AIDS IN NEW YORK CITY: THE ROLE OF INTRAVENOUS DRUG USERS

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DURING RECENT years significant advances have been made in control of the Acquired Immunodeficiency Syndrome (AIDS). First, spread of the Human Immunodeficiency Virus (HIV) has decreased significantly among homosexuals. Second, blood supplies have been made much safer. Third, new medications, although far from ideal, are prolonging the lifespan of those infected with Human Immunodeficiency Virus. But in New York City AIDS continues its relentless increase.

This is due to an alarming increase in the number of new infections among intravenous drug users. Thus, for the first time, in the first quarter of 1988, the number of intravenous drug users acquiring AIDS actually surpassed the number of cases attributable to male sex partners of men in New York City.[1] In no other city in the United States is this yet true, but drug users are now the major expanding reservoir for the virus. They are the bridge for infection of heterosexuals and newborn babies. To date, our inability effectively to slow the spread of HIV among intravenous drug users stands as a major social and medical failure.

A lack of knowledge about effective ways of reducing drug usage, too few resources focused on it, and an absence of public commitment to the problem has allowed the spread of HIV to continue in this group. Both government and medical approaches to the problem have been oversimplified, emotionally polarizing, and highly politicized. A certain sense of defeatism pervades the scene. Quite understandably, resulting outcomes have been disappointing. Striking by its absence has been any real body of knowledge and too many anecdotal beliefs about drug users, their culture, their charac-

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teristics, their abilities to modify their behavior, or the changes that will be necessary in our society to discourage drug usage in the first place. Intensified, well focused social science and behavioral research studies are much needed, as are major shifts in funding and personnel to address the problem if we are to better control AIDS among intravenous drug users, their sexual partners, and their babies.

This paper focuses upon the New York City scene and reviews what is known about intravenous drug users, the demographics of AIDS among them, and some of their sociologic characteristics. It tries to highlight deficits in our current knowledge about this group and to suggest areas for future research. It concludes with some tentative recommendations about steps that even now might permit more effective control of the spread of the human immunodeficiency virus among drug users.

Demographics of AIDS Among Intravenous Drug Users

Intravenous drug users are second only to homosexuals in the number of cases of AIDS. As of February 1989 intravenous drug use was the primary risk factor in 20% of AIDS cases countrywide. Intravenous drug use and homosexual activity were risk factors in an additional 7% of the 85,756 cases of AIDS in the United States.[2] In New York City intravenous drug use is now the primary risk factor in most new AIDS cases,[3] and the actual penetration of HIV infection into this population is probably even greater. Drug users are now dying at faster rates from pneumonia, tuberculosis, and endocarditis. While these infections are not generally counted as AIDS by the Center for Disease Control, much suggests they now frequently appear in HIV immunosuppressed individuals.[4]

Intravenous drug users are a source of HIV infection for heterosexual spread and in utero infection.[5,6] In New York City they are the apparent source of the virus in 80% of native-born risk identified homosexuals and in 90% of maternally transmitted cases. Most women with AIDS are drug users (55.4%) or the sexual partners of drug users (an additional 23%). Perhaps the most disturbing aspect of the demographics is not only the devastation AIDS produces among the drug users themselves, but in their potential to spread the virus to infants in utero or during birth. Ninety percent of intravenous drug users are heterosexuals and 30% are women, of whom 90% are in their childbearing years.[7] A recent New York State study has found that in the Bronx—an area with heavy concentrations of intravenous drug users, one in 49 babies carried HIV antibodies. The overall rate in New York City was 1 in 67.[8]

The racial distribution of the AIDS epidemic is also being altered by the increasing proportion of infected drug users. Although 24% of the New York

City's population is black and 20% Hispanic, 86% of male drug abusers with AIDS are black or Hispanic. Among children with AIDS, 94% of the mothers are from these groups (black 59%, Hispanic 35%) There have been 398 cases of childhoood AIDS in New York City through November 1988.[9]

The prevalence rates of HIV seropositivity among intravenous drug users varies considerably from city to city. New York City drug users are estimated to have HIV seroprevalence rates of 50-60%,[44] in contrast to an estimated 15% in San Francisco.[10] Differing rates of seropositivity are difficult to explain epidemiologically, but may in part be related to the date of introduction of the virus into the drug using community.[11]

The rate of developing AIDS in a group of seropositive homosexuals has most recently been estimated to be more than 50%, and each year the rates grow,[12] leading some to anticipate the eventual appearance of disease in virtually all infected. Applying this rate to the number of estimated HIV infected intravenous drug users in New York City would yield 55,000 cases of AIDS among them alone during the next five years. The number of cases will be even higher if heterosexuals and newborn babies who acquire HIV disease from drug users are also counted.

