2001 Global Research Network Meeting on HIV Prevention in Drug-Using Populations

Fourth Annual Meeting Report
October 11-12, 2001
Melbourne, Australia

Co-chaired by:
St. Vincent's Hospital Sydney
The Macfarlane Burnet Centre for Medical Research

In collaboration with:
Centers for Disease Control and Prevention
Fogarty International Center, National Institutes of Health
Health Canada
Joint United Nations Programme on HIV/AIDS
National Institute on Drug Abuse, National Institutes of Health
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Table of Contents

Preface iii

Glen R. Hanson, Ph.D., D.D.S., Acting Director, National Institute on Drug Abuse

Meeting Highlights 1

Understanding HIV-1 Subtypes in IDU and Other Populations 9

Eline Op de Coul, Ph.D., R.J. Beuker, M.Sc., M.J.W. van de Laar, Ph.D., M. Cornelissen, Ph.D., and V.V. Lukashov, Ph.D.

HIV Among IDUs and the Extent of Heterosexual Spread in Eastern Europe 12

Karl-Lorenz Dehne, M.D., Ph.D., M.P.H.

Injecting Sex Workers or Sex Working Injectors: Crossing Risk Zones 16

Carol Jenkins, Ph.D.

What Risk Networks and Social Networks Can Contribute to Understanding and Preventing the Spread of HIV .. 19

Samuel R. Friedman, Alan Neaigus, Milagros Sandoval, Pedro Mateu-Gelabert, Peter L. Flom, Benny Jose Kottiri, Carey Maslow, Jennifer Fuld, Beatrice Krauss, and Don C. Des Jarlais

Evidence for Action for Policymakers on HIV/AIDS Prevention and Care Among Injecting Drug Users 26

Andrew Ball, M.B.B.S.

Effectiveness of HIV Prevention for Young and New Injecting Drug Users 27

Élise Roy, M.D., M.Sc.; Nancy Haley, M.D., F.R.C.P.C.; Pascale Leclerc, M.Sc.; Moruf Adelekan, M.D., M.R.C.Psych., F.W.A.C.P.; Justeen Hyde, Ph.D.; Sylvia Inchaurraga, M.A.; Susan Kippax; Erica Southgate, Ph.D.; and Lucas G. Wiessing, M.Sc.

Effectiveness of Interventions for Marginalized and Particularly Vulnerable IDUs Including Prisoners, Indigenous, MSM, and Sex Workers 33

Kate Dolan, Carolyn Day, Erica Southgate, and Carol Jenkins

Evidence for Action: Interventions to Reduce Sexual Risk Behavior Among Injection Drug Users 36

Don C. Des Jarlais, Ph.D. and Salaam Semaan, Dr.P.H.

HIV/AIDS Information and Education Strategies for Injecting Drug Users 37

Peter Aggleton, Ph.D.

Effectiveness of Drug Dependence Treatment in Prevention of HIV Among Injection Drug Users 39

Michael Farrell, John Marsden, Robert Ali, Linda Gowing, and Walter Ling

Needle Exchanges in Bangladesh: Policy vs. Practice 43

Carol Jenkins, Ph.D., and Smarajit Jana, M.B.B.S

The Art of the Possible: Intervention Strategies in High and Increasingly Concentrated HIV Epidemics Among Injection Drug Users 45

Dave Burrows

HIV Prevention Strategies for Injection Drug Users in High HIV-Prevalent Scenarios 50

M. Suresh Kumar, M.D., D.P.M., M.P.H. (USA) and Shakuntala Mudaliar, M.B., B.S., D.P.M.

High HIV Prevalence Settings Among IDUs and the General Population: Current Status and Countries at Risk 53

Steffanie A. Strathdee, Ph.D.

Drug Policies: A Reflection of Understanding and a Framework for Action—Findings From a United Nations Drug Policy and HIV Vulnerability Research Study in Asia 57

Adrian Reynolds, M.B.B.S., B.Sc. (Hons.), M.P.H.

Global Monitoring of HIV Prevention Among Injection Drug Users 74

Chris Archibald, MDCM, MHSc, FRCPC and Gundo A. Weiler, M.D., Ph.D.

Methodological Challenges Associated with Data Collection on Indicators: Scientific Considerations 78

Tobi J. Saidel, Ph.D.

Methodological Challenges Associated with Data Collection: Practical Considerations 80

Anindya Chatterjee, M.D., D.P.M.

Preface

Glen R. Hanson, Ph.D., D.D.S.
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The Fourth Annual Meeting of the Global Research Network on HIV Prevention in Drug-Using Populations (GRN) was held in October 2001 in conjunction with and immediately following the Sixth International Congress on AIDS in Asia and the Pacific (ICAAP) in Melbourne, Australia. The GRN meeting was co-hosted by St. Vincent's Hospital Sydney and the Macfarlane Burnet Centre for Medical Research in Victoria, with co-sponsorship provided by the National Institute on Drug Abuse (NIDA) of the U.S. National Institutes of Health (NIH), the NIH's Office of AIDS Research (OAR), the U.S. Centers for Disease Control and Prevention (CDC), Health Canada, the World Health Organization (WHO), the Joint United Nations Programme on HIV/AIDS (UNAIDS), the United Nations Office of Drug Control and Crime Prevention (UNDCP), and the NIH's Fogarty International Center.

Within the ICAAP Congress itself, held on October 5–10, 2001, the GRN sponsored four symposia that built on a number of its themes by highlighting a range of research issues related to HIV prevention among drug-using populations. The symposia addressed the relationship between prevention of HIV infection and prevention of other blood-borne infections; injection drug users (IDUs) as multipliers of HIV to the general population; linkages among prevention, treatment, and care for both HIV and drug abuse; evidence-based findings on the impact and effectiveness of HIV prevention interventions; and strategies for building an infrastructure and capacity to support multinational research collaborations on HIV prevention among drug users. Members of the GRN also presented papers on ICAAP panels on HIV interventions for drug users, HIV prevention policies, and treatment and care for injecting drug users.

Attendance at the Fourth Annual Meeting of the GRN was affected by the September 11th terrorist attacks in the United States and by the length of travel from other parts of the world to Australia. While more than 80 international researchers typically register and attend the GRN meetings, 64 were able to attend in 2001. However, their ranks were supplemented 25 percent or more by interested researchers, practitioners, representatives of national and international government organizations, and graduate students who were attending ICAAP and, at its conclusion, decided to stay an additional two days to attend the formal GRN meeting. Many participants and speakers came to the meeting from Asia and the Pacific Region, including China, India, Pakistan, Thailand, Vietnam, Malaysia, Indonesia, and Australia. Others came from Africa, Europe (including Russia and Poland), and Canada, the United States, and Argentina.

The agenda for the GRN meeting was designed to build on and reinforce themes that had been introduced in the GRN symposia during the ICAAP meeting. The first panel addressed the research implications of IDUs as major multipliers of HIV to the general population. Research findings were presented on the spread of HIV among IDUs in the Netherlands, the spreading epidemic in the Newly Independent States of the former Soviet Union, and the heightened risk for HIV transmission by commercial sex workers who are or who become IDUs. The second panel presented preliminary findings from the Evidence for Action initiative. The initiative, sponsored by WHO, is intended to provide policymakers with state-of-the-art reviews on the effectiveness of different HIV/AIDS prevention and treatment interventions for IDUs. Under the direction of Dr. Andrew Ball, the WHO has commissioned a series of 11 papers that address different aspects of the Evidence for Action initiative and draw upon the expertise of GRN members from around the world. The theme of the third panel also centered on interventions, specifically on strategies for adapting them to the level of prevalence among IDUs on the one hand, and the general population on the other. The panel concluded with a presentation on governmental action and commitment to preventing HIV epidemics, with a focus on seven countries in Asia.

An important objective of this meeting was to continue the work the GRN began in 2000 for its Third Annual Meeting in Durban, South Africa, on the development of a GRN Indicators Database, with reports on the current status of the database and its future plans, methodological challenges associated with data collection, and governmental perspectives on the purpose and importance of a global

indicators database for HIV prevention in drug-using populations.

The GRN meeting concluded with a session on its accomplishments and future directions, including discussions of its mission, research goals, strategies for disseminating its products, future organization and funding sources, and governance.

NIDA is pleased that publication of the *Proceedings* of Fourth Annual Meeting of the GRN will coincide with the XIV International AIDS Conference in Barcelona, Spain in July 2002. The report highlights the considerable progress made in understanding the epidemiology and prevention of HIV/AIDS among drug users and in developing innovative and cost-effective preventive interventions. Yet, despite these advances, HIV/AIDS is spreading among drug-using populations around the world, and thereby challenging HIV prevention researchers and policymakers to remain alert and responsive to avert the further spread. As it enters its fifth year, the GRN will continue to evolve and advance HIV prevention science and knowledge to slow, prevent, or stop the rate of HIV/AIDS transmission among drug-using populations in diverse settings around the world.

Meeting Highlights

Opening Remarks

The Fourth Annual Meeting of the Global Research Network (GRN) on HIV Prevention in Drug-Using Populations was held on October 11–12, 2001, in Melbourne, Australia. The meeting was co-chaired by Drs. Alex Wodak, of St. Vincent's Hospital in Sydney, and Nick Crofts of the Macfarlane Burnet Center for Medical Research in Victoria. They opened by describing the response of the Australian health care establishment to the AIDS epidemic and its progression over the past 10 years. The effectiveness of Australia's AIDS intervention efforts has depended on the timely recognition of the epidemic and immediate action to implement evidence-based HIV prevention policies. A hallmark of the Australian response to the HIV/AIDS epidemic has been the close cooperation between government officials and the bureaucracy on one hand and the medical and scientific communities on the other, along with acceptance by the affected community as equal partners.

Dr. Wodak introduced hematologist David Penington, Emeritus Professor and former Dean of Medicine at Melbourne University. Dr. Penington played a seminal role in developing the country's policies with respect to AIDS and illicit drugs in the early 1980s, as the head of an AIDS Task Force under the auspices of the National Health and Medical Research Council of Australia. He began his presentation by noting that a key component of the Australian response was a commitment to promote community understanding of AIDS as a public health problem that could be managed in a rational, scientific way, rather than by social stigmatization or criminal sanctions, through the collection and dissemination of scientific research data and information. In addition to the AIDS Task Force, other task forces were formed to liaise with scientific institutions, government bodies at different levels including the U.S. Centers for Disease Control and Prevention (CDC), and advocacy groups that represented subgroups and at-risk populations. Nevertheless, some of the Task Force's recommendations, such as decriminalization, needle exchange programs (NEPs), and trials with buprenorphine and naltrexone, were unpopular with the authorities. Dr. Penington's retirement has not altered his continued commitment and participation in efforts to change public attitudes toward HIV/AIDS in the hopes of influencing political decisions.

According to Dr. Crofts, working directly with the affected community is one of the most efficient and effective ways of countering the AIDS epidemic. Dr. Crofts introduced Annie Madden, a long-term injection drug user and currently an executive officer of the Australian Intra Venous League (AIVL). As the national umbrella organization of drug users, AIVL has state and territorial branches throughout Australia. Ms. Madden emphasized that AIVL and its member organizations are run by and for current drug users to provide advice, education, and nationwide advocacy. Some member organizations are fairly large, with a degree of government funding and a range of programs and peer-based services, whereas others are relatively anonymous local networks with limited resources. All arose more or less simultaneously throughout the country, sometimes among people who had never met before, in response to the emerging AIDS epidemic in the1980s. AIVL has published guidelines for safe injecting practices and for ethical research involving users of illegal drugs. Through these and other activities, AIVL is achieving widespread recognition among government officials and researchers and is often invited to participate in official decisionmaking functions, such as advising steering committees for research planning.

Research Implications of IDUs as Major Multipliers of HIV to the General Population

In his introductory presentation, Dr. Inon Schenker of the World Health Organization (WHO), chair of the first scientific session, provided an overview of how risky sexual behavior among injection drug users (IDUs) not only can lead to further spread of HIV among IDUs but also can transmit the infection to the wider non-IDU population. The potential risk for HIV transmission from the drug-using to the general population as well as the future course of the epidemic are determined by the frequency and nature of the links between the two populations. Most efforts in HIV epidemiology, prevention, and policy formulation have focused on individual knowledge, attitudes, personality, and behaviors. This approach ignores the fact that people have social and behavioral ties of various types and strengths. One of the most fruitful approaches to AIDS research has been the hypothesis that HIV transmission patterns depend on interactions between individual behavior and the interconnected chains or clusters of individuals ("networks") with whom a person comes in contact. As described more fully in a subsequent presentation, methods for studying network interactions can contribute to our understanding of how HIV and similar infections spread, how risk behaviors are shaped, and how prevention efforts can be optimized.

Dr. Eline Op de Coul of the Dutch National Institute of Public Health and the Environment pointed out that, as in most European countries, the AIDS epidemic in the Netherlands is concentrated in active networks of high-risk populations. These populations consist mostly of IDUs, and in some areas, men who have sex with men (MSM). Approximately one-half of IDUs reported steady and casual sex partners who were not IDUs and do not consistently practice safe sex. Because this situation creates a potential for AIDS transmission from IDUs to the general public, IDUs have been surveyed repeatedly to determine their HIV prevalence and the nature and level of their risk behaviors. In this particular study, blood chemistry investigations identified strains of HIV specific to Dutch IDUs among people who had been infected heterosexually, suggesting that preventive activities should focus not only on reducing injection risk but also on promoting safer sex.

Dr. Karl-Lorenz Dehne of the Joint United Nations Programme on HIV/AIDS (UNAIDS) addressed the question of the HIV epidemic among the Newly Independent States and how far it might spread. The explosive increase of HIV infection in Russia and other Eastern European countries is largely concentrated within IDU networks, with heterosexual spread apparently occurring within and immediately around those networks. Nevertheless, highly elevated IDU-associated HIV prevalence in some isolated localities may trigger local heterosexual epidemics. Researchers have attempted to model the potential spread of the epidemic to assist the development of appropriate response strategies for these regions. However, projections of the prevalence among the non-injection population vary widely because of the scarcity of data, particularly with respect to sexual networking among drug users. Moreover, patterns of drug use and HIV prevalence differ sufficiently from other geographic areas so that generalizations based on other regions are not applicable. An additional practical consideration is that social policy development in the former Soviet Union must take place within the evolving social support approach that emphasizes the integration of services to at-risk populations.

When a person sells sex and injects drugs, the risks for HIV can be extremely high. Some IDUs may start to sell sex to get drugs, and some sex workers may take up injecting. According to Dr. Carol Jenkins of the U.S. Agency for International Development (USAID) in Cambodia, the contexts and constraints of these different situations can be different. For example, in Atlanta, where 70 percent of IDUs exchanged sex for money or drugs, survey results show that IDUs who exchange sex for money do not consider themselves sex workers or MSM. A person's recognition of vulnerability to AIDS may be hindered by lack of risk-group identity, hindering education-based prevention efforts targeted at those populations. Some HIV prevention programs targeted at sex workers have proven successful, however, despite a characteristic lack of government support. Keys to the success of these programs include accessibility and a non-punitive atmosphere.

Dr. Samuel R. Friedman, of the National Development and Research Institute (NDRI) in New York City, summarized the importance of understanding risk networks and social networks in preventing the potential spread of HIV. Social networks link individuals by influencing general behaviors. Risk networks consist of personal contacts that can carry infections. Both types of networks can range from one-on-one relationships to the entire set of complex direct and indirect interactions of multiple networks on different levels that may cover entire communities (i.e., sociometric networks). Overlapping social and risk networks can help explain the spread of infection throughout or beyond a community. It is critically important to keep HIV out of the core components of networks, which are centers of concentrated overall group activity. Network cores can also serve as centers of prevention-message dissemination and behavior change. AIDS prevention programs using street-based outreach models have demonstrated success among IDUs in Chicago and among MSM in small cities. Such programs depend on the recruitment of peer opinion leaders to endorse and disseminate harm-reduction information and in some cases to distribute needles or condoms. The best results have been obtained in stable, established networks that have well-defined boundaries.

Preliminary Findings from *Evidence for Action*

In response to the urgency of dealing with the global HIV/AIDS situation, agencies in many parts of the world may be basing AIDS-related policy decisions on insufficient or unreliable science-based evidence. "Evidence for Action on HIV Prevention Among Injecting Drug Users" is an ongoing program sponsored by the WHO to synthesize existing evidence for the effectiveness of different interventions for HIV prevention among IDUs. Twelve literature reviews are being conducted in different areas with an emphasis on good research practice and rigorous evidence. Assessment and surveillance tools, policy and programming guidelines, intervention tools, and outreach training guides are also being developed. Dr. Andrew Ball of the WHO's Department of HIV/AIDS chaired a working session on the project and provided an introductory overview. Dr. Ball emphasized that the current draft review papers, although not nearly

complete, will at least provide baseline information until the remaining gaps can be filled. He reminded the audience that the project had been conceptualized in part at a previous GRN meeting, and he urged attendees to provide comments, information, and advice based on their individual knowledge of specific geographic areas.

Only 5 of 12 literature reviews were presented in the limited time provided. Speakers described the objectives, modes of delivery, and scope of implementation for each intervention they discussed, and they presented evidence on the effectiveness of the intervention across different cultures and contexts, with particular attention to parts of Asia and Eastern Europe.

Élise Roy of the Montreal Public Health Department discussed the effectiveness of HIV prevention for young and new IDUs. Online searching identified only two projects in Australia and three in North America that included an evaluation component. No projects were identified in Africa, Europe, India, or Latin America; data on Asia were not available. Peer outreach appeared to be the primary approach used with these young populations. Most such interventions consist of education, referral for HIV testing and basic needs, and the provision of risk-reduction materials (e.g., condoms, bleach, needles). Online searches for programs with an evaluation component to prevent the transition from sporadic to regular injection drug use resulted in only two projects in the United States and one in England. In these programs, group-level peer-mediated counseling and education about safer injecting practices significantly reduced the frequency of injection risk behaviors after a mean followup interval of 9 months.

Research on HIV programs that target high-risk, marginalized, and vulnerable groups of injectors are relatively sparse. Dr. Kate Dolan of the National Drug and Alcohol Research Center at the University of New South Wales described HIV prevention programs and their effectiveness for four marginalized IDU groups: prisoners, indigenous injectors, MSM, and sex workers. Pilot prison syringe exchange programs (SEPs) in Europe have reported favorable results, with dramatic declines in needle sharing and no new HIV infections. Little information has been found on programs aimed at indigenous populations. Such programs that do exist focus largely on sex-related HIV education and are often not culturally appropriate, or they rely on the dissemination of printed educational materials above the population's literacy level. Research on MSM who also use injecting drugs has been conducted mostly in industrialized Western countries. Results indicate that not all people equate their sexual self-identity with their actual sexual practices or preference. As pointed out earlier in the context of sex workers, the lack of group identity among a given high-risk population may foil attempts to target that population. Sex workers represent another elusive population, although New Zealand maintains (separate) drop-in centers for both male and female sex workers, offering drug use education and condoms.

According to Dr. Don C. Des Jarlais of the Beth Israel Medical Center in New York City, CDC is conducting meta-analyses of HIV intervention programs in the United States and other countries that are aimed at reducing sexual risk behavior among IDUs. Peer-led AIDS and HIV education was found to be the strongest predictor of sex risk behavioral change in both industrialized and developing countries. Unfortunately, analysis of even the most rigorous studies failed to provide any basis for determining the relative effectiveness of different specific types or degrees of intervention. Results of a major cross-sectional study by WHO in 12 cities in industrialized and developing nations and results from a meta-analysis suggest that users will change behaviors to avoid becoming infected and transmitting to their regular sex partners. Additional research is especially important now to identify strategies for adapting current prevention programs to different cultural and national settings to produce larger, consistent reductions in sex risk behaviors.

Peter Aggleton of the Institute of Education in London evaluated the role of information and education strategies in AIDS prevention for IDUs. Such strategies have helped alert potential clients to the availability of services; provided information on HIV and safer drug use; and facilitated personal risk assessments, behavioral skills training, and stress management. In addition, media advocacy programs can influence policymaking and combat stigma. To be successful, information and education efforts must have realistic and measurable objectives, use a wide range of appropriate media, and be targeted directly to a specific audience. In particular, different forms of education are needed to address the specific needs and concerns of women, racial and ethnic minority groups, and sexual minorities.

Dr. Robert Ali of the Drug and Alcohol Services Council in South Australia examined the effects of drug-dependence treatment, in particular the use of methadone-substitution programs, in prevention of HIV among IDUs. In Australia, early initiation of methadone treatment was associated with prevention of a major HIV outbreak among IDUs. Relevant data from Europe and the United States are limited. In the United Kingdom, opioid treatment was found to produce significant reductions in the frequency of injection and in

the rates of needle sharing. Dr. Ali also cited two studies that suggest that methadone treatment can be helpful in preventing HIV diffusion from IDUs into the broader community.

Targeting Interventions

Dr. Anindya Chatterjee of UNAIDS introduced a session on targeting interventions based on prevalence patterns among IDUs and the general population. Different scenarios were presented along a continuum beginning with a combination of stable low prevalence among both IDUs and the general population and ending with situations characterized by high rates in both populations.

Most IDUs in Bangladesh are males who inject buprenorphine. Although safe injecting practices are unknown and needles are shared regularly, HIV prevalence has remained at 1 percent.

Dr. Carol Jenkins of USAID described attempts to establish NEPs in that country, where, although paraphernalia per se are not illegal, the police habitually harass and extort money from known drug users. Intervention program personnel have succeeded in establishing NEP drop-in centers, and also providing needles at the homes of professionals who provide injections. Widespread illiteracy complicates the dissemination of educational materials, although printed pictorial representations of safe injection practices have been distributed, and progress has been made in training peer educators. Advocacy remains the most pressing need for intervention programs, although recent major political violence surrounding the 2001 elections has hindered progress and left the future uncertain.

The term "concentrated epidemic" refers to high HIV rates among IDUs with limited spread to other populations. Examples of concentrated epidemics can be found in Tatarstan and in Indonesia; in both cases, there has been a progressive increase in HIV prevalence among IDUs, a situation that could lead to HIV spread to the general population. Larissa Badrieva discussed the constraints of establishing effective harm-reduction projects in Kazan, the capital city of Tatarstan, a republic within the Russian Federation in which the official policy is the elimination of drug abuse. The first cases of HIV among IDUs in Kazan were reported in 1996; the number of reported cases remained low until the beginning of 2001. Since that time, HIV incidence rates have increased considerably; 90 percent of new infections are among IDUs. As in many regions of Russia, a person can be sentenced to prison for possessing a quantity of heroin small enough to be contained in a dirty syringe. Consequently, IDUs may consider carrying needles to SEP outlets more risky than sharing them. Local militia often take illegal action against drug users, and the effects of outreach are countered by media campaigns that stigmatize drug users. Project Renewal in Kazan is an intervention program that targets IDUs and commercial sex workers using drugs, with NEPs, outreach work, training for drug users and clinicians, medical treatment, and counseling. The need to conduct these activities in secrecy requires outreach workers to commit themselves to a lengthy, multistage process of obtaining an introduction to the local drug community, securing their trust, and recruiting and training peer volunteers to encourage and demonstrate harm-reduction practices.

Policymakers in some countries are reluctant to acknowledge the evidence on the benefits and safety of harm-reduction programs, which are therefore often inadequate, delayed, or obstructed. According to Dave Burrows, a private consultant in Sydney, although the Russian Federation's response to the country's massive AIDS epidemic has been slow to develop, it has grown to include some NEPs and outreach programs and even tolerates the existence of at least one user advocacy organization. (These advances, however small, remain in stark contrast to the lack of progress in Kazan and other local areas.) Similarly, although some agencies in Indonesia have issued statements supporting the concept of harm reduction, interest at senior levels of government is simply lacking. According to Burrows, the Indonesian public is essentially unaware of the existence of drug or AIDS problems, and although an informal network of harm-reduction programs is developing, and public awareness has increased somewhat, harm reduction and advocacy efforts still lag behind those in Russia.

Asia produces 90 percent of the world's opium, and 60 percent of the world's opiate users live in Asia. Not surprisingly, HIV has spread rapidly through the region's IDUs. According to Dr. M. Suresh Kumar of the SAHAI Trust, HIV testing and counseling may need to reach at least 75 percent of HIV-infected IDUs to substantially reduce the risk of transmission to the general population. As in other regions, the legal, policy, and social climate of South Asia often impedes the development of a public health approach to the problem. Drug abuse is viewed as a criminal offense, and treatment professionals tend to promote correctional approaches, detoxification, or abstinence-oriented programs rather than HIV prevention strategies. Nevertheless, strategies that have proven successful include community outreach, access to sterile syringes, interventions in the criminal justice system, preventing sexual transmission, HIV counseling and testing, partner counseling and referral, preventive case management, coordinated services for IDUs living with HIV infection, and

primary drug prevention. Unfortunately, such interventions lack quality coverage in South Asia.

The final scenario discussed involves settings where the epidemic is generalized, i.e., HIV prevalence is high among both IDUs and the general population (as a working definition, 25 percent or more among IDUs and at least 1 percent incidence among the general population). Evaluating interventions under these circumstances can be difficult because of a lack of reliable data from developing countries; significant differences between urban and rural prevalence; and the possibility of rapid changes in HIV prevalence. Dr. Steffanie Strathdee of Johns Hopkins University discussed as examples the situations in Manipur (India), Burma, Ukraine, and Thailand. HIV prevalence estimates in IDUs have been reported as high as 40 percent in Thailand and 80 percent in Manipur. Prevalence among the general population in Thailand may be as high as 3 percent. In Manipur, 50 percent of the wives of IDUs are infected, as are 20 percent of commercial sex workers, only some of whom are IDUs. These statistics underscore the urgent need to prevent sexual transmission. Most such efforts (e.g., voluntary testing and counseling, which can reduce risk behaviors among both HIV-negative and HIV-positive IDUs) have been directed at individuals. NEPs are important interventions for generalized epidemics, but they are available in fewer than 40 percent of countries where IDU has been reported. Dr. Strathdee stressed that, in generalized epidemics, the focus of prevention efforts should be on people who are already infected. Highly active antiretroviral therapy (HAART), a combination of powerful antiviral medications that has been shown to prolong survival in people with AIDS, can be viewed as both a therapeutic measure for the patient and a means of primary prevention, since by reducing blood levels of the virus, it may also reduce the risk of transmission to others. Such an approach can build on the fact that in high-prevalence settings many users are well organized and have networks that can disseminate information, and many of them are willing to take on the responsibility of disseminating information.

Dr. Adrian Reynolds of the Gold Coast Hospital, Queensland, described findings from the United Nations Drug Policy and HIV Vulnerability Research Study, conducted in Asia. The study was commissioned by the United Nations Task Force on Drug Use and HIV Vulnerability in the Asia-Pacific Region and took place in seven Asian countries, including China, Vietnam, Thailand, Malaysia, Myanmar, India, and Nepal, together representing about half the world's population. It found that, although some governments have been willing to review their policies to reduce HIV risks, problems arise from unclear administrative arrangements to deal with drug and HIV problems, lack of coordination among agencies, and the formulation of policies without supportive public health and social outcome evidence. During open discussion, the point was made that AIDS prevention efforts can be improved when government decisions are based on public health evidence rather than on political evidence. To influence government decisionmakers, one must take a wider view of the contexts in which governments operate and provide them with recommendations that speak to their concerns, which are not always public health concerns per se.

Opening Remarks, Day 2

Before the official meeting began, Dr. Wodak introduced Jimmy Dorabjee who, along with Luke Samson, was instrumental in effecting major changes in India's AIDS and drug policies. India is the world's second most populous country, and it has a very high prevalence of HIV-positive IDUs. Mr. Dorabjee and Mr. Samson, both of the SHARAN Society for Service to Urban Policy, work in Delhi, which has 10 million people. Their accomplishments demonstrate what is possible in other countries as well.

A long-term IDU himself, Mr. Dorabjee noted that few clinicians or researchers were actively involved in addiction research. In 1991, he had begun working at a Delhi drug clinic that provided detoxification services, the only approach then known, despite the inability of many drug users to overcome their addiction. Encouraged by advice and practical support from other addiction workers as well as researchers and policy advocates, Mr. Dorabjee and his colleagues began administering the opiate antagonist buprenorphine to their clients, an approach similar to the use of methadone. They formed drug-user advocacy groups, began to train people in harm-reduction strategies, and established cooperative relationships with international addiction researchers, eventually obtaining support for an ongoing pilot treatment program. As a result of their success, harm reduction has become an acceptable policy in India.

Dr. Wodak then introduced Cheng Feng and Billy Stewart, of the China-United Kingdom HIV Prevention and Care Project. The project's goal is to create an effective national response to HIV/AIDS in China, where IDU is still the main HIV transmission path. Pilot projects in the Szechuan and Hunan provinces involve surveillance, sex health assessment, methadone projects, and promotion of use of condoms and clean needles. Other projects are being developed for high-risk youth, the general population, and school health education. These projects involve evaluating marketing approaches for enhancing the social acceptability of sterile needle kits, for

example, by developing culturally appropriate and attractive packaging.

GRN Indicators Database

Dr. Chris Archibald of Health Canada, who chaired the next session, acknowledged the contributions of Lucas Wiessing of the European Monitoring Centre for Drugs and Drug Addiction (Lisbon), who was to have been co-chair but was unable to attend the meeting.

Dr. Archibald said that initial HIV data collection efforts concentrated on estimating prevalence and incidence. Only recently have we moved to second-generation surveillance, in which biological surveillance is complemented with the monitoring of behavioral factors to understand and help predict the potential for HIV spread and to develop an appropriate public health response. The standardization, collection, interpretation, and integration of interventions with data from biological and behavioral surveillance on HIV associated with IDU are critical to informing and guiding appropriate prevention responses. Dr. Archibald described the types of statistics to be collected to serve as indicators of potential transmission. Because obtaining information for the optimal set of 46 proposed core indicators would be especially difficult in some countries, a reduced set of 17 indicators was proposed for discussion and consideration, including 5 context indicators (e.g., size of IDU population and main drugs injected); 7 service indicators that help quantify access to treatment, NEPs, and HIV testing; and 5 health outcome indicators (e.g., incidence and prevalence of HIV and AIDS mortality among IDUs).

