payments through its effect on trade and finance. While the trade effects were substantial in Chile, Peru, and Venezuela, which faced reductions in the

volume and price of their commodity exports, they were also significant in Colombia and México. The financial impact was most severely felt in Brazil, which reacted to capital outflows and pressures on the exchange rate by raising interest rates sharply and tightening fiscal policy. Brazil's slowdown was projected to lower Argentina's exports and reduce its GDP growth rate.

Regarding health indicators, interregional and class differences remain stark. A Cuban can expect to live as long as a Dane, whereas a Peruvian's prospects are not much better than those of a person in Botswana. In Brazil a poor child is 5 times more likely to die before his/her first birthday than a rich child; in Venezuela, a poor child is 10 times more likely to be malnourished than a rich one (United Nations Children's Fund 1996).

In this context the spread of the AIDS epidemic has become an important public health problem in Latin America. As of June 1999 a cumulative total of 260,251 AIDS cases had been reported in Latin America. Most of these cases are concentrated in Brazil, followed by México and the Andean area. Information on the 1997 incidence rate per 1 million inhabitants shows that the Caribbean had the highest rate followed by Central America and Brazil.

Although there are big differences in the epidemic's trends in the region, injection drug use represents a very significant route of transmission in several countries. The highest percentages of AIDS cases related to injection drug use are concentrated in the Southern Cone (Argentina, Chile, Paraguay, and Uruguay) and Brazil, with 34.2 percent and 21 percent, respectively (Pan American Health Organization 1999).

Despite the objectives of the Inter-American System of Uniform Drug-Use Data (SIDUC) to monitor the problems associated with drug use, there is no definitive information about the nature and extent of these problems in many countries of the region.

Cocaine and marijuana seem to be the most widely used illicit drugs, and licit substances such as alcohol, opiates, and other pharmaceutical products also represent a rising health problem. Between 1992 and 1994, the World Health Organization (WHO) and the United Nations Interregional Crime and Justice Research Institute (UNICRI) conducted a global study of cocaine (WHO/UNICRI 1995). Six Latin American countries were included: Bolivia, Brazil, Colombia, Ecuador, Peru, and México. Four patterns of use were described in the cities involved in the study:

1. Snorting cocaine; this practice is increasing in Brazil and Peru.

2. Smoking crack/coca paste; coca paste, also referred to as "pasta," "pasta basuca," or "basuco," is almost exclusively used in South America. The use of coca paste may be increasing in the Andean countries, in particular Ecuador. Crack use appears to be increasing in Brazil.
3. Injecting cocaine; in Rio de Janeiro and São Paulo, cocaine injection has become very common, although crack use appears to be gaining popularity.
4. Consuming coca leaves; consumption of coca leaves is fully integrated into the Andean cultural tradition and worldview. For most users coca leaves retain their sacred character.

### Drugs and AIDS Policies

Since the 1970s, Latin American policies have been greatly influenced by resolutions adopted by international organizations and other countries, particularly the drug policies implemented by the United States.

In November 1986 the Inter-American Drug Abuse Control Commission (CICAD) was established as a technically autonomous agency of the Organization of American States (OAS). In June 1997 the General Assembly of the OAS adopted the CICAD-approved Anti-Drug Strategy in the Hemisphere to control drugs in the 21st century (OAS 1997). This strategy included demand reduction and supply-reduction and control measures, but there are neither references to health-related problems such as HIV/AIDS, hepatitis B, and hepatitis C, nor to harm-reduction methods that would promote public health. This statement is an obstacle to developing proper preventive programs in most of the countries in the region because it encourages the refusal of their respective National Drug Control Commissions to include this public health perspective in their policies.

With regard to AIDS policies, the Group for Horizontal Technical Cooperation in HIV/AIDS involves the national AIDS programs of 19 countries in Latin America and the Caribbean. However, the HIV/AIDS situation differs from one country to another.

Treatment accessibility is not assured in most of the countries. Argentina and Brazil are the only countries in the region with free access (without restrictions) to antiretroviral treatments and laboratory tests. México, Venezuela, Colombia, and Costa Rica provide access to triple-drug therapy only for people with social security, which means employed people. Paraguay and Peru are giving AIDS-related therapy to very few patients. Most of the persons living with HIV in Latin America still do not know that they have it. The drug-using population

is one of the most hard-to-reach groups because of its stigmatization and criminalization. However, national AIDS policies in the region, except in Brazil, do not include targeted interventions to improve the access of hard-to-reach populations to the health care system.

### **Harm Reduction Development in Latin America**

Despite the poor situation already described, successful prevention efforts are being developed, and the implementation of harm-reduction strategies to control the HIV/AIDS epidemic in Latin America is increasing.

The first harm-reduction efforts were developed in Santos, Brazil, in 1989. In 1993 the Institute of Studies and Research in AIDS of Santos (IEPAS) began with the first bleach distribution program and the first project based on outreach work in the country. In 1995 the first tolerated needle exchange program was initiated in Salvador in the Brazilian State of Bahia. Currently there are 14 harm-reduction programs in Brazil that are concentrated in 7 priority states, and these include needle exchange among other services. In March 1998 the State of São Paulo passed an act that legalized syringe exchange for the prevention of AIDS; this was the first such law passed in Latin America. The Brazilian Outreach Workers and Drug Users Association (ABORDA) and the Brazilian Harm Reduction Network were created in 1997 and October 1998, respectively.

In Argentina an AIDS preventive program for drug users began in 1993. It was developed by the same team that founded the Intercambios Association in 1995. Since 1998 this nongovernmental organization (NGO) has been developing a pharmacy-based program and outreach interventions in Buenos Aires with the support of Argentina's health ministry and UNAIDS, respectively. Some other harm-reduction activities have also been developed in the city of Rosario.

In August 1998 the Bolivian Harm Reduction Network was created; it supports the Bolivia Coca Museum in La Paz.

The Mental Health Act passed in March 1999 in Colombia makes a reference to harm-reduction strategies. In Medellín, the Granjas Comunitarias Santa Teresa Foundation is developing harm-reduction programs among homeless drug users.

In México the NGO Compañeros is developing outreach work and distributing educational and preventive materials.

### **Research on HIV Prevention in Drug-Using Populations**

As described earlier, harm-reduction interventions are gradually being adopted in the region. However, there is a critical need to improve knowledge about many aspects of the dynamics of the HIV/AIDS epidemic among injection drug users (IDUs) and to support preventive interventions and political changes with scientifically based arguments.

Most of the research conducted in the region has been developed in Brazil. Between 1993 and 1998 the most important research projects conducted in this country were (1) the Projeto Brasil, a multicity study involving five centers and analyzing behavior as well as seroprevalence; (2) a study in another five cities based on Projeto Brasil; (3) a qualitative research study including all the harm-reduction projects in the country; and (4) phase II of the WHO multicity study among IDUs.

In Colombia a rapid assessment has been conducted as part of phase II of the WHO multicity study among IDUs.

In the Southern Cone three national research projects have been developed in Argentina, Paraguay, and Uruguay with UNAIDS support, and other initiatives are also being conducted.\* A regional project, "Prevention of HIV Infection in Injecting Drug Users in the Southern Cone," is waiting for funds to arrive so that the activities for the first 6 months can begin.

As one can observe, there is a lack of research in the region compared with the urgency of the challenges it faces.

### **Latin American Harm Reduction Network**

The main goal of RELARD is to promote efforts to reduce drug-related harm with a priority of preventing HIV/AIDS transmission in the context of public health, human rights, and citizenship in Latin America. To achieve this, RELARD's objectives are

- To promote and diffuse harm reduction as an effective and valid strategy to approach drug-related problems;

\*UNAIDS Thematic Group Projects: Argentina Project—"Investigación Sobre la Prevención del SIDA en Usuarios de Drogas"; Paraguay Project—"Reducción del Riesgo de Transmisión del Virus de la Inmunodeficiencia Humana (VIH) en Poblaciones Vulnerables"; Uruguay Project—"Relación SIDA y Drogas: Diagnóstico y Propuestas."

- To support and strengthen the initiatives of the people as well as of the governmental organizations and NGOs working in the field of harm reduction in the countries of Latin America;
- To promote drug users' organization and participation for the improvement of their quality of life; and
- To generate opportunities to discuss drug use issues with respect to Latin America's social and cultural conditions and to link with other similar networks.

Since its founding, RELARD has encouraged links between research and intervention efforts and has disseminated useful information to researchers and field workers through its newsletter, which is published in three languages (Spanish, Portuguese, and English), its Website, and other means of communication.

During its first year and a half, RELARD enhanced national networks and opened discussion about harm-reduction strategies. It encouraged and supported its members' attendance at scientific forums such as the International Conferences on Drug-Related Harm in São Paulo and Geneva, the 12th World Conference on AIDS and the Inaugural Meeting of the Global Research Network on HIV Prevention in Drug-Using Populations in Geneva, the 20th

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North American Harm-Reduction Conference in Cleveland; and the First Conference of the Group on Horizontal Technical Cooperation of Latin America in Querétaro. It also contributed to capacity-building by providing training in rapid assessment and response.

RELARD is one of the coorganizers of the First Latin American and Caribbean Forum and the Second Conference of the Group on Horizontal Technical Cooperation on HIV/AIDS, which will be held in Rio de Janeiro in November 2000, thus ensuring that the issues of drug-using populations will be included in this regional event.

HIV prevention efforts in Latin America face prejudice and misinformation, policy decisions determined by political interests rather than scientific evidence, and lack of resources. Networks have become a key instrument for the dissemination of literature, best practices, and research findings. The collaborative experience of regional harm-reduction networks and Global Voice has demonstrated how they can make a change. But, although they are a strong force for change, networks cannot do it alone. Research is needed, and field interventions need to be strengthened. And to achieve it, financial and political support is imperative. ■

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## International Multicity Studies From the Developing Countries' Point of View (Latin America)

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Three international collaborative studies in Latin America have produced important information about conducting research in developing countries. These studies include (1) Phase I of the World Health Organization (WHO) Multicity Study, (2) the development of the Rapid Assessment and Response (RAR) methodology, and (3) Phase II, Part II of the WHO Multicity Study.

Phase I of the WHO Multicity Study was the first experience with international collaborative studies for our group of Brazilian researchers. Chapter 8 of the final report of this study (WHO 1994) presented conclusions and recommendations that may be relevant for other international collaborative research groups. The study as a whole was insufficiently coordinated, and in general there is a particular need for participation by developing countries in designing, planning, implementing, and coordinating global research efforts. In this study many problems could have been avoided with more involvement of the developing countries' researchers in the process. Local researchers are more familiar with the communities where the research protocols will be developed and implemented, as well as with the limitations, difficulties, and cultural aspects that will influence the research. Their input and involvement can help ensure that the protocol can be implemented as planned.

Phase I of the WHO Multicity Study provided the baseline data for the Brazilian national strategy to control the spread of HIV among injection drug users (IDUs). The data collected in Santos and Rio de Janeiro were crucial to the design of the national strategy. With the support of the World Bank, United Nations International Drug Control Programme, and the Brazilian Government, the national strategy currently involves 21 harm-reduction projects across the country.

In our second international research project in 1998, we developed the RAR methodology in the City of São Vicente, in the State of São Paulo. The results of this interesting research are in the abstract book of this meeting and are also being published elsewhere (Mesquita et al., in press). Three aspects of this project were particularly

important: (1) the workshop that trained researchers in Latin America for the project, (2) the participation of the community in the research project, and (3) the dissemination of the methodology to other sites in Brazil.

First, the 40-hour workshop held in Guarujá (State of São Paulo) in March of 1998 was a joint initiative of WHO, University of London, Joint United Nations Programme on HIV/AIDS, and RELARD (the Latin American Harm Reduction Network). Researchers from Costa Rica, México, Colombia, Chile, Paraguay, Argentina, Uruguay, and Brazil attended. It was very important as a capacity-building workshop, and research was later conducted in most of the countries that participated. The workshop was an example of the kind of cost-effective practical assistance that more developed research centers can contribute. Second, in the City of São Vicente, one of the most interesting aspects of the RAR was the involvement of the community. Early in the process, a community council was formed to assist the research team and recommend key persons for the in-depth interviews and focus groups. At the end of the study, the research team and community council organized a seminar to discuss the data collected and formulate a response. In working on a global scale, local needs and problems are sometimes forgotten, but it is important to keep in mind that global problems often require local responses and community support.

Finally, in disseminating the methodology to other sites in the country, we had questions about how to apply the methodology in various communities. Researchers with local experience were better prepared to answer questions such as, Is it better to work with focus groups or conduct in-depth interviews in this specific community? Where are the best sources of existing data in this community? Dissemination requires local, regional, and national networks of researchers; the international network alone is not sufficient.

Our last experience in global research was Phase II, Part II of the WHO study (the epidemiologic component). Some mistakes that were made in Phase I also occurred in Phase II, including insufficient communication among researchers

from developed and developing countries (but this is not a one-way criticism).

There were some problematic questions on the instruments used in the Phase II study related to the medical history on sexually transmitted diseases (STDs) (WHO 1999). For example, IDUs were asked, Has a doctor, nurse, other health professional, or counselor ever told you that you had \_\_\_\_ (options included many different STDs)? In some areas there are no STD clinics, and the person on duty, who usually is not even a pharmacist, treats most sick people in pharmacies. Sick people do not go to a doctor for diagnosis or treatment, so their STDs are never diagnosed. Thus this question produces inaccurate data. Other problematic questions related to drug overdoses; most of these questions were developed for heroin users, but in areas where cocaine

is the primary drug used (as it is in most of Latin America), the questions should be worded differently.

Despite these problems, the study produced a very interesting update of the baseline information and included data showing a large increase in smoked crack cocaine and extremely low rates of seroprevalence for HIV and hepatitis C among the drug users who had never injected. The data are being analyzed and should present new information helpful for responding to the drug problem. The cross-comparison of the results will be informative in analyzing the global trends of the epidemic. Since the instruments and procedures have already been designed and tested, the study ought to continue in order to obtain additional data. ■

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## AIDS Situation in México

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Estimates by the Joint United Nations Programme on HIV/AIDS (UNAIDS), reported in December 1999, found that 33.6 million people worldwide live with HIV infection. UNAIDS also found that 16.3 million have already died of AIDS, and an estimated 11.2 million children have been orphaned as a result. Of the 16,000 people around the world who become infected daily, 10 percent are minors under 15 years of age, and 42 percent are women (UNAIDS 1999).

The spread of HIV in Latin America is similar to the spread of the virus in industrialized countries. There is evidence that the number of infections has begun to stabilize, even decrease in some areas, although the outlook is not uniform across the region. Within most countries, epidemics tend to be localized, with a nationwide prevalence of less than 5 percent and a prevalence within specific populations ranging from 5 to 25 percent. However, the prevalence of HIV has increased rapidly in Nicaragua, Venezuela, and Peru in recent years. México, by contrast, has not seen this type of increase yet although the precursors required for an AIDS epidemic are in place.

### **The Situation in México**

México ranks 13th in terms of the total number of AIDS cases reported worldwide; it ranks third in the Americas. However, México ranks 69th with respect to the cumulative incidence of AIDS worldwide and 11th in the Americas. These figures demonstrate, therefore, that México has a very low incidence rate of AIDS relative to other countries in the region and around the world (Magis, Anaya, and Uribe 1998).

The estimated number of persons infected with HIV in México is between 116,000 and 150,000. From the beginning of the epidemic through January 2000, 42,762 AIDS cases have been reported. Given undernotification and delays in notification, this figure increases to approximately 64,000 total cases (Secretaría de Salud 2000).

### **The Rise and Character of AIDS in México**

The first case of AIDS in México was diagnosed in 1983. Through research and retrospective analyses, however, it

has been discovered that AIDS began appearing in México as early as 1981. Since this time, the increase in the number of cases has continued with four distinct trends: (1) up to the end of 1987, the increase was slow; (2) from 1988 to 1991, the number of AIDS cases grew exponentially; (3) from 1992 to 1995, the growth was again exponential but less robust; and (4) from 1996 through 1999 an apparent stabilization of the epidemic has been observed, with an annual average of 4,000 new cases of AIDS.

The current situation in México is characterized by both simultaneous and serial occurrences of multiple, localized epidemics. One factor influencing this situation involves the geographic proximity of affected and unaffected areas; many areas previously unaffected become affected due to their relative closeness to an area where the epidemic has hit. Another factor involves the internal dynamics of the epidemics themselves—each localized epidemic contains other factors regulating its ability to spread to other regions.

All the states of the Mexican Republic have reported cases of AIDS. Fifty-five percent of the total number of cases were concentrated in the Federal District (D.F.) State of México and Jalisco. Most cases of HIV infection are concentrated in 25- to 44-year-olds; within this age group, AIDS has become the third leading cause of death in men and the sixth leading cause of death in women. Pediatric cases (patients under 15 years of age) account for 2 percent of the cumulative total; 50 percent of these are infected by perinatal transmission.

Patterns of transmission around the world and subepidemics within regions or countries depend on the culture and values, sexual dynamics, and socioeconomic situation of those involved. In México, two polar patterns have been reported. The first is distinctly urban, observed mainly in large cities as well as along the northern border. This pattern is characterized by a large percentage of male cases and a long duplication period (18 months). The second pattern is a rural one, observed primarily in the central and southern regions of the country. This pattern is characterized by a higher proportion of female cases and faster duplication periods (8 months) than the urban pattern.

Features of the epidemic outlook of AIDS in México can be classified according to the age and sex of patients, as well as by main modes of transmission in population subgroups. Among men transmission is basically sexual (both homosexual and heterosexual), and to a lesser degree through needle sharing during drug use. Until 1987 HIV transmission among women occurred most often through blood transfusion, but the route of transmission is now largely heterosexual. Also, among children under 15 years of age, the route of transmission was once largely by blood transfusion, but now it is mostly perinatal, and less frequently, sexual.

From surveillance data it has been concluded that the HIV epidemic in México still affects specific groups. The main transmission category corresponds to men who have sex with men (MSM). Men who report homosexual or bisexual practices generally live in large cities. Seroprevalence in this category has remained stable through the years. In small and medium-sized cities, by contrast, infection rates have increased. Increased prevalence has also been noticed in heterosexual groups from certain regions, particularly among female prostitutes. While the infection rate in heterosexuals is low, high-risk practices remain present. Finally, there is a trend toward increasing HIV seroprevalence among tuberculosis patients.

### **HIV and Injection Drug Use**

Despite the fact that injection drug use is unusual in México, there are specific regions where this practice is common. The HIV infection rate in this group is, not surprisingly, increasing, particularly in the northern states bordering the United States.

The first AIDS case associated exclusively with the use of injection drugs was reported in 1986. As of December 1999, 466 cases had been associated with injection drug use, representing 1.3 percent of the total registered cases of AIDS. Of these cases, 262 involved the use of injected drugs; the other 204 reported injection drug use as well as homosexual relations. Cities with the most cases associated with transmission by injection drug use are Guadalajara, Tijuana, Méxicali, Hermosillo, and Juárez.

In the 1994 Survey on Drug Consumption in the North Frontier, the lifetime prevalence (LTP) of heroin use among 19- to 65-year-old males was reported at 0.6 percent in Tijuana and 0.8 percent in Juárez (Secretaría de Salud 1994).

The National Addictions Surveys carried out between 1988 and 1998 showed a stable tendency for heroin use among males between regions, ranging from 0.11 percent to 0.09 percent; cocaine use was 0.33 percent in 1988 and 1.45 percent in 1998.

Between 1976 and 1986, the LTP of heroin consumption among students in the northern region doubled from 0.2 to 0.5 percent; a similar trend was seen for cocaine, with consumption rising from 0.6 to 1.3 percent during those 10 years. In sentinel addiction surveillance carried out from 1994 to 1997 by the Secretary of Health, heroin was the most commonly used drug among individuals in the northern region seeking drug treatment (Secretaría de Salud 1999).

Another study was performed in the jails of Tijuana in Baja California and of Juárez in Chihuahua, both states bordering the United States. The prevalence of injection drug use in these inmates was 37 percent and 24 percent, respectively. The average age of these injection drug users (IDUs) was 27 years; 92 percent injected heroin, and 46 percent injected cocaine together with heroin in the same shot. They consumed an average of four injections per day. Sixty percent in Tijuana shared syringes versus 40 percent in Juárez; 28 percent cleaned the syringes with bleach in Tijuana versus 47 percent in Juárez; 14 percent in Tijuana reported that they injected drugs in some areas of the United States versus 23 percent in Juárez. In both jails, injection drug use among MSM and commercial sex workers was prevalent. In Tijuana, HIV seroprevalence was 2.53 percent; in Juárez it was 1.3 percent. All HIV-positive persons in the study were IDUs (Ruíz-Badillo 1998).

In both of the jails, the prevalence of injection drug use and the frequency of syringe sharing was high (Magis-Rodriguez 1994). In Juárez the risks of contracting HIV were lower than in Tijuana, but a greater probability of migration to the United States existed there. The prevalence of HIV found in this study was lower than that found in other studies in México among MSM; it is, however, almost 20 times the prevalence of the general population. Due to the high migration between the United States and other places in México, these cities could be sites of expansion for the epidemic both locally, and eventually, to other regions of México (Magis-Rodriguez et al. 1997; Ruiz et al. 1998). Should this occur, México's status as a country without a generalized HIV problem will be in jeopardy. ■

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## Country Report: Substance Abuse and HIV/AIDS in South Africa

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### Introduction

Southern Africa, and South Africa in particular, has entered the spotlight in terms of the global AIDS epidemic. According to statistics released by the Joint United Nations Programme on HIV/AIDS (UNAIDS), 22.5 million adults and children were living with HIV/AIDS in sub-Saharan Africa at the end of 1998, roughly two-thirds of the global total of 33.4 million. The number of new cases in this region in 1998 was estimated to be 4.0 million (UNAIDS 1999). Since the installation of a democratically elected government in 1994, South Africa has also seen a substantial increase in the trafficking and use of harder drugs such as crack cocaine and heroin. In this country, substance abuse and HIV/AIDS have largely been handled independently vis-à-vis research and policy. The most likely reason for this situation is that the link between substance abuse and HIV infection is seen as less direct than it is in many other parts of the world.

### HIV/AIDS in South Africa

South Africa has seen two main HIV epidemics, the first starting in the early 1980s, in which HIV was spread mainly through same-sex contact, and the second starting in 1987 among heterosexuals with a co-occurring epidemic among children infected by perinatal transmission, or possibly through contaminated breast milk (Abdool Karim and Abdool Karim 1999). Although there is no reliable source of data on modes of HIV transmission in South Africa, experts believe that about 85 percent of infections occur through heterosexual transmission, 10 percent through mother-to-child transmission, and the remaining 5 percent through same-sex transmission, injection drug use, and occupational exposure (Q. Abdool Karim, personal communication).

The cornerstone of surveillance of the HIV epidemic in the country has been the annual, unlinked, anonymous surveys of a representative sample of women attending public antenatal clinics in each of the nine Provinces of South Africa (Department of Health 1999). Between 1990 and

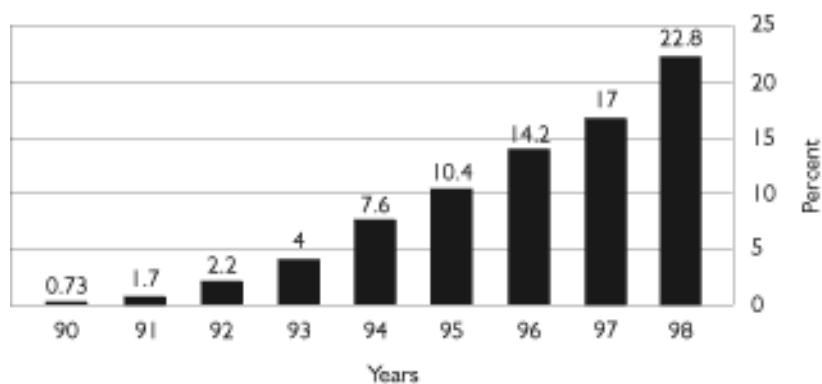
1998, the prevalence of HIV infection rose more than thirtyfold (figure 1).