Characteristics of Intravenous Drug Users

Defining addiction. Clinicians and researchers have defined addiction as a compulsive physiological need for a habit forming drug.[13] Most studies have focused on the physical dependence and tolerance associated with drug use.[14] However, several studies have documented that heroin users can and do give up the habit for various periods of time.[15,16] Many soldiers returning from Vietnam after having used high purity heroin on a daily basis were able to discontinue use completely without significant side effects. Others seemed capable of using heroin in a limited, controlled manner.[17,18]

It has been suggested that intravenous drug use should be considered analogous to alcohol use. Vast numbers of people drink, but only a few become "alcoholic" with its implicit assumptions of progression and irreversibility.[14] The number of occasional heroin users in the United States has been estimated to range from 2 to 4 million. An additional 400,000-450,000 are regular heavy daily users, of whom half live in New York City.[19] It is this group at the far end of the spectrum of intravenous drug use that is at greatest risk of HIV infection.

Sociocultural background. Stereotypes of intravenous drug users are pervasive among the medical and lay communities. These caricatures, like all stereotypes, tend to oversimplify complex characteristics and often to distance observers from the people being described. The classic stereotypical view of an intravenous drug user is of a solitary, alienated person, without

any social organization, uneducable, unconcerned about his health, and unwilling or unable to change behavior patterns. Although there are few hard data regarding the psychologic characteristics, motivations, and social organizations of intravenous drug users' culture, available information suggests that much of this perception is false. Be that as it may, this stereotypic view of intravenous drug users has often been used to justify doing little on their behalf. Further, many programs that attempt to help are not successful because real needs are ignored.

First, a closer look suggests that drug abusers are a diverse population, many of whom are seriously interested in treatment of their habit. As but one example, New Jersey recently implemented an experimental program handing out coupons for free methadone to intravenous drug abusers on the street. Remarkably, 85% of the coupons were turned in at the clinics.[20] Another indication of desire for treatment is continued waiting lists for methadone treatment in many major cities. In New York City, despite an increase of 2,500-3,000 slots during 1987, waiting lists, although a poor indication of the demand for treatment, continue to number into the thousands.

Second, contrary to popular belief, addicts are not "loners." To obtain drugs they must be heavily involved in social networks.[21] Intravenous drug users thus maintain multiple ties to others to obtain drugs, equipment, and locations for injecting. In addition, they have developed a busy subculture that maintains a set of sociocultural values and viewpoints that underpin the worth of getting high.[22] Participation in this subculture provides desired rewards rather than simply an escape from life. Some observers have stated that drug users are actively engaged in meaningful activities and relationships seven days a week. Social systems exist through which they might be approached.[23]

Third, although intravenous drug users tend to have little formal education, it does not follow that they are not educable. Surveys have shown that almost all drug users (93% and 97%) know that they may get AIDS from sharing needles.[24,25] This knowledge has been translated into some behavior changes. As many as 60% of drug users reported increasing the use of clean needles and/or the cleaning of needles and reduction in needle sharing.[24] The premium placed on sterile or "resealed needles," each now selling for $3 apiece,[26] attests to the strength of this behavioral change.

The spectrum of intravenous drug users. Intravenous drug users have a wide geographic, cultural, ethnic, and sociocultural heterogeneity. Characteristics of the addict thus vary depending on the geographic locale. It is, however, a sad fact that most addicts reside in the inner city. For this group,

addiction is closely associated with the multitude of problems found in the inner city: poverty, lack of education, crime, broken families, and sense of alienation.[45] Most of these addicts are black or Puerto Rican, are aged 20 to 30, dropped out of school early, are without job skills, and have been in trouble with the law.

A subset of this group rotates in and out of the penal system on a regular basis. As of November 1988, 818 cases of AIDS were documented among New York State prison inmates. Intravenous drug use was the primary risk factor in 86% of these cases.[9] It is estimated that 60% of the 65,000 inmates in New York State prisons are intravenous drug users.[44] Although prison authorities are reluctant to admit that drug use and homosexual behavior occur within the prisons, it is well accepted that such behavior is common.

Homelessness and intravenous drug abuse are also closely associated. One study found that the greater the instability of housing the higher the incidence of drug use.[46] Recently it has been estimated that 500 to 1,500 HIV infected people live in New York City shelters.[44] A recent study on Wards Island shelter tested a nonrandom sample of volunteers and found an 80% rate of HIV seropositivity, and that more than 75% of those individuals had a history of intravenous drug use.[46]

Approximately 10 to 15% of addicts are middle class, generally having what appear to be close family ties, reasonable support systems, and regular jobs. They frequently stop by shooting galleries to pick up their drugs, and often confine their drug taking to weekends and evenings.[47] They can be compared to alcoholics who are still capable of functioning at work.