The project entails several challenges. Dr. Tobi J. Saidel of Family Health International (FHI), Bangkok, noted that IDUs are the most difficult population of all those in which FHI conducts surveillance. She cautioned that bad data can be worse than no data. Because understanding and predicting the path of an epidemic requires observing patterns and trends over time, there is a need for integrated systems with tracking of HIV and behaviors across a network of different populations. Dr. Saidel discussed the meaning and importance of ensuring statistical validity (measuring the appropriate variables), representativeness (monitoring the appropriate populations), and power (the stability of association between the data and the conclusion drawn from it, a characteristic related to having a sample of sufficient size). Flexibility is also essential, because every country is different.

Dr. Anindya Chatterjee of UNAIDS discussed some additional challenges of a practical nature, noting that information obtained from established databases have been collected by agencies or researchers seeking answers to specific questions that may not be relevant to the GRN's purposes. In addition, official numbers are usually estimates that summarize smaller estimates from isolated localities that do not adequately represent larger populations and which therefore lack the validity, representativeness, and power that are essential components of rigorous statistical sampling. Ultimately, therefore, new primary data will have to be collected to fill in the gaps.

An important consideration in constructing the database is how it will be used. Dr. Sigit Priohutomo of the Ministry of Health, Jakarta, described the potential value of the indicators database from an Indonesian user's perspective. According to Dr. Priohutomo, Indonesia lacks NEPs, peer education programs for IDUs, and government-sponsored harm-reduction programs, although some tentative steps have been taken to reduce needle sharing among IDUs. Despite the AIDS epidemic, the community does not understand that injection drug use can very rapidly increase HIV not only among drug users themselves but also among the general population. Prevailing cultural and religious beliefs are not conducive to either sex- or IDU-related harm-reduction measures. The potential value of the indicator database is to provide information that will clearly demonstrate the relationships between risky sexual and drug use practices and AIDS, thereby changing public opinion; i.e., "seeing is believing." The necessary steps are as follows: (1) policymakers themselves must be involved in every step of database development; (2) the results should demonstrate successful harm reduction as the result of appropriate policy implementation; and (3) the roles of the government, other organizations, and the community must be balanced with respect to both drugs and HIV. As Dr. Priohutomo concluded, "Commitment without money is nothing; action without money is good planning wasted; and good planning without implementation is a dream."

Dr. Gundo Weiler of WHO summarized the GRN's unique role in developing the Global Indicators Database. The GRN brings together researchers and practitioners from many parts of the world with different areas of expertise to exchange information on strategies to prevent HIV among drug users. Through its annual reports, the GRN can increase the comparability of data at three levels: (1) cross-regional collection and analysis of routine data on certain indicators at various levels, as an ongoing process of the GRN; (2) coordinated data processing and packaging to ensure accessibility to all potential users, with the GRN as the focal

point for quality control and validation; and (3) analysis and reporting of data by the GRN in a way that guides interpretation.

Dr. Wodak observed that the central purpose of the database is to change the course of the AIDS epidemic; anything else is secondary. In the inevitable tradeoff between scientific rigor and utility, the balance may have to emphasize utility. The GRN can help develop criteria to judge the database's success, simplicity, timeliness, cost, and rigor.

GRN and Future Directions

Dr. Paul Gaist, of the Office of AIDS Research at the U.S. National Institutes of Health (NIH), chaired the concluding session of the meeting. He explained that the session was intended to be an interactive discussion of the future of the GRN and its mission.

Dr. Gaist introduced Dr. Moruf Adelekan, who was a founding member of the GRN when he was affiliated with the University of Ilorin in Nigeria, and who is now with the United Nations Office for Drug Control and Crime Prevention (UNDCP). Dr. Adelekan noted that the GRN does not have a formal constitution. He noted two statements in the Meeting Program to provide the context for his remarks on the accomplishments of GRN. First, the GRN provides an infrastructure for HIV prevention researchers, scientists, and practitioners to exchange information and data on the changing epidemiology of HIV/AIDS among injection and non-injection drug user populations. Second, the GRN facilitates the dissemination and application of research-based principles on effective HIV prevention strategies for drug users and their communities around the world. A major accomplishment of the GRN has been to fill the information gap on the role injection drug use plays in the spread of HIV. The GRN is the only global (not regional) network of researchers and practitioners with the sole aim of looking at HIV prevention among drug users. Another key achievement is partnership. The GRN has provided a forum for interacting with and benefiting from the wealth of experience of key researchers on HIV/AIDS. These relationships have benefited developing countries, including Africa's 54 countries. A third achievement of the GRN is its dissemination of immediate information on HIV prevention among drug-using populations. Formally, the publication of the *Proceedings* of the 1998, 1999, and 2000 GRN Meetings has provided an important resource on research devoted to HIV prevention among drug users. Dr. Adelekan offered two recommendations. First, GRN members should develop a mission statement for the network and should define its structure and organization, taking into account representation of people from all over the world, as well as gender balance. Second, the GRN should develop and maintain a Web site to facilitate dissemination of information.

Dr. M. Suresh Kumar spoke of the personal benefits of being a member of the GRN. One of the benefits has been in traveling from his native India to different parts of the world and learning from other researchers. In some areas of research, he said, there is a wall between established researchers and those from developing countries. This is not the case with the GRN, whose members have encouraged him to publish, have made him a co-editor of a journal, and have helped him become recognized as an expert in his country and in South Asia. His horizons have expanded from the city of Chennai, India, to all of South Asia, and he has had the opportunity to interact with researchers from Latin America and Africa. He also cited the benefit of giving presentations and publishing research in the *Proceedings* of the GRN Meetings and of citing those documents as a reliable reference source. He concurred with Dr. Adelekan's recommendation to develop a GRN Web site as a means to expand communication among researchers in the field, and he encouraged collaboration among established researchers and those from developing countries, especially in local settings. He also stressed the importance of the Global Indicators Database, illustrating it with his own experience of collecting data for the working document that was prepared for the 2000 meeting in Durban. Limited as the data for India were, he was able to present them persuasively in a formal document to policymakers.

The podium was then turned over to Dr. Wodak to discuss the mission and future direction of the GRN. The mission of the GRN, he said, starts with why the GRN exists. He identified seven problems associated with the prevention of HIV infection among IDUs: (1) HIV infection is spreading rapidly among and from IDUs in many countries around the world; (2) though IDUs are the major, or in some countries, second or third major group at risk of HIV infection, in many countries little attention is paid to this fact; (3) when policymakers do respond, it's often too little too late; (4) even if there is a reasonable response in some countries, it is dwarfed by the fact that the population at risk is increasing so rapidly; (5) evidence on effective measures to control the spread of HIV has been available for more than 10 years, but has done little to change the mind of policymakers; (6) research on HIV infection among IDUs seems to have limited relevance to policymakers; and (7) conversely, research on this issue seems to contribute to a failure of policy rather than to taking us forward. Given these problems, the fundamental

mission of the GRN is "to ensure that research is used as effectively as possible to minimize the spread of HIV infection among IDUs worldwide."

Dr. Wodak identified the kinds of research that need to be done. First is research on the nature and magnitude of the threat of HIV infection among IDUs. This research would involve documenting the demographics of drug users; their drug-use patterns; their HIV risk behavior; their HIV serology; predictive factors for HIV infection; and predictive factors for other important adverse consequences, such as hepatitis C, hepatitis B, and overdoses. Second is research to evaluate interventions designed to control this problem. These evaluations break down into several subcategories, including effectiveness, safety, and cost-effectiveness. Some studies look at special populations, such as ethnic populations and prisoners. Another group of studies assesses approaches for optimizing effectiveness: What scale of intervention is needed? How could the logistics of the interventions be implemented and overcome? Similarly, some research focuses on scenario forecasting: What happens if nothing is done? What happens if we maximally intervene, if we implement the effective interventions? Or what happens if we sub-optimally implement effective interventions? A third kind of research centers on the evaluation of interventions to reduce other adverse consequences, such as hepatitis B, hepatitis C, and overdose. A fourth kind identifies barriers to the adoption and implementation of effective HIV prevention strategies and evaluates measures to overcome these obstacles. Finally, there is monitoring: monitoring the epidemic, monitoring drug use and IDUs, and monitoring the implementation of interventions. This field of research is just beginning.

A further consideration is the target audience for that research, including policymakers, media and the community, other researchers and clinicians, and drug users and drug user organizations. The GRN can reach its target audiences through its published *Meeting Proceedings*, and potentially through refereed journals, supplemental issues to regular journals, books, press releases, and Web sites.

Open discussion on the mission and future of the GRN centered on the need to maintain the GRN's independence, the inherent value of the GRN as a network of researchers interacting with practitioners to identify new areas for HIV prevention research and to serve as a resource of expertise, the importance of developing the GRN's Indicators Database, and additional sources and means of funding.

The final topic on the agenda was Bridge to Barcelona. Dr. Paolo Miotti of the Office of AIDS Research at NIH described the planned structure of the XIV International AIDS Conference, which is scheduled for July 2002 in Barcelona, Spain. The conceptual pillars of the conference will be science and action. The science field includes the basic sciences, clinical sciences and care, epidemiology, prevention science, and social sciences, and the action field includes interventions and program implementation, and advocacy and policy. In addition, bridging sessions are planned between the scientific and action fields. A discussion followed regarding how the GRN could make its presence known at the AIDS Conference, including coordinating the submission of abstracts to ensure that the IDU/HIV issue was on the agenda, developing a bridging session, and sponsoring a satellite meeting.

The meeting concluded with recognition of Helen Cesari and Elizabeth Lambert of the National Institute on Drug Abuse's Center on AIDS and Other Medical Consequences of Drug Abuse for the work they have done to coordinate this and previous GRN meetings.

After the meeting, the GRN Steering Committee convened to discuss the issues that had been raised about the future of the GRN, including structure, cost of conducting the annual meeting, future funding, governance, and planning for participation in the XIV International AIDS Conference in July 2002. ■

Understanding HIV-1 Subtypes in IDU and Other Populations

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Injection drug users (IDUs) are a major risk group for infection with HIV. Injecting and sexual risk behavior may lead to further spread of HIV among IDUs and to the general non-IDU population. According to the second-generation guidelines for HIV surveillance (WHO/UNAIDS 2000), HIV surveillance should include high-risk groups if an epidemic is in a concentrated state (i.e., HIV is concentrated in subpopulations with high-risk behavior). The frequency and nature of links between the highly infected populations and the general population determine the future course of the epidemic.

In the Netherlands, where the HIV epidemic is, as in most other European countries, concentrated among high-risk groups, various studies were conducted to examine the potential for HIV transmission by IDUs to the general population. Repeated surveys among IDUs were conducted to determine the prevalence of HIV infection and the level and nature of risk behavior in this population. Molecular epidemiological studies were conducted in the Netherlands to determine the source of HIV subtype B strains found among heterosexuals.

Molecular Epidemiology

Introduction

Subtype B is the major HIV subtype found among homosexual men and IDUs in the Netherlands, whereas other subtypes (A, C, D, EA, F, and G) are predominantly found among the heterosexually infected individuals (Op de Coul et al. 2001). It has been shown that subtype B viruses from IDUs differ from the viruses of homosexual men based on two synonymous nucleotide substitutions and one amino-acid change, of which the most conserved is a synonymous substitution in the second glycine codon at the tip of the V3 loop (the GGC pattern) (Kuiken et al. 1996). Another study provided evidence that the risk group-associated distinctions between viruses in the Netherlands are likely the result of a founder effect (Lukashov et al. 1996).

Methods

From 54 individuals infected with HIV-1 subtype B viruses as a result of heterosexual contact, gp120 V3 sequences were obtained (Lukashov et al. 1998). The HIV-1 V3 sequence patterns of Dutch IDUs were used as molecular markers to study the origin of HIV-1 strains in heterosexually infected individuals in the Netherlands. The sequences were analyzed by phylogenetic tree analysis, signature pattern analysis, and genetic distance calculations.

Results

Signature pattern analysis revealed that 22 individuals (41 percent) had the GGC pattern specific for Dutch IDUs. Other previously described IDU sequence patterns were found significantly more often among the GGC sequences than among the non-GGC sequences from heterosexuals. Phylogenetic analysis revealed clustering according to the sequence patterns described above. All GGC sequences from heterosexually infected individuals, with a single exception, clustered together with the consensus sequence of Dutch IDUs, whereas all non-GGC sequences clustered separately from the GGC sequences (again with a single exception) and with the global subtype B consensus.

Conclusion

These findings point to the likely common origin of the viruses in Dutch IDUs and the GGC viruses in heterosexuals. It is likely that a considerable proportion of the GGC viruses in heterosexually infected individuals in the Netherlands may have originated from Dutch IDUs.

HIV Surveillance Among IDUs in the Netherlands

In the Netherlands, anonymous repeated cross-sectional surveys among IDUs were conducted to determine the prevalence of HIV infection and the level of risk behavior in this population as well as to assess the potential for HIV transmission.

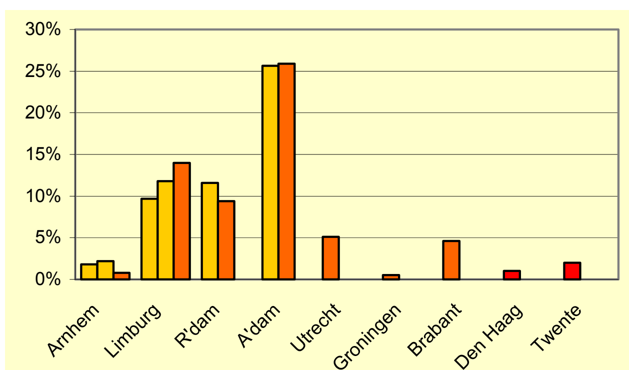
Methods

Data were collected in a national, ongoing, biannual, cross-sectional study among IDUs that started in 1991. Participants were recruited through methadone care, daytime care projects, street prostitution projects, and "on the street." A short questionnaire on demographics, previous HIV testing, and risk behavior was administered, and a saliva sample was collected for HIV antibody testing. In the period 1991–2000, 15 surveys were carried out in 9 cities or areas in the Netherlands (Beuker et al. 2001).

Results

More than 4,000 saliva samples were collected in the surveys. HIV prevalence varied between cities from 1 percent to 26 percent (Figure 1). In cities with repeated surveys, HIV prevalence was constant in all but one city (Heerlen); in this city in the Limburg region, an increase from 11 percent in 1994 to 22 percent in 1999 was found.

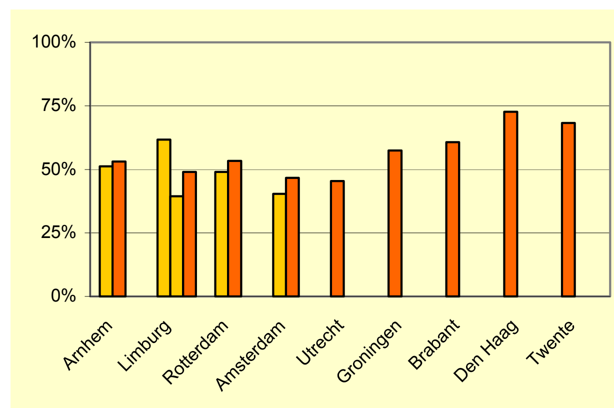
Figure 1. HIV prevalence among IDUs in the Netherlands



The bars in the graph represent the various surveys. In some areas repeated surveys were conducted (in those cases, the darker bar = last survey).

Injection risk behavior through borrowing of needles or syringes was reported by 11 to 42 percent of the participants. In one city with a low HIV prevalence, injection risk behavior was very high in the first survey (42 percent in 1992) but decreased over time (16 percent in 1997). Sexual risk behavior through unprotected sexual contacts was highly prevalent among steady partners (79 to 96 percent). Many IDUs have a steady partner who is not an IDU (35 to 75 percent). Similarly, the percentage of casual partners who are not IDUs was reported as 47 to 55 percent. Inconsistent condom use with casual partners ranged from 39 to 62 percent (Figure 2).

Figure 2. Inconsistent condom use with casual partners



The bars in the graph represent the various surveys. In some areas repeated surveys were conducted (in those cases, the darker bar = last survey).

These cross-sectional surveys show that HIV prevalence rates were low to moderate in the period 1991–2000 in the Netherlands, except for Amsterdam (26 percent) and Heerlen (22 percent). HIV prevalence was stable over time except in Heerlen. Injection risk behavior as well as sexual risk behavior were frequently reported in all cities. The surveys also showed that many IDUs have partners who are not IDUs.

This presentation, in which the results from various studies conducted in the Netherlands were included, shows that there is a potential risk for HIV transmission from IDUs to the general population. Approximately half of the injection drug users reported steady and casual sexual partners who are not IDUs. Furthermore, many IDUs do not use condoms consistently. The molecular epidemiological studies provide evidence that HIV-1 strains specific for Dutch IDUs are found among heterosexually infected individuals in the Netherlands. Taken together, these results indicate that IDUs are multipliers of HIV to the general population. Therefore, preventive actions should focus not only on reducing injection risk behavior, but on the promotion of safe sex as well. ■

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HIV Among IDUs and the Extent of Heterosexual Spread in Eastern Europe

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The HIV epidemic in Eastern Europe has so far been concentrated among drug users. Attempts to predict the spread of the epidemic into the general population have been limited by the lack of relevant research findings, especially in the area of sexual networking among drug users. Moreover, available data suggest that HIV epidemiology in Eastern Europe is region- or country-specific and not comparable to the situation in Asia. This paper examines information on drug use patterns and trends, HIV case reporting and prevalence in injection drug users, and the current extent of heterosexual spread, and discusses response strategies based on the latest projections.

The region bordering on Afghanistan and Central Asia, which is on the main trafficking routes from Central Asia to Western Europe and beyond, has witnessed a massive increase in drug production and trafficking. Afghanistan itself is the leading producer of opium, and there is an established culture of injection drug use (IDU) throughout the region. Data indicate that 70 to 90 percent of all illicit drug use in the area is by IDU. Homemade opiates are still used this way, but heroin injection is increasing and amphetamines are being injected as well. Observations of the drug production process of homemade opiates as well as virological studies show that the drug is probably not being contaminated during the production process, despite the fact that blood is introduced as a cleansing agent during production. Subsequent distribution of the drug and sharing of equipment, however, does place users at risk of HIV infection.

In 1999 the Joint United Nations Programme on HIV/AIDS collected all available data from the U.N. Drug Control Programme (UNDCP) and other sources to estimate the number of drug users in the different Eastern European countries. A clear gradient from east to west was evident, with the countries of the former Soviet Union having a larger per capita rate of drug users than the western countries. Overall, approximately 1 percent of the total population of the region injects drugs. However, the rate is higher in some segments of the population and in some cities, and the rate of young people who inject drugs in some sites is as high as 10 percent. Case reporting data show an explosive increase of HIV infection in Russia, with more than 80,000 new infections reported in the first 9 months of 2001 alone; in 90 percent of these cases, the spread is among IDUs. Similarly, IDU accounts for the majority of HIV infections in Russia, Ukraine, Moldova, Latvia, Belarus, and some Asian countries, although heterosexual transmission does account for 20 to 30 percent of cases in some cities.

The local prevalence of HIV among drug injectors varies widely. In some cities it has increased to 20 percent, and in some cases as high as 60 percent, whereas in other areas prevalence is still below 10 percent. In Belarus, for example, prevalence is high in Svetlogorsk, but remains below 5 percent in other regional centers such as Mogilev and Vitebsk. The increase of the epidemic in this area is impressive, considering that it did not begin to spread there until 1996 (see Table 1).

Available information suggests that the HIV epidemic is not yet generalized but still concentrated among drug users and their associated sexual networks. In some countries, data from the traditional reporting system show an infection rate of 5 to 8 percent among sexual partners of persons who are HIV positive. In Ukraine, 6 percent of the prison population were found to be infected. In Kiev and in the southern city of Nikolaev, 2 to 4 percent of patients with sexually transmitted infections (STIs) are HIV positive. In prenatal care settings infection is below 1 percent. Limited data identify at least three cities in eastern Europe where HIV prevalence among sex workers has reached approximately 15 percent, in contrast to low rates in most of Central and Southeast Europe.

In the former Soviet Union, approximately one-third of registered HIV cases in those sites where prevalence is highest are attributable to heterosexual transmission. The proportion of infections among women in this region is reaching 40 percent in some places, which may be an indication of heterosexual spread, since most drug injectors are male. In addition, HIV prevalence is increasing among sex workers and STI patients. However, these findings are not inconsistent with a concentrated epidemic. For example, although the percentage of new HIV infections attributable to drug users in Poland has varied over 10 years from 70 percent to as low as 40 percent, the epidemic there has clearly not generalized.

Table 1. HIV prevalence among drug injectors in the Newly Independent States

Location	Year	Characteristics	Sample size	Prevalence (%)
Ukraine				
Poltava	2000	needle/syringe exchange	259	42.1
Odessa	2001	needle/syringe exchange	250	68.0
Kharkiv	2000	needle/syringe exchange	250	17.6
Kryvyi Rig	1999	needle/syringe exchange	249	28.1
Russia				
St. Petersburg	2001	needle/syringe exchange	252	35.7
Novosibirsk	2000	IDUs seeking care	239	5.9
Belarus				
Svetlogorsk	2000	IDUs seeking care	250	76.0
Minsk	2000	IDUs seeking care	224	22.3
Mogilev	2000	IDUs seeking care	224	1.8
Vitebsk	2000	IDUs seeking care	154	0.0
Armenia	2000	routine testing	186	6.5
Latvia	2000	routine testing	??	17.5
Kazakstan	1999/2000	registered IDUs	21,013	0.5
Temirtau	2000	needle/syringe exchange	415	26.0

There are caveats. With respect to gender ratios, increased incidence among women could result from an increasing proportion of women injecting drugs. This is likely to be the case, for example, in Russia, where two-thirds or more of mothers of HIV-infected babies are either IDUs or partners of IDUs, and the source of infection among the remaining one-third is unknown. The data permit no conclusion as to the current extent of HIV infection among secondary partners of drug injectors. In addition, data interpretation suggests that even sex workers so far are mainly infected through needle sharing and other drug-related risks rather than infected through sex. Obviously their non-injecting partners are at risk of HIV due to heterosexual transmission.

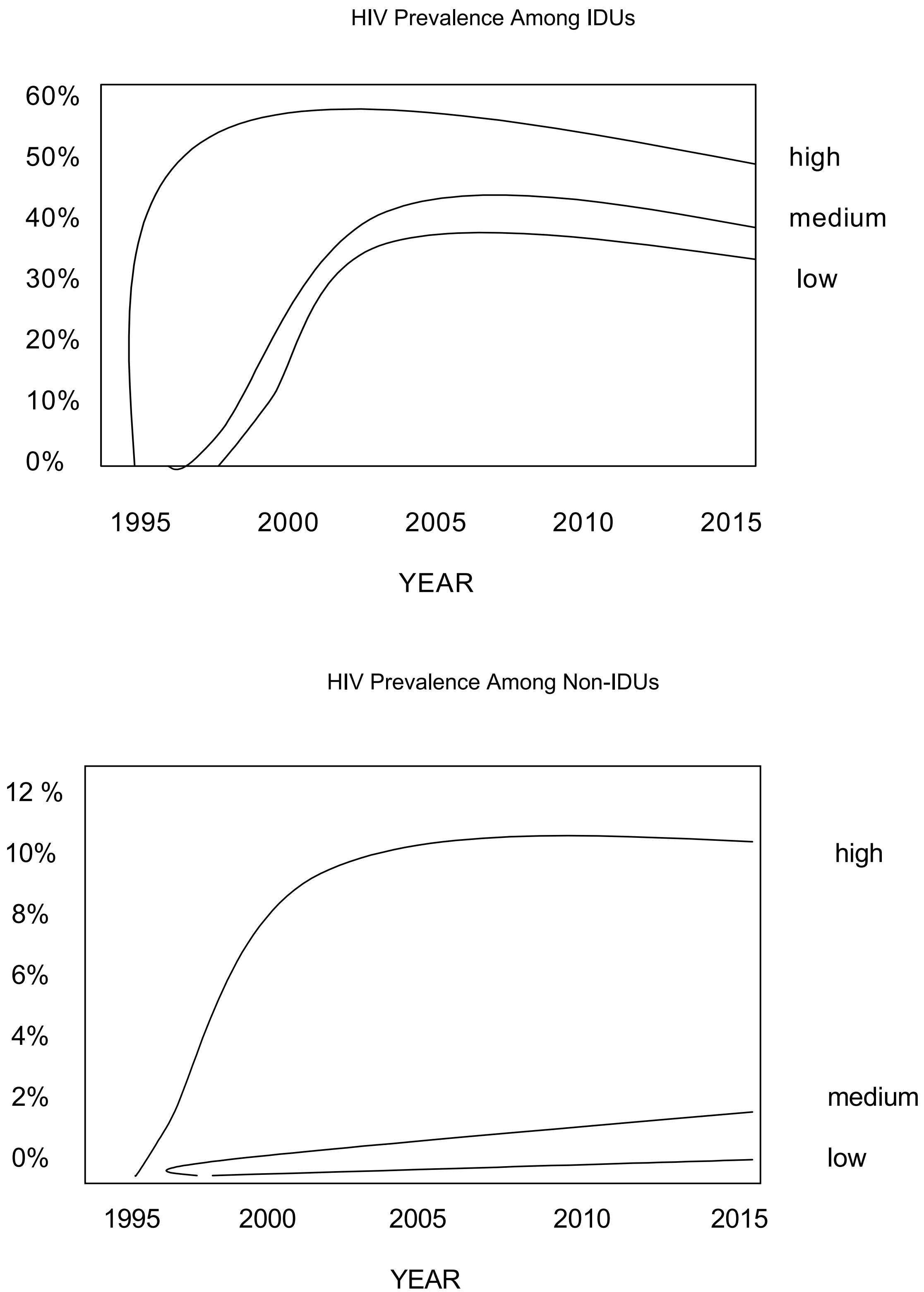
Thus a large IDU population in eastern Europe, especially in Ukraine, Russia, and other Newly Independent States, is particularly vulnerable to HIV, where it is still concentrated in drug users despite an emerging spread among sex workers and STI patients. They may have been infected either through needle-syringe sharing or unprotected sex. Overall, heterosexual spread still appears to occur within and immediately around IDU networks. Because this situation can trigger increased heterosexual spread, it is necessary to estimate the potential extent and speed of this spread in specific contexts.

Various agencies have attempted to predict the spread of the epidemic despite the dearth of evidence. Data based on STI prevalence paint an ominous picture. The existence of a large-scale syphilis epidemic in Russia and Ukraine suggests a high risk of generalization of HIV. However, the extent of overlap between the population infected with syphilis and the population vulnerable to HIV is not known. Researchers at the Imperial College in London and at the United Kingdom's Department for International Development (DFID) have tried to model the spread of the epidemic based on available data. It is still plausible that HIV prevalence among IDUs could level off at between 30 and 60 percent, depending on the type of interventions employed. Projections of the prevalence among the non-injecting population vary widely, however (see Figure 1).

Different agencies have different approaches to HIV planning and strategy, given the social, economic, and epidemiological circumstances involved. Some believe that a generalized epidemic is unavoidable under any circumstances, and that therefore planning should not focus on drug injectors. Others believe that a generalized epidemic *could* have been avoided, but because the epidemic has already been spreading from drug users into the wider population for 5 years, programs should be directed mainly at heterosexual spread instead. Still others say that IDUs will remain the most affected population, and that planning should therefore concentrate exclusively on harm reduction, since the future is unpredictable.

Our approach is to be pragmatic while still planning beyond the immediate future. Prevention and care among drug injectors and their sexual networks should remain a cornerstone of our Eastern European strategy, and, in fact, such a regional strategy has already been developed. As for the rest of the population, if one percent of the total

Figure 1. Potential HIV Prevalence Among IDUs and non-IDUs



population are injecting drugs, while 10 percent of young people in some areas are injecting drugs, it cannot be said that the general population consists exclusively of non-injectors. In fact, these figures indicate a very pervasive pattern that amounts almost to generalized drug injecting. This situation is very different from the small groups of injectors that characterize drug use in some inner cities in Western Europe or in the United States.

Beyond immediate harm reduction, social policy in the former Soviet Union needs to change from repression to a social support approach that affects not only drug users, but also various other marginalized or at-risk populations. HIV planning must also be integrated with programs focused on reproductive health and the elderly and the programs of youth in general. ■

Injecting Sex Workers or Sex Working Injectors: Crossing Risk Zones

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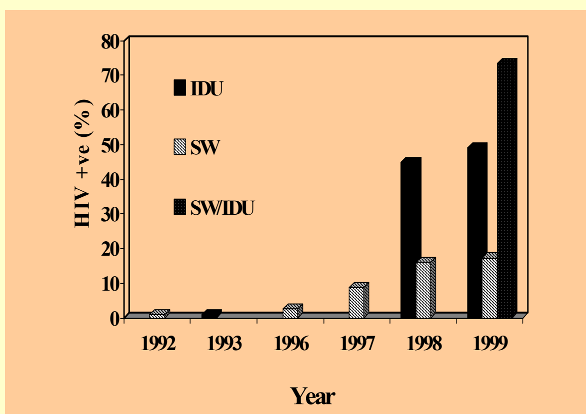
When a person sells sex and also injects drugs, the risk of acquiring HIV can become extremely high. This is not inevitable, however, and programs aimed at preventing HIV infection among sex workers who inject can be as successful as programs intended for less complex risk groups. While some sex workers (male, female, and transgender) are also IDUs, many IDUs exchange sex for money or drugs some time in their drug-using careers. The contexts and constraints of these different life situations may be quite different. Gender, age, and identity play major roles in defining these situations of risk.

The proportion of female IDUs rarely approaches the level of male IDUs. In Asia, reports indicate that no more than about 10 percent of IDUs are female (Joint UNAIDS Asia Pacific Intercountry Team and UN International Drug Control Programme 2000), but this could change and needs monitoring. Many, perhaps at least half, of these female IDUs are sex workers. Valuable data on HIV levels among these women are available from Nepal (Figure 1), showing far higher proportions infected when they are both a sex worker and an IDU.