With regard to the 1998 data, the highest rates were found in women in their twenties. Between 1997 and 1998, there was a 65 percent increase in the estimated infection rate among teenage girls ages 15 to 19, from 13 percent to 21 percent (figure 2). Abdool Karim and Abdool Karim (1999), referring to the 1997 antenatal data, pointed to a gradient of infection across the country, from high levels in the northeastern provinces to lower levels in the southwestern parts of the country. This has continued. They suggest that these geographical differences can partially be explained by urban-rural differences and differences in the level of migration.

After reviewing research in rural KwaZulu Natal Province among antenatal clinic attendees, male and female community members, and female sex workers at truck stops, Abdool Karim and Abdool Karim (1999) concluded that the epidemic is spreading as rapidly in rural areas as in urban areas and is highest in women under 30 years of age. The epidemic is thus viewed as being fueled by the high incidence rates in women (Q. Abdool Karim, personal communication). National data from voluntary blood donors further demonstrate that HIV is spreading in all ethnic groups, especially Africans (South African Blood Transfusion Services, personal communication).

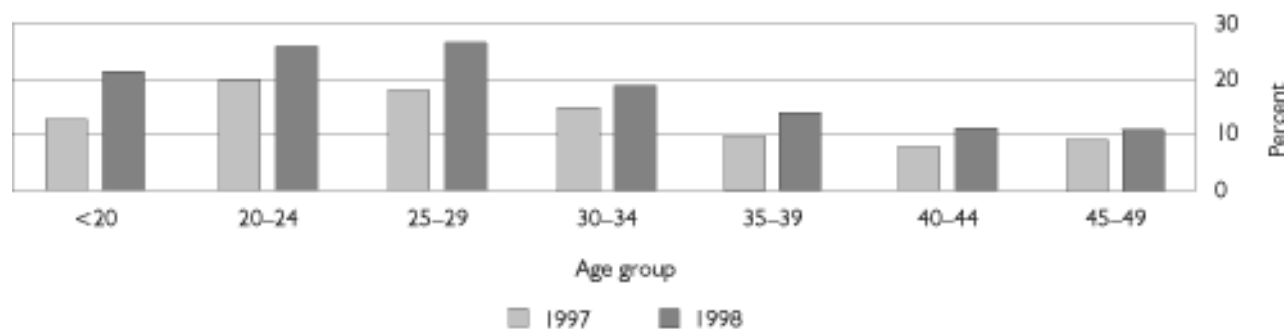
It is estimated that by the end of 1999, 11.5 percent of the population will be infected with HIV (compared with less than 0.5 percent in 1990). This translates to almost 5 million HIV-positive persons. By the end of 1999, there will be 2,500 new infections per day. Between 140,000 and 150,000 AIDS deaths will have occurred during the year, and between 100,000 and 150,000 children will have been orphaned as a result. Life expectancy will be 57 years (down from 63 years in 1990), and the child mortality rate will be 91/1,000 (down from 67/1,000 in 1990) (Dorrington 1999).

Figure 1. HIV prevalence trends in the Republic of South Africa: Antenatal clinic attendees



Source: Department of Health (South Africa) 1999

Figure 2. HIV prevalence by age: Antenatal clinic attendees



Source: Department of Health (South Africa) 1999

Several factors have been identified which put South Africa at high risk of a severe HIV/AIDS epidemic. These include very high levels of untreated STDs; high levels of rape and violent sex; an unwillingness to use (or unavailability of) condoms, and use of anal sex by some as a method of contraception, “dry” sex; the entrenched system of migrant labor; the growing commercial sex industry; good transport infrastructure and high mobility; high levels of poverty and income equality; the low status of women in society and in relationships; and social norms that accept or encourage high numbers of sexual partners (Baleta 1999; Halperin 1998; Kinghorn and Steinberg 1998; Leggett 1999; Varga 1997). An additional factor is the influx of political and economic refugees to South Africa from other African countries as well as the return of an estimated 40,000 freedom fighters from Zambia, Uganda, Angola, and Tanzania (with the exception of Angola, these countries

have a high prevalence of HIV), and their redeployment to military bases throughout the country (Dorrington 1999).

### Substance Abuse in South Africa

Before the installation of a democratically elected government in South Africa in 1994, various factors restricted both the choice and use of illicit drugs to cannabis, Mandrax (a sedative and blend of the pharmaceutical drug methaqualone and an antihistamine), and the cannabis-methaqualone (“white pipe”) combination. South Africa consumes as much as 80 percent of the Mandrax produced in the world (Parry and Plüddemann 1999). Mandrax is sold in a tablet form and is typically smoked at the end of a glass bottle neck with cannabis. Since the early 1990s, however, South Africa has seen a slow but steady increase in the availability and use of drugs such

as cocaine, LSD, amphetamines, and, most recently, ecstasy and heroin. Other substances abused include alcohol, over-the-counter and prescription medicines (such as diet tablets, headache powders, and benzodiazepines), and solvents.

An analysis of information from persons being seen by specialist treatment centers during Phase 5 (July to December 1998) of the South African Community Epidemiology Network on Drug Use (SACENDU) project in Cape Town, Port Elizabeth, Durban, and Gauteng Province (Johannesburg and Pretoria) revealed that the predominant method of ingesting drugs other than alcohol is smoking (Parry et al. 1999). If alcohol is excluded, 87 percent of substances are smoked and 2 percent are injected in Cape Town, and in Gauteng, 86 percent of drugs are smoked, 3 percent injected, and 10 percent snorted. SACENDU data indicate that South Africa currently has little injection drug use, a situation that has not changed much since the project began in 1996. This view is supported by other studies. For example, in a national study of 1,603 prisoners and parolees in 1996, only 1 percent of prisoners reported injection drug use, typically Wellconal or cocaine (Rocha-Silva and Stahmer 1996). Wellconal is a synthetic opiate used for pain relief. Users of this drug are now viewed as a “dying breed” (Leggett 1999). Furthermore, in a 1997 representative study of 2,779 students in grades 8 and 11 from Cape Town, lifetime use of injection drugs in grade 11 was 1.3 percent for males and 0.6 percent for females (Flisher et al. 1998).

Limited analyses of the purities of different drugs have been undertaken in South Africa. However, according to the police Forensic Chemistry Unit, analyses have shown Mandrax to be in the range of 40 to 80 percent purity; cocaine, 60 to 90 percent purity; and heroin, 50 to 90 percent purity. Lately heroin purity has been nearer to 50 percent (van Zyl, personal communication). A decrease in the purity of drugs could lead to an increase in injection drug use.

On the basis of data from the SACENDU project, it appears that whereas alcohol and cannabis use and associated consequences remain high, indicators for drugs such as ecstasy and other amphetamine-type substances (ATS) are showing an increase, together with harder drugs such as Mandrax, heroin, and especially crack cocaine (Parry et al. 1999). With regard to cocaine, and crack in particular, a big increase has been seen in treatment demand in all sites as well as an increase in drug seizures (especially in Durban, Johannesburg, and Pretoria). The price of cocaine is about \$30 to \$50 per gram across sites. During 1998 the use of crack cocaine became firmly established in urban areas in South Africa, including secondary cities. Preliminary analysis of data from the 1998 South African Demographic

and Health Survey indicates that while the majority of South Africans do not drink, a large proportion of those who do drink (one-third) do so at risky levels over weekends.

In terms of future trends, increasing use of ATS and heroin is expected, especially among young persons. Crack use has been reported among all socioeconomic levels, and given its addictive properties, the fact that U.S. markets for crack cocaine have become saturated, its price, and South Africans’ preference to smoke their drugs, it is likely that South Africa will experience an increase in the use of this drug and crack-related negative consequences (such as crime and prostitution).

### **The Link Between Drug Abuse and HIV/AIDS in South Africa**

#### ***Studies of Injection Drug Users***

Two local studies, although somewhat dated, provide some insight into the link between injection drug use and HIV/AIDS in South Africa. A 1991–1992 study of 143 drug users in selected treatment centers in South Africa included 33 injection drug users (IDUs) (Rocha-Silva 1993). Only one IDU indicated that he/she had AIDS but denied ever having shared syringes or needles. The study reported the rate of injection drug use as being higher in females (37 percent of the larger sample) than in males (20 percent). Overall, IDUs (particularly females) tended to share needles and syringes at some time. They also tended toward multiple drug use. Wellconal injections were particularly popular among female IDUs. Cocaine and, to a lesser extent, heroin were also injected but on a less frequent basis. These patients manifested a short-term perspective on life and were fairly unconcerned about HIV infection (Rocha-Silva 1993).

IDUs also tended toward risky sexual behavior. For example, females especially were frequently engaged in prostitution, mostly in exchange for money but sometimes also for drugs. While female IDUs appeared committed to the use of condoms, males were less so. Roughly a quarter indicated that information on how people who inject drugs can protect themselves against AIDS is generally not accessible. In comparison with the larger sample, IDUs tended to be younger and were more likely to use drugs with other people. There were no major differences between the groups in terms of their definition of AIDS, views regarding how HIV/AIDS is transmitted, how people with alcohol and/or drug problems could protect themselves against HIV infection, and whether it was possible for them to protect themselves against infection (Rocha-Silva 1993).

A retrospective study (case analysis) of IDUs at two hospitals in Johannesburg was also undertaken during 1991 and 1992. The study comprised an analysis of case records of 86 patients who were current injection Wellconal abusers. A 2 percent HIV-antibody positivity rate was encountered, which is much lower than that in other parts of the world. No sharing of needles was reported (Williams, Ansell, and Milne 1997).

The situation in South Africa is now very different from what it was in 1991–1992. While injection drug use is still low, there is not good information on HIV prevalence among IDUs. Given the dramatic increase in HIV prevalence in the general population, it is likely that it is also higher among IDUs as well, and this group may now be acting as a bridge for HIV transmission into the general population.

### ***Unsafe Sex and Drug Use***

Research conducted in South Africa has shown that use of glue, paint thinners, and alcohol is common among street children (Jansen, Richter, and Griesel 1991; Morojele 1997, pp. 36–54). Drugs such as cannabis and Mandrax are also used, but less frequently. Injection drug use, however, is rare in this population (Jansen, Richter, and Griesel 1991). In a study of 141 male and female street children, more than one-half of the boys indicated that they had engaged in sex for money, goods (e.g., glue), or protection, and several indicated that they had been raped. Most reported being sexually active with girlfriends, who themselves frequently engaged in transactional sex. All the boys expressed very negative attitudes toward condoms, and no boys used condoms regularly (Swart-Kruger and Richter 1997). Substance abuse is likely to increase the vulnerability of street children to HIV/AIDS, but this has not been a specific focus of research in South Africa to date. Because of the involvement of male street children in sex work (some of whom are bisexual), they may also be an important bridging group for transmission of HIV into the general population.

While several studies of young persons have assessed substance abuse and issues relating to HIV/AIDS, for example, knowledge of HIV/AIDS and/or sexual practices (Flisher et al. 1996; Rocha-Silva, de Miranda, and Erasmus 1996; Visser and Moleko 1999), most have not specifically assessed the relationship between substance abuse and risky sexual behavior. Flisher and Parry, however, using data from a 1997 Cape Town survey (unpublished report) of 2,779 students in grades 8 and 11, found a strong association between substance abuse (binge drinking and other drug use) and unsafe sex (e.g., multiple partners in the past 12 months and not doing anything to prevent pregnancy or

prevent disease during the last occasion they had sexual intercourse). It is clear that more exploration of the causal linkage is required. In particular, there is a need to investigate on an occasion-by-occasion basis whether, and how, substance abuse might be related to safe sex practices.

To better understand the link between drug use and HIV/AIDS, a study of female street and escort agency sex workers was conducted in the Durban central business district in 1998 (Leggett 1999). Seventy sex workers participated in in-depth interviews. Crack has a natural synergy with sex work, since it is a stimulant (allowing long work hours) and an appetite suppressant (leading to weight loss); it is highly addictive and short-lasting (providing a need for an immediate cash income); it is a mood elevator (softening the stresses of the work); and it has a pro-sexual effect in some users (Leggett 1999).

These interviews revealed that crack was systematically introduced into Durban from Hillbrow (Johannesburg) by Nigerian drug dealers who specifically targeted the sex work community to spread this drug to the larger society. Nearly one-third of the sex workers admitted some crack use. Crack use among “non-African” sex workers was 60 percent. This drug was often taken in conjunction with Mandrax, with the latter being utilized to bring the user down from a crack “high” (Leggett 1999).

The study indicated that all the women reported using condoms, but they all reported knowing of sex workers who did not. Women who reported using crack had much larger client volumes than nonusers. The average among nonusers was two to four clients a night, four to five nights a week. Crack users reported having as many as nine clients on a “good night,” working seven nights a week and into the daylight hours. This increase in volume has clear implications for HIV transmission. Many of the women who had been in the industry for some time complained that crack had increased the number of women on the street and driven down the median age. Increased competition had driven down prices, forcing women to handle greater volumes of clients to maintain income levels. It had also led to an increase in demand for unsafe sex, such as condom-free and anal sex, because of the willingness of addicts to do anything for their drug money. Crack was also blamed by some women for the increase in client violence. Rape is reportedly on the increase, and rapists seldom use condoms (Leggett 1999). This, together with the fact that rapists often sodomize their victims, increases the chance of HIV transmission.

There is scant information on the prevalence of HIV among sex workers. One study at a KwaZulu Natal Midlands truck stop found that 50 percent of 145 female sex workers were HIV positive (Ramjee, Abdool Karim, and Sturm

1998), and HIV prevalence rates of more than 60 percent were found in studies conducted in Hillbrow and Carltonville (Rees, personal communication). Nevertheless, it remains to be determined whether drug-using sex workers (and their clients) are also an important bridging group for transmission of HIV into the general population. In the United States, crack users have shown HIV seropositivity levels rivaling those of IDUs because of the unprotected sexual activity by sex workers and their clients, which is often associated with the effects of the drug and with procuring it (Ross et al. 1998).

### Implications for Research and Prevention

#### *Future Directions for Research on Substance Abuse and HIV/AIDS in South Africa*

In terms of descriptive studies, research is especially needed in four areas:

1. Substance abuse practices and HIV risk behavior and status in high-risk subpopulations (sex workers, street children, prisoners, IDUs, and men who have sex with men) and an assessment of the impact of such practices on the general population. Special emphasis needs to be given to alcohol and crack use and unsafe sex.
2. The extent to which, how, and when substance abuse is a risk factor for HIV transmission in young persons. The focus here needs to be on unsafe sex (sex without condoms or spermicide, anal sex, dry sex, rough or violent sex, sex with multiple partners, and not seeking treatment for STDs).
3. How the HIV/AIDS epidemic does, and could, impact the drug situation, and how this can best be managed. For example, as stated in a strongly worded commentary in the December 1998 issue of the *Urban Health and Development Bulletin*, the Drug Advisor for the Southern African Development Community (SADC), Björn Franzen (Franzen 1998), suggested that persons infected with HIV/AIDS may turn to drugs in an attempt to forget about their plight. He also suggested that with the increased incidence of HIV/AIDS in southern African countries, people who witness friends and family members suffering or dying may turn to alcohol or drugs as a way of coping. Furthermore, it is likely that more or less useless, but often very expensive, concoctions are produced and sold by unscrupulous businessmen to sick and vulnerable AIDS patients. These drugs are often illicit and need to be viewed separately from the so-called traditional medicines that are used by many in Africa.
4. A further issue that is only now being given greater attention in South Africa relating to the social impact

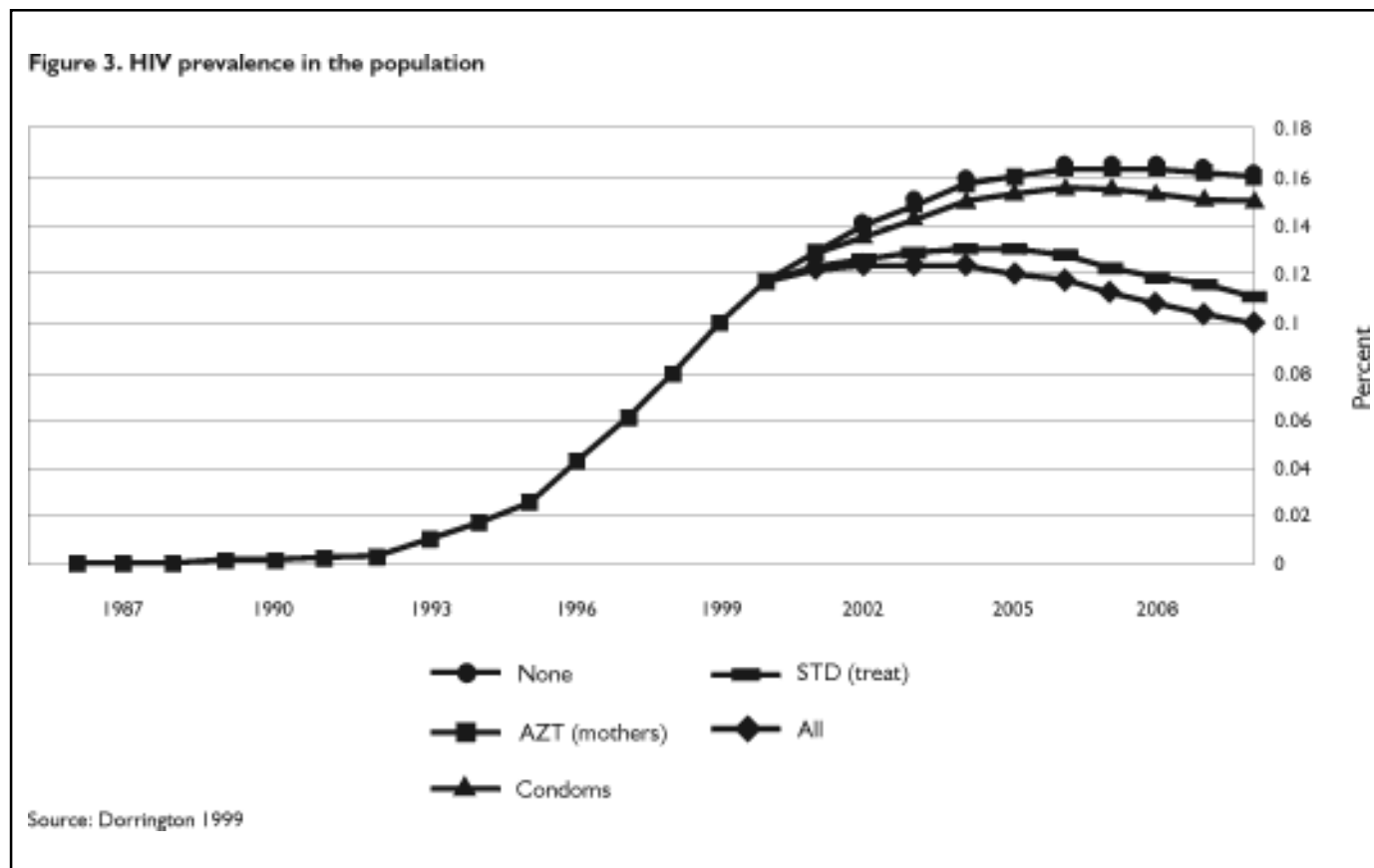
of so-called "AIDS orphans." It is expected that by 2005, a million children younger than age 15 will have lost their mothers to AIDS (figure 3) (Dorrington 1999). This is projected to double by 2010 (Kinghorn and Steinberg 1998). Inevitably, many will be drawn into prostitution, drug dealing, and other crimes. This issue needs to be assessed.

Intervention and operational research is urgently required in several areas:

1. The development and evaluation of interventions aimed at reducing substance abuse and associated HIV/AIDS risk behaviors in selected populations (e.g., IDUs, sex workers, street children, prisoners, men who have sex with men, and young persons in general).
2. The development and evaluation of interventions to reduce the likelihood of drug abuse by persons with HIV/AIDS (or those depressed because of seeing others with HIV/AIDS) using alcohol and other drugs (AODs) to self-medicate.
3. The development and evaluation of interventions aimed at reducing the likelihood of AIDS orphans turning to drug use and trading.

Other areas of research are of interest, such as how substance abuse might have a suppressive effect on general immune system functioning, thereby hastening and or intensifying the deterioration of HIV infection into full-blown AIDS. While one can learn from research on this topic that has been conducted in developed countries, it would still be of value to conduct local research. This is perhaps a useful avenue for cross-national research.

Figure 3 gives an idea of the impact of three possible interventions on the prevalence of HIV in the population. The first assumes that AZT is given to pregnant mothers with partial success, resulting in a 25 percent decrease in mother-to-child transmission. The second assumes that the rate of sexual transmission is reduced by 50 percent through the use of condoms. The third assumes that a national campaign manages to treat half of those with STDs. The impact of all three together is also included for comparison (Dorrington 1999). As the curves show, the impact of successful intervention in the short to medium term could be substantial in terms of the number of HIV infections prevented. Currently, however, we have no idea of the potential impact of interventions to prevent HIV infection in specific drug-using populations (e.g., sex workers, IDUs, street children, or prisoners) or of interventions to reduce substance abuse in the general population. From a policy and advocacy point of view, therefore, it may also be advantageous to model the impact of substance abuse



interventions on national prevalence estimates for HIV over time.

Several new initiatives in South Africa involving the Medical Research Council are under way or planned and, it is hoped, will provide a greater understanding of the relationship between drug abuse and HIV/AIDS. One is a study of drugs, crime, and HIV in arrestees in three metropolitan areas at three points in time (using urine analysis). Another is a study of drug use and HIV risk behaviors in a community sample of adolescents and their primary caregivers in two cities (using self-report measures). The third is a study of drug use and HIV in a sample of sex workers working on the streets, in clubs, and for agencies in one port city (using saliva).

### **Prevention**

Even though there is much that is not known about the link between drug use and HIV/AIDS in South Africa, it is appropriate at this time to consider some areas for targeting prevention efforts. With regard to the general population, and especially young persons, health education efforts clearly need to pay attention to safe sex practices (e.g.,

abstinence, condoms, and spermicides), more risky sex practices (e.g., anal sex, sex with multiple partners), and the impact of substance abuse on safe sex practices.

Targeted interventions need to be directed to the following:

1. IDUs, especially younger and female users, to encourage them to use sterilized injection equipment (e.g., bleaching needles, not sharing needles, using a needle once) if they plan to continue to inject and to use condoms when engaging in sex.
2. Substance abusers in general, e.g., regarding the dangers of needle-sharing and unsafe sex.
3. AIDS orphans, for specific interventions to keep them out of crime (and the drugs trade).
4. Street children, providing education about the importance of preventing blood, vaginal fluids, and semen from entering the body through the use of condoms and nonpenetration, while at the same time addressing the overall development of street youth (Swart-Kruger and Richter 1997).
5. Sex workers, supporting sex worker advocacy and training initiatives to empower them to leave the trade and to protect themselves better while they are in it.

As preliminary research suggests that drug use may be lower among African sex workers, prevention efforts should also be designed to facilitate this trend.

6. HIV/AIDS patients, regarding the dangers of drug use, e.g., increasing the progression of the illness and increasing the possibility of their infecting partners through not using a condom.

### Conclusion

Although recreational drug use in South Africa is extensive, we do not know to what extent it is a risk factor for enhancing HIV transmission, either directly in the case of injection drug use or less directly through, for example, facilitating unsafe sex. Given the enormous social and public health challenge posed by HIV/AIDS, research managers in the substance abuse and HIV prevention areas in South Africa need to collaborate as a matter of urgency to stimulate research to answer crucial questions relating to the link between substance abuse and HIV/AIDS. It is essential, however, not to ignore the impact of HIV/AIDS on the drug abuse situation.

South Africa's National Drug Master Plan (Drug Advisory Board 1999) makes only the following references to HIV/AIDS:

- "Alcohol and other drug abuse (herein referred to as substance abuse) is a major cause of crime, poverty, reduced productivity, unemployment, dysfunctional family life, political instability, the escalation of chronic diseases such as AIDS and tuberculosis (TB), injury and premature death" (p. 1).
- "Substance abuse . . . is also naturally part of the life skills and HIV/AIDS Education Programme" (p. 21).