The changing nature of addiction. During the past 10 to 15 years drug abuse has changed dramatically. Although historically and today heroin remains the most frequently intravenously administered drug, cocaine, amphetamine, and other narcotics are now commonly injected alone or in association with heroin. Thus, many addicts now have multiple addictions including heroin, "crack", alcohol, and other drugs.[45]

But it is cocaine and its analogue "crack" that have swiftly and dramatically changed the nature of drug use and the drug use community with resulting profound treatment implications. Crack is now widely available and relatively cheap. It can be injected and has led to some increase in needle usage.[27] It is highly addictive, causing intense short lasting highs that lead to prolonged deep lows.[48] Hyperaware sexual arousal states and paranoid behavior are associated with its use. These features, in association with turf competition for the rights to sell drugs, has escalated the level of violence in drug using communities.

To date there is no effective pharmacological treatment for crack or cocaine addiction analogous to the substitution of methadone for heroin. The effect of crack and cocaine can still be experienced by an individual on methadone treatment, and it is estimated that 30 to 60% of those in methadone treatment continue to inject cocaine.[48]

Needle sharing. Attitudes about needle sharing seems to be changing. Today it is largely an economic issue and no longer a means of social bonding with fellow addicts. Addicts prefer to spend their available money on drugs rather than on the associated paraphernalia.[46] Although many addicts have reduced their frequency of needle sharing, the likelihood of sharing with an already infected partner has increased because of the sharp rise in HIV positivity rates in the community. A similar problem struck the homosexual community several years earlier. Despite a decrease in the number of sexual partners, no decrease in risk was produced because of higher rate of infection within the homosexual community.[21]

There are yet other significant barriers to change in the drug abusing community. Many addicts have been brought up in poor and overcrowded living conditions, and tend not to be very concerned with hygienic issues. Further, the concept of latency, that someone may be infected and infectious even if they show no symptoms, has not been well absorbed by the drug using community. Many addicts believe that they can tell those who have AIDS by looking at them. If sterile equipment is not available, they remain too frequently willing to share needles with someone they assess as being "disease free."[46]

Areas for further study. Intravenous drug use, like many forms of socially unacceptable human behavior, is poorly understood. Predictable approaches to influencing behavior are not well developed. In the case of AIDS, behavioral and social science research lags far behind virological research. New knowledge that could speed behavioral change among drug users or prevent initial drug use among the young is much needed.

Education and behavior change. Many studies document the extraordinary resistance of people to behavioral change even in the face of clear demonstration of risk.[28] Previous efforts to use the media to influence behavior have had mixed results. Starting in 1964, media coverage of the Surgeon General's report on smoking and cancer had little effect on smoking habits in the short term, but changes in smoking behavior over the long haul have been profound.[29] Similarly, despite extensive coverage of the efficacy and availability of the Salk vaccine in the late 1950s, few people chose to get vaccinated at the time.[30] However, again, over time there was massive behavioral change.

The intravenous drug using community is a tough and unique target group for risk education and behavioral change. Although the lessons learned from previous programs may apply, approaches will have to be closely tailored to this community. Clearly a first step is carefully to define the targeted population: who are the affected drug users? Their spouses and children? What is their current social network? Where do they get their health care? Who do they trust for information? How do they interact with available social agencies?

Because drug use often starts during adolescence, prevention must be viewed through the perspective of the well known phenomenon of adolescent risk taking behavior.[31] The level of risk taking in adolescents seems to depend on many factors such as childhood experiences, parenting, peer pressure, self esteem, depression, ethical and religious training, and education.[32] Efforts must start early in the educational system because many drug abusers drop out before secondary school. Programs that depend on fear have not been successful in the past,[32] particularly if the outcome is of low frequency with a long latency period. Much more data are needed to determine more precisely what prompts young people to start using drugs, how they chose the type and form of drug, what can motivate and persuade them to stop drug use, and what support can protect and reinforce this decision.

How to reach those already intravenous drug users is similarly unclear. These have rejected authority and are unlikely to trust or to accept messages from such established organizations as health departments. The minority community with its disproportionate number of drug abusers has a strong tradition of depending on oral communication rather than written messages. Here, peer leaders and their social network seem central and critically important to the dissemination of information. In New York City ADAPT and in the Netherlands *Junkiebonden* are organizations of former and current intravenous drug users that have provided effective leadership from within the subculture.[47] Black churches may also offer a way into parts of this community.[33] How effective these organizations can become and how their role can be strengthened and expanded are other important areas for careful trial and study.