Figure 1. HIV Levels among IDUs and sex workers in Nepal



Source: U.S. Census Bureau, 2001

In Russia and the Newly Independent States, the proportion of female sex workers who are injecting is reportedly increasing, but data are scant. In one small study of street sex workers in Vilnius, Lithuania, 24.6 percent were IDUs (Chaplinskas and Mårdh 2001), slightly higher than most estimates in Western Europe except Glascow at 75 percent (McKeganey and Barnard 1996). In most structured sex work settings, such as brothels, injecting is highly discouraged or forbidden, which could force women who inject to hide their habits. Higher proportions of IDU sex workers are found at the street level in all societies. In some settings, injecting is stigmatized by sex workers, which tends to encourage keeping one's sex trade and injecting networks separate. In other settings, the controllers of the sex trade (pimps, madams) may be drug users or dealers themselves, as in contemporary Russia and the crack cocaine business in the United States (Miller 1995).

Women IDUs, in general, have been found to be more likely to have a male IDU as a personal partner (Booth et al. 1991), to be initiated into injecting by male partners or friends (Crofts et al. 1996), and to occupy a subordinate role in the control of the drug use pattern (Miller and Neaigus 2001), although these studies have not specifically examined female sex worker IDUs compared to other women IDUs. Female sex workers, who do *not* inject but whose main partners do, are also at heightened risk of HIV due to increased pressure to earn money by taking more clients and due to their continued sexual relations with an IDU (Government of Bangladesh 2000). Imprisonment also contributes to increasing risk of HIV infection (Estebanez et al. 2000). It is likely that gender mediates all these conditions.

In a recently published 10-year (1988–1998) prospective study of 1,874 African-American IDUs in Baltimore, among whom HIV incidence was declining, women's increased risk of acquiring HIV was not associated with engaging in the sex trade (after controlling for other sexual risk factors) but was more than double if they recently had a sexually transmitted disease. Younger age (under 30) was associated with increased risk for acquiring HIV in both men and women (Strathdee et al. 2001). Many, but not all, studies of female and male sex workers show a similar pattern of greater risk

in personal as opposed to commercial sexual relationships (Ward et al. 1999; Grandi et al. 2000). Frequently, studies of IDUs show the critical period for infection is the first few years after starting to inject (Friedman et al. 1998; Garfein et al. 1996).

In the U.S. city of Atlanta, Georgia, one network study showed as many as 70 percent of injecting women also exchanged sex for money or drugs, yet did not self-identify as sex workers or prostitutes. In the same study, 56 percent of male injectors had also exchanged sex for money or drugs, often with men, and did not consider themselves either sex workers or homosexuals (Rothenberg et al. 2000).

Cultural and economic factors may influence these reciprocal proportions. In a representative sample of male sex workers in Dhaka, Bangladesh, 11.2 percent had injected, 4 percent currently. Among male IDUs in the same city who had injected for 2 years or less, 15.8 percent exchanged sex for cash or drugs the previous year and 7 percent the previous month. Transgender sex workers (hijras) in Dhaka reported 2 percent current and 15 percent ever injecting (Government of Bangladesh 2000). Transgender sex workers may have other needle-related risks from injecting silicone to alter their bodies, as in Brazil and elsewhere (Kulick 1998).

The importance of these distinctions is that recognition of one's vulnerability may be hindered by lack of a risk group identity. Injecting men who exchange sex for drugs or cash may think they have little risk for HIV as they are not "gay" or male sex workers. They may, in fact, exchange sex for drugs or cash with women. Transgendered persons may consider themselves heterosexual or not gay, or not an IDU because the drug they inject is not illicit. Messages do not penetrate deeply if people cannot identify with them.

Europe, North America, Latin America, Australia, and New Zealand all have populations of street-level sex workers who inject. Programs that offer them harm reduction and sexual health services have been in place for many years. One good example is the New Zealand Prostitutes Collective, run for and by sex workers, which operates a full needle exchange service at numerous drop-in centers around the country, with drug use education, safer sex products, legal advice, free STD treatment services, and advocacy. In addition, they operate two other agencies, PUMP, for male sex workers, and ONTOP for transgender sex workers. Injecting equipment (which includes filters and other materials) is not free, although discounts are given when used equipment is returned. New Zealand's national HIV incidence has been steadily declining since the early 1990s, and levels of HIV never reached 5 percent in IDUs or female sex workers (AIDS Epidemiology Group, 2000; Kemp and MacDonald 1999). One key to this success is that the collective does not operate in isolation but as part of a national network of needle exchange and sexual health projects set up early in the epidemic in collaboration with government.

Recently, in Eastern Europe and the ex-Soviet sphere, the Open Society Institute and the International Harm Reduction Development Program have begun to fund a group of small agencies that reach female sex workers to incorporate harm reduction in their programs, and another group of harm reduction projects to reach out to female sex workers. This arrangement has the potential to develop into the type of network achieved in New Zealand, but lacks government policy support, a serious problem in many countries (Simon 2001).

The overarching issue with regard to HIV prevention among injecting sex workers or sex-trading injectors is the need to guarantee their rights to friendly, non-punitive, easily accessible services that can provide a safe space in which to discuss the realities of their lives as well as needed services in both sexual health and drug-use harm reduction, including treatment.

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What Risk Networks and Social Networks Can Contribute to Understanding and Preventing the Spread of HIV

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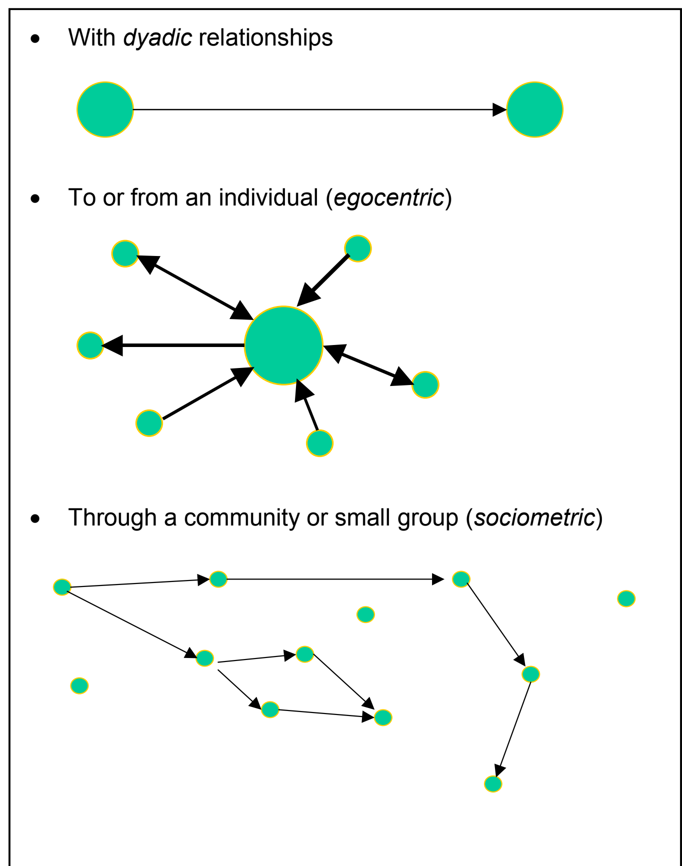
Network concepts and methods can contribute to our understanding of both how HIV and other similarly transmitted infections spread and how risk behaviors are shaped. Many prevention efforts can also be better understood if their network aspects are delineated. In spite of this, however, most efforts in HIV epidemiology, prevention, and policy have focused on individual knowledge, attitudes, personality, and behaviors. As such, they ignore the fact that people have social and behavioral ties of various types and strengths.

We may understand networks better if we make a distinction between social networks and risk networks (Neaigus et al. 1994). Social networks are those ties that link individuals in terms of conversation, social modeling, or other factors that can influence behaviors. Risk networks are ties that can carry infections. For HIV among adults in developed countries, such ties now are pretty much limited to sexual relationships and drug-injection relationships. Risk networks can, however, include such relationships as mother-child breastfeeding and blood banks.

Both kinds of networks may be looked at in terms of dyadic relationships, egocentric relationships, or sociometric relationships (see Figure 1). Dyadic relationships are those between two people. Egocentric networks are all the network ties (of a given type) that an individual engages in directly with other individuals. Sociometric networks are the entire set of ties—direct and indirect—that link a group of people. Thus, they can help explain the spread of an infection or a prevention message through or beyond a community.

Figure 1. Social network ties can carry influence; risk network ties can carry infections



Research on the social networks of drug injectors has shown that:

- In dyadic relationships, risk and transmission behaviors are independently and significantly more likely in close relationships. This has been shown in instances of failure to use condoms consistently (Friedman et al. 1994b), in receptive syringe sharing in injection relationships (Neaigus et al. 1995), and in distributive syringe sharing in the relationships of HIV-positive injection drug users (IDUs) (Friedman et al. 1996).
- Sociometric network location also affects risk behaviors (Friedman et al. 1999a). "Network cores" are centers of prevention message dissemination and potential innovation (Friedman et al. 1999b; Heckathorn et al. 1999).

Research on the risk networks of drug injectors has shown that:

- Among new injectors (here defined as drug injectors in their first 6 years of injection), HIV infection is more likely among those who both have high-risk injectors in their egocentric networks and engage in receptive syringe sharing (Neaigus et al. 1996).
- Risk network characteristics may be related to the high HIV risk of drug injecting women who have sex with women (Friedman et al. 1998b; Young et al. 2000).
- Sociometric network location is related to the probability that a drug injector is HIV infected or has been exposed to hepatitis B (Friedman et al. 1997, 1999a). Comparison of research in New York City with research in Colorado Springs suggests that it may be very important to keep HIV out of the cores of large components. Thus, in Colorado Springs, in studies by Rothenberg and associates (1995) and Potterat and colleagues (1999), HIV was present only in small components and at the periphery of the large component. This is in contrast to New York, where HIV prevalence in the large component was approximately 45 percent in the early 90s (Friedman et al. 1997).
- The interaction of network characteristics with "primary infection" can help explain the stabilization of seroprevalence in cities at rates of 30 percent to 70 percent without later large-scale increases (Friedman et al. 2000).

One limitation of many network studies is that network data typically are based on information about sexual or injection dyads. These data do not do a good job of assessing risk links during common participation in activities at "quasi-anonymous risk nodes" such as shooting galleries or group-sex events. In the Bushwick community of Brooklyn, New York, the authors have collected data about quasi-anonymous risk nodes including shooting galleries; sex and drug parties with large numbers of lesbian, gay, bisexual and transgender participants; other parties where sex takes place; threesomes and foursomes; and "train bangs" in which only some participants know each other. Weeks and colleagues (under review) have shown that, in Hartford, Connecticut, considering shooting galleries augments data about network linkages among IDUs. Specifically, these data show that shooting galleries in that city link Hispanic and African American injection networks that otherwise would have appeared almost entirely unconnected.

Figure 2 presents some of the issues involved in group sex events.

Figure 2. Epidemiologic and sociobehavioral issues in group sex

- Shapes represent people who are in each other's preexisting sociometric sexual networks.
- Group sex can carry infections across preexisting networks.
- Onlookers, whether or not they have previously had sex, may experience emotional or behavioral change.
- If there is considerable group sex activity in a locality, and IDUs take part in it, this might increase the multiplier effects of IDU-based HIV epidemics.

User Intervention Models in Prevention Efforts

Network concepts and diagrams are helpful in thinking about prevention. Unlike models that consider only effects on individual clients, they help us think about how a prevention effort may affect the client's friends and partners, the risk community as a whole, and the peer structure of communities that users' groups are trying to organize. This helps us get "outside the box" of thinking only about the individual, but also keeps us from forgetting about her or him. Following are brief illustrations using social network concepts and diagrams to think about several forms of interventions.

Diffusion models

Social diffusion models (Figure 3) consider the characteristics of both cultures and innovations that make it more or less likely that a given innovation will be adopted by a given subculture. Outreach projects typically include diffusion aspects inasmuch as they expect the information and suasion that outreach workers convey to IDUs or others at risk to be passed on by these people to others. One issue involved is the tipping point for acceptance of the new procedures. In general, individuals are more likely to accept an innovation if a larger proportion of their friends do so, a process that can be thought of as involving a critical mass or tipping point at which, once a sizable minority of a group takes up new ways, others follow suit (Valente 1995). A second issue is the ratio of outreach workers to IDUs. For example, one reason why more drug injectors in San Francisco than in New York City had adopted the use of bleach to disinfect syringes was the much higher ratio of outreach workers to drug injectors in San Francisco. Whereas 50 workers served 20,000 IDUs in San Francisco, 75 outreach workers were attempting to reach an estimated 200,000 drug injectors in New York (Friedman et al. 1992).

Indigenous leadership-focused models

Indigenous leadership-focused models (Figure 4) typically combine elements of diffusion theory and community organizing theory to get naturally occurring group leaders to exhibit and communicate to their peers an innovation such as safer injection procedures or safer sex (Friedman et al. 1994a). Because the innovation may depart from the group's established social norms, these models often rely on making risk reduction strategies socially normative within the target populations. One such successful HIV intervention is the Chicago street outreach model for AIDS intervention with drug injectors, based on the identification of peer leaders (Wiebel 1988). Other examples are AIDS interventions for gay men in small cities (Kelly et al. 1991; Kelly and Murphy 1992). Such interventions seem to depend on strong leaders, established network structures, and minimal resistance from the network members. To the extent that influence patterns change rapidly, that social networks are short-lived, or that there is serious resistance to change among influential segments of a subculture, leadership-focused approaches

Figure 3. Diffusion

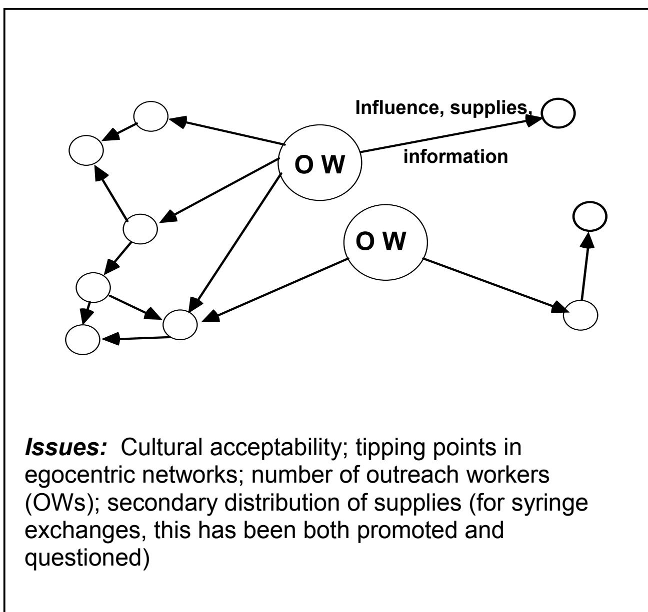
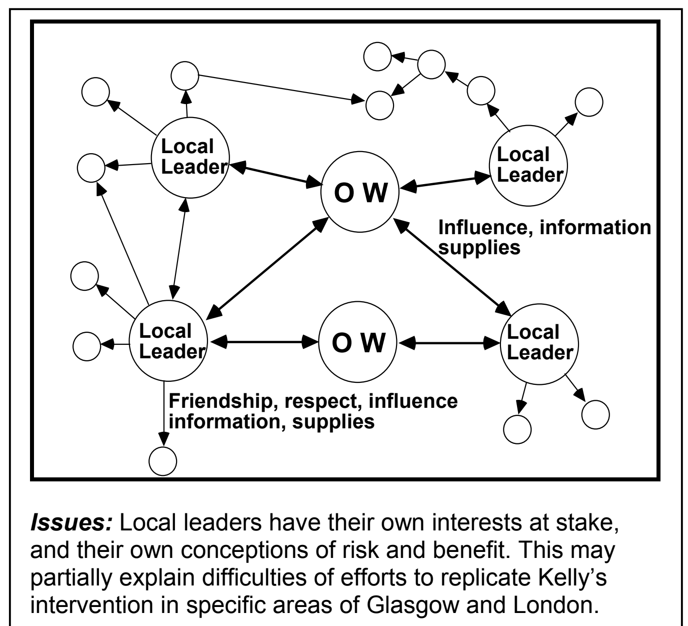


Figure 4. Indigenous leadership-focused models



may be less effective (Friedman et al. 1994a). For example, at the Brighton AIDS Impact Conference (July 2001), it became clear during a panel discussion on efforts to replicate an indigenous-leader intervention model (Kelly et al. 1991) that, among gay men in British cities, the "subjective normalization" of AIDS in some circles meant that AIDS was no longer seen as a crisis. As a result, local gay influentials were not interested in spending time and social-influence resources trying to convince their friends and acquaintances to avoid unsafe sex. As a consequence, the intervention could not be conducted as an indigenous-leader model.

Interventions directly based on network concepts

Interventions directly based on network concepts and those that target the network as the unit of intervention can be effective in reducing risky behaviors and infection levels. Latkin and colleagues (1995, 1996) used egocentric network concepts in their intervention. They asked street-recruited drug injectors to bring in persons with whom they had injected drugs for a series of six meetings. Together they discussed what the risks were, what could be done about those risks, and what social and practical obstacles they might face. They also role-played ways in which to help each other avoid high-risk behaviors. Trotter and colleagues (1996) held group meetings among drug network members, but also engaged in educational outreach and individual problem-solving sessions. In a later-generation intervention, Latkin (2000) incorporated some ideas from efforts to build drug users' organizations and other ideas from indigenous-leader models. They recruited drug-scene opinion leaders and trained them to do outreach work with their drug- and sexual-network members. Unlike the indigenous leader or user group interventions, however, Latkin's group focused on this model as a means to protective risk reduction among the opinion leaders themselves.

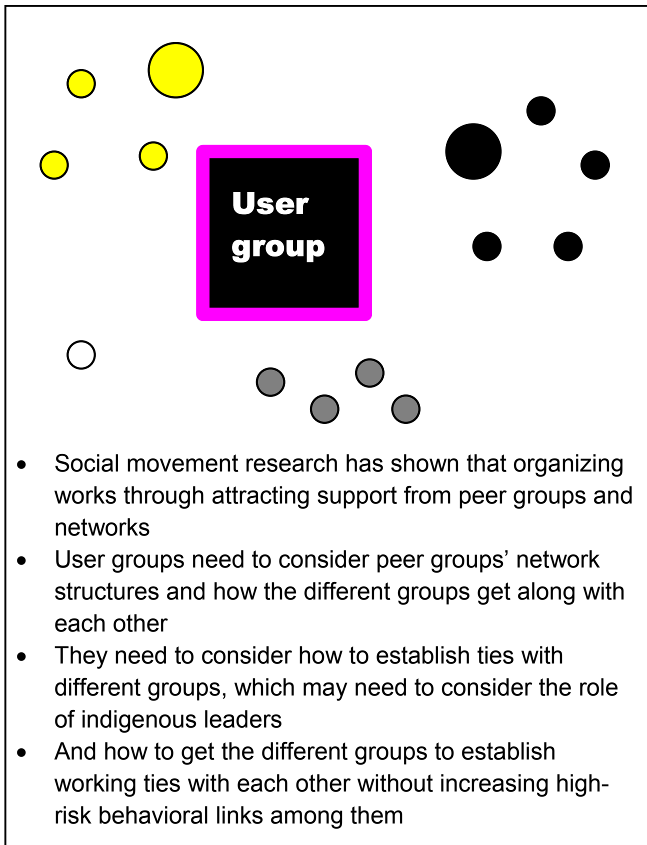
Similar designs have been used with other target populations. A family planning intervention in Bangladesh, for example, compared a network-oriented intervention to a field health worker approach (Kincaid 2000). In the network condition, family health workers held discussion groups in the homes of women who had been identified as individuals whom community members sought out for health advice. One of the goals of the meetings was to increase discussion of family planning among women, spouses, and other family members—all of whom were hypothesized to influence family planning decisions. In the comparison group, the health workers only visited the women's homes. Kincaid found that women in the network intervention were almost twice as likely to report using modern contraceptives as those in the control condition.

Sociometric intervention models

Sociometric network intervention models have also been used among high-risk drug users. Perhaps the most widespread sociometric network intervention among IDUs is what is sometimes called "secondary" or "satellite" syringe exchanging. In this approach, some users of a syringe exchange are allowed to take large bundles of syringes with them, which they distribute in smaller bundles to friends or contacts who may, in turn, distribute these syringes to their contacts. Later, the distributors may collect some of the used syringes to get them off the streets by exchanging them for another batch of new syringes. (Sometimes, of course, some of these syringes are sold for small amounts of money. In these cases, secondary exchangers are receiving a very low rate of pay for their public health labors.) The result of these efforts is that many IDUs who would otherwise not benefit from syringe exchange services receive and use new syringes and safely dispose of used syringes (Valente et al. 1998). Another form of sociometric network intervention is the peer-driven outreach model. Here, community networks of drug users are mobilized to recruit drug users into a storefront where they receive traditional one-on-one interventions (e.g., counseling and HIV testing). The recruitment process, however, is also intended to encourage network members to discuss HIV risk reduction with each other and thus to strengthen norms for safer behaviors. This technique, developed by Broadhead and colleagues (1995), has been shown to recruit a larger and more diverse group of IDUs than does traditional outreach, and for less money. However, using this approach, the effect of peer education on risk behavior is unclear.

In many countries, drug users have organized their own users' groups for various reasons, usually including HIV or hepatitis C prevention (Friedman et al. 1993; Friedman 1996; de Jong 1987; Wodak et al. 1998). In developing effective strategies for such groups, network concepts have been very useful (see Figure 5). In this regard, network theory has used findings from social movement research that show that organizing works by attracting support from peer groups and networks (Weir 1972, 1974; Rudé 1980; Friedman et al. 1998a). These ideas have helped users' groups plan ways to reach out to disparate networks in their communities rather than being limited by preexisting contact patterns.

Figure 5. Networks in organizing user communities



- Social movement research has shown that organizing works through attracting support from peer groups and networks
- User groups need to consider peer groups' network structures and how the different groups get along with each other
- They need to consider how to establish ties with different groups, which may need to consider the role of indigenous leaders
- And how to get the different groups to establish working ties with each other without increasing high-risk behavioral links among them

Other forms of network intervention

The U.S. Centers for Disease Control and Prevention will be initiating network interventions as a way to help HIV-positive persons avoid behaviors that might transmit HIV to others and also to make effective use of therapeutic resources such as antiretroviral therapy. These efforts have not yet begun, so we do not know how effective they will be. They can be thought of as ways to use social network tracing ("contact tracing" of friends and partners) and mobilization to induce people who may have been exposed to infection to undergo HIV testing and to obtain their results. Another goal of this intervention is to build a "support-the-health-of-self-and-others" network culture for getting therapy, adhering to therapy, staying healthy, and reducing behaviors that might transmit HIV to others. There are risks to these prevention programs in using network approaches, however. In particular, if an agency fails to be supportive, it can lose not merely individual contacts but the whole network as well.

Other forms of network interventions have been proposed but not yet implemented. Three of these are (1) helping individuals avoid dangerous sociometric structures (e.g., cores in New York City); (2) shaping the movement patterns within networks to reduce turnover or reduce formation of ties to high-risk sociometric cores; and (3) changing sociometric network structures, whether through direct interventions that work with drug users to reshape association patterns or by changing social environments or policies that create pressures to be members of large components or cores. Fullilove (1995), for example, illustrates that urban development and budget policies can disrupt networks in ways that lead both to diffusing seropositive persons into new networks and to increased levels of high-risk behaviors throughout surrounding communities. It also has been suggested (Friedman et al. 1999a) that policing patterns and the ways in which drug laws are enforced might encourage the formation of, or increase recruitment to, extremely high-risk cores of large social networks. Research on whether changes in these urban policies and law enforcement approaches might reduce HIV transmission should be encouraged.

Discussion

It is increasingly accepted that HIV prevention and treatment efforts, including interventions to increase adherence to therapies, can be enhanced by the use of social intervention models such as primary group support, diffusion models, indigenous leadership models, and collective mobilization by communities of risk. The examples presented above show how an understanding of social and risk networks can improve the understanding and design of these models of intervention.

A number of research questions remain unanswered. These include:

- Would sociometric networks be associated with less overall risk with different:
  - Policing patterns?
  - Levels of income inequality?
  - Levels of residential racial and ethnic segregation?
  - Needle-access laws?

- How do norms (toward injection behaviors, drug use, sexual behaviors, and sex with IDUs) and communication about risk shape:
  - Sexual networks (including microstructure, group sex participation, distance from group sex, and distance from IDUs)?
  - Injection networks?
  - Infection rates with HIV and other sexually transmitted infections?
- Under what conditions, and how, can group sex patterns and shooting galleries influence epidemic multiplier effects?
- How can one intervene to reduce high-risk activities at group-sex events, crack houses, shooting galleries, and other quasi-anonymous risk nodes? Possibilities, some of which have been used, include:
  - Having syringes and condoms routinely available at these places;
  - Assigning outreach workers to these places; and
  - Encouraging organizers, managers, or participants to serve as "safety officers" who make sure supplies are available and who use normative pressures to encourage safer behaviors.

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Evidence for Action for Policymakers on HIV/AIDS Prevention and Care Among Injecting Drug Users

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There is much international debate on how substance use, particularly injecting drug use, contributes to HIV/AIDS epidemics in different countries and regions and the overall pandemic. In some countries injecting drug use is driving HIV epidemics, responsible for over 50% of all infections. Furthermore, there is evidence that concentrated HIV epidemics among injecting drug users (IDUs) can rapidly progress to generalized epidemics through sexual transmission. Even in predominantly heterosexual HIV epidemics, injecting drug use can significantly influence epidemic dynamics.

Explosive HIV epidemics among IDUs have been witnessed in many different cities, but there is evidence that other cities have managed to prevent or slow HIV spread among IDUs by implementing effective public health responses. Despite clear evidence for the effectiveness of such interventions, implementation in countries is often impeded by the lack of coherent national or district-level policies and programs. The reluctance of governments to act in this area is largely related to the controversial and politically sensitive nature of many of the interventions. If governments are to invest in controversial and unpopular approaches, they need to have compelling evidence that such interventions are feasible, effective, and affordable. The World Health Organization (WHO) Evidence for Action initiative aims to assist countries and other key players to make such difficult decisions by providing state-of-the-art reviews on the effectiveness of different HIV/AIDS prevention and treatment interventions for IDUs.

WHO has commissioned a series of 11 review papers for this purpose, covering the following subjects:

1. The nature and extent of HIV/AIDS epidemics among IDUs;
2. Methods for assessing and monitoring HIV risk among IDUs, its health/social/economic impact and effectiveness of interventions;
3. Effectiveness of HIV information, education, and communication interventions for IDUs;
4. Effectiveness of community-based HIV interventions for IDUs;
5. Effectiveness of sterile needle and syringe programming (including other injecting paraphernalia) for HIV prevention;
6. Effectiveness of drug dependence treatment in preventing HIV among IDUs;
7. Effectiveness of interventions in preventing sexual transmission of HIV among IDUs;
8. Effectiveness of STI and HIV/AIDS treatment in preventing HIV among IDUs;
9. Effectiveness of structural and environmental interventions in preventing HIV among IDUs;
10. Effectiveness of interventions for young and new injectors;
11. Effectiveness of interventions for marginalized and particularly vulnerable IDUs, including prisoners, men who have sex with men, and indigenous drug injectors.

The review process involves designation of a lead author for each paper, with co-authors representing different languages, geographic regions, and disciplines. More than 50 co-authors representing over 30 countries are involved in the reviews. The Global Research Network on HIV Prevention in Drug Using Populations (GRN) is acting as a reference group for peer review of the papers and process. During this meeting the preliminary findings of four review papers are presented for discussion, including papers on:

- HIV/AIDS prevention among young and new injectors;
- HIV/AIDS prevention among marginalized and especially vulnerable IDUs;
- Prevention of sexual transmission of HIV among IDUs;
- HIV/AIDS information and education strategies for IDUs; and
- Drug dependence treatment for HIV prevention. ■

Effectiveness of HIV Prevention for Young and New Injecting Drug Users

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Introduction

The effectiveness of HIV-prevention interventions for young and new injection drug users (IDUs) was evaluated by reviewing literature identified through online searches of databases and World Wide Web sites. The review also included interventions undertaken to prevent initiation of drug injecting and transition from non-injection to injection drug use.

The searching strategy was based on selection of keywords that refer to broad categories, rather than specific types of interventions. Databases such as Medline, Sociofiles, ERIC, Psychofiles, and Aidsline were searched. The same key words were used to identify intervention evaluations described in the Web sites of drug addiction and prevention services or agencies, AIDS agencies, and libraries.

The online searches covered published and unpublished literature in the regions shown in Figure 1. The geographical regions are paired with the name of the person in charge for each region. The Evidence for Action program is still looking for a collaborator to cover Asia.

Figure 1. Geographical coverage

Region	Researcher
AFRICA:	Moruf Adelekan
AUSTRALIA:	Susan Kippax and Erica Southgate
EUROPE:	Lucas Wiessing
INDIA:	Suresh Kumar
LATIN AMERICA:	Sylvia Inchaurraga
NORTH AMERICA:	Nancy Haley, Justeen Hyde, and Mary-Jane Rotheram-Borus

HIV-Prevention Interventions

So far an extensive searching has only identified two projects in Australia and three in North America that include an evaluation component (Figure 2).

Figure 2. Evaluated HIV-prevention interventions for young/new IDUs

Region	Number of Projects
AFRICA:	0
AUSTRALIA:	2
EUROPE:	0
INDIA:	0
LATIN AMERICA:	0
NORTH AMERICA:	3

The two Australian interventions are the Safer Injecting Cwiz (SIC) project, and the Sharing Knowledge to Protect Our Community project. The SIC project employed the pyramid selling model to reduce blood-borne virus (BBV) infections, mostly hepatitis C, among new and young IDUs in an economically disadvantaged suburban area outside Sydney. Young injectors were engaged for a nominal financial reward to recruit and educate peers who in turn would do the same. The heart of the intervention was a short quiz followed by an education session about transmission risks. The intervention was implemented from April 1999 to August 2000, with 219 participants.