In 1999 the Department of Health's Mental Health and Substance Abuse Directorate funded an initiative to come up with practical suggestions for how substance abuse prevention can be integrated into life skills and HIV/AIDS education programs in schools. This is clearly a move in the right direction, but much more action is required by the State and NGOs to adequately prevent HIV/AIDS in drug-using populations in this country. ■

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# HIV Prevention in Drug-Using Populations in the Sub-Saharan African Region: An Agenda for Research and Intervention

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## Introduction

The link between substance abuse and blood-borne infections remains rather tenuous and largely unsubstantiated by systematic research. General observation and anecdotal reports indicate that injection drug use is uncommon and rather alien to sub-Saharan Africa (SSA), although a recent World Health Organization (WHO) study in Nigeria would suggest that injection drug users (IDUs) actually do exist but may only be hard to reach for now. A major risk factor for HIV infection among those who do not inject drugs is unprotected sexual practices, for example, female drug users who engage in commercial sex work. Another factor is the use of contaminated, sharp razor blades that lacerate the thumb in the process of preparing cocaine and heroin for use.

The available interventions for substance abuse in SSA countries therefore, understandably, do not yet target issues around preventing HIV and other blood-borne infections. For largely a similar reason, HIV/AIDS research and prevention programs have not specifically targeted the drug-abusing populations. A research agenda is proposed that would attempt to answer several epidemiological questions about prevalence and the relationship between suspected risk factors associated with various modes of substance abuse and the diffusion of blood-borne infections. In the context of SSA countries, definitive interventions and evaluations of same can only follow this first critical stage of research.

## The Epidemiology of Substance Abuse in SSA Countries

It is relevant to note that the agenda for this meeting was clearly focused on the evaluation of definitive intervention services for the prevention of HIV and other blood-borne diseases associated with injecting and other forms of substance abuse. It appears that there was an assumption that the epidemiological issues are already settled in all the regions. This is far from true in the SSA region. Here, data on substance use and abuse in general populations and special vulnerable groups are scanty, scattered, and far between. In some of the countries data are completely

lacking. Indeed, many of the 46 countries that constitute SSA are still battling with basic physiological needs and health and social welfare problems so that research, of any type, takes a back seat in the scheme of things. Such problems include war; hunger, famine, and malnutrition; infectious diseases, and high maternal and infant mortality; refugee problems; severe economic problems resulting in abject poverty for the large majority of the people; political instability; transportation, communication, housing, and education problems; and high crime rates.

With respect to substance abuse research, additional obstacles include its being a low priority on governmental agendas, a dearth of qualified or trained research personnel, lack of research funds and essential equipment, poor advocacy for research, poor understanding by the general public of the issues involved, and overcriminalization of substance abuse which leads drug-dependent persons to have poor access to the few available treatment and rehabilitation facilities. The implication of the above scenario is that although substance abuse and HIV are prevalent in many SSA countries, very little information is available on their actual extent and the links between the duo that would help develop possible intervention options.

This paper describes the current epidemiological information available on substance abuse and HIV in SSA and the current responses to these issues. This is followed by an itemization of an agenda for further research and intervention on the prevention of HIV and other blood-borne pathogens in the region.

The most recent comprehensive account of the substance abuse pattern in the region is presented in a rapid situation assessment conducted in 1997 and 1998 by the United Nations Office for Drug Control and Crime Prevention (UN/ODCCP) in 10 SSA countries, namely Cameroon, Côte d'Ivoire, Ghana, Ethiopia, Kenya, Mozambique, Nigeria, Senegal, South Africa, and Zimbabwe (UN/ODCCP 1999). Although the study aimed at an analysis of the economic, social, and political changes that make the

people of these countries especially vulnerable to substance abuse, it nonetheless provided a mass of data on the prevalence and pattern of substance abuse in these countries.

The following were some of the key findings:

- **Cannabis** remains the most frequently grown, consumed, and trafficked illicit drug in the region; the most common mode of use is smoking although it is also processed into cannabis paste, “hashish” (the resin), and cannabis oil (distilled from the seeds). It is added to various foods and beverages in Ghana, Nigeria, and Zimbabwe. In Cameroon, Ghana, Nigeria, and South Africa, it is smoked in a mixture with crack cocaine or heroin. In South Africa, cannabis is mixed with crushed methaqualone tablets. This mixture is known as “white pipe,” and its use has now spread to Mozambique.
- Two indigenous substances of abuse were identified. One was **iboga** (*Tarboenathes eboga*), an indigenous plant used in the religious rites of the so-called Mbwiti cult of the Fang people of Cameroon and Gabon. Consumed as a brew, it has hallucinogenic properties with effects similar to LSD. The other is **mudzepte**, a plant-derived hallucinogenic drink used by traditional healers in Zimbabwe and taken by male elders in the rural areas.
- **Cocaine and heroin** are used in all 10 countries; it is used most widely in South Africa and used least in Ethiopia. The cheaper crack cocaine is also consumed in Ghana, Nigeria, South Africa, and Zimbabwe. The most common mode of consumption is smoking with tobacco or cannabis. In Nigeria, cocaine is smoked using a short glass pipe (known as “stemming”) or through filtered water (“bunkering”). Also, fumes are sniffed from heroin heated on foil (“chasing the dragon”) or from a mixture of cocaine and heroin, a practice known as “speedballing.” Injection drug use is less common and was reported only in Nigeria, South Africa, and Zimbabwe.
- **Synthetic substances: Methaqualone** (or Mandrax) is more widely used in South Africa, but its use is also reported in Zimbabwe, Mozambique, Ghana, and Kenya. It is either mixed with cannabis or dissolved into alcoholic drinks. **Amphetamine-type substances (ATS)** are known and used in many of the countries, including Côte d’Ivoire, Nigeria, Ghana, and Senegal. In Nigeria, methamphetamine is known as “kwaya” and is most commonly used by casual laborers in the northern parts of the country. The use of “ecstasy,” a new “designer” or “club” drug, was reported in Mozambique, Nigeria, South Africa, and Zimbabwe. LSD was reported to be manufactured and used in South Africa and is also available in Kenya, Zimbabwe, and Nigeria.
- **Solvent abuse**, particularly the inhalation of petrol, methylated spirits, glue, and other industrial solvent products, was found in Cameroon, Ethiopia, Kenya, Mozambique, Nigeria, South Africa, and Zimbabwe. In Kenya solvent abuse is associated particularly with street children who inhale solvents openly in the streets of Nairobi and other large cities. In Zimbabwe solvents known by the names “fembo” and “genkem” are also used widely by street children.
- **Pharmaceutical products** are known to be widely abused in all the countries. These include **barbiturates** obtained over the counter from pharmacies (in Nigeria, South Africa) and/or accessed through “informal” (and often illegal) circuits of distribution in Kenya, Mozambique, and Zimbabwe. Other drugs in this category include **hypnosedatives** (roche 5, Rohypnol) that are commonly abused in Kenya, especially on the coast; **Wellconal tablets** in South Africa, which are crushed, dissolved, and injected “pink”; and **alabukun**, which is a powdery salicylate analgesic used predominantly in Nigeria. The latter is cheap, obtainable over the counter, and widely used as medicine. Heroin users claim that it is a good substitute for heroin and can be similarly “run” on foil and inhaled. In Cameroon “comprimes,” capsules filled with various combinations of licit drugs that can be bought in street markets, are widely used to produce narcotic effects. One kind of comprime is known as “oui, oui” (“yes, yes”) because its effect is to induce the inability to make informed decisions, thus making one vulnerable to manipulation by others.

### Injection Drug Use in SSA

Although most reports from SSA noted the rarity of the injection mode of substance abuse, it would appear that more information could be unearthed on this phenomenon with more extensive systematic research on the hard-to-reach groups. For example, some useful information emerged from the WHO Phase II pilot study of injection drug use which took place in Lagos, Nigeria, in 1997 (Adelekan and Lawal 1997). Users interviewed during this study claimed that although injecting heroin and cocaine is not common, it nonetheless occurs among widely travelled middle-class people. This class of users inject mainly in their homes and in some popular hotels in Lagos and other big cities in Nigeria. Professional injectors, who are known to operate from hotel rooms, reuse the same needles for several clients (sterilized by boiling) although they will supply new syringes and needles (which are readily available

and quite affordable) at an additional cost. Many IDUs reportedly reuse their injection equipment as they cannot afford to buy the number of units needed for their numerous daily shots. Others who reuse injection equipment do so out of ignorance about the possible complications or have a nonchalant attitude about the seriousness of such complications. Fatal overdoses from injecting heroin and cocaine were witnessed by some of the interviewees. More in-depth information is likely to emerge in bigger studies. Our experience from this pilot study in Nigeria has shown that injection drug use, with its multiple health consequences, may not after all be a rare phenomenon among drug users in vulnerable African countries.

### **Current Intervention Strategies for Substance Abuse in Sub-Saharan Africa**

#### ***Policy Thrust***

Many SSA countries have set up interministerial committees under different names to formulate drug policies and to coordinate and supervise supply-control and demand-reduction activities. Examples of such bodies include the National Advisory and Research Council on Drug Addiction (NARCODA) in Mauritius, the National Drug Law Enforcement Agency (NDLEA) in Nigeria, and the Inter-Ministerial Committee for Drug Abuse Control (CILAD) in Côte d'Ivoire. The supply-control strategy adopted in most countries hinges around one or more of the United Nations international drug control treaties to which most of the countries are signatories. Although the supply-control strategy seems to enjoy greater emphasis and attract more resources in many African countries, it would appear to have only limited success judging by the reported increase in drug trafficking activities and the street availability of drugs (Day 1992, pp. 9–14). Attempts are now being made to correct the imbalance between the supply-control and demand-reduction strategies. International funding agencies, particularly the United Nations International Drug Control Programme (UNDCP), also would seem to support activities aimed at strengthening demand-reduction programs.

#### ***Primary Prevention Activities***

The bulk of demand-reduction activities is in the primary prevention areas and involves drug education for at-risk groups (mainly young people in school) as well as public awareness campaigns. Such activities are usually planned and implemented singly or jointly by governmental and nongovernmental bodies. For example, in Kenya the primary preventive activities include a comprehensive curriculum for schools and colleges, annual student drug

education contests, prevention through student activities, prevention through family education, pre-service and inservice training of teachers and educational administrators, and the use of mass media for prevention education. In Côte d'Ivoire, drug abuse prevention education has been incorporated into secondary school curriculums since 1984. The Namibian approach emphasizes the training of pupils in "life skills" with only a minor section on drugs and alcohol. One organization, "Teenagers Against Drug Abuse," also organizes peer group programs (UNDCP 1994). A major limitation of the preventive programs is that most of the facilitating tools (e.g., manuals) and techniques are still being developed and are yet to be standardized. The programs themselves have not been subjected to any critical evaluation.

#### ***Treatment and Rehabilitation***

Treatment of addicted individuals takes place mainly in psychiatric hospitals, although a few general hospitals and health centers offer some primary care services (Ohaeri and Odejide 1991; UNDCP 1994). Units specifically set up for the treatment and rehabilitation of those addicted to drugs exist only in a few countries such as South Africa, Mauritius, Nigeria, and Ghana. Hospital treatment adopts the biopsychosocial model and includes the following: full physical, psychiatric, and social assessment; hospital admission where indicated; treatment of diagnosed conditions; maintenance of abstinence (through the use of individual and group counseling techniques); and rehabilitation. Treatment is a team activity and involves the nurse, clinical psychologist, social worker, occupational therapist, and a psychiatrist who usually leads and coordinates the team. In view of the dearth of treatment personnel in many African countries, there is less emphasis on specialization and a rigid division of roles among the treatment team members.

Unlike many developed countries that have separate detoxification units, detoxification is regarded as an integral part of the treatment process in African countries. Detoxification involves the use of pharmacological support to avert or reduce withdrawal symptoms. Benzodiazepines (e.g., chlordiazepoxide) are used to detoxify patients addicted to alcohol, while major tranquilizers (e.g., chlorpromazine or haloperidol) are commonly used for patients with cannabis, cocaine, or opiate-related problems. The use of substitute drugs (e.g., methadone or heroin) for gradual detoxification has not been reported from any African country. Maintenance therapy using substitute drugs or chemical deterrents (e.g., disulfiram) is also not the usual practice in African countries.

Rehabilitation starts from the initial contact with patients and involves the relatives and friends of the addicted person. The supportive role of the extended family system serves a useful purpose in rehabilitation, although the family is also vulnerable to being overstretched by financial and physical demands. Because most individuals come into drug treatment with little or no skills and are usually unemployed, the habilitation is usually geared towards equipping them with skills in practical areas (e.g., carpentry, bricklaying, tailoring, farming, animal husbandry, etc.) with which they can earn a living on discharge. The follow-up of discharged patients is usually hampered by the absence of community services, distance of the treatment unit from the patients' normal abode, and the cost of treatment (Adelekan and Adeniran 1991). Thus, some studies have reported that up to 60–70 percent of patients default from hospital follow-up appointments within 6 months of discharge (Asuni 1975, pp. 17–23; Adelekan and Adeniran 1991; Lawal et al. 1998). Efforts should therefore be made by African governments to provide affordable care for people with drug problems, preferably at the primary care level.

Religious organizations and traditional healers also provide some form of treatment for drug addiction. Patients are required to stay within the premises of the healer or organization for variable periods (up to 6–12 months) when complete abstinence from the drug is the rule. Patients are also engaged in creative activities such as farming, carpentry, and building during this “admission” period, and this is considered a positive element of the treatment process. Religious organizations base their counseling techniques on the doctrines of their religions. In addition, some churches organize special antidrug abuse crusades and sermons in which “healed” addicts preach and give “testimonies.” On the other hand, the traditional healer works on the belief that substance abuse disorders, like mental disorders, are caused by external agents, usually evil spirits or a curse from a presumed enemy. Accordingly, the healer performs certain rituals designed to remove these afflictions. While it is generally agreed that alternative caregivers are relevant in the care of the drug addict in the African setting, some form of cooperation or collaboration between these groups and the orthodox health workers is still urgently needed in order to maximize the benefits for patients.

### **HIV and AIDS**

Statistics provided by the Joint United Nations Programme on HIV/AIDS (UNAIDS) show that the global cumulative number of people living with HIV/AIDS at the end of 1998 rose to 33.4 million. Recent data indicate that about 70 percent of global HIV/AIDS cases (20.8 million) emanate from SSA (UNAIDS 1998). It is estimated that 16,000

infections occur in the world daily. Of these 16,000, 10 percent occur among children under 15 years of age, and 40 percent occur among women. Although only 10 percent of the world's population is found in SSA, about 95 percent of the children orphaned because of AIDS reside in this part of the globe.

### ***Mode of Transmission***

In Africa heterosexual transmission is the primary mode of HIV transmission (UNAIDS 1998) and has been reported to affect both sexes equally. The most affected age groups are 30- to 40-year-old males and 20- to 30-year-old females (Van de Walle 1990). Transmission of HIV by transfusion of blood and blood products has been reported (Berkley 1991) and may still be a significant problem in countries where the technology for screening blood and donors is often inadequate. Occasional transmission of HIV may occur through the use of intramuscular injections for medical and quasimedical treatment, using unsterilized or poorly sterilized needles (Nwokolo and Parry 1989). An extensive literature search failed to reveal evidence from sub-Saharan African countries linking HIV infection and AIDS with injection drug use.

### ***Risk Factors***

Heterosexual promiscuity has been identified as the major risk factor associated with HIV infection among adults in SSA. Female CSWs, men who report multiple sexual partners, and men with a past history of genital ulcer disease are at particularly high risk of HIV infection (Craiel et al. 1988). These subgroups constitute the major source of infection to their sexual partners when they engage in unprotected sex. It has also been speculated that new risk factors may emerge from CSWs who have sexual contact with Western tourists. Such CSWs may be more willing to participate in heterosexual anal and oral sex practices, which are not part of the traditional sexual practices of the general population (Gwede and McDermott 1992). Migration for employment reasons, high mobility, and forced segregation of the sexes are factors that encourage extramarital sex, particularly among certain vulnerable groups such as male long-distance truck drivers, miners, and military and paramilitary groups (Moses and Plummer 1994). Marginalized groups (e.g., street youths, drug addicts) are also particularly at risk because of their exposure to sexual abuse or exploitation.

### **Substance Abuse and HIV Infection**

Although injection drug use has not been linked to HIV infection in SSA countries, there are nonetheless other

factors that may make substance abusers in this region particularly vulnerable to HIV infection. The use of alcohol and other psychoactive substances has long been linked with a propensity for sexual activity and infrequent condom use. The disinhibition and increased suggestibility that usually accompanies the use of alcohol and cannabis (both widely abused in SSA) may lead to increased chances of users engaging in unprotected sexual activities. Despite the high relevance of studies that identify the associated risk factors for HIV and other blood-borne infections among noninjection drug users in the context of the SSA region, only a few studies have been reported from Nigeria. For example, Adamson (1992) reported a case of HIV seropositivity in a noninjection drug user. Also, Inem et al. (1999) screened 93 drug users for HIV in a rehabilitation home in Lagos. Of the 34 females screened, 18 (52 percent) were found to be HIV positive by ELISA and Western Blot methods, and 9 of the 79 males screened (10 percent) were found to be HIV positive by the same methods. The authors identified unprotected and multiple sexual activities as major risk factors, particularly among the female users who normally engaged in commercial sex work as a means of livelihood and for maintaining their drug habit. Another possible risk factor identified was the habit of using contaminated razor blades that leads to laceration of the thumb in the course of streamlining cocaine or before sniffing heroin.

### National Responses to HIV Infection

HIV/AIDS prevention and control programs, supported by WHO, UNAIDS, and other donor agencies have been established in every SSA country. These programs plan, implement, and coordinate (1) epidemiological surveillance; (2) public awareness campaigns aimed at increasing the level of awareness and knowledge of HIV infection among the general public, as well as among high-risk and special target groups; (3) training on HIV infection and AIDS to all categories of health care workers, including traditional healers; and (4) activities aimed at ensuring that health workers adhere to WHO-recommended guidelines on HIV prevention and the health and psychosocial care of those infected. Specific programs implemented by National AIDS/STD Control Committees include the following:

- HIV testing with pretest and posttest counseling
- Social marketing of condoms
- Treatment and control of STDs
- HIV screening of blood transfusions
- Caregiving for people living with AIDS:
  - As elsewhere, care is palliative;

- Symptomatic treatment is provided for opportunistic infections;
- Long-term hospital care can be very expensive in resource-limited African settings. Home-based care using community and family resources has been tried in Agomanya (in Ghana) and was found to be cheap, effective, and acceptable to the patients and their relatives (Mensah 1994);
- Antiviral drugs used in developed countries to improve the quality of life of AIDS patients are not affordable for the majority of afflicted people in SSA.

### An Agenda for Research and Intervention

Innovative studies are urgently needed in SSA countries that seek to answer the following questions on injection drug use:

- What is the extent of the use of injection drugs?
- What is the extent of injecting among users of injection drugs?
- What are the associated risk factors for HIV infection in the use of injection drugs?
- What are the associated risk factors for HIV infection in injection drug use?
- What are the other health consequences associated with the use of injection drugs?
- What are the other health consequences associated with injection drug use?
- What is the prevalence of HIV, HBV, and HCV among IDUs?

Similar questions should be asked about the role played by alcohol, cannabis, and other psychoactive substances in relation to the spread of HIV, HBV, and HCV infection. The rapid situation assessment and response (RAR) method (already developed by WHO with comprehensive manuals and guidelines) should be employed. This would be comprised of qualitative and quantitative techniques, as well as serological testing for HIV, HBV, and HCV. The study would include current users in treatment, former users, youths, prisoners, CSWs, street users, long-distance commercial drivers, and others from highly vulnerable groups. Fortunately, the RAR method is becoming popular in some SSA countries. For example, the UN/ODCCP study (1999) employed the RSA method in the 10 SSA countries covered. The UNDCP Country Office in Nigeria also commissioned RAR studies in some specific communities in the country (Adelekan 1999; Action Health

Incorporated 1999; Adelekan and Makanjuola 1999a; Adelekan and Makanjuola 1999b; CASSAD 1999; Nigerian Youth AIDS Programme 1999).

Interventions should form part of the RAR package. Such interventions should be modest, affordable, sustainable, and

reproducible in other SSA settings. Nongovernmental organizations including groups of drug users, community-based organizations, community and opinion leaders, religious leaders and organizations, and traditional healers should be involved at every stage of the project and particularly at the intervention stage. ■

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# Fifteen Years of HIV Prevention Among Injection Drug Users in Australia

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## Introduction

As the 20th century draws to a close, HIV prevention among injection drug users (IDUs) has become a major international public health problem. Global heroin production is currently trebling, and global cocaine production is doubling every decade (United Nations International Drug Control Programme 1997). Not surprisingly, injection drug use is spreading to an increasing number of countries. The number of IDUs is increasing in many countries where illicit drug use had recently stabilized or where use was growing slowly. In most countries where injection drug use has been present for even a few years, HIV-infected IDUs have soon been detected. In those countries where HIV infection has spread extensively among IDUs, an extensive spread to the larger population generally has soon followed.

By the end of the 1980, the threat of the uncontrolled spread of HIV among IDUs resulted in a range of "harm reduction-public health" responses. Those responses have been demonstrated as effective in controlling the spread of HIV among IDUs and also have been shown to be safe and cost effective. Importantly, these measures have not increased illicit drug use. However, the need to convince policymakers to respond adequately has proved to be a formidable obstacle. In many countries policymakers have been reluctant to permit the introduction of effective public health measures or to allow their implementation on a scale adequate to control the epidemic.

In one group of countries, which includes the United States, HIV infection had already spread extensively among IDUs before AIDS was first recognized in 1981. Nevertheless, subsequent implementation of public health measures has been disappointing. In a second group of countries, such as most of the countries in Southeast and east Asia, effective prevention strategies already were clearly identified before HIV had become established among IDUs. But tragically, these measures were not implemented while there was still time to make a difference. In a third group consisting of only a few countries, such as Canada, HIV prevention measures were implemented but probably on an insufficient

scale. Epidemics of HIV subsequently occurred among IDUs. Australia is an example of a fourth group of countries where HIV prevention measures were introduced early and vigorously. HIV infection has remained under excellent control for more than a decade and a half.

On April 2, 1985, the Prime Minister of Australia and all of the State Premiers met at a Special Premiers' Conference to discuss the rapidly worsening problem of illicit drug use in the country. Harm reduction was officially adopted as the national drug policy. Following a careful evaluation, this decision has been endorsed on several subsequent occasions by the official body responsible for national drug policy.

In September 1985 Professor James Curran, then at the Centers for Disease Control in Atlanta, visited Australia. He strongly advocated a prompt and vigorous response to the emerging threat of an HIV epidemic among IDUs. Fortunately, Professor Curran's advice was taken very seriously. Reports already were appearing at that time about the rapid spread of HIV among IDUs in many cities in several developed countries.

The earlier official adoption of harm reduction in Australia facilitated the later acceptance of a number of public health and HIV prevention measures, as discussed in the following sections.

## Education of Injection Drug Users

A major and intensive national education campaign was conducted in 1984 to raise awareness of AIDS as a critical public health issue. IDUs were recognized in 1985 as a critical target group. Education campaigns for IDUs began soon afterward. These campaigns were generally explicit and credible. Educational interventions were based on the realistic recognition that a substantial proportion of IDUs would continue to inject illicit drugs notwithstanding vigorous efforts to promote abstinence. The primary role of education was seen to be the encouragement of lower levels of risk behavior (with abstinence regarded as the safest

and most desirable option but the most difficult to achieve and sustain). IDUs often were involved in the design and implementation of HIV educational campaigns. In recent years the frequency of educational campaigns has been reduced to maintenance levels for HIV whereas education about hepatitis C has steadily increased.