Qualitative and quantitative methods were employed in the evaluation (Sheaves, in press). Peer educators' knowledge of BBV transmission was measured pre- and post-intervention, using the SIC quiz. BBV risk behaviors were measured using self-reports of sharing needles and other injecting equipment. The evaluation proved to be difficult and only 95 of 219 participants were followed up and completed the project evaluation. Followup interviews took place on average 6.6 weeks after the intervention. They revealed that two-thirds of the subjects reported safer injecting practices. Of those who had reported engaging in hepatitis C risk behaviors prior to the intervention, 47 percent reported eliminating these behaviors at followup. Overall, the average number of risk events fell from nine to three between first contact and followup. Sixty-one percent of participants reported having changed their thinking about hepatitis C at followup. Quiz

score comparisons indicated that BBV knowledge increased between pretesting and posttesting.

The target population for the Sharing Knowledge to Protect Our Community project was young, Indo-Chinese IDUs. The project's objectives were to provide knowledge about BBVs and safer drug use; to identify gaps in knowledge; to clarify the role of BBV testing; and to develop communications skills and ways of sharing information with peers among the peer educators to Indo-Chinese youth. The intervention was conducted between May and June of 1999. The program was delivered in 12 sessions over a 2-week period, and it covered the concepts of peer education and harm reduction, BBV transmission risks, safer drug use, living with hepatitis C, communications skills, and access to local health services. During the sessions, participants were encouraged to apply the information to everyday situations and experiences. In all, 13 young people were recruited and trained as peer educators. Peers were paid if they attended at least 10 of the 12 training sessions, and other small incentives were also provided.

The evaluation was completed in two stages (Maher et al. 2000). First, participants were asked to complete evaluation sheets at the end of the training. In the second stage, participants were invited to attend a focus group held 2 weeks after the training to reflect on the course and their experiences as peer educators. Feedback from the evaluation sheets was positive, with peer educators stating that their knowledge of BBV transmission had improved and that the training experience was personally satisfying. In the focus group, participants discussed their increased self-worth derived from being trained as peer educators and positive experiences they had in educating peers and family members about preventing the transmission of BBVs. They also discussed situations in which their work as peer educators was constrained, and they spoke of the difficulties involved in communicating with parents and the broader community due to the highly stigmatized nature of injecting. The research team concluded that because of the low levels of education in the target group, additional training time was required.

Three projects with elaborate evaluations were identified in the United States, two in San Francisco and one in Los Angeles. The San Francisco Intensive Outreach Program serves homeless, runaway, and street youth. The Peer Run Secondary SEP in San Francisco and the Needle Exchange Program For Youth in Los Angeles target young IDUs.

The San Francisco Intensive Outreach Program (Gleghorn et al. 1997) consisted of an intensive outreach program targeting homeless, runaway, and street youth among which there were a high number of active IDUs (ranging from 21 percent to 39 percent depending on time of survey or site, i.e., intervention versus comparison). The objectives of the intervention were to increase youth contact with outreach workers (OWs), reduce youth HIV risk behaviors, and increase access to prevention services. The intervention, which started in the early 1990s, was developed for street youth who gather in the Haight-Ashbury neighborhood of San Francisco. The three major components of the program were as follows: (1) traditional street outreach with community health workers and peer health educators offering youth condoms, bleach, and a list of resources for varying needs; (2) a youth center that was established for HIV prevention activities (e.g., in-depth discussions about HIV, other sexually transmitted diseases, drug problems, or other youth-identified concerns), group activities on HIV prevention themes, and limited support services for basic needs such as free meals and showers; and (3) the development of youth subculture-specific prevention activities and educational materials. An underground, youth-oriented needle exchange program (NEP), which was not associated with the intervention, was initiated in the fourth wave of data collection. It was advertised strictly to youth in Haight-Ashbury through word-of-mouth.

The evaluation was conducted from 1993 to 1995, using a quasi-experimental design (Gleghorn et al. 1997). Six sequential cross-sectional surveys were conducted, two prior to and four during the intervention, with youth between the ages of 12 and 23. Youth were recruited using systematic, street-based sampling methods at the intervention site and in three comparison sites. Measurement was done through a standardized survey questionnaire covering demographic variables, youth contact with OWs, referrals received from the best-known OW, sexual and drug use behaviors, and risk-reduction activities practiced by the youth. Approximately 200 participants per site were interviewed prior to intervention implementation, and 400 per site were interviewed while the intervention was in place. The study demonstrated that focused, subculture-specific outreach interventions were successful in reaching a high-risk youth population, increasing access to OWs, increasing frequency of contact with OWs, and increasing the number of referrals received. The intervention as a whole was not associated with using a clean needle at last injection. But multivariate analysis showed that IDUs with access to the youth NEP were three times as likely to report using a new syringe at last injection as youth without NEP access. Higher levels of OW contact resulted in greater numbers of referrals, increased likelihood of follow-through on HIV-related referrals, and increased likelihood of using a new needle at last injection. However,

the study failed to find a relationship between the intervention and condom use at last intercourse with any partner type.

The secondary syringe exchange program (SEP), for young, homeless IDUs in San Francisco, began in 1996. The objectives of the intervention were to reach homeless young IDUs and to decrease HIV risk behaviors. The secondary SEP was designed and operated by members of Golden Gate Park's young IDU community who had gained respect from their peers. Four core peer leaders received training in needle-exchange and HIV-test counseling. Their aim was to provide exchange services 24 hours per day, 7 days per week. In addition to syringes, secondary exchange supplies included cookers, cotton, water bottles, alcohol wipes, containers for sharps, and peer-developed population-specific media. Staff from the supporting community agency visited the park daily and worked closely with the peer exchangers to maintain supplies, resolve potential problems, and provide additional services as requested.

The evaluation sample consisted of intervention participants 15 to 25 years old who were recruited from two areas of San Francisco: Golden Gate Park, the intervention site; and Market street, downtown, the comparison site (Sears et al. 2001). They had to have injected drugs and been homeless within the past 30 days. A questionnaire, which was completed during a 45-minute interview, covered demographics, health (self reported), drug use, exposure to SEP and secondary SEP enhancements, and HIV sexual and injection risk behaviors. Using bivariate analysis, participants from the two sites were compared for different characteristics and outcomes, consisting of injection-risk and sexual-risk behaviors, such as syringe sharing, syringe reuse, sexual activity, number of sexual partners, sex with an IDU partner, and frequency of condom use. For each of the outcomes showing between-group differences, the independent effect of the intervention site was assessed using simultaneous logistic regression techniques, controlling for potential confounders such as age and gender.

One hundred twenty-two youths participated in the evaluation, 67 at the intervention site and 55 at the comparison site. The respondents had been injecting for a mean time of 4.6 years. Logistic regression showed that the intervention site was protective for three outcome variables, namely, syringe sharing, syringe reuse, and inconsistent condom use with a casual partner.

The third U.S. project is a NEP for youth in Los Angeles. The paper that the online search identified (Weiker et al. 1999) is not about the results of the intervention. It addresses the issues and challenges faced by a research organization (Division of Adolescent Medicine of Children's Hospital Los Angeles [CHLA]) and a community-based harm-reduction organization (Clean Needles Now [CNN]) in the collaborative evaluation of a needle exchange program.

The objectives of the Needle Exchange Program For Youth in Los Angeles were to engage current IDUs in a multitiered program to help them enhance their self-esteem, gain control over their lives, get off the streets, and minimize the harmful consequences of their drug taking. The intervention consisted of a community-based needle exchange and harm reduction program targeted to young IDUs. Needle exchange services were first established in 1993 at street-based sites. A storefront facility was opened later to offer services to youth who were IDUs, sexual partners of IDUs, and/or other high-risk drug-using youth. The services offered during the evaluation were needle exchange and distribution, distribution of safer shooting kits and information, creative arts programming, substance use counseling, and case management (peer case managers linked clients with services).

The collaborative evaluation employed a multimethod research design consisting of observation and documentation of program activities, service utilization process data collection, focus groups, individual ethnographic interviews, and quantitative surveying. Based on patterns of service utilization and feedback in ethnographic interviews, it seemed that although all the different services provided by the center were important, the core intervention, the needle exchange, was the one responding to the immediate needs of youth. The center was considered by youth to be a safe place to seek services related to drug use without feeling that they were being judged. The role of peer staff in engaging youth and making them feel comfortable was crucial. A loss of peer staff occurred at the end of the evaluation, demonstrating that projects based on peer outreach may have problems with the turnover rate of peer helpers.

Limitations of the reviewed studies

Most of the evaluations were cross-sectional studies, which prevents exploration of the temporal relationship between interventions and HIV risk behaviors. Probabilistic sampling techniques were only rarely used in recruitment of study participants. Because of the failure to use these techniques, the results may not be generalizable to other young IDUs. Most of the data that were collected were based on self-reports, which can lead to social-desirability bias and recall errors. The youth were not assigned randomly to intervention and comparison groups, and in some cases, the two groups were subject to contamination due to travel between areas. And finally, the followup times were generally short.

Summary of HIV-prevention interventions

The results of the evaluations proved to be consistent with studies conducted among older IDUs. So far, the priority of most projects has been to reach young IDUs, and so the main model of intervention that was used was peer outreach. Most of the interventions consisted of education, referral for HIV testing and basic needs, and the provision of risk-reduction materials (e.g., condoms, bleach, needles).

The results indicate that outreach, offering services that respond to youths' needs, is a key component of interventions designed to prevent HIV infection among young IDUs. Peer involvement is a good way to accomplish this, but strong mechanisms to support peers need to be put in place. Outreach is also a good way to link youth to other health and social services. Provision of syringes, and other injecting equipment, is an important component of a program whose goal is reduction of risky drug-injection practices. The high rate of risk behaviors that still prevails in the intervention groups indicates that more comprehensive programs are needed.

Finally, the reviewed projects did not address issues of feasibility, sustainability, and generalizability and did not address issues of legal constraints, which can be major barriers to services access, especially for minors.

Preventing Initiation of and Transition to Injection Drug Use

Searches for programs designed to prevent injection drug use identified three projects, two in the United States and one in England.

One of the American projects is the trial on prevention of transition to drug injection by Des Jarlais and colleagues (1992). Its objectives were to decrease HIV exposure due to needle-use practices by reducing injection, increase the use of bleach and condoms, increase knowledge about HIV transmission and prevention, and improve skills in cleaning needles and using condoms. The intervention was conducted in New York City, and it addressed drug users who were using heroin intranasally (as their primary mode of drug administration) and who had injected no more than 60 times in the previous 2 years. The intervention was theory based and consisted of health education and risk-reduction intervention using group-level, peer-mediated counseling. Four 60-to-90-minute group sessions took place over a 2-week period. The sessions included basic information about HIV/AIDS, drug injection, sexual behavior, and seeking entry into drug abuse treatment programs. The sessions were led by two trainers and involved didactic materials, group discussions, and role playing. Instructions on safer injection procedures, such as using bleach to decontaminate injection equipment, were provided.

The impact of the intervention was evaluated in a study conducted between 1986 and 1988 with 104 participants. Eligible participants were randomly assigned to the four-session intervention program or to the control condition. Assessments were made at baseline before the intervention, and at followup, about 9 months after the intervention. Participants were interviewed on their drug use history, sexual behavior history, and knowledge of HIV/AIDS. Univariate and multivariate analyses predicting drug injection at followup were conducted to assess the impact of the intervention as well as to determine factors associated with injection. The mean age of the sample was 27 years, and the subjects were predominantly male (70 percent), white (51 percent) or African American (26 percent), and heterosexual (78 percent). The mean level of education completed was nearly 13 years. Due to intensive followup efforts, 83 subjects (80 percent) were successfully followed up at a mean of 8.9 months. In comparison to the control group, intervention participants had a significantly lower level of injection at followup. In all, 15 percent of the persons assigned to the intervention injected during the followup period, compared to 33 percent of those assigned to the control group. There was no evidence that the intervention was effective at increasing use of safer sexual practices.

The second American project, whose primary goal is to prevent initiation into injection drug use, is being conducted by Dale Chitwood and colleagues at the University of Miami. It is a 5-year, NIDA-funded study of non-injecting heroin users. The investigators seek to enroll a tri-ethnic sample of 750 men and women, who sniff heroin as their primary mode of drug administration, into one of two experimental interventions. The first is a Risk Prevention Intervention and the second is a Stage-Enhanced Motivational Interviewing Intervention. The participants will be interviewed at 6, 12, and 18 months following the interventions, in order to compare the effectiveness and sustainability of the two experimental approaches. No more information is available at this time.

The goal of the one project identified in England, Prevention of Injection Targeting IDU Initiators (Hunt et al. 1998), was to prevent injection through an intervention targeting potential initiators who are currently injecting. The intervention consisted of a short session lasting less than an hour, which covered discussion about initiation, the risks related to initiation, and the session also included activities intended to reinforce responses in different initiation

scenarios. It took place in drug service settings and 13 drug workers from 7 services conducted the session.

The evaluation was designed to assess the feasibility of delivering the intervention in various drug service settings and to measure its impact. The study adopted a panel design with followup at 3 months. A structured interview was used to collect data on the behaviors and attitudes of participants before and after the intervention. The drug workers conducting the session also completed a self-administered questionnaire right after the session and participated in a semi-structured interview at the end of the study. The study included 86 participants, mainly male heroin IDUs, with a mean age of 29.8 years; 85 percent of them were followed up. The intervention was considered acceptable by the majority of both participants and drug workers. Participants were less likely to have injected in front of non-IDUs at followup, and the number of non-IDUs in front of which participants had injected decreased. More participants acknowledged that watching someone inject can encourage that person to begin injecting. The number of initiation requests decreased. The intervention did not reduce the extent to which injectors talked to non-injectors about injecting; in fact it increased, but the difference was not statistically significant. After intervention, awareness of the risks (of initiating someone) to both the initiator and initiatee increased. A strong reduction in willingness to initiate others and a reduction in the number of initiatees were observed. The sample size could have precluded the observation of a statistically significant difference.

Summary of programs to prevent initiation and transition to drug injection

The researchers identified few interventions that are effective at preventing transition into injection drug use. The two projects for which evaluation data were available were experiments rather than true programs. The strategies used were education and skill training provided through intensive sessions given, in one case, to members of the target population and, in the other case, to potential initiators. Despite the fact that both studies showed interesting results, there are limited data on the effectiveness of that type of intervention. Moreover, there are no data at all on the feasibility and sustainability of such interventions in other contexts or on their generalizability.

The Situation in Latin America

HIV/AIDS prevention with respect to IDUs is very recent in Latin America, and only a few programs targeting young and new IDUs have been developed. The use of effectiveness evaluations is not the rule in Latin America. Nevertheless, there are some innovative projects on AIDS prevention activities for young drug users and prevention of transition to injection use. These new approaches are being considered in Uruguay, Colombia, Argentina, and Brazil. In Uruguay for example, there is a program providing a mobile service for vulnerable youth in Montevideo (El Abrojo NGO). It includes information and orientation regarding medical, psychosocial, and social issues related to problematic drug use. The intervention, which is based on the self-efficacy theory, is designed to inform youth on ways of controlling drug use, routes of drug administration other than injection, and how to cope with peer pressure to use drugs.

In Rosario, Argentina, a harm reduction bus has been operating at drug scenes since 2000, and injection kits for IDUs are distributed by the National University of Rosario (CEADS) with the support of the Ministry of Health. Peer education and materials created by IDUs are key elements of the intervention. Another intervention is the Argentinean Harm Reduction Association Campaign (ARDA), which specifically addresses young drug users with provision of condoms and information about drugs, HIV and hepatitis risks, overdoses, and social risks related to the law that punishes drug possession. These projects have not yet been evaluated but they appear to be promising.

Special Issues and Gaps

Since the present study found little data on HIV prevention among young and new IDUs, and even less about preventing transition to injection, we conclude that evidence of intervention effectiveness is not strong. A review of the literature on the unique characteristics of young and new injectors was undertaken to find more data for use in developing recommendations. There is no consensus regarding the level of risk incurred by young IDUs as compared to that of older IDUs or on specific risk characteristics of the former. There is not even a consensus about the cut-off age for being a young IDU, which varies from under 19 to under 40 depending on the study. The situation is the same for recent injectors, the cut-off varying from 1 to 6 years of drug injection. Most of our knowledge on transition to injection drug use relies on cross-sectional studies. Therefore, little is known about the factors that predispose to drug injection and to persistence in this behavior.

It appears that more research is needed to develop effective interventions for young and new IDUs. The issue of transition in particular needs to be explored further. Projects inspired by the ones we reviewed, and adapted to the local reality of each region, should be developed. These projects

should include an evaluative component, ideally formative evaluation, allowing for continuous adjustment of the intervention and addressing the issues of feasibility, sustainability, and generalizability. Interventions should be embedded in comprehensive programs addressing the basic needs, including the social and other health needs, of young and new injectors. ■

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Effectiveness of Interventions for Marginalized and Particularly Vulnerable IDUs Including Prisoners, Indigenous, MSM, and Sex Workers

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Introduction

This summary outlines the prevalence of HIV in marginalized and vulnerable groups of injection drug users (IDUs), as well as interventions and the effectiveness of such interventions. These groups of IDUs are at a heightened risk of HIV infection. For example, men who have sex with men (MSM) and who inject are at risk through both their sexual and injection risk behaviors.

Prison Inmates

Although HIV prevalence is higher in most prison systems than in the communities, evidence of transmission is limited (Dolan 1997). Several outbreaks of HIV have been reported (Choopanya 1989; Taylor et al. 1995; Dolan and Wodak 1999). The World Health Organization (WHO) states that prisoners have the right to receive health care, including preventive measures, equivalent to that available in the community (WHO 1993).

Evaluation of pilot prison syringe exchange programs in Switzerland, Germany, and Spain has been favorable in all cases. Drug use reported at interview was stable or decreased over time. Reported syringe sharing declined dramatically and was virtually nonexistent at the conclusion of most pilot studies. No cases of inmates acquiring HIV, hepatitis B, or hepatitis C have been reported in any prison with a syringe exchange program. No serious unintended negative consequences have been reported. There have been no reported instances of initiation of injecting. The use of needles or syringes as weapons has not been reported. Staff attitudes were generally positive, but response rates to these surveys varied.

An observational study in 1994 found that methadone reduced the frequency of injection drug use among inmates in New South Wales. Significantly fewer injections were reported per week than among IDUs not on methadone, but only when methadone doses exceeded 60 mgs and when it was provided for the entire duration of imprisonment (Dolan et al. 1998b). Initial reports from the heroin trial in a Swiss prison suggested it was feasible as a treatment for heroin dependence (Kaufmann et al. 1997/98). Two studies of the bleach program in New South Wales prisons found that most inmates could obtain bleach and most were using it to clean injection equipment (Dolan et al. 1999). The evaluation of the New South Wales condom program in prisons found that inmates thought the vending machines were accessible, incidents of improper disposal were rare, and the level of safer sex was high among those who had sex. There was no evidence of any unintended consequences as a result of condoms or dental dams being available (Lowe 1998).

Indigenous Populations

Despite the increased prevalence of injection drug use in indigenous communities, there is a dearth of literature dealing with harm-reduction strategies and programs for indigenous IDUs. Specific programs are typically based around HIV education and focus almost exclusively on sexual risk and, to a lesser extent, injection risk behavior change. Behavior change is often not reported, and no programs have measured HIV transmission.

Throughout Australia, Canada, and the United States, there are a number of indigenous-specific health services. The cornerstone of these services has been the provision of health services that are sensitive to the culture, values, and belief systems of the client group. Importantly, many of these services provide substance abuse treatment programs. Given this, it would seem wise that such services be extended to incorporate harm-reduction strategies.

A number of commentators have suggested that HIV prevention strategies for indigenous IDUs, such as needle and syringe programs and methadone maintenance treatment (MMT), may be inconsistent with culturally appropriate treatment models (Meyerhoff 2000; Sellman et al. 1997; Erickson 1992). Indeed, some of these services are

not always equipped to deal with the complex needs of IDUs among indigenous populations. One commentator has argued that in some instances these services have served to alienate the IDUs in the indigenous population and that this is partly a result of under-resourcing of services and staff (Meyerhoff 2000).

Culturally appropriate HIV education programs

There has been some research into culturally appropriate HIV prevention education, although for the most part this has focused on sexual risks rather than injection risks. For example, Hill and Murphy reviewed health promotion materials and consulted with health workers who delivered HIV education materials to indigenous people in Northern Australia (Hill and Murphy 1992). They concluded that a great deal of the literature was inappropriate, largely due to low literacy levels among the target population, but also because the language did not always reflect the meanings as understood by the indigenous population (Hill and Murphy 1992).

Men Who Have Sex With Men (MSM)

Research indicates that for some, homosexual sexual activity equates with a gay, lesbian, or bisexual identity, while for others, self-identity is not connected with sexual practices or preference (Bartos et al. 1993). As is the case with research on MSM in general (Parker et al. 1998; Stall et al. 2000), research on gay injection drug users primarily occurs in industrialized Western countries. Studies of male injectors have found higher HIV seroprevalence among MSM than their heterosexual counterparts (Deren et al. 1997; Lewis and Watters 1994).

The *African-American Men's Health Study* (www.caps.ucsf.edu; Peterson et al. 1996) included a session on "shooting up" in its program, but evaluation of the study concentrated on issues related to sexual practice rather than injecting (Peterson et al. 1996). Some HIV/AIDS interventions targeting transgender injectors offer a holistic approach to health (Bockting and Kirk 2001; Derkee 1995; Welby 2000; www.tarcsf.org).

Sex Workers

The New Zealand Prostitutes Collective operates a full needle exchange service at numerous drop-in centers around the country, with drug use education, safer sex products, legal advice, free STD treatment services, and advocacy. In addition, the collective operates another agency, Pride and Unity for Male Prostitutes (PUMP), for male sex workers. Injecting equipment (which includes filters and other materials) is not free, although discounts are given when used equipment is returned.

The overarching issue with regard to HIV prevention among injecting sex workers or sex-trading injectors is the need to guarantee their rights to friendly, non-punitive, easily accessible services that can provide a safe place in which to discuss the realities of their lives. Services in both sexual health and drug use harm reduction, including treatment, are provided.

Conclusion

The research on HIV prevention programs for marginalized and vulnerable groups is scant, despite these groups being at a heightened risk of HIV. Few HIV intervention programs exist that specifically target high-risk, marginalized, and vulnerable groups of IDUs.

The most commonly reported, evaluated projects are those that aim to educate IDUs about HIV and the risks associated with injection drug use. While these programs appear to be successful, there is limited information about evaluation, and a number of projects have not been evaluated. In many countries, groups such as MSM and transgenders are not recognized as present and vulnerable; their injecting sub-groups are therefore totally unknown and ignored. ■

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Evidence for Action: Interventions to Reduce Sexual Risk Behavior Among Injection Drug Users

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This paper is a review of the evidence for the effectiveness of interventions to reduce sexual risk behavior among injection drug users (IDUs). It includes recommendations for increased implementation of current programs and for additional research (1) to assess the generalizability of present research and (2) to develop more effective programs.

The results of previous qualitative research literature reviews and two major meta-analysis studies of interventions aimed at reducing sexual risk behaviors among drug users in the United States were reviewed. The qualitative research reviews produced ambiguous findings; some studies showed evidence of risk reduction, but many studies showed no differences between experimental and comparison groups.

The first meta-analysis found a statistically significant moderate average effect size (participation in the "experimental" group was associated with greater risk reduction), but included studies with relatively weak methods.

The more recent and larger meta-analysis included only studies with relatively rigorous research designs. This meta-analysis found a statistically significant average effect size for studies in which the comparison group did not receive an HIV-related intervention. However, for studies in which both the experimental and comparison groups received some HIV-related interventions, there was only a small, nonsignificant average effect size. (In those studies, the comparison group received a "standard" or "minimal" intervention, while the experimental group received a more extensive "enhanced" intervention.) Thus, it appears that providing currently available interventions is superior to not providing any intervention to reduce sexual risk behaviors, but there is no basis for determining which of the currently available interventions are more effective. In other words, providing something is better than nothing, but more is not necessarily better than less.

The question of generalizing from research conducted in the United States (and other developed countries) to developing countries is a major concern for all research on the effectiveness of interventions to reduce HIV risk behavior among IDUs. This was addressed using results of a major cross-sectional study conducted by the World Health Organization in 12 cities in the industrialized and developing nations, as well as results from a meta-analysis of voluntary HIV counseling and testing studies. These studies suggest that drug users in both industrialized and developing countries will change their HIV risk behaviors in a way that reflects rational and altruistic motives in response to a major health threat. They will change their behavior in order to avoid becoming infected with HIV and also to avoid transmitting the virus to their sexual partners.

While the limited research on drug users in developing countries suggests that they will change both injection and sexual risk behaviors in response to HIV prevention programs, it is possible that stigmatization of drug use, HIV, and condom use may limit the effectiveness of such programs.

Current research indicates that programs to reduce sexual risk behavior should be implemented for IDU populations in all countries. There is also a need to conduct additional research on adapting current programs to different cultural and national settings. Finally, there is a clear need to develop new programs that produce larger reductions in sexual risk behaviors. ■

HIV/AIDS Information and Education Strategies for Injecting Drug Users

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This paper reviews published data on the use of information, education, and communication (IEC) approaches to HIV prevention. The goals of our work were to identify the contribution that IEC approaches could make to HIV prevention, identify different contexts in which such approaches could be used, report on measurements of effectiveness where they exist, describe innovative and effective instances of work that could possibly be scaled up, and also offer insight into the role of IEC by itself or in combination with other approaches. It is important to note that the latter presented difficulties in conducting this study. There were very few, if any, studies cited in the literature in which IEC alone has been used. Most often these approaches were used in the context of other work, and where IEC occurred, it was often not called “IEC.” This created difficulty for the investigators in conducting some of the reviews.

To identify IEC approaches for injecting drug users (IDUs), database searches using MEDLINE and other abstracting indexes were conducted, as were hand searches of selected journals. Although there was limited time to conduct the review, it was important to include hand searches, as electronic database searches often result in identifying only a limited subset of the enormous wealth of literature that exists. When journals are reviewed, investigators can find many articles that have not been identified through electronic database searches.

Broadly speaking, two rather different kinds of IEC models of intervention can be identified: those that are individually focused and those that comprise structural level approaches using IEC. The published literature predominantly emphasizes individually based approaches, although there is a question as to whether they are the dominant approach. Regarding structural level approaches, these can be classified as (1) structural and environmental outreach work and (2) work on gender, race, and sexuality using IEC approaches. However, through this review it became apparent that there is little consistent use of terminology in the international literature regarding IEC approaches. It was expected that the review would find the field mapped out with categories of IEC interventions for IDUs and a standard language developed and shared by those working in this field. As this does not seem to exist, it can be difficult to assign particular approaches to either one of the two dominant categories (individually based and structural level approaches).

Our review of IEC approaches also distinguished between (1) mass-reach information and education programs and (2) outreach interventions that have an IEC component. Regarding the latter, there exists community-based outreach work and a subset of outreach approaches that are sometimes characterized as peer-led approaches. IEC can also be used to complement harm minimization and drug cessation treatment programs with an information, education, and communication component. Because IEC encompasses a flexible set of techniques, and the approach can be used in many different ways, this review revealed a wide variety of strategies for preventing HIV transmission.

Evaluations of mass-reach IEC interventions have demonstrated evidence of effectiveness in raising awareness, which has been identified as the first stage in the hierarchy of effects. There is less evidence of mass-reach IEC interventions’ influence on behaviors directly, with clear evidence in a number of studies that the effects in this sense are short lived, or likely to be so. A number of authors have reached the conclusion that mass-reach IEC interventions may be valuable in increasing the uptake of other drug treatment programs and encouraging safer forms of drug use. However, to be effective these programs must have realistic and measurable objectives, be well focused or targeted, use a wide range of appropriate media, and translate their messages in appropriate terminology and a mode of address that is likely to appeal to the audience that the programs seek to involve.

Outreach interventions are widely cited in the literature as having the ability to trigger the adoption of new behaviors by those who are already aware of HIV/AIDS concerns. There are many kinds of outreach programs, however, and the role of IEC is poorly identified in the majority of them. Some studies have demonstrated that former injecting drug users, or “professional injectors” have been able to trigger risk reduction in specific contexts. However, the nature of the social interactions between peers, clients, and targets is poorly characterized in the majority of outreach intervention reports.

Much of the literature addressing counseling and testing programs shows evidence of increased awareness regarding the location of services and how services can be accessed, as well as increasing demand for counseling and testing. IEC approaches have also been used to help service users understand test results, and promote risk reduction.

In terms of risk-reduction counseling, IEC approaches appear to have been used successfully to alert potential clients to the existence and locations of services, provide information on HIV and safer drug use, and facilitate personal risk assessments, behavioral skills training, and better stress management.

With respect to structural and environmental outreach work, IEC components appear to have a contribution to make in the development of more supportive community structures and safer cultures of drug use. Structural and environmental outreach may also take the form of media advocacy among those who are not injectors but who may have a political role to play in putting into place the kinds of services and policies that are needed.

IEC approaches have also been used to address some of the specific needs and concerns of women, racial and ethnic minority groups, and sexual minorities. There is some evidence that such approaches have been successful in reducing stigma and discrimination against individuals, as well as evidence that IEC may facilitate access to treatment and harm-reduction services among those who may otherwise have difficulty accessing such provision because of social inequalities.

Our review of IEC approaches has led us to develop a series of questions that can guide future research in this area. These include: What forms of IEC are best suited to raising awareness and, crucially, building solidarity? What messages and channels of communication are most effective in laying the foundations for risk reduction and risk behavior change? How is IEC best combined with other approaches to promote safer sex and safer drug use (or, what is the specific effectiveness of IEC in the context of other work)? What does IEC add to other types of interventions, and what can not be achieved unless there is a strong IEC component present? How should IEC approaches be tuned to address gender, race, and sexuality in diverse cultural contexts? How should IDUs be involved in the development of IEC materials and approaches? Finally, what regional specificities need to be addressed? ■

Effectiveness of Drug Dependence Treatment in Prevention of HIV Among Injection Drug Users

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This paper presents two reviews: (1) a brief summary of several countries' experiences with the spread of HIV among injection drug users (IDUs) and the resulting public health responses; and (2) a brief description of a review in progress, in which we are assessing the overall effect of drug-dependence treatment on HIV-related risk behavior, based on a systematic review of controlled studies on HIV. As part of this study, we plan to undertake a meta-analysis that will incorporate 24 individual studies, most from the United States or United Kingdom (only one is from continental Europe). Our full review, which will be completed by mid-2002, will include a current, comprehensive reference list.

National Experiences

Since providing drug substitution, such as methadone treatment for dependent opioid users, most European Union countries have seen a reduction in the incidence of AIDS cases related to injection drug use. Australia initiated methadone treatment early, and the program expanded rapidly, which was associated with the prevention of a major outbreak of HIV among IDUs.

A summary of the prevalence of HIV infection among IDUs in 15 European Union countries reveals an increase in the relative proportions of those who are infected (EMCDDA 2000). This trend in part coincides with the development of substance abuse treatment programs. A substantial increase has occurred in the number of people who now receive methadone treatment. Still, governments vary in their commitment to providing substance abuse treatment for injection opioid users, at both national and regional levels. The results are major variations in the proportion of people who are opioid dependent and in substitution treatment.

Western Europe, North America, and Australia have relatively higher rates of people who are opioid dependent and in substitution treatment, compared to most other regions. In contrast, many countries in Central and Eastern Europe, which do not provide substitution treatment at the same level, have experienced rapid growth in heroin and injection drug use as well as epidemic outbreaks of HIV infection among IDUs.

Rates of drug substitution treatment in the Asia Pacific region also are comparatively low. These countries differ in their stages of development and in their recognition of the problem. Many have not developed or implemented a systematic treatment intervention approach and, in many cases, epidemic levels of HIV among IDUs have developed. Reviewing effective approaches to the management of injection heroin use in those countries has become an urgent public health priority.

The Middle East and Asia Pacific regions have tended to invest more resources in correctional-type approaches, such as involuntarily containment, than have other regions of the world. South America has a major psychostimulant problem with cocaine and crack, which is the major substance of severe dependence.

Large-Scale Descriptive Outcome Studies

In our review of drug treatment and HIV prevention, we have, to date, concentrated primarily on opioid treatment. Evidence of the effectiveness of interventions for stimulants, cocaine, party drugs, and other forms of injectable drugs is limited. Two large-scale efforts include the Drug Abuse Treatment Outcome Studies (DATOS) in the United States, initiated in 1990 by the National Institute on Drug Abuse (NIDA); and the National Treatment Outcome Research Study (NTORS), the first large-scale, multisite, prospective followup study of drug misuse conducted in the United Kingdom.

Both the DATOS and NTORS studies show significant reductions in HIV risk-taking behavior over time for those

in treatment. The studies suggest that there has been some elimination of injection practices, but in most cases this finding is related to reduction in frequency of injection and rates of needle sharing. DATOS demonstrated that for all forms of treatment, there was a statistically significant reduction in injection risk practices. The NTORS study reported that injection rates fell from 60 percent at intake to 37 percent at a 5-year followup of a selected cohort, and that the rates of self-reported sharing fell from 14 to 5 percent over the same period.

The Systematic Review

Methodology

Our systematic review examines effectiveness in terms of seroprevalence among in- and out-of-treatment IDUs and the rates of seroconversion. In general, when studying treatment effectiveness, the emphasis has been on injection drug use, sharing of equipment, number of sex partners, and unprotected sexual activity. Our methodology included identifying major reviews as well as original studies. Articles were obtained through electronic searches and surveys. A Cochrane Review Group hand search also was performed using a wide range of (but not all) drug and alcohol journals.

We are reviewing only those studies in which a comparison is made; if the study did not compare treatments, seroprevalence before and after a treatment, or treatment versus no treatment, it was not included in our selection. For our planned meta-analysis, articles will be ranked on their strength of data for objective comparison.

Treatment approaches

Methadone—Methadone maintenance substantially reduces heroin use, but does not always eliminate it. Treatment often resulted in one of two outcomes: people stopped injecting or reduced their frequency of injecting. Methadone maintenance treatment is more effective than no treatment or placebo in reducing rates of imprisonment, reducing heroin use, retaining clients in treatment, and supporting employment or return to further education. The dose of methadone is important in terms of retention in treatment and continued heroin use. There appears to be a threshold effect, with 60 milligrams being an effective dose. We caution that these data apply to the developed world; some studies in the developing world indicate that an effective intervention may not require as high a dose.

Detoxification—Detoxification is not a treatment: it is a doorway into treatment. Methadone maintenance, as compared to detox and outpatient drug-free counseling, is more effective in reducing heroin use, reducing criminal behavior, and reducing risky sexual behavior.

Buprenorphine—Buprenorphine appears to have a dose effect. Doses of 12 milligrams or greater appear to result in longer retention in treatment and lower levels of heroin use. Compared to methadone maintenance treatment, treatment with buprenorphine has a similar or slightly lower rate of retention. Treatment with buprenorphine reduces illicit drug use to an extent similar to methadone treatment.

LAAM—The other main opiate agonist, LAAM, remains under scrutiny in the European Union because of concerns about its effect on cardiac rhythm. The treatment appears to be comparable to methadone maintenance in its effectiveness in reducing illicit drug use. Higher doses of LAAM are more effective in reducing opioid use.

Naltrexone—Naltrexone, the major antagonist opioid, has poor patient acceptance. It has high efficacy, but people often drop out of treatment early. Those who are highly motivated or socially connected tend to do better. We also found some evidence that craving is reduced, but this varied among individuals.

Residential rehab—In residential rehabilitation, dropout rates were high during the early stages of treatment but then declined. People who completed rehab had reduced drug use and criminal behavior after treatment. Those who effectively engaged in treatment, compared to those who merely attended, had better outcomes but the effect size was small.

Self-help—Self-help care is very difficult to evaluate as it is based on anonymity. The data often are conflicting. Participation in meetings appears to be important in terms of impact; merely attending a meeting does not seem to have the same effect. Also, voluntary participation is more important than being forced to attend.

Behaviorism—The review of behavioral interventions for cocaine and amphetamine-type stimulants is in process. This study will be completed for inclusion in the full review in mid-2002.

Antisocial personality disorder, concurrent major psychiatric conditions, and concomitant use of benzodiazepines or cocaine reduced the likelihood that treatment interventions would be effective.

Individual studies

Two seroprevalence studies suggest that methadone treatment might help prevent HIV diffusion into the broader community. We found three seroconversion studies of

people in treatment. These findings confirmed that people have lower rates of seroconversion while in treatment. One of the studies (Metzger et al. 1993 [cited by Camacho et al. 1996]) reports 3.5 percent seroconversion over 18 months of treatment, compared with 22 percent for a nontreatment population.

We found 13 studies that examined the practice of continuing injection while in treatment, of which 10 were studies of methadone maintenance, one of buprenorphine, one of Naltrexone, and one of drug-free treatment. We found lower rates of continued injection overall for those in treatment. In fact, all methadone maintenance treatment groups showed significantly lower rates because people either injected drugs less frequently or actually stopped injection completely.

We identified 11 studies that examined the practice of sharing injection equipment. All showed a reduction in the risk of needle sharing, predominantly because of decontamination. The 11 studies include early studies, particularly of countries where needle syringe exchange was not accessible. The majority of studies also reported a reduction in the proportion of people sharing each needle. One study included an effect size. Caplehorn and Ross (1995), from Australia, estimated an odds ratio of 0.55 for methadone compared with nontreatment populations, with a confidence interval of 0.33 to 0.9.

Eight studies examined sexual risk exposure primarily through continuing involvement in the sex industry or the number of partners. Only two of those studies showed an actual aggregate score of reduction in sexual risk.

Three papers examined global indicators of HIV risk reduction while in treatment. All centered on methadone maintenance programs, and all showed a global reduction in risk compared to nontreatment populations.

Conclusion

In summary, our review thus far indicates that a limited body of literature exists on the link between treatment and reductions in HIV. For this reason, in our remaining work, we hope to extrapolate findings from the broader treatment research to determine the effects of different regimens on drug use and drug risk-taking behavior. We have found that drug treatment programs are effective in preventing HIV risk, both for those who are in treatment and, through diffusion, for the broader community.

We now are summarizing data on stimulants, cocaine, and amphetamine-type stimulants. We also are seeking collaborators in developing and transitional countries to extend the reach of our review. Our goal is to show the degree of effect for the different interventions, though we recognize that restrictions in current data may limit our ability to show this for all current interventions. ■

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Needle Exchanges in Bangladesh: Policy vs. Practice

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In Bangladesh, the SHAKTI project of CARE-Bangladesh was the first to begin a needle exchange program for injection drug users. Funded by the Department for International Development, the project began with a survey of Dhaka, the capital city of about 10 million people, in late 1997. The survey used a unique adaptation of an enumeration method for estimating the number of injectors publicly visible in the city. The original estimate was about 7,000 men; few women were found. A baseline serosurvey revealed no HIV, but showed that 20 percent of men had sold blood and that most shared needles regularly (Chatterjee et al. 1998). Needles were available in pharmacies but few would invest in them. Almost all men injected buprenorphine, on average three times a day.

At that stage, the project had few dealings with the Narcotics Control arm of government or the Drug Treatment personnel. The project managers had learned that Bangladesh had no paraphernalia law—that is, no one could be arrested simply for carrying syringes; hence they felt confident that needle exchange was not against the law, and proceeded. After a half year of start-up needed to train staff, organize the drop-in centers, develop pictorial educational materials, select and train peer educators and distributors, and procure supplies, the first drop-in centers opened in May 1998. SHAKTI peer educators are active IDUs, and this was seen as extremely practical (Beg 1999).

In 1998–1999, the first National Behavioural Surveillance took place and sampled the areas around these centers. It was found that 93 percent of IDUs had shared needles some time during the previous week. Serosurveillance was only conducted at government and private treatment centers, where HIV prevalence was found to be 2.5 percent among IDUs in treatment (AIDS and STD Control Programme 2000). By 2000, the number of drop-in centers had expanded and SHAKTI claimed to cover 3,500 men with three needles and one syringe daily. A rapid assessment took place in early 2000, indicating that there was another large focus of injecting in North Bengal in the cities of Rajshahi and Chapainawabganj (Rahman and Jenkins 1999). In 2000, the project attempted to expand to Rajshahi.

The second round of the national surveillance sampled both in-treatment and out-of-treatment IDUs, the latter through clinics that had been set up at the drop-in centers. By that time, all drop-in centers also offered abscess treatment, conducted by trained IDUs, and STD treatment on a periodic basis, with services supplied by the Marie Stopes Clinic Society. In that year HIV prevalence was found to be less than 1 percent among those in treatment and 1.4 percent among those at the drop-in centers. The serosurvey was extended that year to North Bengal where no HIV was found. Samples sizes ranged from 402 to 418 (Rahman and Jenkins 1999).

Advocacy to diminish harassment of IDUs by police was often carried out locally, but no official permission was granted by government. In 2000, a visit was made to the Inspector General of Police, explaining the program. He was very positive about it and offered to help by giving spaces for detoxification in all wards in Dhaka. Both government and private clinic treatment regimes are based on a short-term and highly drugged detoxification period with little follow-up counseling or maintenance through support groups. Only one small program had an alternative, the 12-step approach to abstinence, and no substitution treatment was (or is yet) available in the country. The Inspector General promised to send a letter to all wards in the city to ask for their cooperation with the program. However, apparently this did not occur, or ward-level officials never adhered to the request, because IDUs in contact with the needle exchange program continued to be harassed. Police sometimes beat them, took their drugs, and reportedly, even sold these drugs back to them. Advocacy for policy change is essential, but the conditions of police work, including poor salaries and entrenched corruption, make it unlikely that top-down policy work will be sufficient.

By mid-2001 the SHAKTI project and a rapid assessment funded by Family Health International had reestimated the number of IDUs, adjusting the original estimates downward to a total in the country of about 7,170. New drop-in centers and the provision of needles at the homes of professional injectionists in North Bengal were added to the program. Out of the total of about 7,200 IDUs, SHAKTI estimated it reached nearly 60 percent or 4,320 persons daily. One drop-in center was set up for female IDUs with female staff, and served about 65 women in Dhaka. The needle exchange rate has been stabilized at about 83 percent over the past year (CARE-Bangladesh 2001).

In response to the frequent requests from IDUs to be helped with their addictions, SHAKTI began to support the efforts of ex-addicts to run detoxification camps, as well as the 12-step programs of small nongovernmental organizations in two cities. Discussions have often taken place about the usefulness of substitution treatment but, to date, no trial has taken place. Policy decisions with regard to trying new approaches will require further education and advocacy, and the setting up and funding of a proper scientific data collection system. In the past year, however, major political violence surrounding the 2001 elections has stymied much progress. When the new government is in place, renewed advocacy with new official faces will be required to push the agenda for improved treatment and HIV prevention for Bangladesh's IDUs. ■

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The Art of the Possible: Intervention Strategies in High and Increasingly Concentrated HIV Epidemics Among Injection Drug Users

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For at least a decade, harm-reduction approaches to the control of HIV infection among and from injection drug users (IDUs) have been convincingly shown to be both effective and cost effective. In fact, these approaches have been shown to be the only effective way to address highly concentrated epidemics of HIV among IDUs. Such epidemics have occurred for the first time in many cities throughout the world and have become more numerous in many others, especially in developing or transitional countries. Importantly, harm-reduction measures are not associated with serious adverse consequences such as increasing illicit drug use. Nevertheless, policymakers in many countries have demonstrated a profound reluctance to accept the strong evidence of the benefit and safety of harm-reduction programs. Consequently, implementation of these prevention strategies has often been inadequate, delayed, or obstructed. In many countries and regions, the limited acceptance of harm reduction has had catastrophic health, social, and economic consequences. The need for improved advocacy for harm reduction has been identified in many regions where HIV infection among IDUs threatens or already has occurred.

This discussion will chart the course and status of advocacy efforts to introduce widespread harm-reduction strategies and programs in two countries with high and increasingly concentrated HIV epidemics among IDUs: the Russian Federation (RF) and Indonesia. Tables 1–4 present a number of factors that are important to advocacy efforts.

Harm-Reduction Efforts in the Russian Federation

As shown in Table 1, the official number of HIV cases in the Russian Federation is 144,000. This official number is based on people living with HIV who have registered with the government. There is no current estimate of what the actual number might be. UNAIDS arrived at its 1999 estimate by multiplying the registered number by 4.45. If one uses the same multiplier, there would be about 640,000 estimated cases as of October 2001.

Table 1: The HIV and drug use situation

Situation parameters	Russian Federation	Indonesia
Population	147 million	220 million
Official number of HIV cases	144,000	1,887
Estimated number of HIV cases	640,000	80,000–120,000
Official number of IDUs	<300,000	130,000
Estimated number of IDUs	1 million	500,000–1 million
Estimated number of HIV-positive IDUs	570,000	16,000–40,000

The number of registered illicit drug users is fewer than 300,000, but the mean number of estimated illicit drug users (various figures are quoted) is 2.5 million. Of these, an estimated 1 million are IDUs. The estimated number of HIV-positive IDUs, if the estimate of 640,000 cases is accepted, is around 570,000.

Responses to this massive epidemic have been slow to develop but have increased in recent years. As shown in Table 2, 63 rapid situation assessments (RSAs) have been carried out, and about 48 needle and syringe programs (NSPs) have been established, most as a result of the assessments. At least 37 NSPs provide outreach to IDUs as part of their needle and syringe exchange services, and at least one other outreach program for IDUs (in Moscow) operated without distributing needles and syringes. There are no drug substitution programs, because the use or prescription of methadone is against the law in Russia, as is use or prescription of buprenorphine. One drug user organization exists. Its formation was a key moment in Russian harm-reduction history. On the author's trips to Russia after this group was formed, most needle exchange personnel were discussing whether or not they should start additional drug user organizations. In spite of the growing number of efforts, the combined reach of all harm-reduction programs in Russia, based on information I have been able to gather, is less than 100,000. This is definitely less than 10 percent of the estimated 1 million IDUs in Russia.

Table 2: Advocacy factors: Program-related factors

Factors	Russian Federation	Indonesia
Rapid situation assessments	63	9
Needle and syringe (NSP) programs	48	1 (but another starting in 2002)
Outreach programs	37	1 (but 4–6 starting in 2002)
Substitution programs	0	0 (but 2 starting in 2002)
Drug-user organizations	1 (unfunded but seeking funding)	1 (unfunded)
Combined reach of all harm-reduction programs	100,000	<1,000
Reach as % of estimated number of IDUs	<10%	<0.1%
Secure funding of programs	Funding for 46–48 NSPs 2002–05 (DFID); ongoing funding from Open Society Institute (OSI)	Funding promised for 2 NSPs and 4–6 outreach programs (USAID, Ausaid, OSI) 2002–03
Prison harm-reduction programs	6 (all peer education plus education of guards and prison medical staff; 1 proposed NSP	1 outreach program to prisoners
Involvement of HIV+ IDUs in HIV+ advocacy	None	None

In terms of plans, the U.K. Department for International Development (DFID) has provided 3 years' funding for NSPs—36 NSPs initially and an additional 10–12 during the 3-year period. The DFID funding also will provide extra training and technical support for the NSPs through AIDS Foundation East-West (AFEW), an international nongovernmental organization (INGO).

As for advocacy, what has transpired and where is the Russian Federation now? Table 3 lists several activities that have proved to be important to harm reduction. Publication of specific materials in Russian, such as Larissa Badrieva's book on the Kazan outreach model, is important. Experience in other countries has shown that it is important to have at least one agency that focuses on harm reduction as a core activity across the country. In Russia, this is AIDS Foundation East-West. The fact that technical support is available, externally but also internally, is extremely important. Many Russian harm-reduction workers are getting to the point where they can be used by international NGOs or by other groups in the area to provide the support internally. Consultants from outside the country are not needed to the extent they were 2–3 years ago. An informal network of harm-reduction programs is developing in Russia, and helps to disseminate information and keep programs in touch with each other, but no formal network has been established to advocate for harm reduction. Funders are interested in harm reduction in Russia, and a report written early in 2001 (Burrows, in press) showed that 20 percent of funding for NSPs was coming from the government or local sources, which is excellent. Also important is the fact that the major funders of harm-reduction programs meet regularly to try to coordinate strategy and ensure there is no duplication of programming.

Table 3: Advocacy factors: Umbrella advocacy activities

Umbrella advocacy activities	Russian Federation	Indonesia
Publication of key harm-reduction documents in local language: examples	Starting and managing NSPs, IDU-RAR, European Peer Support Manual, scientific papers, Kazan outreach model	Manual for the Reduction of Drug Related Harm in Asia
Provision of external harm-reduction technical support	Yes, through AIDS Foundation East-West (AFEW); Imperial College (UK), Royal College of Tropical Medicine (UK), etc.; Medicins du Monde (France); consultants	Yes, through Centre for Harm Reduction (CHR), Asian Harm Reduction Network, Family Health International (FHI), consultants
Training of local harm-reduction technical support providers	Yes, by OSI and AFEW	Yes, by CHR and FHI
Implementing agency focusing on harm reduction as national core activity	Yes, AFEW	No

Table 3. Advocacy factors: Umbrella advocacy activities *(continued)*

Umbrella advocacy activities	Russian Federation	Indonesia
National harm-reduction program network	Forming	Forming
Harm-reduction advocacy network	No	Yes
Regular meetings of funders of harm-reduction programs	Yes	Yes
Harm-reduction advocacy targets identified by programs and donors	Yes	Yes
Advocacy materials produced for:		
• Police	Yes	No
• Health departments	Yes	Yes
• Politicians	No	No
• Teachers	No	No
• Clergy	No	No

Table 4 lists several indicators of effective advocacy, based on experience in other countries. One of the most important is statements of support from government agencies. The Ministry of Health in the Russian Federation now has provided considerable public support for harm reduction. Advocacy materials have been developed by various organizations—mainly INGOs and some U.N. organizations—for specific groups. There are materials in Russian for the Russian Ministry of Health, for Russian doctors (including various medical specialties), and for various other groups to enable them to advocate the need for harm reduction. Importantly, an order went out to all Ministry of Health bodies to implement harm reduction, which could be considered an explicit inclusion of harm reduction in health policy. Concern remains, however, that harm reduction is not the priority it should be in Ministry policy documents.

Interestingly, the Ministry of Justice appears to be reasonably supportive of harm reduction in Russia. The level of programming being allowed inside Russian prisons, mostly through an AIDS Foundation East-West project, is quite extraordinary. This includes training at many levels, including the training of peer educators in prisons. It also appears that condoms may be distributed in prisons. One program, in Pskov, is attempting to start a needle and syringe exchange program in prisons. While this idea may sound strange to Western ears, its already has been tried in Moldova and Belarus and there are moves to implement similar programs in Ukraine. Specific materials have been developed for the Ministry of Justice, again, mostly produced by INGOs. Unlike the Ministry of Health, however, the Ministry of Justice has never issued a press statement saying it deems harm reduction a good idea.

Table 4: Indicators of effective advocacy

Indicators	Russian Federation	Indonesia
Statements of public support by:		
• Ministry of Health	Yes, increasing	Yes, increasing
• Ministry of Police/ Ministry of Internal Affairs	No	No
• Ministry of Education	No	No
• Ministry of Justice	No	No
• Prime Minister/ President	No	No
Health policy explicitly includes harm reduction	Yes, to some extent	No, but signs of change
Media articles on harm reduction	Generally positive, not a prominent issue	Generally positive, increasingly prominent
Community awareness-raising activities by programs and donors	Yes, mostly local	No
Closures of harm-reduction programs due to community pressure	No	No
Reports of negative community reaction to harm-reduction programs	Increasing, especially from Russian Orthodox Church	None
Community support for harm reduction	Little evidence but does not seem to be growing	Little evidence but seems to be growing

The Ministry of Internal Affairs—the law enforcement ministry—has sent many conflicting signals. The Ministry does not shut down the needle exchanges, which is good. Yet ministry staff often make negative comments about harm reduction, so we do not really understand where they stand. Unless they begin to offer support in a very public way, it will be extremely difficult to do work on the ground. Some very specific harm-reduction advocacy publications—in both English and Russian—have been developed for the Ministry and distributed to all its groups, but they have not led to any public statements of support. It appears that at the senior levels, there is virtually no interest in or support for harm reduction.

One group that has not been addressed with advocacy materials, and which appears to be increasingly opposed to harm reduction, is the Russian Orthodox Church. Other clergy in Russia have not been as opposed, although Catholic and other clergy in Ekaterinburg joined with their Russian Orthodox colleagues recently in condemning NSP. This is a worrisome trend.

In the community, by contrast, there does seem to be substantially increased awareness of and support for harm reduction. One way of measuring this is the extent of closure of harm-reduction programs, which has happened only rarely in Russia. Harm reduction has had some media coverage, which is often positive, but HIV/AIDS issues are not yet prominent in Russia.

Harm-Reduction Efforts in Indonesia

In Indonesia, registered HIV cases stand at 1,887. Estimated figures range widely, but 80,000 to120,000 is the figure Gary Reid posited in *The Hidden Epidemic Revisited* (Reid and Costigan 2002). The police estimate of the number of illicit drug users is 130,000, though the general estimate is 1.3 to 2 million. Estimates of IDUs also vary enormously, although 500,000 seems to be the minimum. Estimates of HIV-positive IDUs range from 16,000 to 40,000.

As shown in Table 2, harm reduction programs in Indonesia have been limited. Nine rapid-situation assessments have been done, but follow-up activities have been slowed by several issues. One, quite simply, is funding for programs. Another is perception: many people believe that Muslim religious leaders in particular will be opposed to harm reduction. As a result, people are reluctant to implement harm-reduction programs. One outreach program currently exists, Yayasan Hati Hati in Bali, but several more should start over the next year. One needle exchange program is operating at a very low level, in a somewhat illicit way, and a man from Makassar is running a drug users' organization. There are no methadone programs, although WHO is planning two such pilot programs. Overall, the reach of all these programs is very limited. Because drug users are afraid of contact by outreach workers, building up such programs by building trust with clients will take considerable time.

Advocacy efforts are being developed and hopefully will go into effect soon. An advocacy steering committee of Indonesian government and nongovernment organization (NGO) representatives already has been established and meets regularly in Jakarta. More funding may be coming from several sources. The Ministry of Health indicated recently that harm reduction will be difficult to implement, but, in a great breakthrough, the Ministry supports it. Materials have been produced to assist this process as well. The Ministry of Justice is interested in harm reduction because of worrisome study findings of HIV among drug users in prisons. Officials now realize that harm reduction may be the only way to proceed, though they have yet to issue public statements of support. Indonesia's Ministry of Police demonstrates considerable understanding of the issue, but also puts out many conflicting signals.

No agency in Indonesia is currently focusing on harm reduction as a national core activity. The Family Health International Stop AIDS program does manage specific harm-reduction activities and funding for a wide range of advocacy tasks, which will be carried out by the Asian Harm Reduction Network and the Centre for Harm Reduction, among others. Funding organizations are interested in harm reduction. Technical support is available from outside Indonesia, but is very limited internally. The lack of internal resources will slow the process of scaling up harm reduction.

One of the biggest problems in Indonesia is that there is virtually no awareness of drugs or harm reduction at the national level. People really do not understand drugs, drug use, or drug dependence, let alone needle exchange. All of these concepts are new and need to be talked about—a debate must be started. At the local level, very little support for harm reduction is evident, but media coverage does seem to be increasing.

Conclusion

Advocacy is vital. We need to preprogram. That is, if we want 50 harm-reduction programs, or 100, in countries like Russia or Indonesia, we must do an enormous amount of up-front work. We must persuade all the different groups that need persuading that harm reduction is the right way to move forward.

Overall, advocacy efforts in Indonesia are somewhat behind those in Russia, but it is interesting to note that, while actual approaches need to suit the context, the types of advocacy work being done have many similarities. The common elements seem to be these: coalitions of INGOs and NGOs and government; target groups segmented for advocacy; and police, health care, media, and politicians as the groups to be approached. In Indonesia, religious affairs and religious leaders also are important, and this may be the case in the Russian Federation, as well.

Harm reduction does not occur by itself. Development of specific arguments based on local evidence is important. This can be done through rapid assessment, but also through strategic research that can feed into program development and that does not take too long to report. Evidence is needed in varied formats; the WHO Evidence for Action series should be useful in this respect. Technical support and funding are absolutely necessary. Country-based agencies to implement programs are very useful. We need to find or start such agencies and encourage them to focus on harm reduction as their main activity. Finally, networks of harm-reduction programs are also key to success. ■

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HIV Prevention Strategies for Injection Drug Users in High HIV-Prevalent Scenarios

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Ninety percent of the world's opium is produced in Asia, and about 60 percent of the world's opiate users live in Asia. HIV has spread quite rapidly in the region since evolving there and diffusing into this population. Because injection drug use is the major force driving the HIV epidemic in many Asian countries, comprehensive strategies are needed in the region to contain the escalating level of HIV infection among drug users. In many places, high-risk drug use and high-risk sexual behaviors often are linked, further increasing the risk of transmission. Injection drug use is mainly responsible for hepatitis C transmission. Nevertheless, even though high seroprevalent situations contribute to persistent HIV incidence, it still may be possible to avert epidemics, as has been demonstrated in cities like Edinburgh and New York. But for that to happen, public policies must support appropriate structural interventions.

A spiraling injection drug use trend is particularly apparent in Myanmar (formerly Burma), Indonesia, Vietnam, and the southern provinces of China. In many places, HIV prevalence among drug users has escalated alarmingly in a very short period: in about a year, the seroprevalence has risen from almost nil levels to as high as 50 percent. In many cities in countries where drug users have been infected, the HIV seroprevalence has gone up to unacceptably saturated levels; HIV epidemics of an explosive nature have occurred in Bangkok, Thailand (1987); Manipur Province in northeastern India (1988); Yunnan Province, China (1989); Ho Chi Minh City (1992) and some other cities in North Vietnam; and Kathmandu in Nepal (1998). In Vietnam, HIV prevalence among injection drug users (IDUs) rose from 0.1 percent in 1996 to 64 percent in 1999. In Indonesia in 2001, the Ministry of Health estimated that there were 1 million drug users, 60 percent of whom were IDUs, and that 70 percent of the IDUs shared needles and 15 percent were HIV positive. Transmission often is driven by drug abusers' sharing of contaminated needles and syringes as well as by their unsafe sex practices, which ultimately contribute to infection in the general population.

In India, by the end of 2000, 3.6 million persons were infected with HIV. In urban areas, the infection rate was in the range of 40 to 70 percent among sex workers and 15 to 30 percent among attendees at sexually transmitted disease (STD) clinics. In the antenatal clinics in urban areas, about 1 to 3 percent HIV seroprevalence has been observed. Recent rapid assessments of drug use in 14 sites in India have indicated the prevalence of injection drug use in all of them (UNDCP ROSA, 2002). In fact, in almost all the cities and towns where injection drug use has been reported, HIV seroprevalence has been alarmingly high. Data from the sentinel surveillance (2000) from the National AIDS Control Organization, India, indicates that the median HIV prevalence among IDUs is at or above the critical level of 5 percent in many places, including Manipur (64.3 percent), Chennai (26.7 percent), Mumbai (23.7 percent), Mizoram (9.6 percent), Nagaland (7 percent), and Delhi (5 percent).

Across Asia certain types of drug- and sex-risk networks facilitate HIV transmission; membership in certain risk networks increases the potential for acquiring and transmitting the infection. The settings in which drugs are used are also important—drug use in shooting galleries, common shooting locations, and dealers' places increases the potential for transmission. Structural inequalities like income inequality, poverty, living conditions, and access to care influence HIV-related risk behavior. Certain locations can be termed risk locations where environmental factors play a significant role in promoting unsafe behavior and practices.

Still, it may be possible to contain HIV epidemics even in areas where HIV seroprevalence is significantly high. In New York City, Des Jarlais (2001) examined trends in HIV prevalence, incidence, risk behaviors, and prevention programs from 1990 through 1997. Based on cross-sectional surveys and cohort studies, he found that HIV prevalence during that period declined from approximately 50 percent to 30 percent, and that HIV incidence declined from 4 to 1 per 100 person-years at risk. (The cross-sectional surveys involved more than 11,000 IDUs, and the incidence studies considered more than 6,000 person-years.) The study also found that from 1990 through 1997, use of syringe exchange programs in New York increased from 20 to 50 percent for the current injectors, while HIV testing increased from 40 to 80 percent. Participation in syringe exchange programs was associated with reductions in risk for exposure behavior;

knowing that one was HIV positive was associated with a reduced risk for transmission behavior.