### **Needle and Syringe Programs**

The first (unofficial) needle and syringe program in Australia was established in November 1986, and the first official program began in December 1986. Within 2 years, all Australian States had extensive needle and syringe programs. By international standards, the availability of sterile injecting equipment has always been remarkable and the provision of this equipment well organized. Annual throughput increased from 10 million needles and syringes in 1991 to 20 million in 1997. During 1998–1999, many of the eight States expended their annual budget for needle and syringe programs within the first two-thirds of the financial year. This recent increase in the demand for sterile injecting equipment has occurred at the same time as a decline in the prevalence of unsafe injecting practices. The number of IDUs reporting the reuse of needles and syringes used by another person within the month preceding the interview decreased significantly from 31 percent in 1995 to 15 percent in 1997 (MacDonald et al. 2000). A rapid increase in the number of IDUs at the time also may have contributed to the growing demand for sterile injecting equipment. In 1999 in the most populous State of New South Wales (NSW), a large volume of injecting equipment (used for methadone syrup self-administration) was withdrawn from needle and syringe programs on political rather than public health grounds.

### **Methadone and Other Drug Treatment**

On June 30, 1998, the number of Australian citizens receiving methadone treatment was 24,657. The per capita provision (more than 2,700 per 1 million inhabitants, 15–44 years of age) is very high by international standards. The number of patients enrolled in methadone treatment has been increasing annually by 5 to 10 percent for many years, but treatment supply still does not meet demand. In recent years, increased funding has been provided to expand methadone and other forms of drug treatment. In the past few years, a national commitment to expand pharmacotherapeutic options also has been made.

### **User Groups**

Government-funded organizations of IDUs now exist in all states and at the national level. These organizations have had considerable involvement in the policymaking process.

Funding has continued even when conservative governments have been in office. User groups also provide a great deal of informal advice to government officials. Maintaining user groups at all times has not been easy. Sometimes the working relationship between government officials, clinicians and researchers, and user groups has been somewhat strained. Still, these difficulties have always been overcome; indeed, working with these difficulties has always seemed preferable to an uncontrolled epidemic of HIV.

Almost 15 years ago Australia officially adopted harm reduction as the country's national drug policy. Soon afterward, efforts began to maintain control of HIV infection among IDUs. The following paragraphs summarize the results of those efforts. What have been the strengths, weaknesses, threats, and opportunities of a national effort to maintain control of HIV among IDUs in Australia? Also, the HIV epidemic among IDUs has represented a formidable problem for policymakers in many countries. What can other countries learn from the experience of the HIV epidemic in Australia?

### **Strengths**

#### ***HIV Control***

Evidence to support the conclusion that HIV control has been maintained is consistent, substantial, and derived from multiple diverse sources (National Centre in HIV Epidemiology and Clinical Research 1999). HIV prevalence was 0.2 percent among inmates entering Australian prisons between 1991 and 1997 (McDonald et al. 1999). This is approximately three times higher than HIV prevalence in the general community. Approximately 50 percent of inmates in Australian prisons serve sentences for drug-related offenses. Therefore, the sustained low prevalence of HIV among inmates is a very strong indicator that HIV prevalence (and incidence) remains very low among IDUs in the community.

Abundant and consistent evidence from very comprehensive surveillance also indicates that HIV prevalence has remained low among the general population in Australia, with the exception of men with a history of male-to-male sexual contact (National Centre in HIV Epidemiology and Clinical Research 1999). It is estimated that there are approximately 500 new HIV infections each year (in a country with a population of 19 million). Multiple factors conducive to an HIV epidemic were present in the 1980s. An HIV epidemic occurred among homosexually active men in the early 1980s in an area in Sydney strongly associated with the gay community. Injection drug use also is extremely common in the same Sydney neighborhood. Although the prevalence of HIV

infection among IDUs with a history of male-to-male sex was very high, further transmission through needle sharing to female and heterosexual male drug users was uncommon. An averted epidemic is the most likely interpretation of the sustained low prevalence of HIV among IDUs in Australia.

### ***Substantial Health, Social, and Economic Benefits of HIV Control***

In those countries where uncontrolled HIV infections began among IDUs and then spread to the general population, the health, social, and economic costs have been sizable. In a number of developed and developing countries, the extensive spread of HIV among the general population has followed within a few years of the uncontrolled spread of HIV among IDUs.

### ***Control Sustained Over 15 Years***

The proportion of IDUs in Australia who report recently sharing injecting equipment continues to decline. The rapid increase in throughput of needle and syringe programs is mainly due to increasing utilization of sterile equipment, but the increasing numbers of drug users also has probably contributed. An annual national survey of IDUs attending needle and syringe programs has been conducted every year since 1995 (MacDonald et al. 1997). Extensive surveillance also is carried out from other types of sources (National Centre in HIV Epidemiology and Clinical Research 1999). Failure to detect a significant outbreak is unlikely.

### ***Probable Reduction of Hepatitis C Incidence Among IDUs***

The prevalence of hepatitis C (HCV) among drug users who reported injecting for less than 3 years declined from 22 percent in 1995 to 13 percent in 1997 (MacDonald et al. 2000). This conclusion is based on an annual national survey of IDUs attending needle and syringe programs. In the same study, the prevalence of HCV among IDUs overall declined from 63 percent in 1995 to 50 percent in 1997. The results of this study are supported by a number of other studies. In addition, hepatitis B prevalence among IDUs has declined, and hepatitis D has become exceptionally rare.

### ***Process***

### ***Endorsement of Harm Reduction***

The beneficial outcomes mentioned in the previous section were the result of a number of important measures, including the adoption of harm reduction as the official national drug policy (on April 2, 1985), with full support across the varied political spectrum. The strength of this support has been maintained for many years. The

Ministerial Council on Drug Strategy, the official body responsible for national drug policy, has endorsed harm reduction on several occasions. This body is comprised of all national health and police ministers and usually meets at least once a year. Evaluation of the National Drug Strategy has been conducted 3 times over the past 15 years. On each occasion, the commitment to harm reduction has been reviewed and endorsed. The term "harm reduction" has now been redefined several times.

### ***Implementation and Expansion of Public Health Measures***

Early adoption of harm reduction as the national drug policy facilitated the rapid and vigorous implementation of public health programs. Those programs provided education to IDUs, increased the availability of sterile injecting equipment and ready access to methadone and other drug treatments, and enabled the establishment of funded organizations of IDUs.

Throughput of the needle and syringe program in NSW (population over 6 million) has increased by 50 percent over the past 4 years to reach 10 million per year. This is typical of the situation in most Australian states. Demand also has increased rapidly during this period. In NSW expansion of throughput was achieved largely by increasing the efficiency of the program. Trials also are currently under way using alternative pharmacotherapeutic agents (buprenorphine, naltrexone, LAAM, and sustained-release oral morphine). Additional funding is being provided for treatment expansion and quality improvement. A methadone program was initiated in correctional facilities in NSW in 1986, and it is now the largest correctional methadone program in the world, providing treatment to more than 800 inmates. (The daily inmate census is now more than 7,000. It is likely that there are at least 3,500 IDUs among these inmates at any one time.)

### ***Approval of a Trial of an Injecting Room***

In July 1999 an 18-month trial of a medically supervised injecting service in an inner-city area of Sydney long associated with injection drug use was announced by the NSW government. A commitment to set up similar facilities has been made in Melbourne and Canberra.

### ***Weaknesses***

Negative outcomes from the needle and syringe programs include a continued high incidence and prevalence of HCV among IDUs. It was estimated that in 1997, 190,000 Australians had been exposed to HCV, of whom at least 80 percent were exposed through injection drug use (Australian National Council on AIDS and Related Diseases 1998). It

was further estimated that there were 11,000 new HCV infections in 1997 with 91 percent of those cases attributed to injection drug use. A total of 134,000 Australians were estimated to have chronic HCV infection; 8,500 had HCV-related cirrhosis, of whom an estimated 80 percent developed HCV-related hepatocellular carcinoma during the course of 1997. The number of people with HCV-related cirrhosis and the number of cases of HCV-related hepatocellular carcinoma are both expected to double by 2010 (Australian National Council on AIDS and Related Diseases 1998).

There also is considerable HCV infection in prisons. IDUs who entered prison had twice the incidence rate of HCV than IDUs who remained in the community during the same period (Crofts et al. 1995). Other evidence is accumulating to suggest that a large number of HCV infections currently are occurring in prisons in Australia.

#### ***Rapid Rise in Drug Overdose Deaths Over the Past Three Decades***

Another negative outcome from the syringe programs was a rise in drug overdose deaths. Opioid overdose deaths increased in Australia from 6 in 1964 (1.3 per 1 million inhabitants, ages 15–44) to 600 in 1997 (71.5 per 1 million, ages 15–44) (Hall, Degenhardt, and Lynskey 1999), and 737 in 1998. The rate of opioid overdose deaths increased 55-fold over the 33-year period between 1964 and 1997. The proportion of all deaths attributed to opioid overdoses increased from 0.08 percent in 1964 to 7.26 percent in 1997. (Hall, Degenhardt, and Lynskey 1999).

#### ***Steady Then Rapid Increase in the Number of Drug Users***

Injection drug use in Australia was virtually unknown before the arrival of U.S. servicemen on rest and recreational leave from the Vietnam War during the late 1960s (Manderson 1993). It is estimated that in 1997 there were 100,000 regular IDUs (defined as one who has injected for at least 12 months on an average of 10 times per month, on most months of the year). The number of occasional IDUs (defined as one who has injected at least once in the past 12 months but not frequently enough to be considered a regular IDU) was estimated to be 175,000. These estimates were derived by the Delphi technique using a group of experts, including clinicians, researchers, government officials, drug users, and law enforcement officials. Annual growth was estimated at 7 percent net (which means that the doubling time would be 10 years).

There are many indications that the number of IDUs has increased at an even faster rate during the past few years. There have been substantial increases in the number and

amounts of drug seizures. Moreover, the ages are declining among persons arrested for drug-related crimes, persons presenting for drug treatment, and persons presenting to needle and syringe programs. The age of reported initiation of injection drug use has declined steadily and is now under 17 years of age (Lynskey and Hall 1998). The increasing demand for needle and syringe programs and methadone treatment further supports the conclusion that the number of IDUs in Australia has increased much more rapidly in the past 5 years than in the previous quarter century.

#### ***Rapid Increase in Drug-Related Crime***

Armed robbery increased nationally 69 percent from 34.1 incidents per 100,000 inhabitants in 1996 to 57.9 incidents per 100,000 in 1998. Meanwhile unarmed robbery increased 25 percent from 55.3 incidents per 100,000 in 1996 to 69 incidents per 100,000 in 1998 (Australian Bureau of Statistics 1998). A study of 267 imprisoned burglars showed a higher median rate of burglary among those who used heroin (13.0 incidents per month) compared with those who did not (8.7 per month). Median earnings for burglars who were nonheroin users was US\$ 666 per week compared with US\$ 2,000 for burglars who used heroin (Stevenson and Forsythe 1999).

In addition to the rise in drug-related crime, there has been rampant police corruption linked to the prohibition of illicit drugs. In the past decade, Royal Commission investigations into police corruption were conducted in two states (Queensland and later NSW). In both cases, the Royal Commissioners concluded that police corruption was rampant and linked to unsuccessful attempts to implement illicit drug prohibition.

#### ***Possible Increased Risk of HIV in Prisons and Other Populations***

Still another weakness of the syringe program was evidenced by a recent investigation into a suspected HIV network among IDUs in prison. Thirteen ex-prisoners and their prison contacts were investigated (Dolan and Wodak 1999). It was concluded that there was a very high probability that at least 4 of the 13 ex-prisoners investigated acquired HIV in prison by sharing injection equipment. Another two ex-prisoners most likely acquired HIV infection outside the prison. Recently, four inmates who seroconverted to HCV in prison were documented. Two of the four cases were attributed to the sharing of injection equipment (Haber et al. 1999).

Likewise, there is a suspected increase in injection drug use among indigenous Australians, a fact that could place this population at increased risk for HIV. Unfortunately, only

anecdotal information is available at present because of the considerable sensitivity of the subject. However, there can be little doubt that injection drug use has been increasing rapidly among indigenous Australians in recent years.

## **Process**

### ***Harm Reduction***

The poor outcomes listed above may be a direct result of weaknesses that exist in implementing prevention measures. A key weakness was the fact that initially there was no clear agreed upon definition of harm reduction. Subsequently, new definitions were adopted after each of the major evaluations. Still, these definitions have not been consistent over time.

In addition, the official definition of harm reduction was “air-brushed” with zero tolerance. In May 1998 the Prime Minister publicly gave unstinting support to the alien policy of zero tolerance. Subsequently, the official definition of harm reduction has become confused by attempts to introduce zero tolerance elements. The promotion of abstinence had been accepted previously as an important component of harm-reduction approaches to IDUs. However, the problems of zealously pursuing abstinence with individuals unable or unwilling to consider becoming abstinent was fully recognized. Following criticism of zero tolerance, the policy has been redefined as relating only to drug use in schools and drug trafficking.

Another problem in gaining support for harm reduction has involved the unraveling of the bipartisan support that has existed for this program. As the threat of an uncontrolled HIV epidemic among IDUs spreading to the general population has receded in recent years, support for the policies and programs that maintain that control has dwindled somewhat. This is variable around the country and also may have been influenced by the strong support of the Prime Minister for zero tolerance.

### ***Poor Implementation of Public Health Prevention Measures***

A clear prevention message targeted to populations at particular risk is key to the success of the needle and syringe program. Education of inmates about the risks of blood-borne viral infections has been introduced in prisons throughout Australia. In some jurisdictions, bleach was distributed in prisons even though authorities were well aware that some bleach would be used to decontaminate injecting equipment. Condoms have only been introduced in Australian prisons within the past couple of years. Demand for methadone treatment far outweighs supply in

the one state where this treatment is available on a large-scale basis. Other states are now introducing methadone treatment.

The messages targeting indigenous Australians also have been ineffective. Like many other severely disadvantaged populations around the world, older indigenous Australians tend to be more skeptical about public health prevention measures to control the spread of infection among IDUs. However, younger indigenous Australians tend to have a more pragmatic attitude to harm reduction.

### ***Policy Impact on Needle and Syringe Programs***

Finally, governmental policy has hampered the needle and syringe program process. In 1999 in NSW, wide-bore (i.e., large injecting) equipment was withdrawn from official needle and syringe programs on the pretext that governments could not be seen providing the same equipment used to inappropriately inject government-provided methadone. The risk of blood-borne viral infections increases exponentially with the increase in the bore size of injecting equipment.

In addition, government spending on illicit drug use remains overwhelmingly allocated to law enforcement. It was estimated that in 1992 Commonwealth and State Governments expended US\$ 393 million in response to illicit drug use. The largest proportion (84 percent) was allocated to law enforcement with 6 percent allocated to drug treatment and 10 percent to prevention and research (United Nations International Drug Control Programme 1997). In 1991 US\$ 6.6 million were allocated to national needle and syringe programs (Feachem 1995), while in 1995 US\$ 20 million were allocated to methadone programs throughout the country.

## **Threats**

### ***Increasing Drug Use, Drug Overdose Deaths, and Crime***

Drug overdose deaths are likely to continue increasing for some time even if effective prevention measures are implemented because of the declining age of drug use initiation. There is a tendency for outcomes to be worse with the earlier onset of drug use.

### ***Loss of HIV Control***

HIV control among IDUs may be lost because injection drug use and HIV prevention programs are being cut. Although there has been substantial growth in the throughput of both needle and syringe and methadone treatment programs throughout the country, increasing

difficulties have been encountered in some local communities regarding the location of services. In some cases services have had to be shut down. If the unraveling of bipartisan political support continues, additional programs may be threatened and some closed.

Although it still seems unlikely that control of HIV will be lost in the general population, maintaining policies and programs and therefore control of HIV infection among IDUs and preventing onward transmission to the general population is becoming increasingly difficult.

### ***Increased Risk of HIV and HCV Infection Among Indigenous Australians***

Indigenous Australians are considerably overrepresented among prisoners. The rate of incarceration is 85 per 100,000 for nonindigenous Australians; 1,700 per 100,000 for indigenous Australians, and 90 per 100,000 for the total population. Incarceration is only one of many factors increasing the risk of HIV and HCV infection among indigenous Australians.

HCV infection among IDUs is also increasing because the number of IDUs is increasing even faster than the programs targeting prevention of injection drug use. Providing adequate prevention services to IDUs is becoming increasingly difficult because of the very rapid growth in the size of the population at risk. The logistics of doubling services every 10 years is a major problem let alone finding adequate funding. Uncertain political will and less secure community support are additional problems.

### ***Increases in Cocaine Injecting Imperil Control***

Another threat to prevention measures is increasing cocaine consumption. Cocaine injecting began in Sydney to a significant degree within the past 5 years. There are now three major sites in Sydney where cocaine injecting occurs. The problem is growing rapidly. The far greater number of injections per day with cocaine and the far greater difficulty controlling cocaine injecting without a pharmacological equivalent of methadone represents a significant risk to HIV control among IDUs.

### ***Threats to the Process of Prevention***

Finally, threats exist against the prevention process. For example, harm reduction might be abandoned as official policy. At present this seems unlikely, as current volatility of support for harm reduction is unprecedented. However, if harm reduction was to be abandoned, programs would be cut or abolished. It is unlikely that programs will be cut although some outlets have already had to close.

## **Opportunities**

### ***Outcome—Control of HCV Among IDUs***

The continued reduction in reports about the sharing of injecting equipment and the encouraging prevalence data suggest that HCV incidence is declining. This raises the possibility that HCV among IDUs in Australia could be controlled within the next 15 to 20 years. A 10 percent annual reduction in the number of incident cases of HCV among IDUs would result in the number of annual national incident cases falling from 11,000 to 4,000 by 2008. However, the rapid expansion in the population at risk represents a major obstacle to the achievement of control of HCV among IDUs.

### ***Process—Define Illicit Drug Use as Primarily a Health and Social Issue***

There is already some movement toward redefining illicit drug use primarily as a health and social issue. The emphasis in recent decades on supply reduction has been accompanied by increasing drug use, deaths, disease, crime, and corruption notwithstanding considerable government expenditure. Increasingly, community leaders and politicians are publicly acknowledging that current policies “have not worked.” In some countries where more emphasis has been placed on health and social responses to illicit drug use (while retaining all law enforcement measures), outcomes have substantially improved. Australia supports other countries facing similar problems. It has already substantially supported countries in the Asian region who have sought assistance with the technical information regarding effective measures to control HIV infection among IDUs.

## **Conclusions**

The Australian experience of HIV/AIDS demonstrates that early and vigorous implementation of a public health approach to the threat of uncontrolled HIV being spread among and from IDUs can reduce risk behavior and sustain low HIV prevalence. The most parsimonious interpretation of the situation is that an HIV epidemic has been averted in Australia. The prevalence of HCV among IDUs now appears to be declining (from unacceptably high levels). The measures that maintained low prevalence of HIV appear to have contributed to the decline in HCV prevalence. The rapid increase in drug overdose deaths and drug-related crime, apparently widespread official corruption, and the substantial recent growth in the number of drug users suggests that the drug policy overall is not succeeding. Australian government funding in response to

illicit drug use is, at present, allocated overwhelmingly to law enforcement. Although there is little evidence that law enforcement measures are effective, there is compelling

evidence that the small allocation of government funding to public health measures is very effective and cost effective. ■

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## UNAIDS Best Practice Research on Drug Use and HIV/AIDS

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To understand the Joint United Nations Programme on HIV/AIDS (UNAIDS) funding opportunities to support research, one needs to grasp the Programme's concept of "best practice." Best practice is the continuous process of learning, feedback, and reflection, and the analysis of what works or does not work in response to AIDS and why. Best practice is shared through exchange forums, networks, *UNAIDS Best Practice Collection* materials, and technical assistance. Finally, best practice is a key strategic approach to policy, strategy, and research development and implementation.

In light of the above framework, UNAIDS is interested in research that clearly leads to or involves both policy development and the implementation of effective interventions. (Note that UNAIDS' primary focus is on developing countries.) This includes areas such as the following:

- Assessment of situations (i.e., leading to intervention strategy planning or the development of policy options)
- Examination of existing programs to identify what works, what does not work, and why
- Testing of methods and tools for effective interventions
- Monitoring and evaluation of research (i.e., research leading to improvement or expansion of the intervention programs)
- Activities such as training that strengthen capacity for research

When considering the content of the research to be proposed, the following are some important areas to consider:

- How were some countries able to adopt a harm-reduction policy at the same time as a demand-reduction policy?
- What interventions can be started early?
- How can coverage be increased to ensure that a majority of drug users have access to the interventions (i.e., what are innovative ways to deliver services at lower costs)?

- How can a comprehensive package of interventions be implemented?
- How can the conditions be created to enable interventions such as legal support and anti-discrimination measures?

### Experiences and Collaboration

UNAIDS has worked on the issue with the national AIDS programs and their cosponsors and partners in Latin America, Central and Eastern Europe, Asia, and the Pacific region. The experience gained in these partnerships has been invaluable in providing information from the lessons learned. For example, the assessment and monitoring of an outreach project in Nepal provided a very good case study in which it was learned, first, that harm reduction can be planned and implemented, and second, that without expansion of the program, the course of the epidemic cannot be changed. The needle exchange program in Nepal began when HIV prevalence was less than 15 percent among injection drug users (IDUs). Now it has risen to 45 percent in some pockets of the country. One of the major reasons is that only a few hundred drug users out of several thousand have benefited from the program. The majority of drug users do not have any community or individual support. Once a drug user has left the outreach project, he or she encounters the same users, the same unsafe behaviors, and the same community that has shown little tolerance toward drug users.

In south Asia, UNAIDS is advocating for research among IDUs as a major priority population group in all settings. This is particularly important in view of the potential for heterosexual transmission of HIV related to injection drug use (as has been seen in northeastern India, Myanmar, etc.). UNAIDS has funded street-based outreach projects (e.g., the first such outreach project in a developing country was started in Manipur) and advocates for priority funding for such projects in all countries. The World Bank has also funded some projects with components that involve IDUs.

Bilateral agencies and UNAIDS Theme Group members in many countries are increasingly supporting IDU projects,

e.g., the Department for International Development in Bangladesh and the Australian Agency for International Development in India. The United Nations International Drug Control Programme (UNDCP) is already funding components of drug use and AIDS-related projects and providing support to some countries such as Vietnam and Brazil. UNAIDS is supporting the capacity of UNDCP to strengthen HIV prevention programs among drug users in India and other countries.

UNAIDS has been collaborating with the World Health Organization Department of Substance Abuse (WHO/SAB) in developing and providing training on rapid assessment methods. A multisite project for research leading to intervention planning on substance use and sexual behavior has started and will be expanded in the next 2 years. Collaborative work with WHO and UNDCP for technical support in rapid assessment, intervention planning, and evaluation is also provided to large countries such as Russia and China.

UNDCP, which recently joined UNAIDS as a cosponsor, has stated in the UNAIDS unified work plan for 2000–2001

that “UNDCP plans to increase the data collection capacity of Member States. This programme will also include improving the capacity to collect data and information on HIV/AIDS and IDU and also on HIV/AIDS and non-IDU. UNDCP will continue with global projects for the identification and development of *Best Practice* of drug use prevention. . . .” UNDCP’s activities also extend to addressing research issues. For example, UNDCP collaborates with the WHO Special Programme for Research and Training in Tropical Diseases, the United Nations Development Programme, and the World Bank to incorporate drug use prevention elements into existing women’s health research and intervention projects. In the near future UNAIDS will continue its collaboration with community organizations, especially the regional harm-reduction networks, discussing with these networks opportunities for research activities within the framework of best practice. UNAIDS will also support collaboration between the networks and national programs, cosponsors, and other partners. ■

## Factors That Impede and Facilitate HIV Prevention Policies and Programs Regarding Drug Users

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“... one of the greatest challenges on every level—individual, national, and global—is to combat complacency in HIV prevention.”

David Satcher, M.D., Surgeon General of the United States, 1998

### Introduction

Below are definitions for some of the terms used in this chapter.

- Primary prevention: Prevention of drug use, prevention of HIV.
- Supply reduction: Reduction of drug availability.
- Demand reduction: Reducing the abuse of drugs through focusing on prevention and reduction of drug abuse.
- Harm reduction: Reducing the harmful consequences of drug abuse to the individual, the community, and society (also referred to as risk reduction, harm minimization, and damage reduction) (Riley 1993; Riley 1994; Riley and O'Hare, in press; Riley et al. 1999; Riley and O'Hare 1998).