The New York data suggest that 50 percent or greater direct participation in syringe exchange programs may be sufficient, though secondary exchange may also be required. HIV testing and counseling may need to reach a relatively high percentage of HIV-positive IDUs (70 percent and above) to substantially reduce transmission behaviors on a population level. The percentage of IDUs who need to be reached for an effective prevention effort is a critical question in containing HIV among IDUs.

In South Asia, limited government responses and capacities for responding often complicate the situation. The legal, policy, and social climates often impede the development of a public health approach to the problem. Often in many countries in South Asia, the departments of drug control and public health are in conflict with each other. Drug abuse is viewed as a criminal offense, and treatment and rehabilitation are heavily influenced by a paradigm of institutional isolation and punishment. Public health departments have leaned toward a disease-based approach to the problem of drug abuse, often relying on detoxification as a primary form of intervention. Rarely have government drug control or health agencies considered the specific needs of chronic, dependent opiate injectors outside the context of an "abstinence objective." Recognition of high rates of treatment failure with IDUs, usually beyond the 80th percentile, has not helped to change treatment approaches and pragmatic strategies.

The principles of ensuring coverage, access, and quality; ensuring coordination and collaboration; overcoming stigmas; and tailoring services and programs guide key strategies for HIV prevention. These strategies include: substance abuse treatment, community outreach, interventions to increase IDUs' access to sterile syringes, interventions in the criminal justice system, prevention of sexual transmission, HIV counseling and testing, partner counseling and referral services, preventive case management, coordinated services for IDUs living with HIV/AIDS, and primary drug prevention.

In South Asia, HIV interventions for drug users lack quality coverage (Figure 1). There is agreement in the region that new responses to the issues of injection drug use must be initiated in order to control and possibly reverse the current trends toward HIV infection. At present, the critical need in the region is to understand the influences of injection drug use on the HIV epidemic and to develop informed collaborative policies and programs for effective prevention and intervention.

To the extent that IDUs may now be targeted by law enforcement, a more tolerant approach would keep IDUs out of prison so they are less likely to get or transmit HIV. The ability of nongovernmental organizations (NGOs) to work with IDUs can be undermined by law enforcement actions that put self-identified IDUs in jail. Because a large number of drug users are in prisons in many Asian countries, prison-based programs can focus on HIV prevention among the incarcerated drug users. These programs are critical in reducing HIV transmission.

Structural interventions that have an impact on HIV incidence are needed. Structural interventions may be promoted through such strategies as policy implementation, broadly defined to include legislation, litigation, regulation, law enforcement, and the setting of administrative, organizational, and product standards; or through community advocacy or organizing (Heimer 2001). Even though structural interventions are designed to increase availability, accessibility, and acceptability of effective HIV interventions, finding and sustaining financial support and altering public perception of treatment, changing clients'

Figure 1. Coverage of HIV interventions for drug users in South Asia

HIV Prevention Interventions	Bangladesh	India	Nepal	Sri Lanka	Comments
Community outreach	♦	♦	♦	♦	Inadequate coverage
Peer interventions	♦	♦	♦		Excellent model of needle exchange delivery through peer interventions
Needle exchange programs	♦	♦	♦		Inadequate coverage
Pharmacological therapies		♦	♦		Inadequate coverage; inadequate quality control
Prison-based programs		♦		♦	Quality control inadequate

differential participation, and the retention of certain groups (by gender, ethnicity) may pose great challenges in Asian settings. Equally challenging is the need to develop methods for assessing the impact of structural interventions.

Opiate maintenance treatment is relatively new in South Asia. Sublingual buprenorphine has been used in five cities—New Delhi, Mumbai, Chennai, Calcutta, and Imphal. Findings from studies evaluating these programs have demonstrated that pharmacological therapies with sublingual buprenorphine have a positive influence in reducing injection-related HIV risk behaviors among the participating drug users. Furthermore, additional benefits, such as reduction in criminal behavior and improved psychosocial functioning, have been observed. Despite this, there is no policy that supports pharmacological therapies in India, and this effectively means that the programs initiated cannot be expanded and sustained.

Many obstacles and challenges face us. An important impediment is that treatment professionals promote correctional approaches, detoxification, or abstinence-oriented therapies, rather than promoting HIV prevention strategies. The challenges start with resources, both human and material. Where do we find money, and how do we sustain it? How do we sustain our programs? Many times, families from Asia request that drug users be incarcerated in correctional facilities. How do we alter the public perception of treatment? How do we alter the government perception of treatment? How do we ensure that more women come into treatment? Obviously, in Asian settings, many drug users do not seek treatment. Marginalized people, people belonging to certain ethnic communities, do not access treatment services. How do we facilitate their recruitment and retention in treatment? And again, while we are facilitating structural interventions as researchers, it is time for us to develop methods of evaluating the impact of these structural interventions. The challenge in the future will be to bring about necessary structural and policy changes in Asian settings that facilitate a public health and humanistic approach to drug users. ■

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High HIV Prevalence Settings Among IDUs and the General Population: Current Status and Countries at Risk

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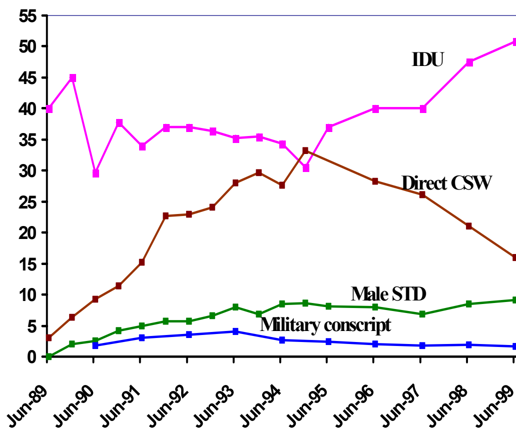
This paper focuses on intervention strategies in settings where HIV prevalence is high among both injection drug users (IDUs) and the general population. Our working definition of high HIV prevalence is a situation where HIV prevalence is 25 percent or more among injectors, and 1 percent among the general population. The 1 percent cutoff has been proposed by the Monitoring the AIDS Pandemic (MAP) Working Group (2001) that has tracked the HIV pandemic for many years.

In applying this definition, however, we should take into account a number of caveats. First is the lack of reliable data for HIV prevalence in many developing country settings. In some instances, estimates of HIV prevalence among IDUs were available but estimates for the general population were not, whereas in other countries the opposite was the case. A second problem is that in some large, populous countries such as China, India, or Brazil, there are examples of cities where there is high HIV prevalence among drug users, but in more rural areas prevalence is low. Therefore, countrywide prevalence rates should be regarded with caution, since these rates will tend to mask HIV sub-epidemics in urban settings. Finally, another limitation of any kind of working definition of high prevalent settings needs to take into account the fact that these are very dynamic epidemics, and a situation can change very rapidly from a low prevalent setting to a high prevalent setting. A recent example of this is the HIV epidemic among IDUs in newly independent states of the former Soviet Union in the late 1990s.

Figure 1. Median HIV prevalence in selected groups from sentinel surveillance, Ministry of Public Health, Thailand, June 1989–June 1999



Source: Thai Ministry of Health

Limitations aside, there are a few examples where HIV prevalence among IDUs and the general population definitely meets our working definition. These include Manipur, Burma, Ukraine, and Thailand. The data in Figure 1 show sentinel HIV surveillance data among various populations in Thailand between 1989 and 1999. HIV prevalence among IDUs has been relatively stable but high at around 40 to 50 percent, and HIV prevalence in military conscripts—which can be considered an indicator of HIV prevalence in the general population—has varied from 1 to 3 percent, the level considered to be a generalized epidemic (reference: Thai Ministry of Public Health). The prevalence in the general population is not restricted to Bangkok; data also suggest very high HIV incidence rates among drug users attending drug treatment programs in Cheng Mai, in Northern Thailand (Celentano et al. 1999).

A second example of a region where HIV prevalence is high among IDUs and the general population is in India's Manipur Province. HIV prevalence among IDUs in Manipur is approximately 75 to 80 percent. Studies of wives of IDUs in Manipur indicate that as many as half are HIV infected (Panda et al. 2000). Among commercial sex workers, only some of whom are IDUs, HIV prevalence rates are between 12 and 20 percent (Agarwal et al. 1999). These data point to a situation where interventions to prevent sexual HIV transmission are urgently needed. In fact, studies from my own research team in Baltimore, Maryland, and others have indicated that sexual HIV transmission plays a much more important role among IDUs than previously recognized (Strathdee et al. 2001; Kral et al. 2001).

Populations in a number of countries were at risk of meeting our working definition for generalized epidemics, including Belarus, Kazakstan, Moldova, and the Russian Federation;

all of these Eastern European countries may face the same fate as Ukraine. In the MAP report of 2001, Moruf Adelekan has reported that HIV prevalence in injectors in Nigeria is around 9 percent, but in the general population it is about 5 percent. In Nigeria, injection drug use has diffused relatively recently, and HIV prevalence is starting to creep up. Also, in southwest China, many regions in India, and in Malaysia and Vietnam, HIV epidemics are escalating rather rapidly in the general population as well as among injectors. In some cases, such as Vietnam, HIV prevalence rates vary widely depending on the sample. For example, a report by Quan and associates in 2000 reported HIV prevalence among IDUs ranged from 0 to 89 percent depending on the province. HIV prevalence among commercial sex workers (CSWs) ranged from 0 to 13.2 percent, and prevalence among pregnant women, blood donors, and military recruits were 0.12 percent, 0. 20 percent and 0.61 percent, respectively (Quan et al. 2000). Clearly, this calls for careful monitoring and targeted interventions.

In terms of what kinds of interventions can be put in place, we can first consider interventions that target individuals, which is where most of our collective efforts in the HIV epidemic have been directed. These types of interventions include voluntary HIV testing and counseling, which can effectively reduce risk behaviors among both HIV-negative and HIV-positive IDUs. The demonstrated reduction of risk behaviors underlines the importance of voluntary HIV testing and counseling even in countries that do not have antiretroviral therapy readily available.

Needle exchange and other syringe access programs are obviously an important component of an intervention system in generalized epidemics where IDUs have a major role in the epidemic. However, needle exchange programs exist in less than 40 percent of all countries around the world where injection drug use has been reported. We have a long way to go (Strathdee and Vlahov 2001).

Other examples of interventions that operate at the individual level include male and female condoms, and microbicides. Of particular interest for generalized epidemics are interventions focusing on HIV-infected persons, which include prescribing highly active antiretroviral therapy (HAART) to HIV-positive people. Some might argue that this is solely a care issue, because we know that antiretrovirals will reduce morbidity and mortality. However, if used properly, and with high adherence, antiretrovirals can reduce the level of HIV below detectable levels and can theoretically reduce the risk of transmission. Data are lacking that indicate the extent to which transmission risks can be reduced with viral suppression, but if we can assume that transmission risks are lowered, provision of antiretrovirals represents one example of how the gap between prevention and care can be closed.

Another important aspect for interventions is one that views HIV-positive IDUs as vehicles of change. In high HIV prevalence settings, we need to capitalize on the fact that many drug users are very well organized and have drug user networks that can help disseminate information. We have very much underutilized interventions focusing on HIV-positive persons. We can learn more about the gay segment of the IDU community and their strategy for using HIV-positive people to spread the word and take on some responsibility to stop HIV transmission.

In settings where HIV prevalence is high, we must move beyond individual-level interventions to consider the risk environment, which is a term recently coined by Tim Rhodes and colleagues (1999). What do we mean by interventions that alter the risk environment? The idea is to create enabling environments that nullify the risk environment, and these can operate on a number of levels. We can consider micro-level interventions at the physical, social and economic levels. Physical interventions (e.g., using safe injection rooms) might operate in prisons, brothels, or shooting galleries. Social level factors include peer network interventions to prevent HIV or injection drug use, and couple counseling. Economic interventions at the micro level include offering free drug treatment, HAART, or micro-credit interventions. For example, a program called Nai Zindagi in Pakistan is a network of drug treatment programs directed by Tariq Zafar that operates in the absence of traditional substitution therapies to treat opiate addiction. Nai Zindagi is a novel community development project that reduces the socioeconomic vulnerabilities to HIV infection by creating jobs for active drug users, who make leather goods, furniture, houses, and rebuild vintage jeeps from World War II. Many drug users either stop or reduce their injection as a result of this program, and thus it is an excellent example of how we can counteract the risk environment through an intervention.

A problem encountered in high-prevalence settings is how to go about allocating resources, since there is often a battle for dollars between prevention and care programs. Zaric and Brandeau (2001) describe a theoretical population of a million, where there is high HIV prevalence among IDUs as well as the general population. These authors suggested that allocating two-thirds of a $1 million budget to needle exchange and one-third to condom promotion would reduce the annual HIV incidence rate, but only by 15 percent. In a high-

prevalence setting, that is not a very great reduction in incidence, meaning that we have to think beyond this.

Going beyond this means interventions at the macro level. One example at the macro level is interventions aimed at preventing transitions to injection drug use. This would be particularly suitable for countries where we have seen injection drug use diffuse fairly recently, Nigeria and Pakistan being two examples. Another example of a macro-level intervention is one where there has been a repeal of drug paraphernalia laws and prescription laws that often prohibit drug users from accessing sterile syringes. Such a repeal has taken place in some states of the U.S. recently, as well as in two Brazilian states, Sao Paolo and Santa Catarina. Studies show that syringe deregulation policies have a positive impact on access to syringes in these settings, which reduces the risk of HIV infection through needle sharing (Strathdee and Vlahov 2001). Finally, another bold example would be universal provision of HAART to all HIV-positive persons meeting international guidelines for therapy. This has been done in both Canada and Brazil, the latter being one of the few developing countries to provide free antiretrovirals to HIV-positive people.

In generalized epidemics, interventions operating solely at the individual level are too narrowly confined. On a macro level, we need to reduce HIV vulnerability and transitions to injection, and offset the vulnerabilities created by war, migration, poverty, and socioeconomic collapse such as the situation in Russia and the Newly Independent States in recent years.

Why are macro-level interventions important? Consider the situation facing Central Asia in the aftermath of September 11, 2001. Consider also some descriptive statistics for drug users in Quetta, Pakistan, collected by the Nai Zindagi treatment program mentioned earlier. Prior to September 11, there were approximately 1,500 drug users in Quetta, which is situated close to the Pakistan-Afghanistan border. Most drug users at the time were chasing heroin, and about 8 percent were injecting. HIV prevalence was about one percent among IDUs. Of the 1,500 drug users, 16 percent had recently donated blood, which is a paid service (Zafar and ul Hasan in press). As in Manipur and some of the other settings nearby, almost half of the drug users are married, and 85 percent of those who are married return home after spending the days on the streets. There is virtually no condom use. Experience shows that once HIV is introduced into such a setting, it will become very generalized very quickly.

Prior to September 11, about 20 percent of the drug users attending the program in Quetta were Afghan refugees. Since September 11, more than one million Afghan refugees have arrived in Pakistan, where they encounter more poverty and despair. Military pressure on the Afghan border has shut off the heroin supply. What happens when nearly 1,400 drug users who have been chasing heroin cannot get it? They start to inject. The situation is a time bomb.

The experience in the newly independent states of the Soviet Union was that socioeconomic collapse led to transitions to injection drug use, and lateness in putting interventions in place led to several of those countries being on the brink of a generalized epidemic. The same thing can happen to the countries in Central Asia. Transitions to injection have already occurred in Quetta, and it is expected that a new epidemic of injection is imminent. To prevent generalized epidemics from becoming the norm in the face of such conditions requires us to "think big." There is an urgent need to provide macro-level interventions that can potentially offset the explosive nature of HIV epidemics among drug users and in the communities where they live. ■

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Drug Policies: A Reflection of Understanding and a Framework for Action—Findings From a United Nations Drug Policy and HIV Vulnerability Research Study in Asia

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This paper examines the manner in which drug policies are constructed in seven Asian countries and the technical merits of these policy-development processes, as well as their impact on public health. The paper draws on the findings of a 1998 drug policy and HIV vulnerability research project commissioned by a task force of the Joint United Nations Programme on HIV/AIDS (UNAIDS) Asia Pacific Intercountry Team (UNAIDS/APICT). In particular, this study was conducted to examine whether national drug control and public health laws and policies facilitate or impede interventions designed to reduce the risk of HIV transmission among drug users.

Why Drug Policy Is Important

Drug policy is central to the challenge faced by governments seeking to prevent drug problems and, in particular, to prevent, limit, or reverse drug-fueled HIV epidemics. Drug policies reflect the way governments and their decisionmakers understand and view the determinants and consequences of drug use and the manner in which they believe drug-related problems are best addressed. More generally, policies reflect the importance that decisionmakers give to a particular issue and provide a framework for what is possible. Policies also determine the manner in which governments and their organizational instruments can and do respond to particular problems and how governments seek to achieve their aspirations and goals.

U.N. Drug Policy and HIV Vulnerability Study in Asia

In 1998, an officer of UNAIDS/APICT, Christian Kroll, recognized the critical impact that drug policy has on government efforts to address drug problems as they relate to HIV vulnerability. Subsequently, the UNAIDS/APICT Task force on Drug Use and HIV Vulnerability in the Asia Pacific Region commissioned a study to examine drug policies in the Asia Pacific Region and, in particular, the link between drug policy and HIV vulnerability. This study provided a systematic review of drug policy in seven countries—China, Vietnam, Thailand, Malaysia, Myanmar, India, and Nepal—representing approximately half of the world's population. Edna Oppenheimer (from London) and I were the two consultants selected to undertake this research. The task force selected these countries in large part because drug use was recognized as a major determinant of HIV in China, Vietnam, Myanmar, Malaysia, and Nepal and looms ever larger in Thailand and India.

During this project, the researchers interviewed senior government officers from relevant sectors in these countries (including health, public health, narcotics control, police, prisons, education, finance, home affairs, economic planning, justice, social justice, social welfare, and so on). The researchers also met with representatives of key nongovernmental organizations (NGOs), International NGOs, and U.N. agencies; and during field visits, with drug users and drug-user support groups. The study was implemented over a 3-month period. The researchers examined relevant legislation and government and scientific papers and reports. A total of 426 questions across relevant sectors were drafted in preparation for the research, and these were honed down to 18 major areas of inquiry:

1. Information, education, and communication activity
2. Acceptance of outreach, peer education and user self-organization approaches, and current activity
3. Treatment and prevention interventions
4. Drug substitution treatments—policy and practice
5. Legal situation regarding needles and syringes
6. Managing people with dual drug problems and HIV/AIDS—policies and practices
7. Drug laws that allow and enable or that prevent other harm-reduction interventions
8. Criminal justice system and HIV prevention policy and practice in prisons, police lock-ups, and detention centres
9. Organizational framework to support and facilitate implementation of health protection policies
10. Consensus building and consulting in the general population and within injection drug user (IDU) communities
11. Socioeconomic factors influencing drug use

12. Acceptance of the concept and jargon of “harm reduction”
13. The policy decision making process
14. General drug use and HIV situation data
15. Drug prevention, treatment, and control policy development and planning
16. HIV/AIDS prevention, treatment, policy development, and planning
17. Drug policy and intervention research
18. Future drug policy options that could be considered

A wide range of issues were examined, including the manner in which drug policy is actually constructed by governments and how it is translated into practice. This policy research included an examination of drug-specific and HIV prevention-related legislation.

Examples of themes explored included the following:

- Is drug use an offense in itself?
- Is the possession of needles and syringes unlawful?
- Do police officers often arrest people for possession of needles and syringes?
- Is treatment abstinence oriented only?
- Is methadone provided for detoxification?
- Is substitution therapy available?
- Are needle and syringe exchange programs available?
- Are IDU peer-led approaches available?
- Are policymakers currently opposed to substitution therapy, to needle and syringe exchange programs, to peer education programs?
- Are policymakers currently willing to consider substitution therapy, needle and syringe exchange programs?
- Was drug use addressed in the last HIV/AIDS national plan?
- Was HIV/AIDS addressed in the last national drug plan?

The findings were analyzed and reported in terms of constraining factors and facilitators, levers, and opportunities for addressing drug use and HIV vulnerability. The survey was completed in May 1999. The report then was distributed to governments and concerned agencies to obtain their feedback prior to publication (Oppenheimer and Reynolds 2000).

Major Research Findings

The results of the study provide grounds for guarded optimism in certain areas of policy endeavor. For example, some governments would, under certain circumstances, be willing to review their policies concerning interventions to reduce the risk of HIV transmission among IDUs. Particularly important was the possibility of regional support for policy reform that supports harm-reduction policies and interventions.

In many other areas, however, the findings were disturbing. The following points illustrate several salient findings from the policy research study.

- ***Unclear mechanisms for drug policy development.*** It often was unclear how drug policies were constructed in these countries. In several instances, senior policy decisionmakers, from a range of ministries and departments, indicated that even they were unclear about the manner in which (and reasons why) policy was formulated in their countries.
- ***No coherent framework for problem analysis and solution generation.*** Fundamentally important was the observation that in all seven countries, senior government officers could not provide information to suggest the existence of a coherent framework for analyzing the nature and prevalence of drug use and its determinants, the range of public health problems associated with drug use, and the outcomes associated with current policies and interventions. The study suggested many decisionmakers possessed a poor understanding of human behavior and its determinants more generally (e.g., the widely held assumption that education and punishment provide meaningful pathways to prevention of a wide range of problematic human behaviors). Instead, policy decisionmakers often appeared to make personal assumptions about the nature of the problems and their solutions. These findings were particularly salient to the researchers’ task of understanding how senior decisionmakers formulate drug policy and the reasons for adopting one approach over an alternative set of options.
- ***Drug problems treated as a moral issue.*** Drug problems in the study countries were treated primarily as a moral issue rather than a public health and social policy issue. This view rendered debate on HIV/AIDS prevention and sexual behavior sensitive and difficult and continued to seriously hinder efforts to contain the HIV/AIDS epidemic.

- ***No theoretical modeling of policy.*** No evidence was found to indicate that theoretical models were used in developing policy. Such models allow specific assumptions and hypotheses to be precisely described and tested.
- ***Unclear or poorly structured administrative arrangements to deal with drug and HIV problems.*** Often, there were unclear or poorly structured administrative arrangements with a lack of communication, research, planning, and coordination between drug control and public health sectors—factors that impeded the development of evidence-informed policy.
- ***No dialogue between drug-control and HIV/AIDS-control agencies.*** In all seven countries, there was inadequate dialogue between policy decisionmakers and service delivery personnel of drug-control and HIV/AIDS-control agencies.
- ***No procedures for routinely examining local and international evidence.*** In relation to the review and development of drug policy, little was found to indicate that policymakers routinely searched for local and international evidence on what has been found to work best in preventing or mitigating drug-related harms in different settings, that they sought expert advice or took such advice where it was proffered, or that they understood the principles of evidence-based decision making. An examination of the process of policymaking suggested that it was often superficial and based on a highly questionable analysis of the set of problems.
- ***No questioning of the absence of evidential basis for policy development or review.*** There was no concern or questioning by officials in any of the countries about the absence of an evidential basis for policy development and practice or for their review.
- ***Limited command of the methods of scientific of inquiry.*** Many decisionmakers appeared to possess little or no understanding of the basic methods of scientific inquiry.
- ***Decisionmakers not cognizant of research.*** Decisionmakers appeared unaware of the experiences and research undertaken in their own countries and internationally with regard to what works in preventing or reducing HIV transmission among IDUs. Often they were not interested in knowing about evidence and asserted that replicated international research findings were "not relevant" to their countries or cultures.
- ***Untrustworthy evidence.*** Many senior decisionmakers expressed a mistrust of research conducted in another country. At the same time, they did not appear to require, or insist on, evidence to support the effectiveness of current drug policies and practices in their own countries in the face of demonstrably poor public health and social outcomes associated with these policies. They did not, for example, demand evidence supporting a current focus on repression, boot camp treatments, and drug education for a "drug-free" nation.
- ***No culture of learning from lessons.*** In all study countries there was little evidence that the impact and outcomes associated with policy decisions were evaluated on a continuing basis or with a lessons-learned approach. These practices were considered unnecessary and unimportant. One notable exception was in Manipur state in northeastern India, where a policy reversal was adopted in 1997 when it became clear that the emphasis on repressive measures was worsening the situation and rendering the prevention effort ineffective.
- ***Drug policy dominated by personal opinion and belief.*** In general, personal opinion and belief about what works dominated the formulation of drug policy, although religious belief, sociocultural traditions, and moral values also played an important role, These factors were often offered as a reason for excluding the possibility of (arguably) more adaptive policy reforms. Evidence did not appear to be valued as a basis for drug policy and intervention.
- ***Senior policy decisionmakers reject harm-reduction policies.*** On a number of occasions, senior policy decisionmakers indicated that they rejected the potential public health utility of harm-reduction policies and interventions in their countries. They did so on the basis of a misconception that no evidence exists to support the implementation of these policies in developing countries. Cultural differences also were cited as a reason for not implementing a harm-reduction policy. As one officer said, "We cannot accept it because there is no evidence that it can work in our country and in our cultural setting. It is not possible."
- ***Heavy investment in non-evidence-supported approaches.*** Study countries unwisely invested all or substantial drug control resources in drug- and life-skills education; in lengthy and expensive residential treatment, which was invariably involuntary, punitive, and non-evidence-based; and in repressive law enforcement interventions—all as lead or sole strategies.
- ***Redoubling of efforts as the solution.*** Decisionmakers were insistent that if only current interventions could be delivered with more commitment and resources, those approaches would succeed.

- ***Harm reduction sending the wrong message.*** Health protection and harm-reduction strategies often were denounced in study countries as morally incorrect because they send young people the wrong message about drug use.
- ***Willingness to consider harm reduction.*** Some governments would, under certain circumstances, be willing to review their policies concerning interventions to reduce the risk of HIV transmission among IDUs.
- ***Scattered harm-reduction interventions.*** There was a scattered and incoherent selection of harm-reduction interventions in the study countries, with no country adopting the full suite of interventions supported by evidence.
- ***Less-than-optimum implementation.*** When harm-reduction approaches (e.g., methadone maintenance) were adopted, those polices were not always fully implemented. No country adopted the full suite of HIV prevention interventions supported by evidence.
- ***Methadone demonized politically.*** In India, buprenorphine maintenance treatment was offered instead of methadone because of the stigma carried by methadone. Yet methadone is equally effective overall and is much less expensive for clinically equivalent doses. Like the other study countries, India has a large population living in absolute poverty and needs to use its limited resources in the most cost-effective manner possible. Considering this, methadone or even slow-release oral morphine would be a more effective choice.
- ***Health protection measures not delivered to scale.*** The measures adopted in an attempt to prevent the spread of HIV among drug users often were localized, short-term, underfunded, and insufficient in scope.
- ***Absence of supportive policy and funding frameworks.*** The lack of supportive policy and funding frameworks hindered sustainability. Instead, countries tended to adopt expensive, resource-demanding interventions with no demonstrated public benefit, save perhaps the satisfaction of "traditional values."
- ***Substantial legal and political barriers.*** Substantial legal and political barriers in study countries were impeding implementation of the most effective preventive interventions available for limiting the spread of HIV infection among IDUs.
- ***Unquestioning application of the U.N. drug treaties.*** The study revealed that senior decisionmakers often are oriented toward the international drug treaties, as well as associated guidelines and institutions, without probing the merits of their application or seeking evidence in relation to benefits and costs.
- ***Misinterpreted meaning and intent of U.N. drug treaties.*** Governments often appeared to misinterpret the meaning and intent of the U.N. drug treaties for their own purposes, often emphasizing repressive measures over alternative policy approaches.
- ***Senior decisionmakers confused about U.N. position.*** A number of senior government decisionmakers were confused about the U.N.'s recommendations regarding harm reduction policy. While the U.N. International Drug Control Programme and the International Narcotics Control Board (INCB) say one thing, the World Health Organization and UNAIDS appear to be saying something quite different in this regard.
- ***Widespread denial, complacency, or indifference.*** There was evidence of widespread denial, complacency, or indifference to the public health threats posed by injecting drug use.
- ***Drug problems not generally given high funding priority.*** With the exception of law enforcement, drug problems generally were not given high funding priority in the study countries.
- ***Emphasis on traditionally narrow policy responses.*** In all countries examined, there was an emphasis in policy, resource allocation, and focus on drug education in schools for a drug-free country, repression through law enforcement and interdiction and, in most of the study countries, involuntary military-style boot camp treatment programs.
- ***Misallocation of funds.*** Governments did not have a coherent decision making framework for determining where precious resources might best be allocated. For example, Malaysia currently invests the equivalent of nearly one-third (29.7 percent) of its entire health budget in the three low-yield and often counterproductive approaches cited above. Moreover, government is currently considering further substantial investment in these interventions. Malaysia has serious and substantial alcohol and tobacco problems but, as Table 1 shows, it allocates no serious funds to these problems. Malaysia also has a very serious and expanding HIV epidemic, particularly among IDUs. Seventy-seven percent of all known cases of HIV infection were drug injectors, whereas estimates of HIV seroprevalence among IDUs varied from 10 to 27 percent. In the face of these serious public health threats, Malaysia allocates disproportionate funding to interventions that are not supported by empirical evidence or by a rigorous in-country

evaluation of outcomes. Economists would label this a "misallocation" of funds. Notwithstanding these substantial investments, the problem of HIV among IDUs continues to grow more serious. Rather than contemplating a shift in policy and funding allocations to respond more effectively to the situation with health protection policies and interventions, government now is seriously considering increases in expenditure in these same interventions, with greatly extended periods of coerced "treatment" (2 to 13 years) and harsher penalties.

Table 1. Malaysia's budget for alcohol and tobacco problems and HIV/AIDS (U.S.$)

Program area	Annual budget	% Health Budget
Tobacco control	$400,000	0.011
Alcohol control	$27,000	0.0027
HIV/AIDS	$11.4 million	1.13
Drug control	$297 million	29.7
Total health budget	**$1,000 million**	**100.0**

Relevant Issues

The following issues are relevant to a consideration of the relationship between drug policy and HIV vulnerability.