### The Issues

Most countries in the world have reported injection drug use, and a large majority of these countries report HIV infections related to such use. In many countries, injection drug use is a greater cause of HIV infection than sexual transmission. HIV infection has grown more rapidly among injection drug users (IDUs) than among those in any other group; therefore, the need for HIV prevention among IDUs is obvious. HIV spreads among IDUs through their sharing of needles and other injection equipment, which is a very efficient way of transmitting HIV directly into the bloodstream. Prevention of HIV infection among IDUs could involve any or all of the following: cleaning of equipment, eliminating sharing of equipment, cessation of injection, and cessation of drug abuse.

According to presenters at the 1998 International Symposium on HIV Prevention in Geneva, effective and sustainable interventions should (1) be based on sound scientific principles; (2) adapt interventions to changing circumstances; (3) view recipients as change agents rather than targets; (4) deliver interventions at multiple levels; (5) consider the context of behaviors, practices, and attitudes; (6) require partnerships; (7) be supported with technical assistance and evaluation; and (8) provide combinations of complimentary interventions (Valdiserri 1998).

### *Making Drug Use Safer*

The safest way to avoid HIV infection through drug injection is to stop injecting. Some countries have responded to the HIV epidemic by expanding drug treatment services, some of which are compulsory. Not all drug users are willing or able to give up drugs. In such cases, the urgent need to reduce HIV risk associated with injecting remains. For these users, less sharing of needles and better sterilization of injection equipment can significantly reduce the dangers of drug use (Joint United Nations Programme on HIV/AIDS [UNAIDS] 1998). Comprehensive prevention programs based on the principles of harm reduction provide a means of intervention in such cases. As with sexual HIV transmission, the prevention of transmission through drug injecting requires a multifaceted prevention package. The 1998 UNAIDS report stated that for maximum impact, the following components should be part of this package:

- Education for drug users (and their sex partners) on HIV and other blood-borne pathogens
- Training in skills (e.g., negotiation of safer drug use)
- Access to sterile injection equipment or access to bleach or other means of cleaning equipment
- Access to condoms
- Treatment programs to help users reduce or stop injecting

- Information and education to stop the demand for injection drugs

A comparison of cities with high and low prevalence of IDUs showed that those cities that were successful in avoiding an epidemic among IDUs had three features in common (UNAIDS 1998). First, they used community outreach or peer education to reach and educate IDUs, including those who would not otherwise receive such information or be in contact with treatment and prevention programs. Second, they ensured that IDUs had inexpensive and ready access to sterile syringes through pharmacies or needle exchange programs. Third, they all started prevention programs early, before HIV prevalence had risen beyond a critical point. Mathematical modeling shows that after more than 10 percent of the drug-injecting population is infected with HIV, prevalence almost invariably rises to 40 or 50 percent within a few years. In many cities, there have been much faster increases in prevalence. In cities such as Glasgow, Tacoma, and Toronto, where prevention activities started very early and before 5 percent of IDUs were infected with HIV, there have been consistently low rates of HIV transmission.

Needle exchange programs as part of a comprehensive harm-reduction approach are an effective way to reduce sharing of equipment. A number of studies have shown that HIV infection rates are more than three times lower for IDUs who participate in needle exchange programs than the rates for those who do not. Analysis of blood on returned needles suggests that programs can reduce transmission by about one-third. Needle exchange programs benefit IDUs and the community in a number of ways. They reduce the spread of blood-borne pathogens, and they provide an opportunity to put IDUs in touch with counselors, HIV testing, drug treatment, and other services. In many cities, needle exchange programs are the single largest source of referral of IDUs to treatment. Programs that teach IDUs how to avoid sharing equipment and how to sterilize it inexpensively and easily have helped to reduce unsafe injection practices in many places, such as parts of the United States where syringe exchange is illegal.

The success of needle exchange is not limited to industrialized countries. There are currently programs in the cities of Santos and Salvador in Brazil and Kathmandu in Nepal, in the Akha hill-tribe communities of northern Thailand, and in many more. Most of these programs are small. Only a few countries, such as Australia and a few in Western Europe, come close to meeting the demand.

In most countries, the drugs that are injected are illicit, making the activity furtive and the injection drug

community difficult to reach. For these and numerous other reasons, it is difficult to initiate and maintain policies and programs for the prevention of HIV infection among IDUs. Yet there have been successes—some of them quite remarkable—in a number of countries, and by no means did all of them require the resources of the developed world. This chapter outlines some of the barriers and facilitators of HIV prevention programs among IDUs and describes examples around the world.

### **Factors That Impede and Facilitate Prevention of HIV Infection Among Drug Users: Some General Issues**

Factors that impede (barriers) or facilitate (facilitators) policies and programs related to the prevention of HIV infection among drug users, their partners, and children fall into several main categories:

- **Sociocultural.** Does the region or country have a strong public health tradition, particularly with regard to drug use? Are there established networks for prevention? Is there a choice of programs and approaches? Are there religious barriers to HIV prevention?
- **Economic.** Does the region or the country have the funds to mount prevention campaigns? Are cost-effective prevention mechanisms in place or easily implemented? Are there barriers to the movement of funds to the areas where they are needed?
- **Legal and ethical.** Are strict paraphernalia laws in place at the state or national level? What are the penalties for possession and trafficking of drugs, and how are these enforced? Is there strong legal support for nondiscrimination and human rights with respect to public health and drug users?
- **Political.** Is there political will for HIV prevention or political champions for this cause? Is HIV prevention considered a national priority? Are there national strategies for HIV and drug use prevention and are these interrelated?
- **Accidental.** Earthquakes, floods, wars, and civil unrest disrupt the physical and social fabric of the environment; the resulting disruption and uncertainty lead to homelessness, migration, economic fragility, and vulnerability to many problems, including unhealthy drug use and HIV infection. (In this chapter, accidental factors are covered under sociocultural and economic concerns.)

**Barriers***Sociocultural*

1. **Absence of a Public Health Approach to Drug Use.** The use of drugs such as heroin and cocaine is illegal and condemned in most societies today. Persons who inject drugs are often young, poor, or both and are driven underground, reluctant to seek help or information when this is available. This behavior is one of the greatest barriers to HIV prevention in the drug-injecting community. Clearly, in many countries changes to the law are an unlikely option (although some regions have demonstrated that this approach is possible, e.g., São Paulo, Brazil). Reducing the stigmatization of IDUs by society is one means of dealing with this barrier. Illegality and stigmatization are often concurrent in societal responses, but discrimination can be reduced even in the presence of drug prohibition if communities and support groups emphasize the universal application of the Declaration of Human Rights, actively fight discrimination through legal channels, and, most of all, consider drug use a public health problem and not a moral or criminal issue. A public health approach to drug use and its related problems is growing in popularity and offers hope that users will be less marginalized and therefore more likely to be reached by prevention and treatment programs.
2. **Communal Drug Practices.** In some places, because of the nature of drug use practices, conventional needle exchange programs may not be particularly effective. For example, in Vietnam many drug users go to shooting galleries for their injections. The galleries are often in slums with no running water, where a dealer mixes opium or heroin solutions. Users pay for a shot of solution that the dealer draws from a communal pot and gives to the user. A single pot of solution may be shared among 50 users, all of whom use the same dirty syringe and needle. As of 1997, more than 70 percent of HIV infections in Vietnam were thought to be among IDUs (also reflecting the high level of testing of users in this society). A similar system of injection is found in Myanmar. In both countries, shooting galleries often use homemade equipment, with a needle attached to an eyedropper of polyethylene tubing. Such equipment is extremely difficult to sterilize. It has been estimated that more than 90 percent of IDUs in the northern State of Kachin are infected with HIV (UNAIDS 1998).

In Eastern Europe, anecdotal evidence suggests that in some areas persons preparing drugs add fresh blood to the solution to precipitate contaminants. Therefore, if this blood is infected, all those using drugs from that

batch can become infected, even when they are using sterile injection equipment. Large-scale dealers often use testers, who are users who draw a dose from the batch, inject it, and report on its quality. The testers are then allowed to draw another full dose using the same syringe, thereby allowing infectious agents to be introduced to the solution. In areas where this kind of communal practice is common, conventional needle exchange programs may not be very effective, and there is a need to focus on programs that are effective for dealers and persons who prepare and deliver drugs.

3. **Absence of Adequate Prevention Measures.** These are special kinds of barriers to prevention and are by no means necessary for an explosive spread of HIV to occur, as shown by the following examples:
  - New York City. HIV prevalence among drug users rose from 10 percent to 50 percent in 3 years.
  - Edinburgh, Scotland. HIV prevalence rates rose from 1 percent to 40 percent in 1 year.
  - Vancouver, Canada. HIV prevalence rates rose from less than 10 percent to between 25 and 35 percent in 3 years.
4. **Inadequate Attention to Social and Environmental Factors.** Although health behavior theory recognizes the influence of social and environmental factors on individual behavior, this recognition is rarely reflected in intervention strategies. One source of difficulty is that nonindividual risk factors are essentially of a structural nature and therefore not perceived as easily modified. In addition, HIV transmission is related to sexual activity and drug use, which are taboo subjects. The relationship between such behaviors and social and environmental factors has also never been well understood and is not easily explored. Also, the discourse of decisionmakers in AIDS is largely a biomedical one to which only the more scientific models and evaluation designs are credible, and these models more readily measure individual change than community change. Information about community- and society-level changes, which are difficult to quantify and measure, are often viewed as “nonscientific” in nature.

*Economic Constraints*

1. **Poverty.** Poverty has been associated with increased risk for a wide range of diseases and disorders, including AIDS. Poorer rural and urban communities are at heightened risk of infection and least able to bear the economic consequences of AIDS once the epidemic is established. The economic dimension to risk behavior extends to those who are not poor (for example,

smoking cigarettes is a price-sensitive behavior, especially for adolescents). In Brazil, eliminating a tax on imported condoms greatly reduced the price at the consumer level and is believed to have contributed to a substantial increase in condom sales.

The vulnerability of women in sexual relationships is a likely result of women's limited access to resources, their financial dependence on their partners, and social norms related to gender roles. Drug users' choice of sexual partners may be based on economic factors. The conditions that affect initiation, mode of administration, and access to treatment also are shaped by economic factors. For example, injecting is often a less expensive mean of reaching a good hit or high.

2. **Resource-Poor Settings (Lamptey 1998):** Communities that are poor in resources present a number of special barriers to prevention. These include the following:

- **Technological Challenges.** Currently only a few technological options are available, primarily the male latex condom (the female condom still has limited usage), clean injection equipment, limited access to sexually transmitted disease diagnostics, and some treatment drugs. Access to these services and equipment is very limited in resource-poor settings.
- **Program Challenges.** These challenges include changing and sustaining risk-reduction behaviors; improving program reach, which is often limited to small-scale, urban-based, easy-to-reach communities; expanding successful intervention to hard-to-reach groups with the active involvement of local communities (Sarkar 1999); demonstrating program effectiveness and disseminating good practices for which no good indicators exist; and improving evaluation indicators and providing adequate funding for program evaluation.
- **Research Challenges.** The available data are limited for resource-poor settings; to better understand and interpret HIV trends, information needs to be linked from many sources, such as behavioral, demographic, socioeconomic, and biologic data sources.
- **Policy Challenges.** A policy on how to allocate limited and scarce resources for competing development and health needs is needed.
- **Funding Challenges.** There is a need to diversify the funding base to include the private sector and increase public sector commitment (UNAIDS 1999).
- **Human Rights Challenges.** There is a need to improve access to information and prevention programs, ensure access to care, reduce societal

inequality and vulnerability to HIV, and minimize conflicts between individual and collective rights.

3. **Sudden Economic Breakdown.** A sudden economic breakdown such as that which occurred in some Asian countries and parts of the old Soviet Union raises enormous barriers to the implementation and sustainability of HIV prevention (Schlegel 1998).

*Legal Factors*

1. **Restrictive Legislation.** Restrictive legislation may act as a barrier to adopting preventive measures. The threat posed by the AIDS epidemic has led to calls for the decriminalization of prostitution and less repressive drug laws. It is very difficult to change established policy. Decisionmakers in most countries remain cautious. In a number of cases, national policy has been adapted to local needs, as in the case of harm reduction, which is often pursued at the local level despite prohibitive national policy. For example, the introduction of needle exchange programs and safe-injection rooms was implemented at the local level, usually by community or activist groups.
2. **Lack of Public Education.** Another impediment is lack of public education regarding the nature and effects of drug policy. For example, one of the chief obstacles in setting up a syringe exchange is lack of public education on the relationship between injection drug use and AIDS. Once people are aware that syringe exchanges help to significantly reduce the spread of AIDS, they are much more supportive of such a program (although not necessarily in their own backyards).
3. **Legislative Barriers.** These arise as a consequence of the criminalization of drug use, sex work, illegal immigration, and homosexuality. Criminalization increases the vulnerability of persons belonging to these groups. Hidden populations are difficult to reach because they suffer discrimination in many ways. Other barriers are formed by laws discriminating against the rights of persons with HIV/AIDS in their pursuit of work or insurance.

*Political Factors*

1. **Gap Between the Rapid Expansion of the HIV/AIDS Epidemic and Proposed Changes.** International agencies are pursuing a policy of integrating HIV prevention into development programs and allocating resources to restructuring health services. On the community level, nongovernmental and governmental organizations have developed initiatives to support education, occupational training, or other activities for those vulnerable to HIV. Yet the impact of these policies on the AIDS epidemic is questionable: The gap

between the rapid expansion of the AIDS epidemic and the much slower pace of proposed fundamental social change and development cast doubt on whether these approaches can be effective quickly enough (Tawil, Verster, and O'Reilly 1995).

2. **Placing HIV/AIDS on the Political Agenda.** The term "normalization" is misused in many different contexts to erase HIV/AIDS from the political agenda, to justify decreasing AIDS-specific budgets (if they ever existed), and to ignore complex issues that emerge from the HIV/AIDS epidemic and are difficult to address (Schlegel 1998). The main barriers in many regions of this world are the lack of HIV/AIDS-specific policies, lack of resources and capacity, and the lack of interest in HIV prevention. Other major problems related to health, economy, or warfare can delay development of a regional policy on HIV/AIDS. In some cases, policies do exist but are based on provisions instead of empowerment, compulsion instead of motivation and capacity-building, or segregation and isolation, in violation of human rights, instead of integration.
3. **Major Political Upheaval.** Major political changes like those faced by communities such as the countries formed from the breakup of the former Soviet Union raise some of the most daunting obstacles to prevention.
4. **Failure to Include NGOs.** Policies seem to face some of the most serious barriers when they do not account for the importance of HIV-focused nongovernmental organizations (NGOs) and when they do not acknowledge the necessity for multisectorial interventions on both individual and societal levels.
5. **Complacency.** Last but by no means least, one of the greatest challenges on every political level is to combat complacency in HIV prevention (Satcher 1998).

### **Facilitators**

#### *Sociocultural and Economic*

1. **Enabling Approaches** (Tawil, Verster, and O'Reilly 1995). The need for multifaceted intervention approaches has been well established, as has the need for broader thinking about prevention options. Most HIV prevention efforts focus on changing the behavior of individuals through increasing their personal awareness and risk perception, raising expectations of favorable outcomes of risk avoidance, teaching the skills to make the behavior change, and so forth. The premise underlying this approach is that individuals will make appropriate decisions about their personal behavior and will then act on those decisions. A number of theories have described the cognitive mechanisms involved in this process relative to preventive health behavior, and

their practical application has yielded results in various areas. But these theories may have limited use when one considers social and environmental determinants of HIV transmission. These determinants go beyond individual volition and also must be addressed. It is therefore necessary to revise approaches to prevention and to develop a wider range of options in an effort to complement existing strategies. A distinction needs to be made between prevention approaches that aim to "persuade" individuals to undertake behavior change and those that "enable" changes to occur (Tawil, Verster, and O'Reilly 1995). The latter focus on the social and environmental determinants that facilitate or impede behavioral choice. Enabling approaches are intended to remove barriers or constraints to protective action or to erect barriers or constraints to risk-taking.

"... In some cases, enabling approaches that remove barriers for some people, such as women who may have little say in sexual matters, may actually erect barriers for others, such as men who may find their traditional dominance constrained. An enabling approach that removes a barrier to change might be a policy that allows the purchase and possession of sterile injection equipment by drug users, while an example of an enabling approach that erects a barrier to continued risk taking might be a policy mandating condom use in commercial sex establishments."

Tawil, Verster, and O'Reilly 1995

- **Modifying the Context of Risk Practices.** While continuing to recognize the role of individual decisionmaking, all structural interventions acknowledge that meaningful reduction of HIV transmission can still occur even though the range of an individual's action may be too limited in certain contexts to allow for sufficient behavior change (Tawil, Verster, and O'Reilly 1995). Attempts have been made in some communities to modify contexts that encourage risky practices; e.g., community injectors in countries such as Vietnam can promote safer injection practices. These structural interventions are a powerful addition to the more standard HIV/AIDS prevention approaches. Careful preparation and consensus-building are necessary to ensure the implementation and continuation of these approaches.

"To date, AIDS prevention efforts around the world can be characterized as being too little, too late and too narrow. As yet, AIDS

prevention efforts have had limited experience with efforts that aim to modify the context of risk-taking or to go beyond debates on how to reinforce prevention efforts. It is important to broaden the range of prevention options through innovative approaches addressing the context of risk.”

Tawil, Verster, and O'Reilly 1995.

Focusing on social and environmental determinants is an approach already espoused by WHO and other health agencies. The principles guiding disease prevention and health promotion were developed in the 1986 Ottawa Charter. Five steps were identified:

- Developing skills
- Developing appropriate health legislation
- Creating supportive environments
- Strengthening community-based action
- Reorienting health services

These steps place health within a broader social agenda. They also place attempts to motivate individual action in the wider context of attempts to modify conditions of risk-taking.

- **Challenges for Enabling Strategies.** Challenges are associated with pursuing a prevention strategy that includes enabling strategies:
  - Understanding situations in which risk occurs; it is essential to focus on the structures that have impeded or facilitated risk avoidance, not only the individual determinants of risk behavior.
  - Thinking more broadly and creatively about interventions that might be needed.
  - Consulting more widely, beyond the traditional providers of HIV prevention. Forging useful alliances with those outside the public health community, especially those in development, can provide new input into intervention strategies.
- 2. **Outreach.** Aggressive outreach work should be encouraged so as to reach those individuals unlikely to use established syringe exchange and information schemes. Prevention strategies are most effective when information and services are brought to the users rather than the reverse (Power, Hartnoll, and Daviaud 1988). Community outreach programs can significantly increase the coverage of programs. For example, in the northeast Indian town of Churechandpur, a program that encouraged abstinence for drug users was made available for several years through various agencies but never reached more than one-half of the town's drug

users. When community street outreach began with a bleach distribution program, the proportion of drug abusers participating increased to 80 percent within 6 months.

3. **Activism.** The activism and advocacy of community groups, persons living with HIV/AIDS, and networks have been and remain central to the success of HIV prevention among drug users (Schlegel 1998).
4. **Networks and Networking.** The HIV pandemic has demonstrated the importance of a strong public health tradition in a society; it has also underscored the importance of the many varieties of networks in our societies—local, national, regional, and global. These networks serve many functions: social, technical, informative, political, and more (Schlegel 1998). **Networking.** Activism and pragmatism will not lead to sustained HIV prevention programs if these programs remain isolated. Skills, experience, good practices, problems, and resources must be shared. Networking requires coordination, which in turn requires human and financial resources (Schlegel 1998).
5. **Inclusiveness.** Inclusiveness of persons and groups at whom interventions are targeted, of persons responsible for action, and of persons with HIV/AIDS is of the greatest importance in overcoming any kind of barrier. Inclusiveness creates a sense of commitment and coherence, which are both essential for a sustained effort (Schlegel 1998).

### *Legal*

Legal barriers, such as laws regulating drug paraphernalia and other drug-related laws, can stand in the way of prevention programs such as syringe exchange. Liberalizing paraphernalia laws greatly enhances the ease with which prevention programs can be implemented. In some cases, legal barriers are more perceived than real, and rewriting the relevant legislation to explicitly allow for syringe exchanges would make it easier for communities to open sites. In many other cases, however, legal barriers to HIV prevention are very real indeed and can be reduced by changing the laws on drug use, enforcing existing laws, or both. Where current laws and policies do act as barriers, “enabling” strategies can sometimes be put into place, allowing these barriers to be effectively overcome so that, for example, condoms or clean needles are still made available. Decreasing the criminalization and stigmatization of drug users and persons with HIV/AIDS by modifying laws is another means of facilitating prevention and encouraging people to seek treatment.

*Political*

1. **Effectiveness of Prevention.** The fact that HIV prevention programs have been proven effective makes their implementation easier, but not easy. A National Institutes of Health (NIH) meeting on the subject in 1997 reached the conclusion that “behavioral interventions to reduce risk for HIV/AIDS are effective and should be disseminated widely (NIH 1997).” Efforts to reduce risks of IDUs through policy changes have been evaluated and found to be very effective. For example, in both New York and Connecticut, significant reductions in the sharing of injection equipment occurred after the implementation of programs and policies that increased access to sterile injection equipment.
2. **Comprehensiveness.** Comprehensive prevention programs work best. For example, IDUs need strategies to help them stop using drugs or sharing needles and also need to learn to protect themselves from sexual transmission of HIV. Behavioral and biomedical strategies should be integrated for increased effectiveness. For example, new strategies must be developed to encourage adherence to complex drug regimens, which is difficult for HIV-infected IDUs who may be homeless and without supports (Riley, Oscapella, and Roy 1999).
3. **Supportive Policy Environment.** Health promotion practice has long recognized the importance of a supportive policy environment in which a preventive agenda can be pursued. National policies that recognize and support the desirable outcome of disease prevention and health promotion are an important first step and have been used for many decades to directly promote health (e.g., legal requirements for seatbelts, immunization) (Tawil, Verster, and O’Reilly 1995). The introduction of enabling approaches to HIV prevention will involve lobbying for political support and policy changes. Long-term approaches are essential, but possibilities currently exist to promote a more pragmatic approach to addressing the determinants of HIV risk.
4. **HIV Prevention as a Priority.** “Accepting the priority of HIV prevention over that of drug-use control is essential in adopting an integrated approach to risk reduction” (Tawil, Verster, and O’Reilly 1995). Evidence has shown that early action to make sterile injection equipment available is one of the key factors in maintaining stable low seroprevalence of HIV among IDUs. Examples from several counties demonstrate the possibility of adopting an integrated policy, where public health and law enforcement work together flexibly to meet the needs of both drug control and HIV prevention; for example, compare the unforeseen consequences of the so-called Needle Park in Zurich to the results of expansion of harm-reduction services as in Frankfurt and Merseyside.
5. **Pragmatism.** Needle exchange programs were made possible in Swiss prisons because they were designed as research programs. The positive results led to a change in the attitude of policymakers. Now the programs are a legal obligation in Switzerland (Schlegel 1998).
6. **Treatment.** The lack of treatment and other services for drug users in many countries prevents significant progress in HIV prevention and other programs for drug users. This criticism is particularly valid for correctional systems (Riley et al. 1999; Jurgens and Riley 1997). Until more “user-friendly” services are available, it is likely that true prevention cannot be put into practice, and we will continue to be hypocritical in our overall approach to drug abusers. To maximize contact with drug abusers, services can no longer afford to work only with those who seek to stop abusing drugs.
7. **Comprehensiveness.** Strategies for overcoming barriers must be comprehensive and take into account contextual factors. For example, HIV/AIDS is often not the most urgent problem in resource-poor settings; basic health care, education, and information all contribute to solving a variety of health-related problems. Social or economic inequalities increase a person’s vulnerability to HIV. Issues of gender, access to health care, education, employment, economic resources, and disparities in power and wealth are not easily addressed. Indeed, some people may not want them to be addressed. Comprehensive strategies on a long-term basis are necessary. These strategies must take into account the living conditions and the cultural and political backgrounds of individuals and their society.

**Conclusions and Recommendations: Lessons Learned**

Experience around the world has taught the importance of the following:

- The critical role of NGOs and networks, including technical resource networks at the global, regional, and national levels
- The centrality of community initiatives, including the role of drug abusers and persons living with HIV/AIDS
- A pragmatic attitude toward drug problems
- An established public health tradition, with drug abuse regarded as a public health rather than a criminal justice issue
- Policy driven by science

- Recognition of the severity of HIV/AIDS and its long-term consequences
- A combined AIDS and drug abuse prevention strategy at local and national levels
- Social and health care resources, including universal health care
- Recognition that prevention is far more cost-effective than the alternatives, such as becoming infected with HIV or involved with the criminal justice system
- Need for a social safety net and a broad range of social and health programs for the entire community
- Political champions and political will
- Absent or flexible paraphernalia laws
- Acceptance by the religious community (or at least the willingness of this community not to prohibit prevention efforts)
- Willingness of the United Nations International Drug Control Programme and similar organizations to accept

“damage reduction” as a goal of policies and programs, either implicitly or explicitly

### Conclusion

For truly effective prevention, comprehensive and culturally sensitive harm-reduction programs are necessary. Harm reduction must be multifaceted, not only a singular intervention (Riley 1993; Riley 1994; Riley and O’Hare, in press; Riley et al. 1999; International Harm Reduction Association 1999). The data regarding drug-related consequences such as AIDS make it clear that a long-term plan for harm reduction is needed. Risk reduction is a social process, not something that public health officials can impose; an effective program must provide multiple means for behavior change and should be conducted on a long-term basis. ■

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# Comprehensive Approach to Prevention of HIV and Other Blood-Borne Infections Among Injection Drug Users

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The most effective means of reducing the transmission of HIV and other blood-borne infections among injection drug users (IDUs), their sex partners, and their children is through a comprehensive approach involving multiple interventions. Community-wide strategies that include such proven components as HIV counseling and testing, provision of condoms, access to sterile injection equipment, and substance abuse treatment programs should be combined with public education campaigns that reach large numbers of IDUs with multiple, reinforcing messages. Programs work best if tailored specifically to the distinctive behaviors and risk patterns of the target population, and if they involve cooperation among multiple agencies. Some basic considerations are discussed below.

## Prevention and Treatment of Substance Abuse

Preventing the initiation of drug use would effectively eliminate the risk of injection-related HIV transmission. Parents' movements, youth programs, public education campaigns, and other organized efforts to help adolescents and adults resist pressures to start drug and alcohol use can make important contributions to drug abuse and addiction prevention (Catalano et al. 1998, pp. 130–159), especially if such programs are tailored to subpopulations at higher risk (Kumpfer 1998, pp. 160–207).

High-quality, easily accessible substance abuse treatment programs help persons already addicted to alcohol and drugs (such as heroin and cocaine) reduce and, ideally, eliminate their drug use.

## Prevention of HIV for Drug Injectors Who Continue to Inject

The risk of injection-drug-based HIV transmission can be reduced by promoting safer sexual practices and by having IDUs who continue to inject drugs use sterile syringes.

Sexual transmission of HIV occurs among IDUs and their sexual partners. Risk reduction programs for IDUs must

include condoms and counseling to reduce risk of sexual transmission of HIV (Bryan et al. 2000). Studies have documented the effectiveness of HIV intervention programs that target sexual behavior among homosexual men, adolescents, young adults, and heterosexual adult men and women, including IDUs, in settings ranging from schools to substance abuse treatment clinics (Institute of Medicine [IOM] 1994).

Syringe exchange programs (SEPs) provide sterile syringes to IDUs who continue to inject drugs and help ensure safe disposal of used syringes (Jones and Vlahov 1998; Batki and Nathan 1999). Most SEPs also provide IDUs with information about safer drug injection techniques such as the use of bleach to disinfect syringes and drug preparation equipment. Other services provided by SEPs include referral to drug abuse programs, instruction in the use of condoms, and diagnosis and treatment of sexually transmitted diseases (IOM 1994). Studies have shown no increase in illicit-drug injecting associated with the exchanges and have shown marked decreases in drug-related risk (Reid 2000).

Sterile syringe availability and use are substantially affected by "syringe laws" and pharmacy practice regulations (Gostin 1998). HIV prevention programs should determine what types of existing laws and regulations restrict the sale or criminalize the possession of syringes. Because pharmacists and police can be important allies in making sterile syringes available, programs should develop partnerships linking these two groups, public health agencies, and communities.

## Tailoring Prevention Programs

Ideally, counseling is culturally appropriate, is sensitive to issues of sexual identity, and provides information consistent with a person's age, gender, learning skills, language, and style of communication. For example, treatment of drug abuse among patients from ethnic minority populations may involve issues of the patient's

minority status and ethnic self-identity. Some researchers suggest that early attempts to resolve such issues should be conducted with a therapist or peers from the patient's own ethnic group (Westermeyer 1999, pp. 75–78).

Substance abuse treatment programs are especially important in jails and prisons. In these settings, treatment requires a competent and committed staff, adequate administrative support, separation of patients from the general prison population, comprehensive intensive therapy aimed at the drug user's entire lifestyle, and continuity of care after release back into the community (Gerstein 1999, pp. 135–150).

Drug users with mental health problems are another important subpopulation (IOM 1994). Both psychological and pharmacological treatments are necessary to treat comorbid psychiatric disorders in patients with HIV infection and drug problems. Support and self-help groups can help patients feel less isolated. Inpatient treatment may be required for acute episodes of mood disorders or psychosis (Batki and Nathan 1999, pp. 503–510).

### **Coordinated Services for HIV-Infected IDUs**

IDUs living with HIV deserve quality health care. Participation in ongoing health care and counseling should reduce the chances that HIV-infected IDUs will transmit HIV to others. Services should include counseling (short- and long-term), substance abuse treatment, primary medical care, and access to highly effective HIV therapies.

Continuity of care is crucial for HIV-infected IDUs released from prison or jail. Close collaboration between substance abuse, corrections, and HIV/AIDS agencies is essential. Cross-training programs around HIV prevention and substance abuse issues are often helpful.

### **HIV Counseling and Testing**

HIV counseling and testing programs should be tailored to IDUs or offered in settings with large numbers of IDUs (for example, substance abuse treatment programs and correctional facilities). Partner referral (“notification”) and prevention case management are useful program components. Case management is the process of linking drug treatment with related services, especially when the necessary services are located at different sites or provided by different agencies (Siegal and Rapp 1996). The goals of case management are to assure continuity of care and integration of the other functions of the treatment system (IOM 1994; Vigdal 1995).

### **Quality, Access, and Coverage**

Each component of a comprehensive program must perform well in terms of quality, access, and coverage. The quality of an intervention influences its potential effectiveness. For example, although methadone maintenance can decrease drug use and HIV transmission (IOM 1994), methadone doses are often inadequate and will not be effective (Kauffman and Woody 1995).

Treatment services must be accessible in terms of cost and distance. For example, there is increasing recognition of the spread of HIV infection into rural communities in the United States where adequate treatment may not be available (McCoy et al. 1999).

Finally, even when services are available locally, their volume may not be sufficient to reach all the IDUs in the community (Chitwood et al. 1999). In Montreal, for example, SEPs and pharmacy sales to IDUs in 1994 amounted to 338,000 syringes compared to the estimated total need of 10.7 million sterile syringes needed to supply one for every drug injection, a coverage of only 3.2 percent (Remis, Bruneau, and Hankins 1998).

### **The Problem of Stigma**

Society often views IDUs as pariahs who should be punished rather than given treatment. These negative stereotypes substantially limit the public health options available for HIV prevention. For example, experimental data from one study showed that nurses perceived a patient labeled as a substance misuser far more negatively than an identical patient who was not so labeled (Howard and Chung 2000). In addition, views on any substance abuse issue are highly polarized. Many local or regional HIV education strategies have been thwarted by public objection to the promotion of condom use by community-controlled health services, and substance abuse needle exchange programs have met substantial resistance in some communities (Brady 1996).

### **Summary**

Prevention of HIV among IDUs requires timely access to substance abuse treatment and programs to prevent drug use, as well as the transmission of HIV by IDUs who continue to inject. Programs should be tailored to specific groups of IDUs and should involve coordinated services among agencies, especially the criminal justice system. Access to sterile syringes is an important component of a comprehensive program of HIV prevention for IDUs. ■

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## Drug Treatment as HIV Prevention

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Comprehensive drug treatment programs play an important role in HIV prevention, along with needle exchange programs and comprehensive prevention strategies. Long-term, community-based treatment strategies that include substitution therapy are among the most effective (Gerstein and Harwood 1990). Unfortunately, such therapy is not uniformly available worldwide.

### **The Multidimensional Approach**

The concept of drug treatment as a means of HIV prevention involves a multidimensional outcome perspective, or treatment aimed at reducing harm rather than eliminating risk. Across the range of available treatments, evidence strongly demonstrates beneficial outcome with respect to injection practices and risk behavior (Task Force 1995). However, drug use programs are not universally incorporated into the broader health perspective in every setting, nor is the need for developing comprehensive drug treatment programs universally recognized.

In most parts of the world, drug treatment starts out with fairly large and long-term residential treatment programs and evolves into a broader range of programs. The majority of these treatments are reported to produce significant benefits in the long term, with the exception of boot camp or incarceration strategies. Although these boot camps are popular in some parts of the world, they are expensive and they lack even minimal evidence of any benefit.

Drug treatment modalities include drug-free treatment, inpatient programs, community detoxification, residential drug-free rehabilitation, drug substitution therapy, and other community-based, low intervention programs, including needle exchanges. There are many different settings for treatment modalities, including the general community, specialist settings, services for young people, homeless services, maternity care clinics, psychiatric facilities, and in particular, criminal justice settings such as prisons. Drug treatment in correctional settings tends to be inadequate even in countries that have extensive drug treatment provisions in the community.

The prevention of HIV among drug users involves more than simply eliminating drug injection. Many interventions

can reduce the frequency of drug injection by 70 percent (Gossop, Marsden, and Stewart 1998), which is ultimately much more pragmatic than attempts to eliminate risk entirely. Risk-reduction strategies include sharing injecting equipment less frequently, decontaminating injecting equipment before use, using only clean needles and syringes, administering drugs by other routes, and abstaining from drug use.

### **The Role of Outcome Studies**

Outcome studies provide politicians, policymakers, and the general public with information about the effectiveness of particular treatments in the real world. Outcome studies also provide clinical advancements in treatment and can show changes over time in patterns of drug use and treatment services and resources.

Michael Gossop and John Marsden at the National Addiction Centre did a study in response to concerns in the community, including those of politicians, that substitution treatment and harm-reduction services were having no effect. Over a 24-month period, outcomes from interventions in community and residential treatment were assessed. The community group was primarily in methadone treatment. Both groups showed substantial reductions in both injecting and sharing, which is the core of any strategy that incorporates HIV prevention (Gossop, Marsden, and Stewart 1997).

Data from the 1970s through the 1990s show that duration and intensity of treatment predict better outcomes. The characteristics of people who enter different treatment modalities vary.

### **Access to Treatment**

Access to treatment is another issue. Looking at long-term residential, outpatient drug-free, and outpatient methadone programs, it is clear that methadone programs provide a level of access as well as retention that is substantially greater than that of other modalities. Retention rates also vary in relation to the quality of the program (Fletcher, Tims, and Brown 1997).

In many settings, there is limited access to treatment for cocaine and amphetamine users, many of whom take their drug by injection. Stimulant users who do access treatment have been reported to experience good outcomes. Sophisticated studies are needed to investigate whether there is a role for prescription programs for chronic amphetamine injectors.

Experience in Europe and the United States has provided strong evidence for the benefits of oral methadone, LAAM, and buprenorphine maintenance treatments. In addition, more than 16 randomized, controlled trials involving these three medications show an unequivocal benefit from the use of such substitution therapy. Many countries may not be able to finance these expensive programs; in some cases, however, indigenous substances may be available locally that could be used in maintenance treatments. While the

type of product used in maintenance treatment is an issue in many countries, a related issue is the system or organization that delivers it, because different approaches have their own inherent costs.

### Summary

Globally, affordable treatment access for opiate dependence remains a major challenge. Community-based, long-term programs are the most accessible, but the major issue for developing countries is limited pharmaceutical resources. To create comprehensive programs, we must first learn which treatment components, what pieces of programs, and whether pharmaceutical or psychosocial components provide the most effective interventions. We must then assemble those components into cost-effective, integrated strategies to ensure the broadest levels of access. ■

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## Global and Regional Research Issues for Programs Working to Reduce Drug-Related Harm

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### Overview

The scarcity of research and the difficulties accessing those research results that do exist in a timely fashion are major barriers facing programs working to reduce drug-related harm, especially those in developing regions. Research findings often are not readily available to the very individuals or programs that supported the original data collection. Partly in response to this situation, a range of regional and national harm-reduction networks were formed during the 1990s in Africa, Asia, Canada, central and Eastern Europe, the Latin Caribbean, and the United States (Crofts and Deany 1999). Focusing particularly on HIV and injection drug use, these networks have been important mechanisms for program support, policy development, and the rapid dissemination of research findings and other technical information. However, these networks face a variety of challenges in ensuring that research is conducted, disseminated, and utilized most effectively. These challenges include chronic resource shortages, language and cultural barriers, lack of political support for research,

shortages of experienced program personnel to lead research and interventions, and difficulties in translating research into effective policies and programs. This chapter discusses these themes in light of activities planned by the Global Research Network (the Network) and includes updates from each of the regions represented.

### Challenges to International Harm Reduction

#### **Global Voice**

Global Voice: The International Harm Reduction Network is comprised of the following organizations:

- African Harm Reduction Network;
- Asian Harm Reduction Network;
- Canadian Harm Reduction Network;
- Central–Eastern European Harm Reduction Network;

- Latin American Harm Reduction Network;
- Oceania Harm Reduction Coalition;
- Harm Reduction Coalition (U.S.); and
- Western Europe Harm Reduction Network.

### ***HIV Infection and Drug Use***

Despite the research community's best efforts to share information and research, the problem of HIV infection among drug-using populations usually seems to be several steps ahead. According to recent estimates by the United Nations International Drug Control Programme (UNDCP), injection drug use is now occurring in 134 countries, with 97 of these experiencing HIV among injection drug users (IDUs) (UNDCP Secretariat, personal communication, June 4, 1999). In countries such as Kazakhstan, the Russian Federation, Malaysia, Vietnam, and the People's Republic of China, injection drug use is the major cause of HIV infection (Ball, Rana, and Dehne 1998).

In many other regions, including south and Southeast Asia, north Africa, Eastern Europe, and increasingly west Africa and Latin America, injection drug use is a major factor behind sustained and often explosive HIV/AIDS epidemics (Ball, Rana, and Dehne 1998). Global Voice and other Network members, reporting on recent developments in their regions, indicate the appalling yet preventable epidemics that are occurring in many countries (Global Research Network 1999). As well as being some of the most populous parts in the world, these regions comprise some of the least developed countries. However, on reviewing much of the research literature, one could be forgiven for thinking that most injection drug use occurs in the developed world.

This is, no doubt, a reflection of the greater access developed countries have to research literature and other information and funding and other resources in general. For example, *Time* magazine (1999) recently noted that more than 50 percent of the world's Internet users live in the United States. But difficulty in accessing new information is only one factor making access to research a constant challenge in developing regions. Other challenges include

- Chronic resource shortages;
- Inadequate and inaccurate data on drug use and HIV trends;
- Difficulty in developing standardized data collection instruments;
- The dynamic and often hidden nature of drug use and of consequent harms, especially HIV, hepatitis C

(HCV), hepatitis B (HBV), abscesses, and drug overdoses;

- Increasing trends toward the injection of legal drugs, a practice not often monitored by health or law enforcement agencies;
- The vast and often remote geographic locations where injection drug use takes place;
- Difficulties in sharing research findings across regions due to language barriers, different research standards, and different cultural interpretations;
- The considerable costs and logistics involved in bringing researchers together from developing regions; and
- Mounting economic crises, making HIV prevention a low priority.

Added to these difficulties are global challenges facing all of us, including

- The general lack of funds to support research on HIV and drug use;
- Difficulty in translating rapid assessments and other research methodologies into rapid responses;
- Responses that are driven by political agendas rather than science, research, or logic;
- Government and donor agendas that are determined by crisis management rather than by long-term vision, making early intervention a low priority;
- The lack of strong leadership and clear messages from the international community regarding effective ways to reduce drug-related harm; and
- Global law enforcement efforts against drug use, which often overlook the health, social, and human rights consequences of drug use, and although politically popular and well intentioned, cause far too many human casualties.

On the other hand, some inspiring research and harm-reduction activities are being initiated in many settings by incredibly courageous and skilled people. Outstanding research is being conducted in many locations, usually with only a fraction of the funding and technical resources needed for such exercises (Deany and Crofts 1999). Needle and syringe exchange programs and other interventions are being initiated without the necessary funding or government approvals, sometimes even using workers' personal funds. Programs are operating in extremely remote and underresourced locations where civil unrest, physical threats to staff members, and other barriers are commonplace. Moreover, new harm-reduction policies are

being drafted and translated into law, often in the face of strong political opposition. In short, a growing number of researchers, legislators, and program personnel are demonstrating harm reduction simply by practicing it. All of these activities rely heavily on research and are essential for supporting further research. There are practical ways to utilize research more effectively.

### **Looking Forward**

The objectives of the Global Research Network meeting in Atlanta were to

- Identify emerging issues in the epidemic with implications for HIV, HBV, and HCV prevention;
- Discuss the nature, status, and effectiveness of HIV prevention efforts among IDUs in different countries; and
- Increase research capacity through collaborative efforts, nationally and internationally.

### ***Identification of Emerging Issues***

Identifying emerging issues in the epidemic can occur only if there are sufficient global and local mechanisms for surveillance and research. This is fine in theory, but it is not occurring in many countries due to economic constraints, competing priorities, poor skills, and inadequate mechanisms for research and surveillance. Organizations such as the World Health Organization's (WHO) Substance Abuse Department and its partner agencies are to be commended for their efforts in this area, especially the rapid assessment and response methodology (WHO 1999) they have recently been piloting in different countries.

Previously, WHO provided guidelines for universal precautions to prevent the spread of disease in health care settings, but in many countries these guidelines were often unrealistic or simply ignored, meaning that HIV and other pathogens continued to be spread through unsafe injection and other risky clinical practices. Although this issue is probably beyond the scope of this meeting, it illustrates the need to provide more supportive environments, more comprehensive training, and greater resources to ensure that research methodologies and public health guidelines are implemented effectively.

### ***Nature, Status, and Effectiveness of HIV Prevention Efforts***

Discussion of this second objective concerning IDUs in different countries also took place at this meeting. However, the question is, how can we continue to share

this information and support ongoing research after the meeting is over? Two immediate ways are through the Network and the regional harm-reduction networks, which already are operating around the world. United as Global Voice, these networks contain some of the best researchers and programs available. These extensive and cost-effective networks have shown practical ways to sustain and expand research in different countries:

- Harm-reduction networks have identified the research needs of different regions.
- These networks have helped translate research data into action through national AIDS programs, rapid situation assessments, sharing information, advocacy, and other activities.
- Global Voice members are directly involved with grassroots organizations. This link between science and community is an essential combination for the success of HIV prevention among IDUs. By linking research to local advocacy and interventions, research is more humane, and there is more effective community activism.
- Global Voice acts as a resource base where people can receive and share information. This can be done easily via the Global Voice Website, electronic discussion groups, regular space in Global Voice members' newsletters, and meetings such as this one.
- Global Voice can also assist with training on research methodologies, documentation, and data collection. Those trained can then train others in their own regions, thus ensuring uniformity in research methods and the participation of local and national researchers.

In short, harm-reduction networks provide many benefits:

- Regional responses to regional issues;
- Replication of successful models;
- Less reliance on outside assistance;
- Strengthened capacity and skills base;
- Facilitation of locally appropriate solutions;
- Reduced isolation of programs;
- Peer support for network members;
- Ability to influence policy development;
- Advocacy for members and clientele; and
- Fostering of new programs.

For these and many other reasons, Global Voice should continue to be seen as a major partner in the work of the Global Research Network.

### ***Increasing Research Capacity Through Collaborative Efforts***

Achievement of this third objective, nationally and internationally, is in the hands of the people who were assembled in Atlanta and the partner agencies Global Voice works with. All attendees are urged to rise to the global challenge presented by HIV and drug injection and seek new ways to turn words into action, research into response, and HIV into a more effectively controlled global health problem.

An important step has been made in organizing this Global Research Network. Through the formation of Global Voice and the harm-reduction networks in each region, many valuable lessons have been learned over the past 10 years in how to share, strengthen, and utilize research.

Some of these lessons include the following:

- Researchers and research journals must make concerted efforts to ensure that research findings represent and reach less-developed regions.
- Donor agencies and researchers must make more coordinated efforts to strengthen research and HIV prevention in developing countries. Ninety-six percent of HIV/AIDS is occurring in the developing world, but only a fraction of global funding and research is targeted in this direction (Piot 1997).
- Research must respect the needs and rights of drug-using populations and local agencies.
- Research must inform and support interventions in the field, ensuring that the lessons learned are applied

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immediately toward the urgent problem of HIV/AIDS among IDUs.

- Finally, networks of harm-reduction programs have proven to be powerful yet inexpensive mechanisms for coordinating, conducting, and disseminating research, and then linking this research to local programs and policies. These networks must continue to be supported.

Disease prevention among IDUs is difficult in any circumstance. But when resources, skills, and local capacity are critically low, as in many developing countries, the challenges in translating research into effective programs and policies can seem almost insurmountable. The challenge is to use research as a tool to persuade donors, governments, the United Nations, and the international community to make early intervention a more urgent global priority. If we do not, many more preventable deaths will occur. The exact numbers are often unclear, but the toll is already staggering.

### **Conclusion**

Global Voice welcomes this new Global Research Network and thanks NIDA and participating organizations for arranging this meeting. Hopefully, efforts can continue to be combined in the fight to reduce HIV and other harms associated with drug use. The problem is large, resources are few, and time is short. Everyone must continue to find ways to collaborate effectively in the future, mobilize diminishing resources, strengthen political and donor support, and continue this fight—together. ■

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# Syringe Exchange Programs in the United States: How Far Have We Come, and How Effective Are They?

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## Introduction

The United States has been at the forefront in the battle against AIDS since cases were first recognized. It raced the French in identifying HIV and is the Nation that discovered and produced medications that keep so many Americans with AIDS alive. The United States is a resource-rich country, which means it has the luxury of choice as to where it places its resources. It has chosen not to place its resources in HIV prevention for injection drug users (IDUs).

At an earlier session of this meeting, IDUs were asked, “Do you feel that the Government would rather have you dead than provide you with help?” They unanimously laughed and replied, “Yes.” It is likely that the same question posed to any community of drug users in the United States would elicit the same response. A central strategy of national drug control in the United States is that the greater the dangers a drug user faces in his or her drug use, the greater the deterrent to continued use. Legal limitations imposed at the end of the 1970s on the purchase and possession of syringes reflect this strategy (Gostin et al. 1997). However, instead of deterring injection, it created an artificial scarcity of sterile equipment and facilitated the spread of blood-borne viruses such as HIV and hepatitis C (HCV). It is important to remember that HIV was known as a blood-borne infection even prior to its isolation. According to the U.S. Centers for Disease Control and Prevention (CDC), this deterrent strategy has produced a cumulative total of 173,693 people with AIDS directly related to drug injection. An additional 74,318 persons in the United States also are sick with AIDS acquired directly from drug injection, through sex with an HIV-positive drug user, or through being born to a drug user or a sexual partner of a drug user (CDC 1998) (table 1).

A comprehensive intervention to stem the spread of HIV among IDUs includes providing drug treatment and user-to-user education and support, changing routes of drug administration, and rescinding possession and paraphernalia laws. This chapter focuses on syringe exchange efforts in

the United States. However, this chapter provides only a snapshot of the situation for a country as large and complex as the United States. Part of this snapshot is a comparison between the syringe exchange effort in New York State, principally focused on New York City—with probably the best resourced set of programs in the United States—with the State’s neighbor across the Hudson River, New Jersey. Other areas of the country, such as the Pacific Northwest and particular cities such as San Francisco, have equally strong histories of supporting the need of IDUs for HIV prevention.