Search for a more informed understanding of drug use determinants

Drug use often is analyzed in terms of the traditional public health model—the environment, the individual, and the drug— but there are other models of analysis and understanding. The evidence and analysis presented in this paper points to the fact that the pathway to prevention and out of drug dependence and other drug problems is not a simple one, so simple solutions to the problem are unlikely. In seeking to address problems of any description, it is axiomatic that one must first identify and distinguish those factors that have a simple, non-causal association with the problem and those that may have a causal relationship. It is now clear from the research and analysis of authors such as Spooner and colleagues (2001, 1996), Keating (1999), Keating and Hertzman (1999), National Crime Prevention (1999), and many others that the determinants of drug use are multifaceted, complex, and interactive, and are influenced not only by the activities of health, police, prison, or education departments.

Drug use and abuse is not an isolated form of behavior, a point made repeatedly by a number of authors (Keating and Hertzman 1999; Jessor 1998; and Rutter et al. 1998). Problematic drug use usually co-occurs with other types of problem behavior (Spooner and Hall 2001). Drug use sits alongside a raft of other "problem behaviors" that may have common origins in early childhood development (particularly in the first 6 years of life); the family and broader sociocultural modeling; and the physical, economic, and political environments.

This past decade has seen a rapid increase in neurobiological research in the early childhood field. It is now understood that during critical periods in the first few years of life, particular parts of the brain require positive stimulation to develop properly, and negative experiences in those early years can have long-lasting effects that are difficult to overcome later. Virtually every aspect of human development—from the brain's evolving neural circuitry to the child's capacity for empathy—is affected by the environments and experiences that are encountered in a cumulative fashion, beginning well before birth and extending until a child is about 6 years of age (National Research Council and Institute of Medicine 2000). This research shows that what happens during the first months and years of life matters a lot, not because this period of development provides an indelible blueprint for adult well-being but because it sets either a sturdy or a fragile stage for what follows.

This research found that while the highest risk of developmental problems is found among the poorest groups, the majority of children suffering from these problems are spread broadly across the middle classes. Socioeconomic status was found to be a key determinant of childhood developmental outcome. The gradient was found to be related to the qualities of the environments that stimulate, support, and nurture children; how work-life conflict is played out; parenting style; childcare; the resources for remedial work; the security of neighborhoods; and how marriage breakdown is resolved.

These findings are consistent with a large body of research demonstrating the complexity and wide array of determinants of health and social well-being (e.g., Marmot et al. 1991; Kennedy et al. 1996; Kawachi et al. 1996; and U.K. Department of Health 1998). It follows that if the determinants are multifaceted and complex and arise substantially outside those public sector areas where governments commonly invest most heavily, then the solutions must also come from new and more sophisticated investments in other sectors and areas of community endeavor that shape human behavior—in this case, drug use behaviors that place people at significant health and social risk.

Spooner and Hall (2001) comment as follows:

> The co-occurrence of many problem behaviors demands an end to the separate funding of interventions directed at subsets of these behaviors: such as crime prevention, suicide prevention, mental health promotion, and drug prevention programs. A continued dispersion of effort and resources is inefficient; more collaborative efforts are needed.

These are the areas that now deserve our closer attention. The international experience, empirical evidence, and analysis now available to governments suggest they must now reduce their emphasis on interventions focused on the individual and think more broadly in terms of programs, policies, and the macro environment and how these factors might influence pathways to a range of problem behaviors, including those of crime and unsanctioned, hazardous, and harmful drug use. Drug policy is pivotal in this context. It reflects the depth and richness of problem analysis and "solution" selection. One can infer from the literature (e.g., Keating 1999; National Crime Prevention 1999; Spooner et al. 2001) that governments are failing to strategically address a long list of structural (government policy and programs) and macro-environmental (economic, social, and physical) issues that could affect drug use and other problem behaviors. To be fair, many of these issues are very difficult to address, particularly in the context of government structures, funding arrangements, and operational processes that invariably work in isolation without coordination and integration of effort to tackle a problem that has cross-sectoral, and/or systemic determinants. Governments cannot promise nirvana, but, clearly, to continue along a pathway similar to those chosen by the seven study countries is untenable. The findings of this research, when considered alongside the relevant body of international research, suggest that governments must now reflect carefully upon the evidence in support of current policies and approaches and, if persuaded by this new analysis, must start pursuing new policy directions.

Substantial opportunity costs are associated with current funding allocations. Governments like those involved in the drug policy research study certainly can do much more to improve outcomes. First, however, those countries must understand what is at stake and then must demonstrate a commitment to outcomes-based funding in preference to more superficial problem analysis and populist politics.

Shifting focus from children to adults

The focus of attention needs to shift from children to adults who model (or fail to model) values and who nurture socially aware, socially responsible, and healthy behaviors. A shift also needs to be made by the (adult) commercial, policy, and political decisionmakers who construct the sociocultural, economic, physical, and political environments in which children develop, learn, and behave. Adult behaviors must be addressed as a basis for shaping (or reshaping) the drug-use behaviors of young people.

By way of example, a body of evidence indicates a pathway from early tobacco use by young people to illicit drug use. Most studies indicate that, for adolescents, tobacco use appears to be a stronger predictor of illicit drug use than does alcohol use, although some studies show that alcohol is more likely to precede than follow tobacco smoking (U.S. Surgeon General 1988). Degenhardt and Hall (1999) examined data from the Australian National Survey of Mental Health and Well-Being (Australian Bureau of Statistics 1998) and found that substance use disorders are strongly related to smoking. Compared to nonsmokers, current smokers were about four times more likely to have an alcohol use disorder (95 percent confidence interval: 3.4, 4.7), about eight times more likely to have a cannabis use disorder (95 percent confidence interval: 5.7, 10.2), and five times more likely to have another drug use disorder (sedative, stimulant, or opiate; 95 percent confidence interval: 3.1, 7.1). These relationships remained significant even after accounting for demographics, neuroticism, and other drug use (Degenhardt and Hall 1999).

This finding suggests that more attention must be given to regulating commercially opportunistic and irresponsible practices (e.g., sports stars and media personalities promoting the use of alcohol and other unhealthful behaviors). In the case of tobacco control, much has been achieved in this respect but more needs to be done to prevent the uptake of smoking at all ages and to work with adults to help them quit smoking and remain abstinent.

A developing body of literature (e.g., Keating and Hertzman 1999) supports the notion that effective parenting is a crucial issue for promoting healthy early development (e.g., the evidence pertaining to "biological imprinting"). Keating and Hertzman point to evidence related to behavioral modeling at "critical transition points" and the importance of finding ways to enhance resilience in environments conducive to spawning drug use and other problem behaviors, including

crime. A need exists for a more expansive model of preventive intervention that broadens the focus from individual children to their parents and to the functioning of local community institutions and aspects of social organization that affect child development.

Valuing scientific methodology

As a result of this and other studies, one is prompted to ask why so many countries continue to reject scientific methods and empirical evidence as a basis for drug policy decision making and intervention. Why do they fail to adopt more rigorous processes in formulating, monitoring, and evaluating the impacts and outcomes associated with selected policies and approaches? Why is it that personal values and beliefs continue to prevail when local and international evidence, in a range of forms, repeatedly suggests current approaches are producing poor results and new thinking is required? The explanation may have its origins, at least in part, in the Renaissance, the dawning of a new age of "enlightenment," when the principles of scientific methodology began to usurp religious dogma as a guiding light for decisions. Of course, not all countries and cultures embraced this set of intellectual and social reforms and, even today, religious beliefs dominate decision making in many parts of the world. Even in countries that did embrace the Enlightenment and, along with it, a valuing of scientific methodology, there remained significant gaps, inconsistencies, and often difficulties disconnecting from dogma and nonscientific problem analysis. The drug policy research supports the thesis that nowhere does such disjunction appear larger, more obvious, or more serious than in the drug policy area.

It is not always easy to base decisions on evidence—in some matters, little quality evidence and especially level I or II evidence is available. Evidence is in any case invariably the subject of expert, political, and moral contest. However, to ignore evidence where it does exist and to fail to look for evidence where it does not is a recipe for stagnation and invites poor outcomes.

Inequality and poverty as drug use determinants

The U.N. Development Programme (UNDP) *Human Development Report* (2000) describes how, in a world of globalization, some countries are benefiting substantially in terms of economic growth and poverty reduction while others are fairing poorly. Economic, social, and health inequities have declined in some countries while increasing in many others. There are clear winners and losers. Marmot and associates (1991) observes that poverty and inequality overlap but are not the same. Spooner and Hall (2001) make the case that both issues need to be addressed by public policy if drug use and abuse are to be reduced. Economic and social inequalities, poverty, social tension, and violent crime tend to go hand in hand. Drug use is invariably more problematic in such social contexts. Spooner and Hall question whether government policies that have stimulated economic growth and increased wealth in many countries over the past decades have also increased happiness. They argue to the contrary and point to the increased prevalence of psychosocial disorders, such as crime, depression, drug abuse, and suicidal behavior, found among young people in those countries.

In the context of an increasingly deregulated and globalized economic environment, it would seem facile to suggest that hazardous, harmful, and unsanctioned drug use can be eliminated or even reduced in the foreseeable future. While the Special Session of the General Assembly on Drugs (United Nations Drug Control Programme 1998) in 1998 signaled lofty but scientifically implausible aspirations for a drug-free world, it is well established that globally, the face of drug use is constantly changing and that overall, the situation is worsening in terms of amounts used and numbers of people involved (e.g., Commission on Narcotic Drugs 2001). Crime and other problem behaviors are also on the increase (United Nations Office for Drug Control and Crime Prevention 2000).

Drug use as an adaptive option (not a demon) for many

Although conventional wisdom might suggest otherwise, many people who use illicit or unsanctioned drugs consider it the most adaptive personal and social option available to them. For many, life offers little in the way of economic, social, and personal opportunity and much angst, boredom, loneliness, and suffering; drugs, on the other hand, offer relief or escape, even if short lived. Moreover, drug dependence and mental health co-morbidity, which is highly over-represented in prevalence among people with alcohol and other drug problems, are important determinants of continuing drug use in the face of great risk or harm (Regier et al. 1990).

The punishment paradigm

A finding that the determinants of drug use are complex and varied also applies, more generally, to crime and its determinants. The criminology literature is now paying

increased attention to these concepts (e.g., National Crime Prevention 1999; Aos et al. 2001). There is a growing realization in some scientific quarters that the punishment paradigm is not an effective basis for addressing drug problems in a sustainable manner at the population level and that governments need to move toward more expansive and constructive social policy reforms if they are to prevent, reduce, reverse, or mitigate such problem behaviors. Again, this finding suggests that governments need to move away from a preoccupation with education as prevention and punishment as deterrence. Only limited evidence is available to support these approaches and a great deal of evidence points to the potential for induced harm (e.g., Hawthorne et al. 1995; Ritchie 1999; White and Pitts 1998; Falco 1996; Rydell et al. 1997; Aos et al. 2001; Wardlaw 1986; and Wardlaw 1992). Indeed, the punishment paradigm is incompatible with more constructive social policy reforms that could afford governments some chance of protecting and promoting public health.

Munro and Midford (2001) argue that drug use in youth often is incidental to a young person's life, a result of curiosity, an experimental phase that passes quickly. They make the additional point that only a minority of novice users graduate to problematic use, and they are likely to be adolescents already troubled. They point out that one of the problems of adopting a zero tolerance policy is the strong possibility that drug use and drug problems will be driven underground, and young people who require assistance will not receive it. They view zero tolerance as an overzealous response, which makes no allowance for the natural history of drug use, offers vulnerable young people no help, and may intensify rather than reduce drug problems

In a criminological literature review, Homel and his colleagues (National Crime Prevention 1999) observe that the "roots of criminal offending are complex and cumulative, and embedded in social as well as personal histories." Particularly salient is the thesis that more effective crime prevention should be based on "developmental approaches that emphasize intervening early in pathways that lead to antisocial or offending behavior."

The evidence that a prohibition policy has greater effects on physical complications and patterns of use than on levels of use (e.g., Wardlaw 1986) has profound implications for public policy, legislation, and community policing. It would appear that this evidence has not affected, in any meaningful way, public policy and community policing activity internationally. Wardlaw (1992), former director of the Australian Institute of Criminology, observed: "The most one can reasonably expect of supply-reduction strategies is a holding function—containing the problem at present levels until more effective demand-reduction strategies are developed, or preventing the situation from getting worse." However, these considerations have to be balanced against the risks of harm associated with an over-investment in supply-reduction strategies and the associated opportunity costs, which were found to be substantial in all the study countries. None of the countries involved demonstrated an awareness of, or attention to, these matters, but to be fair, this is generally the case internationally.

The punishment paradigm dominates policy in the seven countries studied, and *The Hidden Epidemic Revisited* (Reid and Costigan 2002) suggests this is the case in many other developing countries. This approach does not reflect evidence-based thinking. Rather, it reflects undisciplined thinking, and unproductive problem analysis and solution generation. Of more concern should be the fact that the punishment paradigm is serving to preclude or negate more constructive and potentially more effective approaches to drug use, crime, and other problem behaviors.

Given its domination of global thinking and action, the U.N. Task Force on Drug Use and HIV Vulnerability in the Asia Pacific Region has on several occasions recommended that the punishment paradigm be the subject of international (U.N.-initiated) research and review, with a view to informing future U.N. technical support and drug policy guidance. Unfortunately, this idea was not embraced by senior officers of UNDCP and UNAIDS.

Involuntary treatment of a punitive nature—faulty concept, failed strategy

Many governments continue to fund involuntary boot camp-type treatments, which really are military-style prisons by a different name. In a study to examine the comparative costs and benefits of programs to reduce crime, Aos and colleagues (2001) found that relative to comparison groups, juvenile offenders in these programs had higher, not lower, subsequent recidivism rates. The average effect size was a positive 0.10, meaning recidivism rates were, on average, about 10 percent higher for boot camp participants than for juvenile offenders who went through regular juvenile institutional facilities. One might ponder the likely difference if boot camp programs were compared to strategies other than incarceration. Aos and colleagues (2001) point out that boot camp programs were intended to serve as a cost-effective alternative to institutionalization; to promote discipline through physical conditioning and teamwork; to instill moral values and a work ethic; to promote literacy and increase academic achievement; to

reduce drug and alcohol abuse; to encourage participants to become productive law-abiding citizens; and to ensure that offenders are held accountable for their actions. In their review of the 10 existing evaluations of juvenile boot camps in the United States, Aos and colleagues estimate these camps initially are less costly but lead to increased costs to taxpayers and crime victims associated with the higher recidivism rates.

One has to wonder at the rationale for this policy. Although boot camps may be intuitively appealing to some and a political vote winner in many countries, they carry with them substantial opportunity costs. And the strategy allows governments to cross off the problem politically, claiming they are doing something to address it effectively when in fact they are not. At the same time, governments abrogate their responsibility to continuously monitor their policies and actions and to search for evidence of effectiveness and induced harm.

Moreover, in some of the study countries, incarceration is known to be associated with a substantial increase in risk for exposure to HIV and a range of other transmissible diseases. In one country in particular, HIV seroprevalence rates were reported to be as high as 95 percent in some involuntary "treatment" centers. It is known that high-risk drug use is a serious problem in these centers, and it would appear that treatment approaches of this nature bring with them a triple punishment—a double punishment to the individual whose liberty is taken and who enters "treatment" free of disease and leaves with HIV/AIDS and other diseases, and a further punishment to the community to which the individual returns and transmits the acquired disease to many others. This represents a public health and human rights problem of substantial proportions. It is difficult to reconcile existing evidence and analysis with public policies that allow and promote public sector responses to drug problems of this nature. Prisons also invariably afford people little or no opportunity for recovery from their drug problem, or rehabilitation more generally. Rather, they provide exposure and modeling of all manner of antisocial and maladaptive behaviors. In attempting to address drug problems on the basis of demonstrably incorrect assumptions about the determinants of this set of health-endangering and unsanctioned social behaviors and their remedy, policy decisionmakers are wittingly or unwittingly fueling HIV epidemics in their respective countries.

It would appear that the seven study countries provide but a window to broader international approaches to drug policy decision making and intervention. The punishment-and-seclusion paradigms continue to dominate drug policy and political decision making in these countries as they do in many other countries. Assumptions of punishment as deterrence continue to go unquestioned and unchallenged by governments, and the U.N. remains a passive observer to all of this. And the true impacts of these approaches are readily observable for all who care to see. Drug-related HIV epidemics are being fueled by superficial or faulty analysis and response. Many governments appear to believe they can educate, imprison, involuntarily treat, and punish their way out of drug problems and HIV epidemics when, clearly, they cannot.

Problems with disease-model treatment approaches

The seven-country study did not provide for a systematic review of treatment policies and practices in the countries engaged in this research. It did, however, afford the researchers some opportunity to view the treatment approaches adopted in these countries. It was difficult to discern the use of any specific theoretical framework for treatment, save the common and simple assumption that punishment, seclusion, discipline, work therapy, and recreational therapy are pathways to abstinence. Variations were found centering on the themes of a therapeutic community and boot-camp-styled programs. The research revealed no evidence to suggest that the disease model has made serious inroads into the treatment methods and culture in any of the study countries. However, it is relevant to note that 12-step programs are appearing in some neighboring Asian countries not included in this drug policy study. Some study respondents expressed the view that programs like Alcoholics Anonymous (AA) and Narcotics Anonymous (NA) would not sit well in Asian culture. Others made similar comments about cognitive-behavioral treatment (CBT) approaches, although CBT also has been introduced in some Asian countries. It remains to be seen whether CBT will be embraced more widely. Because treatment is pivotal to any strategy to address drug problems as they relate to HIV vulnerability specifically and other problems more generally, this issue is one of considerable importance.

Although social learning theory, CBT and social skills training approaches are assuming greater prominence in drug treatment programs across the globe, many countries continue to base their treatment approaches on 12-step, disease-model approaches. AA and NA are based on the constructs of the disease model. They are not treatments in the sense that they address the cognitive, behavioral, and environmental determinants of drug use in any systematic manner. Rather, they provide a mechanism for personal support, one that can be highly effective for a minority of

people seeking a pathway to abstinence from alcohol and other drug use.

Social learning theory, cognitive-behavioral therapies, and social skills training, when implemented in tandem with appropriate environmental interventions, rest on firmer scientific grounds and would appear to offer more (e.g., Miller and Hester 1986a, 1986b; Holder et al. 1991; Hester and Miller 1995; NIDA 1999; Heather and Tebbutt 1989).

To the degree that U.N. agencies, international NGOs, and other bilateral and multilateral agencies are involved in providing technical support and policy guidance to governments, it would be helpful if they would advocate for and facilitate the adoption of contemporary, evidence-based treatment approaches. At present, too little in this regard is occurring, given the existence of the international drug conventions and the serious responsibilities these confer on the U.N. in relation to its ongoing monitoring, evaluation, and adjustments (on the basis of measured benefits, costs, and harms).

Does law of diminishing returns apply to drug repression?

As history has taught us repeatedly, more of the same does not necessarily lead to better outcomes. Sometimes, the law of diminishing returns applies. In international forums, one often hears comments such as, "We could prevent drug use (or achieve a drug-free society) if only we could invest more heavily in a policy (or punishment)" or "if only we could apply these approaches more forcefully." This is said as though the problem is analogous to that of scaling up programs for needles and syringes or immunization targeting diseases that are preventable with vaccines. We certainly know that governments must deliver interventions to scale and in a sustainable way if they are to exert a meaningful public health impact. The difference, however, is that harm reduction is both scientifically plausible and proven while the punishment paradigm is neither. One approach provides perceived benefits to the target audience; the other does not. One addresses the fundamental structural and macro-environmental determinants of behaviors that place people at risk; the other does not. One embraces people where they are and provides constructive social policy reform; the other is often socially and culturally divisive, with a potential for enormous collateral damage to users, their families, and their communities. As many writers have observed, repressive policy approaches also are often associated with significant and serious breaches of the U.N.'s Universal Declaration of Human Rights and often reflect selective morality.

The education paradigm

The ideas that education provides a pathway to prevention, and that a focus on the youth of today is an investment in the future, are for many intuitively appealing. Unfortunately, the evidence in support of drug education as a sole or lead strategy for drug-use prevention is not at all compelling. Moreover, a focus on youth in the absence of attention to adults who construct the world in which children grow and learn would be folly, to say the least.

Wetherburn, director of the New South Wales (NSW) Bureau of Crime Statistics and Research, makes the case that economic and social stress (Bagnall 2002) does not produce crime by motivating people to offend. Rather, they produce it by disrupting the parenting process. Wetherburn adds that stressed parents are less likely to form a strong emotional bond with children; are more likely to neglect, reject, or abuse them; and are more likely to engage in disciplinary practices that are harsh, erratic, and inconsistent.

Midford (2000) observes: "Presenting students with arguments as to why they should resist drinking will be very difficult in a society that provides all kinds of reinforcements for alcohol use."

Caulkins and colleagues (1999) comment as follows:

> While treatment may be more cost-effective, there is a clear cost dividend from such a comprehensive education approach in that estimated savings of US$2.40 in social costs associated with cocaine use accrue for every education program dollar spent. There would also be parallel savings of US$0.75 and US$0.80 in social cost, respectively, associated with tobacco and alcohol use and additional savings from reduced use of other illicit drugs apart from cocaine. This research demonstrates clearly that there would be substantial cost benefit to the community from comprehensive, effective drug education programs.

On the other hand, in a review of the effectiveness of drug education, Midford (2000) cites the findings of White and Pitts (1998):

> White and Pitts, in their meta-analysis of drug education program evaluations, found that 10 of 18 methodologically sound school-based programs had a statistically significant impact on drug use. The effect size of these programs was, however, very small. At 1-year follow-up these programs delayed onset or prevented drug use in 3.7 percent

of the participating students. Effect size also declined with time. Similarly sound programs were effective, with only 1.8 percent of the participating students at 2-year follow-up.

In other words, these studies suggest drug education is cost effective, but the size of the population-level changes in drug-use behavior are very modest and decline rapidly over a relatively short period of time. In public health, small benefits from multiple interventions are often very useful in aggregate. So we cannot dismiss education completely, notwithstanding the small effect sizes associated with this strategy. The review by Spooner, Hall, and Lynskey (2001) and other reviews with a similar theme add to the complexity of the analysis of drug education programs but are generally unfavorable. Ballard and colleagues (1994) conclude that it is unrealistic to believe drug education in schools can succeed in preventing initiation of drug use in the absence of other supportive environments.

It must be noted that people have a right to information about the risks associated with drug use, but it would appear this must be balanced against an acknowledgment of the perceived benefits of drug use to the user if the messages are to be perceived as credible. Messages that emphasize only risk and harm are likely to be rejected if they are seen to be unbalanced or if they do not align with experiences. This in itself is a tricky task.

Concern is sometimes expressed that harm-reduction education may encourage drug use among those who have not yet used drugs. However, most young people already are exposed to drugs in their social environment and often have incorrect information that places them at increased risk should they commence use. In a systematic analysis of the literature on school sex education, the Department of Policy, Strategy and Research, UNAIDS, examined 68 reports on sexual health education. The report concluded that providing young people with education on sexual health did not increase early initiation of sexual activity, sexually transmitted disease (STD) rates, pregnancy rates, or a proclivity to promiscuity—contrary to the concerns expressed by many policy decisionmakers (Grunseit 1997). If young people have accurate and balanced information, the U.N. study suggests, they are more likely to use this information to make self-protecting and adaptive decisions. It should also be noted that education on how people can best protect themselves from health harm also has proven important as an element of strategies for preventing HIV epidemics (Stimpson et al. 1998). It may be that people are more receptive to education that tells them how to minimize their harm in the face of a specific behavior that confers some real or perceived physical, emotional, or social benefit than to education that tells them not to engage in risky behavior at all. This is an area that deserves more careful study.

The individual responsibility paradigm

A great deal of drug use and HIV prevention effort is aimed at the level of individual behavioral choice, and pays little attention to the broader environmental or systemic determinants of behavior. This is an issue of immense importance for prevention planning—with respect to HIV in particular and with respect to other drug-related harms more generally.

Such individual focused understanding of the factors that motivate people to use licit and illicit drugs tends to ignore or, at the very least, minimize the broader array of sociocultural phenomena that underpin and motivate drug use. Such factors include the cultural and symbolic meanings of drugs; the use of drugs as commodities to define self; and the economics and politics of production, marketing, and profits to be made from the sale of alcohol and other drugs (Petersen and Lupton 1996). The addictive properties of drugs also often are downplayed or ignored. Yet anyone who has ever tried to stop tobacco smoking will attest to the substantial challenge, personal angst, and personal distress that this may cause. The perceived or real benefits of drug use also are often afforded insufficient attention.

Individuals do not live in a social, cultural, commercial, economic, political, or public policy vacuum. Structural and macro-environmental factors, lifestyle factors, and personal experience will heavily influence a person's drug use, as they influence other social behaviors, unless the person possesses extraordinary insights, personal skills, and independence of thought and action. The fact that physical and sociocultural environments, norms, personal experiences, and political processes may often impede, if not run counter to and shape such behavioral choices, is invariably ignored.

Although individuals cannot be held accountable for their behavior at every level, an opposing tension must be considered. That is, that to shield or deny the individual any say or potential role in influencing his or her own destiny, including health destiny, may be to unwittingly, unintentionally, or unhelpfully foreclose on or minimize that person's life advancement possibilities and capacities. Alternatively, actively encouraging and motivating that person to take steps that are feasible in the context of his or her life circumstances may actually improve their health and well-being. In identifying the structural and macro-environmental determinants of health—as those that either have primacy over or that cannot be separated from

individual behavioral choice—it is often concluded that every person is, in effect, a blameless victim of his or her circumstances (Peterson and Lupton 1996). Clearly, in policy and intervention, a middle ground must be found between the extremes of full responsibility and no responsibility for unsanctioned, hazardous, and harmful drug use. It would seem reasonable to suggest that individuals will find it easier and they are more likely to adopt socially adaptive and health promoting behaviors when sociocultural, economic, and other environments are conducive to this. It follows from this discussion that to rigidly apply any attribution of responsibility without taking into account an individual's range of personal capacities, deficits, and sociocultural, economic, and political opportunities is to repeat the policy errors of history.

The challenge of responding to scale

A number of serious and complex problems face governments with regard to their response to scale. First, the drug policies of many countries oppose the existing body of international experience and empirical evidence on "what works best" in preventing or mitigating drug-related harm. In cases where evidence-supported interventions are implemented, it often is on a scale that is too small to make a difference in public health. Although it is true that small-scale local action sometimes may lead to broader policy reforms and the delivery of interventions to scale, evidence-supported interventions are far more likely to be delivered in a generalized and sustainable manner if they are supported by policy; legislation, where relevant; and government program funding. This is critical if such programs and approaches are to have a measurable public health benefit.

Labonte (1990) comments on the issue of acting locally:

> Unless local actions are integrated with advocacy and political action strategies directed towards higher-level government policies, our drive for decentralized decision making and community development may unwittingly "privatize," by rendering local, what are much larger issues. We risk mystifying the actual exercise of political power, just as green products mystify the sustainable limits of consumption. Local actions and green products are starting points only, and represent the community-organizing rule "to begin where the people are." But where people are is not necessarily where they should be. The environmental motto to "Think Globally, Act Locally" may well need amending to "Start Locally, Act Globally."

Considering this, it is interesting to examine the ideas of Labonte in the context of the development of needle and syringe exchange programs in Australia. In late 1986, Wodak and Dolan opened the first needle and syringe program in Sydney, following mounting concerns about the potentially devastating impact of unsafe drug injection practices on public health. They did so without the support of law or public policy. They acted instead on knowledge, wisdom, and a determination to do what they firmly believed to be right from a public health perspective. The New South Wales Police were quick to examine this case, perhaps with a view to identifying a basis for laying charges. Fortunately for the people of New South Wales, when the public health rationale for these actions was explained, common sense prevailed and no charges were levied. (Wodak, personal communication, 2001). Within a short few months, needle and syringe programs were accepted in policy and later supported by legislation in this Australian state. Other states and territories soon followed suit and needle and syringe exchange programs began to open across the country. This series of events would, I believe, be fairly unusual internationally. That is, it would be quite rare that such a rapid and widespread policy and legislative change would result from an informal local intervention, such as the one initiated by Wodak and Dolan.

Of course, in many societies it is very difficult to achieve policy reforms of any type, let alone those of a sensitive and contentious nature. So depending on the social, cultural, and political circumstances, it may or may not be possible for such local action to stimulate broader policy reform.

U.N. drug treaties and the responsibility they confer on the U.N.

The existence of the three drug treaties and their ancillary instruments assigns the U.N. a pivotal role in drug policy and intervention. The very existence of these treaties commits the U.N. to a role in monitoring, guiding, and supporting their implementation in policy, in legislation, and in practice. So it is very important in the international context for the U.N. to adopt a proactive role in educating, clarifying, advocating for, and supporting evidence-guided approaches at every single opportunity. Unfortunately, this is not the case at present.

Also problematic is the fact that the drug treaties are often aimed at prevention and intervention within the narrow confines of "supply reduction" and "demand reduction," which is, as noted above, now untenable in the context of an expanded understanding of the determinants of drug use and drug-related harm. An urgent need exists to review the

treaties in light of this more recent and erudite understanding of drug use and its determinants and harms, particularly in view of the strong relationship that has been found between injection drug use and HIV vulnerability.

Progress is hampered by limitations in the U.N.'s own technical capacity. The current focus on the purchase of external expertise has not served the U.N. well, nor have the current processes of consultancy management.[1] It is necessary to appreciate the paucity of finances and other resources and the political and diplomatic constraints within which the U.N. must work. In many ways the U.N. has been handed a poison chalice. But it can do more and it can do it better.