## U.S. Statistics

Although many nations have implemented syringe exchange programs (SEPs) to curtail an HIV epidemic among IDUs, the United States responded with repression and arrest at worst and tentative tolerance at best. Efforts started as early as 1986 to institute such programs (Lurie et al. 1993), but at the birth of the North American Syringe Exchange Network in 1990, there were only nine programs openly operating (Purchase, personal communication, August 24, 1999). By 1999 the number had increased to approximately 150 (Purchase, personal communication, August 8, 1999). This figure is approximate, since nearly half of the known SEPs operate extralegally under extremely tenuous circumstances, relying on the generosity of volunteers and the fundraising technology of bake sales.

Utilizing a conservative estimate of the number of U.S. IDUs who access SEPs, the actual number of syringes distributed through known SEPs, and a modest estimate of an average of three injections per day, U.S. SEPs provided three syringes per IDU in 1998 (Paone, personal communication, September 9, 1998). Hypothetically speaking, this means that each syringe is used 350 times (Grove, personal communication, September 9, 1998). An IDU would be foolish to rely on even the best funded and well-established program as the sole supplier of her or his injection needs. Ideally, the injection practices of IDUs

**Table 1. Reported AIDS cases related to IDU transmission, United States 12/31/98**

Via injection drug use	173,693
Via men who have sex with men and inject drugs	43,640
Via having heterosexual sex with an IDU	26,246
Via mother to child where mother contracted HIV either through injection drug use or by having sex with an IDU	4,432
Total	248,011

Source: U.S. Centers for Disease Control and Prevention 1998

who use illicit drugs should be concomitant with standard medical practice, that is, one syringe per injection. The United States is nowhere close to approaching sufficient syringe access to address the HIV problem, let alone the rates of HCV recorded among IDUs. There is a similarly disproportionate concentration of distribution, with 10 percent of SEPs in the United States supplying 59 percent of the syringes in 1997 (Paone et al. 1998).

### New York

New York City began considering syringe exchange in 1985. In 1988 it instituted a program that was shut down after 2 years. It had enrolled 318 participants out of an at-risk population of 200,000 (Eaton, personal communication, September 9, 1998). After 3 more years of underground SEP activity, the New York State Department of Health's AIDS Institute authorized five New York City SEPs (New York State Department of Health 1993). Since then, four more SEPs have opened in the city and three more upstate. All these programs are centered in neighborhoods with high per capita rates of IDU-related HIV infection. For fiscal year 1999–2000, the State Department of Health has invested \$3,900,000 in protecting the lives of IDUs via syringe exchange. These organizations deserve credit for making a dramatic reduction in new infections, and many individuals have seen the quality of their lives improved by access to the ancillary services these SEPs offer. In 1998 the 9 New York City programs collectively distributed 3,061,434 syringes (Vogel and Finkelstein 1999). However, to meet the absolute need of the city's IDUs, approximately 255,500,000 syringes would have to be introduced into circulation (Vogel and Finkelstein 1999). As astonishing as

the effort has been in New York City, it has succeeded in meeting only 1.2 percent of the total need.

New York City, compared with most other regions of the United States, is more receptive to intervention and support programs targeting individuals with a history of drug use, partly due to the severity of the AIDS crisis there. However, in 1999 the New York Academy of Medicine was prompted to note that “The federal ban on syringe exchange, and . . . vocal opposition to harm reduction has [sic] created an unfriendly financial and political environment for syringe providers in New York City . . . This environment has forced syringe providers to adopt a ‘survival’ mentality” (Vogel and Finkelstein 1999). Maintaining high standards of public health is difficult given overt governmental disapproval of syringe exchange, including a ban on funding since 1988 (U.S. Department of Health and Human Services 1988) and negative guidance from the Office of National Drug Control Policy (Coverdell Amendment 1999).

### New Jersey

New Jersey has 27,600 people living with HIV/AIDS (New Jersey Department of Health and Senior Services 1999), the fifth highest caseload in the United States. It ranks third in the United States for IDU-related infections, with 70 percent of AIDS cases directly or indirectly attributed to the use of contaminated injection equipment (New Jersey Department of Health and Senior Services 1999). Newark ranks number 4 in the 10 U.S. cities with the most AIDS cases, with 15,964 AIDS cases (U.S. Centers for Disease Control and Prevention 1999). In 1997 CDC estimated that there were another 46,000 at-risk IDUs uninfected in New Jersey (Holmberg 1996).

New Jersey has not implemented any kind of access to sterile injection equipment, and under the auspices of its Republican Governor Christine Todd Whitman, it actively pursued and prosecuted the organizers of the Chai Project, New Brunswick's openly underground SEP. Chai Project workers have been arrested on three occasions since 1998 as a result of sting operations. Defense arguments used successfully in similar U.S. cases have failed in New Jersey. Punitive court action included suspension of Chai Project Director Diana McCague's driver's license, although McCague drives a cab to earn her living. Ms. McCague read a moving final statement to the court testifying to the impact the State has had on the Project and her personal life:

“The seizure of the Chai Project's van, the establishment of a high bail, and the threat of a felony charge have had their intended effect—my

resolve has been broken, and consequently I have announced publicly through the press and in other forums that I will no longer distribute syringes and that as long as the Chai Project is running under my direction, the organization will refrain from this activity as well. I would add that this was a difficult and painful decision; I am convinced that what we have been forced to discontinue is a public health service that has saved lives . . . I believe there is no purpose then, to punishing me to a greater extent than the criminal code requires. Certainly I've received the intended message and responded clearly. Indeed, everyone watching this situation has gotten the message—further violations will result in ever harsher sanctions . . . Finally, I ask for leniency for my own sake. It's been months since I've known a sense of joy or contentment—I'm exhausted and broke. My family and friends worry about my ability to endure additional stress and hardship. Over the past 3 months, an inordinate amount of my time and resources have been focused on these legal difficulties: I want to get back to my work and move forward; I want to fulfill my part in the mission of the Chai Project (State of New Jersey v. Diana McCague 1998).”

## Conclusion

There appears to be no other country in the developed world that has acted so purposefully to restrict access to syringes for its IDUs, with full knowledge of the consequences. The available research clearly indicates the efficacy of syringe exchange, yet the research findings that have received the most attention in the United States recently have been the Canadian studies (Strathdee et al. 1997; Bruneau et al. 1997). Despite the protests of the

author, Members of Congress and the Clinton administration have misused and misinterpreted these findings. Yet there has been no obvious counterpoint from any other branch of the Government or the research community. Silence is normal. Even the research community appears to be deeply divided on the issue of syringe exchange.

The United States' response to a national HIV pandemic among IDUs is to tolerate 150 syringe programs for its population of 250,000,000. Tolerance generally occurs only after unsuccessful hostile legal action. Australia—with a population of 16,200,000—has 2,000 syringe exchange programs (Feachem 1995). In 1996 (the last useful year for comparative data) England and Wales had a cumulative total of 803 injection-related AIDS cases compared with 146,359 in the United States (Stimson, personal communication, October 30, 1998). For the global research community, the United States is a useful model to study, learn from, and not replicate.

The Global Research Network provides a wonderful opportunity to move beyond investigating the utility of sterile syringes as a protection against the transmission of HIV. Using the experience of programs globally, it should be asked which mechanisms are most effective in getting syringes to IDUs. The Network is also well positioned to examine the role of IDUs in facilitating disease prevention. How can IDUs be more effectively involved in the evaluation process, as both providers and collectors of information and data? What is the process by which SEPs promote and contribute to the health of IDUs? How does one quantify positive change, and how does one change the disparity of a situation where help is available to HIV-infected persons and not to uninfected persons? This Network can be a truly effective and positive organism for change and reconciliation. ■

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# Global Multisite Research on HIV Prevention: Challenges, Methods, and Prospects

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The Global Research Network reflects a commitment to international, multisite research on the prevention of HIV infection in drug-using populations, and a commitment to undertake research that has an impact on preventing HIV infection in drug-using populations. This paper explores reasons for undertaking multisite, multinational research and associated methodological challenges. By way of an introduction it looks at influences on HIV prevention research; the relationships between research, policy, and interventions; and the kinds of multinational research currently being conducted.

## Trends in Research on HIV and Drug Injecting

The last 15 years of research on HIV prevention have seen a highly innovative field with contributions from researchers of many different methodological persuasions. The history of HIV prevention research relates to broader trends in public health thinking and research in the last decade. HIV research has in turn contributed to these trends. First, there has been the shift toward the “new” public health with a focus on the environment in which healthy behavior occurs, the emphasis on global health for all, and identification of the conditions required to achieve health for all. As outlined in the Ottawa Charter, this new public health approach emphasizes the need to develop individual personal, social, and political skills; the reorientation of health services; the strengthening of community action; the creation and maintenance of environments conducive to health; and the creation and maintenance of public policy supportive of health. In other words, health is a product of healthy individuals, healthy services, healthy environments, healthy communities, and healthy policies. HIV research therefore needs to take into account this broader context in which healthy behaviors can be encouraged. Second, there has been recognition of the limitations of risk-factor epidemiology in contributing to the new public health agenda. In classic risk-factor epidemiology it is difficult to

discern the influence of those social forces and processes that affect people’s ability to lead healthy lives. This methodological limitation is especially apparent in the case of diseases and conditions that are the result of human behavior. Hence the new approach to public health needs a range of research methods that can look at the various levels of influence on people’s health behaviors.

Coincident with these broader shifts in public health debate and research came the arrival of HIV disease. HIV research has fed off of this public health debate and in turn has been a source of innovation and change in public health approaches to facilitating change in the health of populations. Indeed, research on injection drug use and HIV infection can be viewed as a paradigm for good public health research, and HIV prevention work with injection drug users (IDUs) reflects the principles of good public health work as outlined in the Ottawa Charter (Ball 1998). The important contribution of HIV research on injection drug use is that it has taken the explanation for risk behavior beyond the level of the individual. It looks at the community context in which behavior occurs and at the broader structural factors that influence behavior. As Rhodes and colleagues put it:

“HIV infection does not progress within populations in uniform or random ways, but is subject to the relativity of risk and to variations in population behaviour in different social, cultural, economic, legal, policy and political environments.”

Rhodes, Stimson, Crofts et al. 1999

At the microlevel of the community, the “risk environment” comprises friendships and networks, norms, local material environments, physical and social settings, and local drug production, distribution, and use. At the macrostructural level it includes social, cultural, and

religious characteristics of the society, economic conditions (including national and global disparities in wealth), laws and their enforcement, political structures, health and welfare policies, transport and communication, migration, and socioeconomic inequalities. Significantly, with respect to drug use and associated risk behavior, it also includes the impact of war, civil unrest, rapid social change, and social dislocation.

If health behaviors are subject to such multiple influences, it follows that interventions need to target not only individual behaviors but also the risk environment.

The HIV drug research agenda has had three further important features. First, researchers have been influenced by an engagement with affected groups and the need to link research to lessening the health burden and other misery associated with HIV infection. Second, researchers have been guided by a public health pragmatism, with interventions being developed on the basis of achievable public health benefits. Third, there has been an awareness that research has a global reach and consequences. From the beginning, HIV research was conducted in an international context, which was coincidentally facilitated in the 1990s by the increasing ease of electronic information exchange. This internationalism spurred interest in research methods suitable for resource-poor settings and highlighted the capacity-building role of research (Rhodes, Stimson, and Fitch et al. 1999).

### **The Relationship Between Research, Policy, and Practice**

Optimists hope that research will lead to enlightened policy and interventions, specifically, that HIV research will lead to the prevention of HIV infection. This is an important motivation and should guide the type of research that is undertaken. But the relationship between research, policy, and interventions is extremely complex, and there are tenuous links between what researchers do and the ways in which policies and interventions are developed—or as is often the case, not developed (Berridge and Thom 1994). Policy change does not simply follow research evidence; many examples would illustrate this, the case of syringe exchange in the United States being one (Watters 1996). In the field of drugs, morality, politics, and polemic are often more powerful than scientific evidence. The question of how research evidence is used is therefore important. In devising a research strategy that will have an impact on HIV epidemics, consideration must be given to the intended impact of the research and how to achieve it.

Assessing the impact of any research investment is not easy and is a controversial area with significant methodological

difficulties (Weiss 1986). It may be unhelpful to think of research having single impacts and useful to consider the variety of ways in which research may have an effect (Buxton and Hannay 1997). Traditionally, benefits to knowledge have been seen as the primary payback from research, but this payback is insufficient for public health research because of the need to contribute to the ultimate goal of affecting health outcomes. Intermediate health impacts include improvements in the process of delivering services, cost savings in delivering services, and improvements in accessibility and equity. The economic benefits of research are the effects on reducing costs from ill health and improving the economic condition of the population.

The link between research and health outcomes is tenuous and complex. Researchers can rarely influence how their results are used, or whether they will be used at all. Public health researchers hope that research is one part of a chain of events that will influence political decisions, policy change, and the implementation of effective interventions. It is to be hoped that research provides an improved information base and contributes to raising national and local awareness, framing agendas, and identifying the need for policy change and interventions. Research can, however, also be ignored or distorted, used by policymakers to delay immediate decisionmaking, to justify decisions that have already been taken for other reasons, or to deflect criticism by showing that the problem is being investigated. As a consequence, it is hoped that health promoting interventions will be implemented, that they will have an impact on target populations, and that disease, in turn, will be prevented (Nutbeam 1998). Exogenous factors beyond the consideration of researchers intervene at all parts of this chain, linking research with health outcomes.

This leads to two conclusions. One is a modesty about what can be achieved by researchers. The second is that researchers should view research itself as an intervention and not just knowledge acquisition. Important questions for them to consider are

- To what extent can or should research champion particular policy changes or interventions?
- What is the utility of different kinds of research for achieving change in policy and interventions?
- How can the impact of research be increased?

If research is to be effective in bringing about change, researchers may need to be familiar with ideas from community development, advocacy, political science, and social marketing.

**Reasons for Conducting Multisite, Multicountry Research and Methodological Issues**

There is currently no global audit of multisite, multinational research on drug use and HIV infection. Examples of the types of work being conducted across more than one country are listed below. Only projects that are multinational are mentioned; there are important single-country studies with external collaborations that are not mentioned here. Most multinational research on HIV prevention in drug-using populations has focused on injection drug use. Many of these studies are reported elsewhere in this volume.

***Current Multisite Research on Drug Use and HIV Infection***

1. Overviews, metaanalyses, and comparative epidemiology of city and country data, for example, regional summaries of the prevalence of HIV infection in Eastern Europe (Burrows et al. 1998; Dehne et al. 1999; Rhodes, Stimson, Crofts et al. 1999); the overview of HIV infection in Southeast and east Asia conducted by the Asian Harm Reduction Network (1999); comparisons of HIV epidemics in different European Union countries by the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA); and the comparison of the New York and Bangkok epidemics (D. Des Jarlais, personal communication, 1999).
2. Development projects and capacity-building with a research component, for example, the southern Latin America project on the prevention of HIV infection in IDUs in Argentina, Chile, Paraguay, and Uruguay (Touzé and Rossi, personal communication, 1999), and the Phare subregional project on harm reduction in the Czech Republic, Macedonia, and Slovenia (Phare 1998).
3. Risk-behavior assessment and the needs of special groups that cut across national boundaries, such as the survey of injection drug use in Roma gypsies in central and Eastern Europe and the Newly Independent States, which has been funded by the Open Society Institute (Grund and Verbraeck, personal communication, 1999).
4. Policy reviews, for example, the overview of the situation in Southeast Asia conducted by the Asian Harm Reduction Network, and reviews of paraphernalia legislation and migration and refugee issues.
5. Pilot testing and development of research methods, for example, testing and evaluating the World Health Organization (WHO) and the Joint United Nations Programme on HIV/AIDS Rapid Assessment and Response methods (Burrows et al. 1999), and the WHO questionnaire on injecting, HIV, and other health consequences.
6. Descriptive and analytic surveys and inventories of HIV prevention services, for example, research on outreach among drug users in Europe and reviews of methadone delivery (Korf et al. 1999), much of which has been initiated by the EMCDDA, and the Phare subregional project on harm reduction.
7. Evaluation of specific interventions, for example, the Lindesmith-funded evaluations of syringe exchange in Eastern Europe, the WHO study of opioid substitution treatment, and the Beth Israel project on syringe exchange programs in the Czech Republic, Hungary, Macedonia, Poland, and the Ukraine (J. Honti, personal communication, 1999).
8. Cross-country comparative work on crack and cocaine use and risk behavior linked with HIV infection.

What can multicountry research achieve that single-country and single-site studies cannot? What is the global added value from collaborative international research? The main contribution that multicountry research makes to scientific understanding and to the advancement of the public health response to HIV is that it highlights the relationship between national (or subnational) structural and community-level differences in the risk environment, differences in the nature of risk behaviors in which IDUs engage, and the course of HIV epidemics. It also enables investigation of the “response environment,” including the transferability of interventions, the testing of hypotheses about the impact of specific interventions in different contexts, and the identification of factors that enhance or impede policy change and the success of interventions.

Comparative analysis is thus especially useful for examining the influence of community and structural factors on drug injecting, risk behavior, epidemic history, and responses to epidemics. This encourages researchers to take whole cities or countries as a unit of analysis, or at least to consider the wider picture in the interpretation of their data. This level of investigation has methodological advantages but also creates methodological problems.

Multinational research also provides the opportunity to look at behaviors and epidemics that transcend national boundaries. Single-site studies often ignore the significance of regional trends in drug use or in HIV epidemics. A regional assessment also helps develop hypotheses about future vulnerable sites.

An additional benefit of multisite research should be the development of local research capacity, which in turn improves research utilization. Practitioners and their colleagues who are trained in research are more receptive to the findings of other research projects and to the general idea of making policy based on such evidence. Countries

with better scientific researchers are more able to capture and exploit outside scientific information.

### Research Questions and Methods for Multisite Studies

What are the questions that need to be addressed through multisite studies? We need to be cautious in drawing up a list of potential research questions because different regions are at different stages of knowledge about HIV and in their responses to HIV epidemics. For example, while some regions now have a large amount of information about drug use and HIV infection, there are many parts of the world where basic descriptive information is not yet available. Therefore, in underresearched regions there is an urgent need for descriptive studies of drug use, risk behaviors, and the status of the HIV epidemic.

There are six key research questions for multisite studies.

1. What factors influence the spread of injection drug use? Many countries have in the past decade witnessed the introduction and spread of injection drug use to new population groups and geographical areas. Further countries are vulnerable. Can we identify factors that facilitate the spread of injecting and use this information to develop interventions to prevent diffusion of injecting?
2. What is the intersection of HIV and sexually transmitted disease epidemics? Eastern Europe has witnessed major increases in the spread of sexually transmitted infections (STIs), notably syphilis, which has increased 60-fold in many parts of the former Soviet Union (Renton and Borisenko 1998). At the same time, there are major epidemics of HIV infection and evidence of high levels of STIs among IDUs. Untreated STIs enhance the transmission of HIV, and there is an urgent need to develop research and intervention projects on controlling STIs among populations of IDUs.
3. What are the positive and negative interactions between use-reduction policies and risk-reduction policies? Use reduction (measures to reduce consumption) and risk reduction are often seen as opposing methods for preventing harm (Wodak 1999). Can we beneficially combine use reduction and risk reduction as a means for reducing overall levels of harm? We also need to look at the negative interactions between use reduction and harm reduction. Two examples: Under what circumstances does harm reduction increase the levels of use, so that while risk per user or using event is reduced, the absolute number of risky events is increased? On the other hand, under what conditions do measures to reduce consumption actually serve to increase risk, for example by marginalizing drug-using

populations and excluding them from prevention and treatment services?

4. What facilitates change in national policy, and what are the barriers to change? There is wide variation in the willingness of governments to act in a timely way to prevent HIV infection. How can governments be encouraged to promote and fund HIV prevention measures targeting injection drug use? We need research on advocacy methods for promoting HIV prevention.
5. What are the positive side effects of HIV prevention in terms of their effect on other health risks such as hepatitis B, hepatitis C, STIs, and the general health status of drug-using and drug-injecting populations?
6. Finally, what components are needed to make HIV prevention successful? Can specific interventions such as syringe exchange or methadone treatment be introduced and be effective without also changing the social and policy environment in which drug users live?

The primary tool for multisite research is the comparative method. This can be used to find explanations for similarities and differences in injection drug use between countries, in risk behaviors, epidemic history, and the impact of various policies and interventions.

There are a number of methodological problems for multisite studies. The first is how data collection can be standardized across diverse contexts. The collection of information about risk behavior within particular social groups or cities within the researchers' own countries is relatively refined. But there are considerable variations in risk behaviors in different settings. Drugs are injected in different ways and involve different risks. The need to standardize data collection in global research studies may result in significant local variables being missed. Note that there are similar difficulties in defining and describing services and their components across countries. For example, what exactly is "methadone treatment," and what does it comprise in different settings? Qualitative ethnographic, organizational, and policy research needs to inform and complement quantitative studies.

The next problem concerns the measures that are appropriate for comparing differences across cities and countries. Measures of HIV risk behavior are now reasonably sophisticated, but much less is known about how to measure the risk environment and the response environment (Kelly 1999). For example, how can researchers in multisite studies measure the quality and quantity of HIV preventive interventions, different types of legislation on drug use, and the climate of opinion regarding HIV infection and drug use, let alone the broader economic, cultural, human rights, religious, and social environment?

Third, how can researchers develop causal explanations for differences that are observed in injecting, risk behaviors, epidemic history, and in policies and interventions? Some single-country analyses of the effectiveness of HIV prevention (for example, Stimson 1995) claim to show a link between good HIV policy, intervention development, risk behavior change, and epidemic history. But authors of such studies acknowledge the weaknesses of single-country analyses. Can we come to more robust conclusions about differences that are observed between countries in the histories of their HIV epidemics? Randomized controlled trials cannot be undertaken at a country level, so hypothesis testing relies on natural experiments and comparative analysis. This requires critical case studies of countries with different policies, interventions, and epidemic histories.

Fourth, what variables should we choose for comparisons between countries? What factors within and between countries actually account for the observed differences? Explanations cannot be reduced to a handful of a priori indicators. The work of John-Paul Grund and colleagues (1996), which compared the behaviors of IDUs and the HIV epidemics in Rotterdam and the Bronx, stands as a seminal analysis because it highlights the problems of trying to determine the factors that actually influenced risk behavior in the two locations. The authors' understanding of this

work is that the social conditions in which IDUs live may be as important for risk behavior and risk reduction as the specific HIV interventions that have or have not been introduced.

A related point concerns synergy between different interventions. Comparative country analyses encourage investigation of community or nationwide responses. Community-wide interventions simultaneously affect many individuals through the reinforcement of messages, encouragement of community-level change, and encouragement of structural change. How do we measure the effect of the particular mix of interventions that is found in different countries?

Finally, what are the units of analysis, and how should they be selected? In multisite studies research sites are often picked unsystematically. They might be selected fortuitously through the contacts built up by researchers and international organizations; they might be selected "politically," by the potential impact on the country or region. They are rarely selected according to the research questions to be tested. Future studies will benefit by being hypothesis driven and selecting sites for their theoretical relevance. ■

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# Evaluation of HIV Prevention in Resource-Constrained Situations

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The practice of injecting illicit psychoactive drugs is well established in many industrialized countries and is spreading rapidly in many developing countries (Ball, Rana, and Dehne 1998). Multiperson use (“sharing”) of the needles and syringes used for drug injection is a relatively efficient method for transmitting HIV (and other blood-borne pathogens.) Epidemics of HIV have occurred in populations of injection drug users (IDUs) in both industrialized and developing countries, are currently occurring in many countries, and must be expected in additional countries.

It is now very well documented that IDUs will change their HIV risk behaviors (Des Jarlais, Friedmann et al. 1996) and that HIV prevention programs for IDUs can limit or even avert HIV epidemics among IDUs (Stimson, Des Jarlais, and Ball [eds.] 1998). There is a critical need for implementation of additional HIV prevention programs for IDUs in many different areas throughout the world.

Implementation of HIV prevention programs without concurrent evaluation of those programs, however, is quite risky. While the great majority of HIV prevention programs for IDUs have been effective, there are also programs that clearly have not been effective in controlling HIV transmission among IDUs (Strathdee et al. 1997).

Evaluation, however, does require resources, both in terms of money and technical skills. These resources are scarce in many locations, both in industrialized and developing countries. This paper will address methods for the evaluation of HIV prevention in “resource-constrained settings.” In such settings, the resources used for the evaluation work may have to be taken from the pool of resources available for the prevention work itself, so the more resources that are used for evaluation, the less resources are available for prevention. Even in this situation, however, evaluation should be considered an essential part of the management of prevention programming.

## Methods

Data for this paper were collected at drug treatment sites, HIV prevention programs, and through community outreach (Turner, Miller, and Moses [eds.] 1989; Miller, Turner, and Moses [eds.] 1990; Normand, Vlahov, and Moses [eds.] 1995; Des Jarlais, Marmor et al. 1996). Typical methods included conducting baseline and followup interviews and obtaining blood or saliva samples from participants at syringe exchange sites as well as from street-recruited IDUs (Des Jarlais, Marmor et al. 1996).

## The Research Base and Research Design Fundamentals

There is now more than 15 years of research on preventing HIV infection among IDUs (Des Jarlais and Friedman 1998), and it is important to use this research base for the design, implementation, and evaluation of HIV prevention programs in resource-constrained settings. Two general statements can be made about the overall conceptualization of prevention programs in such settings.

1. The programs should focus on preventing HIV transmission within the local population of IDUs and not on protecting individual IDUs from HIV infection. It is possible to design programs to be effective at either a population or individual level (and at times at both levels), but in resource-constrained settings, the primary focus must be on reducing HIV transmission in the population at risk.
2. The randomized clinical trial (RCT) is generally considered to be the gold standard in evaluation research because it provides for (relatively) clear inferences about causal mechanisms. The RCT, however, is usually *not* an appropriate design for evaluating HIV prevention programs in resource-constrained settings. RCTs are typically resource intensive, and RCTs in which a population is the unit of analysis are almost always extremely resource intensive. The primary issue in evaluation research in

resource-constrained settings is not making inferences about causation but rather ascertaining whether the rate of HIV transmission in the population is low. (“Low” will be in the context of the local HIV seroprevalence rate.)

### Process Evaluation

Within the overall framework of these two principles, there are a number of specific research questions to be addressed in evaluating HIV prevention programs for IDUs in resource-constrained settings. These questions can be considered as “process evaluation.”

1. Does the program utilize a “biologically certain” method of reducing HIV transmission? There is an almost absolute certainty that a needle and syringe obtained from a pharmacy or a syringe exchange will not contain HIV. There is a very high degree of certainty that a condom, when properly used, will prevent HIV transmission during sexual intercourse. Prevention programs for IDUs need to incorporate these “biologically certain” methods of preventing HIV transmission.
2. Does the program incorporate a “psychologically” or “sociologically certain” theory of behavior change? There are a variety of theories of behavior change that are applicable to reducing HIV transmission among IDUs, from the health belief model (Becker and Joseph 1974) to the diffusion of innovations (Rogers 1982). (There is also substantial overlap among many of these theories.) These various theories do provide guidance on how risk behavior can be reduced among IDUs. The purpose of evaluation research in resource-constrained settings should not be to test theories, but the application of the theory can determine whether there is a coherent design for reducing risk behavior and whether all of the necessary components of the design have been implemented in the prevention programs.
3. How many IDUs participate directly in the program? Since the overall objective of prevention programming in resource-constrained settings should be to control HIV transmission in the local population of IDUs, the more IDUs who use the program, the more likely it is that this goal will be achieved.
4. How many IDUs participate indirectly in the program? Many HIV prevention programs lead to indirect participation by persons who never physically visit the program. Information and risk-reduction supplies (sterile syringes and condoms) may flow from persons who participate directly in the program to a much wider group that does not. This wider group may include IDUs who have good reasons for not coming to the program, including concerns about maintaining

confidentiality about their drug use and transportation difficulties. Again, the more IDUs who participate indirectly, the more likely that the program will lead to reduced HIV transmission in the local IDU population.

5. Do the participants stay with the program? Many IDUs will visit prevention programs but not return. There may be a variety of reasons for the lack of return, some under the program’s control and others not under its control. Many types of prevention programs need to develop a regular clientele that visits the program frequently. These “regulars” can not only obtain sufficient supplies of prevention materials (sterile syringes and condoms) for themselves but also act as extended staff for the program, providing information and supplies to others. This regular contact can serve as an important social reinforcement for risk reduction by the participants and provide a sense of accomplishment for program staff. The regular contact also permits important relationships to develop between the program staff and the regular clientele. These relationships can lead to consideration of a wide variety of potential positive changes among the participants, including reducing drug use.
6. Do the participants follow the program? All HIV prevention programs usually have an underlying ideal protocol for the behavior of their participants. For syringe exchange programs, the ideal protocol is proper preparation of the injection site, injection with a new (sterile) needle and syringe, and then safe disposal of the used needle and syringe. For methadone maintenance programs, the ideal protocol is to take the prescribed dose of medication each day and to abstain from illicit drug use. For abstinence-based drug treatment, the ideal protocol is to abstain from all psychoactive drug use (with the possible exceptions of prescribed psychiatric medications, alcohol, and/or nicotine, depending upon the program). It is unrealistic to expect all program participants to adhere to these ideal behavior protocols, however, it is important to provide support for participants to adhere as closely to these protocols as possible. If adherence is not possible, then plans need to be made with the participant to adhere to a less than ideal protocol, such as reusing one’s own injection equipment—without sharing injection equipment—for syringe exchange participants.

### Outcome Evaluation

The incidence of HIV is obviously the most important outcome for an HIV prevention program. Directly measuring HIV incidence among either program participants or the local population of IDUs is usually very expensive and must be considered beyond the means of resource-constrained settings. There are, however, a

number of substitute outcome measures that can be utilized with much less expense.

1. Are program participants (or local IDUs in general) engaging in “very high risk” injecting? As noted above in the section on adherence to the program protocol, it is very unlikely that the participants in the program will fully adhere to the ideal protocol for new behavior. To date there has been no single HIV prevention program or even a set of programs that have led to risk elimination among its participants. There are, however, different degrees of injection risk behavior. Sharing within small groups (such as sexual partnerships or close friendship groups) can certainly transmit HIV if the members of the groups are serodiscordant. Many of these groups do not have discordance among the members, especially in low seroprevalence areas. Most importantly, this type of risk behavior within small groups does not lead to very rapid transmission of HIV within a population.

Very rapid transmission requires sharing with large numbers of persons within short time periods (Des Jarlais et al. 1992). For IDUs, rapid partner change occurs in situations such as risky injections in shooting galleries, injections with equipment owned by drug dealers, injections from professional injectors, injections in jails, or risky injections with strangers met at central gathering places.

If a substantial number of IDUs are engaging in this type of rapid-partner-change risk behavior, it should be taken as a clear warning that the prevention programs are not sufficient to control HIV within the local population of IDUs.

What are the trends in HIV prevalence among participants in the program and in the local population of IDUs? While conducting seroincidence studies can be extremely resource intensive, it is often possible to draw inferences about incidence from monitoring seroprevalence over time. If seroprevalence is increasing, then it is quite safe to assume that current prevention efforts are not adequate to the task of controlling HIV transmission in the population of IDUs. This is most evident if prevalence is increasing rapidly. The only exception to the rule that increasing prevalence indicates a failure of prevention programming would be an increase in prevalence due to better treatment of HIV infection and longer survival times in IDUs who are infected with HIV. If this is the case, persons operating local prevention programs will almost certainly be aware of the situation.

If HIV prevalence is low (under 5 percent), then continuing low seroprevalence clearly implies that incidence must also be low, assuming a relatively stable IDU population size.

The situation is more complex for high-seroprevalence populations (with prevalences of 20 percent or higher). Stable seroprevalence in a high-prevalence population is consistent with incidence rates of approximately 3 per 100 person-years to approximately 7 per 100 person-years, depending on the rates of new persons beginning to inject drugs (entry into the population) and death and disability (loss to the population). Almost everyone will be HIV seronegative when they begin injecting drugs, and the disability and death rate will almost certainly be substantially higher among HIV seropositives than among seronegatives, so that without new HIV infections, prevalence would decline over time. A decline in seroprevalence may indicate a reduction in HIV incidence (potentially attributable to the effects of prevention programs), but such a decline would be gradual, and difficult to interpret without large sample sizes and relatively good data on deaths and entry into the population.

2. Monitoring HIV prevalence in special subgroups can be of particular interest. Prevalence in new injectors (recent initiates into drug injection) can be used to estimate incidence. If one assumes that all new injectors were HIV seronegative when they began injecting, then incidence can be estimated by dividing the number of seropositive new injectors by the total time since they began to inject.
3. It can also be useful to monitor prevalence in “very high risk” subgroups of IDUs. Examples of very high risk IDUs would include persons with very high injection frequencies, persons without stable housing (who may have difficulties storing clean injection equipment), persons engaging in high-risk sexual activities, and persons who report injecting in rapid-partner-change settings. Increases in prevalence in these groups should be taken as a warning of possible increases in HIV transmission in the local IDU population as a whole.
4. The recently developed “detuned” assay (Janssen et al. 1998) for HIV antibody can also be used to potentially identify recent HIV infections. This is, however, a difficult assay to conduct, and it is not yet ready for widespread use. The laboratory standards for properly using this assay are quite strict, and there are currently only a small number of laboratories that have received training in its use. One hopes it will be possible to utilize this assay more widely in the future, including in resource-constrained settings.

#### **Data Collection**

Data collection for evaluating HIV prevention efforts can include operational data from prevention programs, special

research questionnaire studies, clinical service HIV counseling and testing, research study counseling and testing, and anonymous (blinded) testing of blood samples collected for other purposes. Ethnographic research methods (key informant interviews, focus groups, semistructured interviews) can also be very helpful in designing the more quantitative data collection and in interpreting the quantitative data.

Three principles are important in collecting and interpreting data for evaluating HIV prevention efforts for IDUs.

1. “Triangulation” across multiple data sources. It is almost always impossible to obtain a “random” sample of IDUs, and it is rarely worth trying to obtain such a sample. It is better research practice to obtain samples from multiple-subject recruitment sites and then look for consistencies across the different data collection sites. Sites can include HIV prevention programs, drug treatment programs, health care settings, law enforcement settings, and community outreach (including “targeted sampling”). In doing triangulation, it is very helpful to have some understanding of the biases inherent in the individual sites for data collection.
2. Safety in large numbers. Because it is not possible to obtain “random” or “representative” samples from a local IDU population, the value of large sample sizes increases. With large sample sizes, one can have at least some confidence that trends can be detected relatively rapidly for at least the IDU subpopulation from which the sample is drawn. If one also knows the likely directions of biases in the subsample with respect to the larger IDU population, then reasonable inferences about what is happening in the larger IDU population may be possible. Large sample sizes also permit examination of possible trends among subgroups within the total sample.
3. Finally, it is absolutely critical to maintain the highest “practical” and ethical standards in collecting the data. By “practical” standards, I mean data collection procedures that do not interfere with the operation of the HIV prevention programs. In particular, the data collection procedures should not serve as a barrier to participation in HIV prevention programs. The procedures must also protect against causing harm, especially loss of confidentiality, and be based on respect for the dignity and autonomy of the individuals participating in the data collection. ■

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# **Appendix**

# Meeting Agenda

## THURSDAY, AUGUST 26, 1999—DAY 1

- 8:00 a.m. – 8:30 a.m.                   **Continental Breakfast and Registration**
- 8:30 a.m. – 9:00 a.m.                   **Welcome and Introductions**  
 Chair: Richard H. Needle, Ph.D., M.P.H.  
           National Institute on Drug Abuse, Bethesda, MD
- Eric Goosby, M.D.  
 Office of HIV/AIDS Policy, U.S. Department of Health and Human Services,  
 Washington, DC
- Paul A. Gaist, Ph.D., M.P.H.  
 Office of AIDS Research, National Institutes of Health, Bethesda, MD
- David R. Holtgrave, Ph.D.  
 Centers for Disease Control and Prevention, Atlanta, GA
- Werasit Sittitrai, Ph.D.  
 Joint United Nations Programme on HIV/AIDS, Geneva, Switzerland
- Mary Jansen, Ph.D.  
 World Health Organization, Geneva, Switzerland
- Donald Sutherland, M.D.  
 Health Canada, Ottawa, Ontario, Canada
- 9:00 a.m. – 9:15 a.m.                   **Meeting Overview: Meeting Goals and Objectives**  
 Speaker: Richard H. Needle, Ph.D., M.P.H.  
           National Institute on Drug Abuse, Bethesda, MD
- 9:15 a.m. – 10:15 a.m.                   **Epidemiology and Prevention of HIV in Drug-Using Populations:  
 Global Perspectives**  
 Chair: Eric Goosby, M.D.  
           Office of HIV/AIDS Policy, U.S. Department of Health and Human  
           Services, Washington, DC
- 9:15 a.m. – 9:35 a.m.                   Epidemiology and Prevention of HIV in Drug-Using Populations: Global Perspectives  
 Speaker: Andrew Ball, M.B., B.S.  
           World Health Organization, Geneva, Switzerland
- 9:35 a.m. – 9:55 a.m.                   Epidemiology and Prevention of HBV and HCV in Drug-Using Populations:  
 Global Perspectives  
 Speaker: Nick Crofts, M.B., B.S.  
           Macfarlane Burnet Centre for Medical Research, Fairfield, Victoria, Australia
- 9:55 a.m. – 10:15 a.m.                   Questions and Answers
- 10:15 a.m. – 10:30 a.m.                   Break

**THURSDAY, AUGUST 26, 1999—DAY 1 (CONTINUED)**

- 10:30 a.m. – 11:30 a.m.      **Factors That Impede and Facilitate Prevention Policy and Programs**  
 Chair: Werasit Sittitrai, Ph.D.  
 Joint United Nations Programme on HIV/AIDS, Geneva, Switzerland  
 Speakers: Diane Riley, Ph.D.  
                  Canadian Foundation for Drug Policy and Harm Reduction,  
                  Toronto, Ontario, Canada  
                  Christian J. Kroll  
                  The East Bank, Bangkok, Thailand
- 11:15 a.m. – 11:30 a.m.      Questions and Answers
- 11:30 a.m. – 12 noon      **Reactor Panel—Factors That Impede and Facilitate Prevention Policy and Programs:  
 Drug Users’ Perspectives**  
 Chair: Claire E. Sterk, Ph.D.  
          Emory University, Atlanta, GA
- 12 noon – 1:00 p.m.      Lunch
- 1:00 p.m. – 2:45 p.m.      **Regional and Country Presentations on HIV Prevention: Description, Impact,  
 and Effectiveness**  
 Chair: Paul A. Gaist, Ph.D., M.P.H.  
          Office of AIDS Research, National Institutes of Health, Bethesda, MD
- 1:00 p.m. – 1:15 p.m.      Central and Eastern Europe—Regional Report  
 Speaker: Karl-Lorenz Dehne, M.D., Ph.D., M.P.H.  
          University of Heidelberg, Heidelberg, Germany
- 1:15 p.m. – 1:25 p.m.      Russia—Country Report  
 Speaker: Natalia Ladnaia  
          Russia Federal AIDS Centre, Moscow, Russia
- 1:25 p.m. – 1:35 p.m.      Ukraine—Country Report  
 Speaker: Natalya Lukyanova, M.S.W.  
          Substance Abuse and AIDS Prevention Foundation, Kiev, Ukraine
- 1:35 p.m. – 1:45 p.m.      Central–Eastern European Harm Reduction Network Report  
 Speaker: Judit Honti, M.D.  
          Central-Eastern European Harm Reduction Network, Szeged, Hungary
- 1:45 p.m. – 2:00 p.m.      South and Southeast Asia—Regional Report  
 Speaker: M. Suresh Kumar, M.D., M.P.H.  
          Punarjeevan Drug Treatment Centre, Madras, India
- 2:00 p.m. – 2:10 p.m.      Vietnam—Country Report  
 Speaker: Nguyen Tran Hien, M.D., M.P.H.  
          Hanoi Medical College, Hanoi, Vietnam
- 2:10 p.m. – 2:20 p.m.      China—Country Report  
 Speaker: Zunyou Wu, M.D., Ph.D.  
          National Center for AIDS Prevention and Control, Beijing,  
          People’s Republic of China

**THURSDAY, AUGUST 26, 1999—DAY 1 (CONTINUED)**

- 2:20 p.m. – 2:30 p.m. Thailand—Country Report  
Speaker: Sirisanpang Yodavaudh, M.D.  
Health Center No. 6, Bangkok, Thailand
- 2:30 p.m. – 2:45 p.m. Questions and Answers
- 2:45 p.m. – 3:00 p.m. Break
- 3:00 p.m. – 5:15 p.m. **Regional and Country Presentations on HIV Prevention: Description, Impact, and Effectiveness (continued)**  
Chair: Alex Wodak, M.D., F.R.A.C.P.  
St. Vincent's Hospital Sydney, Darlinghurst, New South Wales, Australia
- 3:00 p.m. – 3:15 p.m. Mediterranean—Regional Report  
Speaker: Ahmad Mohit, M.D.  
World Health Organization, Alexandria, Egypt
- 3:15 p.m. – 3:30 p.m. Sub-Saharan Africa—Regional Report  
Speaker: Moruf Adelekan, M.D.  
University of Ilorin, Ilorin, Kwara State, Nigeria
- 3:30 p.m. – 3:40 p.m. South Africa—Country Report  
Speaker: Charles D.H. Parry, Ph.D.  
Medical Research Council (Cape Town), Tygerberg, South Africa
- 3:40 p.m. – 3:55 p.m. Western Europe—Regional Report  
Speaker: Lucas G. Wiessing, M.Sc.  
European Monitoring Centre for Drugs and Drug Addiction,  
Lisbon, Portugal
- 3:55 p.m. – 4:00 p.m. Canada—Country Report  
Speaker: Chris Archibald, M.D.  
Health Canada, Ottawa, Ontario, Canada
- 4:00 p.m. – 4:10 p.m. United States—Country Report  
Speaker: T. Stephen Jones, M.D.  
Centers for Disease Control and Prevention, Atlanta, GA
- 4:10 p.m. – 4:20 p.m. North American Harm Reduction Coalition Report  
Speaker: Allan Clear  
Harm Reduction Coalition, New York, NY
- 4:20 p.m. – 4:35 p.m. Southern Cone—Regional Report  
Speaker: Diana Rossi  
INTERCAMBIOS, Buenos Aires, Argentina
- 4:35 p.m. – 4:45 p.m. Latin American Harm Reduction Network Report  
Speaker: Graciela Touzé  
Latin American Harm Reduction Network, Buenos Aires, Argentina

**THURSDAY, AUGUST 26, 1999—DAY 1 (CONTINUED)**

- 4:45 p.m. – 4:55 p.m. Mexico—Country Report  
Speaker: Carlos Magis-Rodriguez, M.D., M.P.H.  
Ministry of Health, Mexico City, Mexico
- 4:55 p.m. – 5:15 p.m. Questions and Answers
- 5:15 p.m. – 5:30 p.m. **Reimbursement and Administrative Issues**  
Speaker: M. Patricia Needle, Ph.D.  
National Institute on Drug Abuse, Bethesda, MD
- 5:30 p.m. – 5:45 p.m. **Summary of Discussions**
- 5:45 p.m. Adjournment

**FRIDAY, AUGUST 27, 1999—DAY 2****Reporting of Interventions Around The World—Research Synthesis and Translation:  
Implementation of Best Practices**

- 8:30 a.m. – 9:00 a.m. Continental Breakfast
- 9:00 a.m. – 9:15 a.m. **Welcome and Review of Day 1**  
Speaker: Richard H. Needle, Ph.D., M.P.H.  
National Institute on Drug Abuse, Bethesda, MD
- 9:15 a.m. – 12 noon **HIV Prevention and Intervention Synthesis**  
Chair: Haydée Rosovsky, M.P.H.  
Consejo Nacional Contra Las Adicciones, Mexico City, Mexico
- 9:15 a.m. – 9:40 a.m. Comprehensive HIV Prevention  
Speaker: T. Stephen Jones, M.D.  
Centers for Disease Control and Prevention, Atlanta, GA
- 9:40 a.m. – 10:05 a.m. Needle and Syringe Programs  
Speaker: Alex Wodak, M.D., F.R.A.C.P.  
St. Vincent's Hospital Sydney, Darlinghurst, New South Wales, Australia
- 10:05 a.m. – 10:30 a.m. Drug Treatment as HIV Prevention  
Speaker: Michael Farrell, M.B., M.R.C.Psych.  
National Addiction Centre, London, England
- 10:30 a.m. – 10:55 a.m. Evaluation of the Impact of HIV Interventions in Resource-Constrained Countries  
Speaker: Donald C. Des Jarlais, Ph.D.  
Beth Israel Medical Center, New York, NY
- 10:55 a.m. – 11:20 a.m. Global and Regional Research Issues for Programs Working to Reduce Drug-Related Harm  
Speaker: Paul Deany, B.S.W., M.P.H.C.  
Macfarlane Burnet Centre for Medical Research, Fairfield, Victoria, Australia

**FRIDAY, AUGUST 27, 1999—DAY 2 (CONTINUED)**

- 11:20 a.m. – 12 noon                      Questions and Answers
- 12 noon – 1:00 p.m.                      Lunch
- 1:00 p.m. – 1:45 p.m.                      **AIDS Prevention in the Third Decade: Policy and Programs for Prevention, Treatment, and Care in the United States**  
 Speaker: Eric Goosby, M.D.  
 Office of HIV/AIDS Policy, U.S. Department of Health and Human Services, Washington, DC
- 1:45 p.m. – 2:00 p.m.                      Questions and Answers
- 2:00 p.m. – 4:45 p.m.                      **Cross-National and Multisite Research Symposium**  
 Chairs: Donald Sutherland, M.D.  
 Health Canada, Ottawa, Ontario, Canada  
 Andrew Ball, M.B., B.S.  
 World Health Organization, Geneva, Switzerland
- 2:00 p.m. – 2:20 p.m.                      Past Multisite Research Results—Their Impact on HIV and Drug Policy and Programming: Global Perspectives  
 Speaker: Donald C. Des Jarlais, Ph.D.  
 Beth Israel Medical Center, New York, NY
- 2:20 p.m. – 2:40 p.m.                      Current Multisite Research Methods and the Impact on HIV and Drug Policy and Programming: Global Perspectives  
 Speaker: Gerry V. Stimson, Ph.D.  
 Imperial College School of Medicine, London, England
- 2:40 p.m. – 2:50 p.m.                      Questions and Answers
- 2:50 p.m. – 3:00 p.m.                      Break
- 3:00 p.m. – 4:00 p.m.                      Panel Discussion: Multisite Research Policy, Programming, and Implications for Improved Intervention Effectiveness
- 3:00 p.m. – 3:15 p.m.                      *Africa*  
 Speakers: Charles D.H. Parry, Ph.D.  
 Medical Research Council (Cape Town), Tygerberg, South Africa  
 Moruf Adelekan, M.D.  
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- 3:15 p.m. – 3:30 p.m.                      *Eastern Europe*  
 Speakers: Judit Honti, M.D.  
 Central-Eastern European Harm Reduction Network, Szeged, Hungary  
 Karl-Lorenz Dehne, M.D., Ph.D., M.P.H.  
 University of Heidelberg, Heidelberg, Germany
- 3:30 p.m. – 3:45 p.m.                      *Asia*  
 Speakers: M. Suresh Kumar, M.D., M.P.H.  
 Punarjeevan Drug Treatment Centre, Madras, India  
 Shuiyuan Xiao, M.D., Ph.D.  
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**SATURDAY, AUGUST 28, 1999—DAY 3 (CONTINUED)**

12:30 p.m.                      Adjournment

12:30 p.m. – 3:00 p.m.      **Working Lunch and Meeting**  
(Co-sponsoring Organization Representatives)

- Debriefing and Planning for Durban, South Africa
- Planning for Publications

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Printed June 2000