The need for a unified and integrated U.N. response to drug problems

A drug policy study finding that the drug treaties are emphasizing a narrow understanding of the determinants of drug use, drug-related harm, and their "remedies" is of particular concern. As a result, different U.N. agencies are currently sending different and conflicting messages to governments requesting technical support in the area of drug policy and intervention. Although the WHO over the years has made calls to governments to adopt harm-reduction policies and interventions, UNDCP has found it politically unacceptable to embrace the jargon of harm reduction, preferring instead to use obtuse and confusing language. During the drug policy research study, senior decisionmakers in government often asked: "What is the U.N.'s position on harm reduction. Does the U.N. support it or not? UNDCP and INCB say one thing, while WHO and UNAIDS say something quite different!"

The situation may be changing now that UNDCP has become a cosponsor of UNAIDS. Still it remains unclear just how far UNDCP will shift in supporting and promoting evidence-based harm-reduction approaches.

Another concern is that within the U.N. a number of individuals appear to be following their own direction when it comes to drug policy. During the study, one senior U.N. official argued that this is acceptable because it is consistent with the principle of complementarity across the U.N. system, as called for by the Secretary-General in 1997. Arguably, what is needed instead is a strategic and tactical approach to drug problems, one that is integrated and coordinated across the U.N. system, rather than a complementarity or harmonization of activity, on which basis anything and everything can be defended.

The System Wide Action Plan, the United Nations Development Assistance Framework (UNDAF), and the United Nations Development Group (UNDG) are examples of U.N. processes designed to facilitate a unified approach to a range of U.N. endeavors, including those related to drug policy and intervention. To date, these approaches have not proven successful in addressing the global drug problem.

U.N. agencies short on technical capacity in drug problems area

Few of the U.N. agencies that currently provide technical support to governments in relation to drug policy and intervention have a critical mass of in-house expertise, particularly at senior policy decision making levels. It is pleasing to learn that the Substance Abuse Department of WHO in Geneva is now expanding. However, there no longer is a Regional Advisor in Alcohol and Drugs at the Western Pacific Regional Office of WHO, and no expertise in many other U.N. offices across the globe. Yet many U.N. officers involve themselves in matters pertaining to drug policy and intervention. In instances where alcohol and drug programs exist, they invariably are staffed by only a handful of people with few financial resources available to them. In a world where drug-related harm, including HIV infection, is so substantial and ever increasing, this would seem unwise and, indeed, unacceptable. Many of those who know the literature on drug use and HIV vulnerability and who view harm reduction as a pragmatic and effective approach express concern that the International Narcotics Control Board (INCB) has a narrow and incomplete command of contemporary knowledge and skill. Conversely, those who hold to the view that punishment provides a constructive pathway forward are more likely to endorse the rigid public pronouncements of this U.N. body. Again, more recent analysis of the evidence related to the determinants of drug use and drug problems demonstrates the chasm in thinking between the traditional supply reduction/demand reduction paradigm and more contemporary and expanded approaches. The differences in these views are critical because interpretations and pronouncements made by the INCB and UNDCP have the potential to influence drug policies across the globe.

Without a critical mass of expertise at both operational and senior management levels, the U.N. affords itself little or no opportunity to impact meaningfully on drug use and HIV vulnerability at national, regional, and international levels. An urgent need exists to strengthen the internal technical

[1] This analysis is based, in substantial part, on the author's personal experiences working as a Technical Adviser, Short Term Consultant, Short Term Professional, and Acting Regional Adviser, with six agencies of the U.N. system.

and management capacity of U.N. agencies engaging in technical support activity as it relates to drug use and HIV vulnerability, particularly within UNAIDS and its cosponsoring agencies. There also is a need for the U.N. system to take a unified approach when providing technical support and policy guidance to governments. In one sense, it would be preferable for the U.N. to play no role if it cannot meet acceptable standards of technical capacity; however, given the existence of the three drug treaties, non-engagement is not feasible.

Policy remedies lie within and beyond the U.N. system's roles and influences

The problem extends beyond a need for organizational reform with the U.N. system. Many countries requesting technical support from the U.N. in the area of drug policy and intervention simply ignore the advice that is provided. Further, numerous technical support missions have failed to influence government policy and intervention. Governments often do not have the technical, structural, or financial capacity to respond to recommendations for reform. Governments may lack understanding of and commitment to the principles of evidence-based decision making. There also may be poorly developed mechanisms and capacity for "good governance." To be fair, however, the idea that high-income, developed countries are the harbingers of good governance is itself open to dispute. Finally, there may be little commitment to reform, despite rhetoric to the contrary. Clearly, the methodology of providing technical support will need substantial revision to be effective.

The U.N. routinely sends an individual consultant, with expertise in a particular area, to a country to make a rapid situational assessment and to recommend methods for addressing a particular problem. When it comes to drug problems, the use of a single consultant in this manner contradicts the highly complex and multifaceted nature of drug use and its determinants. Recommendations may not be understood or may be viewed as impracticable or culturally unacceptable, leading the country to make no changes at all.

A more effective mission might include a team of people with a wide range of complementary expertise to assess and provide pragmatic, evidence-supported advice on aspects that lie outside as well as within the traditional areas of government attention. Better preparation and expanded models of engagement by governments, by the U.N. agencies concerned, and by consultants—before, during, and after technical support missions—would offer governments more options for dealing with problems in the context of their country's real-life circumstances.

The U.N. needs to do much more and do it much better

The U.N. presently does little to challenge governments and to promote rigorous review of existing assumptions and unhelpful policy responses, many of which appear to be influenced by a rigid and often incorrect interpretation of the U.N. drug treaties.

The U.N.'s work with governments should reflect contemporary knowledge and understanding of the determinants of hazardous, harmful, and unsanctioned drug use. And recommendations should reflect evidence that offers the most hope of advancing the cause of preventing or mitigating drug-related harms. At a minimum, all agencies of the U.N. system should work in a way that is consistent with the U.N. position paper on Preventing the Transmission of HIV Among Drug Abusers (Administrative Committee on Coordination, Subcommittee on Drug Control 2000). If the U.N. fails to meet this challenge, governments are likely to continue adopting policy decision making processes that are devoid of scientific rigor, resulting in failed drug policies and interventions. In this context, drug-fueled HIV and other blood-borne viral epidemics will continue to expand uncontrollably. Surely this is not an acceptable option for any government.

Evidence vs. rhetoric as basis for preventing HIV epidemics

Sufficient international empirical evidence is available to guide rational decision making in relation to effective health protection-oriented drug policies and interventions. Governments that maintain the goal of preventing, containing, or reversing drug-related HIV epidemics in their countries must make a key policy decision. They can continue with the current rhetoric ("drug free world," "just say no," "zero tolerance") and in so doing, actively fuel drug-related HIV epidemics, or they can follow the logic of health protection and harm reduction and support these philosophies in policy and practice using evidence-based interventions. The choice is that simple.

Challenging traditional ideas about a balanced drug strategy

The idea that a balanced drug policy should consist of a mix of supply reduction, demand reduction and, in some cases, harm reduction is often stated in government drug strategies and in some U.N. documents. The notion that such a mix can effectively respond to drug problems is simply too limiting. This approach ignores the key determinants of

drug use that lie outside the influence of health, education, police, and prison departments.

The links must be strengthened among the traditional public sectors involved in drug control activity (Health, Education, Police, Justice). However, there is a greater need to broaden the base for policy intervention and action beyond these conceptual and program boundaries. The phraseology and the thinking behind the framework of demand-and-supply reduction oversimplify and neglect the broader structural and macro-environmental determinants of drug use. As such, this terminology ceases to have utility as a basis for policy and planning. Language is important because it signals the writer's or speaker's framework of knowledge and understanding of an issue and his or her conceptual boundaries for intervention. If governments and the U.N. continue to base policy and planning on the jargon of demand-and-supply reduction, they will remain disconnected from or unaware of the more important and primordial areas of concern where new thinking and action is required.

Accordingly, it would be helpful if governments and relevant U.N. agencies would abandon the demand-and-supply reduction notion within the context of their public policy and planning endeavors and their public pronouncements. Notwithstanding, policy reforms in these areas remain critical to preventing, containing, and reversing HIV epidemics, because many governments invest heavily in these areas but with very limited or negative returns. Drug-fueled HIV and viral hepatitis epidemics are but one manifestation of such policy-driven harm.

Conclusions

Drug policy reflects how governments understand drug problems and HIV vulnerability. Policy provides a framework for what is possible and what can be done to address these problems. The drug policy study in seven Asian countries commissioned by the United Nations Task Force on Drug Use and HIV Vulnerability in the Asia-Pacific Region provides many keen insights into the manner in which drug policy is constructed by governments. It indicates a paucity of attention paid to the principles of scientific methodology and little reliance on evidence as a guiding light to policy decision making. There are reasons to believe this study's findings are representative of many other countries of the world currently facing serious drug problems. Governments and relevant agencies of the U.N. system need to work together to gain a better understanding of the issues raised in this drug policy research and to search for new pathways to prevention and intervention. ■

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Global Monitoring of HIV Prevention Among Injection Drug Users

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Traditionally, international HIV/AIDS surveillance has focused on monitoring the epidemiological course of an epidemic in and between countries, differentiated according to mode of HIV transmission and distribution across different population groups. Little effort has been undertaken to match the epidemiology of HIV with a systematic description of public health responses to counteract the spread of HIV. This paper proposes a framework for increasing international collaboration on, and standardization of, data collection on public health responses to HIV/AIDS associated with injection drug use (IDU).

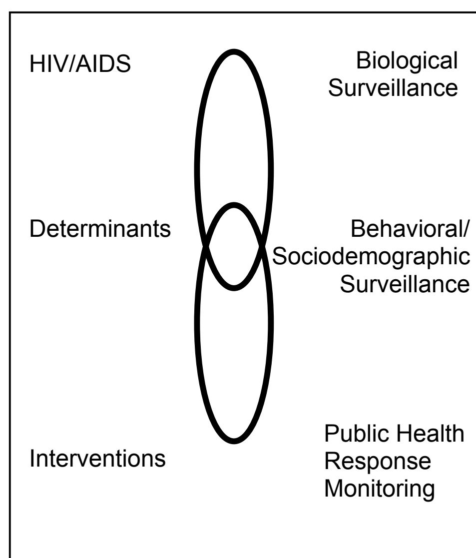
Monitoring Public Health Responses: A Critical Third Component

Initial data collection efforts on HIV/AIDS concentrated on the description of HIV/AIDS prevalence and incidence rates, broken down where possible by geographical, population, and transmission characteristics (UNAIDS and WHO 2000). Only more recently have efforts intensified to complement this type of "biological surveillance" with "behavioral surveillance" in a concept termed "Second Generation Surveillance" (UNAIDS/WHO Working Group on Global HIV/AIDS and STI Surveillance 2000). This expanded concept of surveillance adds significantly to the understanding of the HIV epidemic by including information on the behavioral factors that help to explain the observed epidemic and that alert us to the epidemic's potential for further spread. To this end, behavioral surveillance can play a critical role in setting targets for the public health response and evaluating its impact.

The interplay between biological and behavioral surveillance may generate useful insights into the course and determinants of the HIV epidemic. Nevertheless, its suggestive power with regard to the nature of appropriate public health responses is limited. A clear answer to the important question—"How do we modify our response to HIV/AIDS?"—is unlikely because no parallel description exists of the interventions that are in place. Likewise, learning from success ("How did we achieve change?") depends on a thorough understanding of the interventions that were used.

Therefore, monitoring the public health response to HIV/AIDS represents a critical third complement to biological and behavioral surveillance systems, and the integration of all three components (as shown in Figure 1) can make such systems more powerful and relevant for public health planning purposes.

Figure 1. Integration of three components of HIV/AIDS surveillance



Objectives of Monitoring HIV Prevention Responses to IDU

At this stage of the epidemic, the description and comparative analysis of public health responses to HIV/AIDS among injection drug users (IDUs) are of particular relevance. Transmission associated with IDU accounts for the most dynamic HIV epidemics worldwide, and many countries find it difficult to identify the appropriate mix of responses at a sufficient scale to prevent, halt, or reverse the epidemic. To this end, the response-monitoring component of an integrated surveillance system may serve three distinct purposes:

- Assess the nature, status, and coverage of current HIV prevention strategies and service delivery;
- Relate public health responses to the epidemiology and determinants of HIV/AIDS in order to assess their appropriateness and effectiveness; and
- Provide technical information for policy planning and resource allocation at the local, national, and international levels, including target setting and progress assessment.

Using this approach, response monitoring deliberately takes a perspective that extends beyond any single intervention. Whereas the effectiveness of certain HIV prevention activities is well established at the intervention (micro-) level, a dearth of information exists on the appropriate mix and coverage of services at the city, provincial, or country (macro-) level.

Types of Information Required

No one intervention alone can halt HIV transmission among IDUs and their noninjection partners. Rather, preventing IDU-related HIV epidemics depends on the provision of a range of services, some of which may be outside the traditional health sector. A meaningful response-monitoring system strives to capture a complete picture of options available to IDUs to reduce unsafe injection practices and other risk behaviors. One possible way to frame such service provision is to group activities into three HIV-related service areas:

- ***Community-based information, education, communication (IEC),*** including voluntary testing and counseling, outreach programs;
- ***Sterile injection equipment and condoms:*** Needle and syringe exchange programs, pharmacy-based programs, needle and syringe availability in the general community, bleach programs, condom promotion and availability; and
- ***Treatment and care for IDUs:*** Substance dependence treatment (both treatment based on abstinence and treatment involving drug substitution), primary health care, and HIV-related treatment.

Each of these service areas can be described along a number of dimensions: *Provision* of services aims to capture the nature of services delivered. Service *utilization* aims to quantify the extent to which services are being used by injection drug users and focuses on the accessibility and acceptability of services. Finally, *service coverage* relates the observed use to the potential demand, be it with regard to the total number of the IDU population, to specific geographical areas (e.g., rural vs. urban), or to IDUs living in specific settings (e.g., service provision during incarceration).

Although information on services would be useful for programming purposes at different levels, it is the integration of such data with other surveillance data that carries significant potential for informing public health approaches. Ideally, such complementary data should include:

- ***Context of HIV among IDUs:*** Size of IDU population, types of drugs injected, needle sharing and sexual behaviors, policy and legal framework, knowledge of HIV among IDUs; and
- ***Health outcomes:*** Prevalence and incidence of HIV/AIDS among IDUs, possibly also hepatitis and drug-related mortality.

Initial Steps to Response Monitoring

Recognizing the critical need for monitoring HIV prevention efforts that target IDUs, the Global Research Network on HIV Prevention in Drug-Using Populations (GRN) initiated steps to establish a global database in 1999. This process resulted in the presentation of a report on HIV prevention efforts in more than 40 countries during the third annual meeting of GRN in Durban, July 2000 (Global Research Network 2000). Though the report clearly demonstrated the potential of such data collection for policy planning and prioritization, it was still limited in scale and lacked the necessary standardization that would allow for meaningful cross-country comparisons and meta-analyses. Therefore, the GRN members called for further harmonization of data collection efforts.

To this end, major international data collection activities were reviewed and consultations were held with organizations involved in their design and implementation. An extensive set of 46 proposed core indicators and numerous supplementary indicators then was developed to cover the types of information required for effective monitoring of, and response to, the HIV epidemic. This full set of indicators is very ambitious, however, and, for many countries, obtaining reliable data for these indicators would be very difficult, if not impossible. A more feasible alternative would be to first successfully implement a reduced set of indicators before attempting to collect data on the full set.

Focusing on Core Indicators

To develop a feasible reduced set of indicators, one needs to consider both the scientific value of the proposed indicator and the practical aspects of data availability and quality for that indicator. To assess the feasibility of obtaining information on the various proposed indicators, discussions should be held with individual countries. To facilitate these discussions, it would be useful to have a first attempt at reducing the existing full set of indicators to the ones that would be expected to be of most scientific value. A reduced set of 17 indicators was proposed for discussion purposes:

- Seven services indicators (number of IDUs in drug substitution and in abstinence-based treatment, proportion of IDUs with access to unused sterile injection equipment, number of needles distributed per IDU per year, number of pharmacies that sell needles without medical prescription, proportion of IDUs who have been tested for HIV in past year, and number of IEC programs for IDUs);
- Five context indicators (size of IDU population, main drugs injected, proportion of IDUs who use borrowed needles and who use condoms, and proportion with correct knowledge of HIV transmission risks);
- Five health outcome indicators (incidence and prevalence of HIV among IDUs, AIDS cases among IDUs, prevalence of hepatitis C, and number of IDU-related AIDS deaths).

This proposed set of core indicators provides a basis for discussion to further refine the contents of the set, to decide on standardized definitions for each indicator, and to develop a plan for data collection, management, and interpretation.

Integrating Data Collection, Processing, and Analysis

As stated earlier, it is important to integrate data across the various technical areas and geographical entities for scientific, policy development, and advocacy purposes. Such integration relies on the collaborative effort of all those involved in the generation and interpretation of IDU-related HIV/AIDS data, with the organizational and individual expertise represented in the GRN providing a promising platform.

Already, in terms of data generation, a number of organizations have demonstrated a particular interest in and commitment to advancing data collection in specified geographical or technical areas (Table 1). With a coordinated approach, existing data collection mechanisms might be able to obtain other core information such as that described here. However, even a joint effort is unlikely to cover all the core information of interest. Hence,

Table 1. Existing HIV/AIDS data collection efforts related to injection drug users, plotted on a grid of technical versus geographical aspects

	Health	Context	Services
International	WHO/UNAIDS estimates; Regional Networks	UNDCP Annual Reports	
National		UNDCP Bi-annual Reports	EMCDDA survey on coverage
Subnational	National AIDS programs	WHO/UNAIDS country reports; UNAIDS/WHO 2nd generation surveillance	
Local	FHI Impact Project; CDC GAP Project		RAR & other studies

consideration also must be given to complementing existing data collection with a new data collection effort, and to including nonstandardized data, such as those gathered through rapid assessments (Weiler et al. 2002).

A number of international databases have been used in the past to collate health and sociodemographic data at the international level, including the recently upgraded *Global Atlas of Infectious Diseases* (WHO 2001). Such systems allow for user-friendly, Internet-based data entry and access along technical or geographical lines at various levels of aggregation, from the global down to the local level. However, how and whether such preexisting systems can be used for the purpose of collating global data on prevention responses to HIV/AIDS can only be considered after more experience is gained in this area with data formats and collection processes.

Conclusions

Developing a mechanism to collect information for the global monitoring of HIV prevention among IDUs is a necessary first objective of any joint data collection activity. Such data collection efforts cannot stop with simply making data available to the public and to interested groups. Rather, information that is meaningful for informing public health planning must be specifically analyzed for the envisioned target audience—the public health policy and programming community. The standardization, collection, interpretation, and integration of intervention monitoring data with biological and behavioral surveillance data on HIV/AIDS associated with IDU is critical to informing and guiding appropriate prevention responses. ■

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Methodological Challenges Associated with Data Collection on Indicators: Scientific Considerations

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Examination of the scientific considerations relating to collection of behavioral indicator data depends upon the purpose for collecting the data and the ultimate uses of the data. The discussion must take into account the need to strike a balance between the desire to obtain accurate information and the costs and practical issues in collecting such information. The objectives of behavioral surveillance among injecting drug users (IDUs) in the context of HIV surveillance systems are (1) to measure risk behaviors related to the spread of HIV in drug-using populations, (2) to enhance the understanding of the potential for HIV spread, both among IDUs and their non-injecting sexual partners, if and when the HIV is introduced into the population, (3) to use this information to advocate for adequate interventions and 4) to track changes in risk behaviors over time.

One of the challenges of behavioral surveillance is the need for methodological rigor on the one hand and the need for timely data for action on the other. Recommendations for developing countries must consider the sparseness of data in those settings and the reality that a lack of data provides ample opportunities for inaction. At the same time, researchers must recognize that bad data can do more harm than no data at all, if the data fail to detect risk. Therefore, it is worth the time and expense to ensure that the quality of the data is high enough to produce accurate information that will lead to appropriate action.

Researchers must be concerned with the integrity of the data that are collected and must make an effort to be systematic in their approach to data collection. Three major considerations that are encountered in every kind of research, including surveillance, are (1) validity, the issue of what we are measuring, (2) representativeness, whom we are measuring and (3) power, whether the data are stable enough to use in detecting differences and drawing conclusions.

Data Validity

If our major purpose is to get a realistic picture of what drives the spread of HIV, then it is necessary to quantify those behaviors that transmit HIV, namely sexual intercourse and needle sharing. Key indicators include frequency of unprotected sex by partner type (i.e., with higher-risk and lower risk-partners), and frequency of injection with shared needles. Data about the size and extent of needle sharing and sexual networks are also important for quantifying the extent of exposure.

There is a strong push internationally for standardized behavioral indicators that can be compared across countries and regions of the world. However, failure to adapt these indicators to the local setting can weaken our ability to obtain valid information. For example, to measure needle sharing one must define sharing and then do qualitative research to operationalize the definition. A recent behavioral surveillance survey in Nepal illustrates the point. Needle sharing was defined as use of needles that had been used previously by others. Qualitative research conducted in advance of the survey uncovered a pattern whereby injectors keep needles in public places (e.g., in holes around temples, in bushes, or in public toilets),. Although persons using needles obtained in such places are likely to be "sharing" in the sense of using needles that someone else has used before them, they may not think of it in this way, especially if they are alone when they inject. Indeed, results of the Nepal survey showed that when respondents were asked whether they used "previously used" equipment at last injection, 17 percent replied "yes." An additional 22 percent reported using equipment obtained in a public place at last injection, but among this group, only one-quarter reported that they used "previously used" equipment at last injection. Apparently needles from public places were not considered as "previously used" equipment. Failure to ask the question about use of needles from public places would have resulted in an underestimate of sharing.

In addition to making sure the right questions are being asked, another way to improve validity is to involve the population of drug users in the research. The importance of gaining the trust of respondents cannot be underestimated. One of the best ways to achieve this is to grant "ownership" of the research, by allowing drug users to be involved in shaping the research and by making the results accessible to them. Sometimes it takes more than one round of data collection to achieve this trust, and the first round may end

up as a "throwaway" round, in the sense that the data may be less valid. Once relationships of trust are established, they must be sustained over the long run. Therefore some stability is needed in terms of who conducts the research. It is also important to use interviewers with the right characteristics and to keep an open mind about what those characteristics might be. In some settings, it is better to use interviewers whom respondents can relate to as peers. In other settings, health-care workers might be considered more trustworthy and therefore stand a better chance of obtaining valid information. The key is to know your audience. Adequate training and supervision during the whole process are also important.

Representativeness

The next, equally important component of scientific rigor in surveillance is defining the population you want to measure and making sure that similarly defined populations are consistently tracked over time. Populations of drug users can be defined in a multitude of ways, each with its own set of biases and differing patterns of risk behavior. The key is to pick the population(s) you want to track and stick with it. Populations of drug users can be defined by the type of drugs they use or by whether they inject their drugs or not. Some drug users are accessible on the street, others through drug treatment programs, and others in prisons. Some inject primarily in their homes and are not accessible at all, except perhaps through household surveys, or through their drug suppliers. There are advantages and disadvantages to monitoring all of these groups, but if a different population is surveyed each year, then it is not possible to track changes. Making sure that similarly defined groups are tracked over time is crucial.

Methods for sampling populations defined in the ways described above differ, but one thing is certain. Populations of injectors tend to be "hidden" in the sense that there is no easy way to list them for sampling, and the motivation for them to hide is great, given the illegal and socially stigmatized nature of their drug use. While this makes the task more difficult, there are ways to overcome the obstacles. Mapping the locations where drug users can be accessed on the street is a good starting point, but sampling only users who are accessible at those locations will "net" only the most visible portion of the population, which may be those with the highest risk behaviors. While random samples of visible drug users can be obtained, and it may be useful to track this population over time, it may be equally beneficial to use systematic non-probability sampling techniques, such as targeted network sampling or respondent driven sampling (both enhanced forms of snowballing) to obtain samples that are more "representative" of the overall community, even if they are not chosen as strict probability samples.

Statistical Power

The main driving force behind statistical power is the sample size. It is important to remember that although it is faster and cheaper to do small surveys, the precision of the indicators measured in such surveys will be very limited, as will the ability to measure change. That is why it is advisable to use sample sizes that are adequate for measuring indicators with reasonable confidence limits (i.e., plus or minus 10 to 15%). If the confidence bounds get much wider than that, the entire exercise becomes much less useful.

In conclusion, behavioral surveillance can be an extremely powerful tool for tracking HIV epidemics and explaining the dynamics underlying the spread of the virus. Although practical considerations and feasibility are important, the value of the data can be greatly increased if adequate attention is given to the issues of scientific rigor described in this paper. The endeavor will be well worth the effort if it leads to more accurate and credible information from our surveillance systems. ■

Methodological Challenges Associated with Data Collection: Practical Considerations

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The development of the Global Research Network Indicators Database must take into account several practical considerations, which should be more accurately understood as management problems. Here I will briefly reflect on data collection challenges that confront us based on my experience working in several Asian countries. Many of these problems have no immediate solution and they are common to national data collection systems in developing countries, particularly in Asia. But I hope this paper will help us think not only about the indicators, but also about how to manage a global database and the related processes that are involved.

In compiling this database, the main problem, of course, is the availability of data, or lack thereof, in many countries. For example, there are no data for many of the indicators in the WHO/UNAIDS fact sheets on country-specific HIV/AIDS situations (http://www.unaids.org/hivaidsinfo/statistics/fact_sheets/index_en.htm). One can not discern temporal trends because even if data were once available, they may now be unavailable, or if data are now available, they may previously not have been. The lack of an established database is a particular challenge for most developing countries. To fill in the blanks in the database requires primary data collection, which in turn requires personnel and financial resources.

Multiagency Involvement and Need for Coordination

In most countries, data on the extent of drug use, risk behaviors, service availability, and health consequences are collected by different national agencies. Patterns and trends of drug use-related data are collected by national drug control and social welfare agencies rather than public health agencies. Most drug control agencies have a very small research staff, often one- or two-person research units. Risk behavior data come from commissioned research and surveillance data on health outcomes from ministries of health.

HIV data, and particularly HIV surveillance data, are more readily available from Asian countries. Thailand is one example, and there are established sentinel surveillance systems in many other countries. Still, data on morbidity—for example from Hepatitis C or B and overdoses—are difficult to obtain.

Monitoring Systems of Drug Use Trends and Patterns

Most countries have no data monitoring systems as such. An example of what does exist is the registration systems of drug users (e.g. in China, Myanmar, Viet Nam) who come to treatment or are imprisoned, and thus convey no idea of the magnitude of the problem. These registered (or similar) figures are often officially quoted by the national agencies. In the absence of established monitoring systems, countries also report to the U.N. using the official number of registered cases and, unfortunately, their subjective impressions.

The absence of database structure in many countries is also problematic. For example, the ministry of social justice and empowerment in India, which oversees drug treatment and prevention in the country, funds over 500 nongovernmental organizations (NGOs) to provide drug treatment and prevention services in the country. These NGOs record the number of people who have been in contact with them and profiles of people who seek services. From these data an aggregate figure and percentages are reached, and hard copies are then sent to the ministry. In such circumstances it is difficult for the ministry to develop a database that would allow appropriate analyses. Furthermore, the reporting format does not allow recording of injection figures. The data are recorded by drug of use. Thus, from 500 NGOs there are some national data for nearly 100,000 people in a given year, but is not known how many, or what proportion of them, have sought help for injection drug use.

Resources for Surveys

There is a huge demand for national surveys, which is particularly problematic for developing countries because of the cost involved. A national household survey on drug use, for example, in a developing country in Asia would cost USD $6 to $8 a person, and if one's sample consists of 40,000 individuals, the cost of the survey would be quarter of a million U.S. dollars. The ministry of social justice and empowerment in India, for example, has a budget of roughly a million dollars a year for substance abuse treatment. If

more resources are invested in gathering information, there will be very little left for actual intervention. In many settings it is very difficult to justify costly and sophisticated data gathering methodology.

National Level Estimates

Yet another challenge is generalizing from locally conducted studies with small sample sizes, particularly in highly populous countries in Asia such as China, India or Indonesia. A study on hepatitis C on 500 drug injectors in one site in the country does not allow us to generalize to a state or a province, let alone the whole country. This further complicates matters.

Data Quality

The quality of data available is also a problem. Behavioral data is especially problematic. This creates the problem of comparing poor quality data with relatively good quality data from other settings

Government Acceptance of the Data

Acceptance of the data and estimates by the government agencies is yet another problem, depending on the context and social and political realities of the countries. Thus it is extremely important to coordinate any data gathering exercise with relevant national agencies. A global database will be used by researchers, but if governments do not buy in to it, the database will be useless at the local, state and national levels, and it is these national institutions that are the primary consumer of such a database.

Specific Indicators

As a general, well-accepted principle, looking at multiple indicators is essential. It is also vitally important to understand the relationships between various indicators in a situation. For example, among the suggested indicators, looking at AIDS-case reporting only may be problematic. In Thailand, HIV has spread rapidly among drug injectors and prevalence of HIV among drug injectors continues to be high (50 percent) after more than a decade. The cumulative *AIDS-case* database, however, showed that only 5% of the AIDS cases in Thailand have been due to injecting drug use. The percentage of cumulative AIDS cases related to injection drug use and perception of the relative magnitude of the problem has probably contributed to the fact that the drug injecting component of the epidemic continues to be relatively neglected in Thailand, despite the country's robust, multi-sectoral response to the AIDS epidemic. However, new infections in 2000 due to drug injecting accounted for 20 percent of the new HIV infections in Thailand. Thus the need for looking at multiple indicators.

Tracking Funding

The GRN Indicator Database should also consider some indicators for national and international fund flows for IDU/HIV interventions or activities. Intervention on injecting drug use-related HIV transmission is one of the most under-funded areas in Asia. Such indicator/s would provide insight into what is happening in terms of response.

Indicator Database as a Model for Countries

Development of well-defined indicators will help countries conceptualize what data they need and will help them to revisit their own database and data collection systems. This endeavor must also be complementary to other global initiatives such as the Global Assessment Programme of the United Nations International Drug Control Programme and the Country Response Information System of UNAIDS. In developing the database we must also keep in mind that the primary data collection needs remain. Careful consideration of the processes of national level data collection and consumption is absolutely crucial to the management of this database. ■

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