TREATMENT OF DRUG ABUSE

Although a great deal has been learned since the first treatment of heroin addicts with methadone by Dole and Nyswander,[34] many issues regarding the treatment of addiction remain unresolved.[35] Methadone itself remains a controversial treatment for heroin and needs further evaluation in the setting of

AIDS.[36] The changing dimensions of drug use including the ubiquity of cocaine and crack, polydrug use, and AIDS itself, have called into question all aspects of drug treatment. Currently there is no effective pharmacologic therapy for crack addiction. The extent and nature of support services required to increase the likelihood of treatment success needs evaluation. At present, local neighborhood opposition sharply limits expansion of drug treatment centers. We need much better ways to address neighborhood concerns if we are to put an adequate number of treatment centers in place.

Resource needs. Use of medical support by these patients has important consequences for planning anticipated resource needs and costs, a need especially keen in New York City with its current hospital bed shortage.[37] We need to know the hospital costs and lengths of stay of intravenous drug users with AIDS compared to other patients with AIDS. How many of these patients could be treated outside hospitals? What kind of follow-up care do these patients get and what is required? Where do these patients go when discharged? How many simply return to the street? Is nursing home care appropriate for more of these patients? What about hospice care? Do health care providers serving intravenous drug users understand chemical dependency or have experience with substance abusing clients? What linkages between hospitals, community based centers, and drug treatment programs are required for effective continuous care? How easy is access to treatment programs for the drug abusing patient?

The natural history of HIV infection among intravenous drug users remains unclear. Does it differ from other populations? Are intravenous drug users diagnosed later in the courses of their infection causing lead time bias or is their shorter survival related to greater immunosuppression? After an addict is HIV positive, do continued intravenous drug injections accelerate immunosuppression? What is the relationship between HIV and endocarditis and tuberculosis? Do such maternal factors as nutritional status affect the incidence or natural history of HIV in the newborn?

PUBLIC POLICY RESPONSES

Public response to AIDS has been slow and poorly coordinated. Current prospects for early development of an effective vaccine or cure remain dim.[38] Until that happy day, preventing infection through behavioral change remains the only effective response. But measures that work toward behavioral change require intense and continuing political will and vigorous community support. Nowhere will aggressive coordinated action be more necessary than in the development of means to control intravenous drug use. While far short

of ideal, we suggest several approaches that may help decrease the use of drugs and the spread of AIDS.

Education. Education about AIDS transmission has altered the behavior of homosexual men and has led to profound social changes within the homosexual community. The educational efforts required to effect similar change among intravenous substance users will be much tougher. Programs must be sharply targeted and carefully tailored for several different groups: drug users who seek treatment; those who wish to continue drug use; the sexual partners of drug users; those on the streets, those in shelters; and those within prisons who use parenteral drugs.

Aggressive, unsentimental, and explicit preventive education must be directed toward those who are at high risk of beginning intravenous drug use but who have not yet started. School progams will reach some of these young people. However, many of these children drop out of school and have to be reached through local community organizations formed by former drug users, religious groups, or other outreach programs. These programs must be made relevant, come from peer or community leaders, and be couched in readily understood language.

Treatment on demand. Expanding the number of treatment centers for intravenous drug users will be crucial to control the spread of AIDS. While this alone will neither eliminate drug addiction nor the spread of AIDS among addicts, it is the essential first step. Treatment should be available immediately, be it methadone or drug free programs, to all drug users who request help. These programs should be easily accessible and without financial barriers. The Presidents Commission on the Human Immunodeficiency Virus has recently made a similar recommendation.[39] Intravenous drug abuse should be managed as any other life threatening condition. Physicians would never accept long delay in treatment of congestive heart failure or diabetic acidosis. It should not be tolerated with drug abuse.

Treatment programs must be innovative, flexible, and responsive to the needs of distinct populations. A program for homeless intravenous drug abusers will need to consider the special characteristics of this population and develop ability to treat transient drifting groups. A different program will be needed for intravenous drug users in and out of prisons. The number of treatment slots in the programs should not be considered adequate simply when there are no longer any people on the waiting lists. Only when all those actively seeking treatment and all those who would accept treatment if actively recruited are enrolled can the response be viewed as adequate. Funding expanded treatment programs will require a change in political priorities.

While drug abusers have no political leverage with which to urge such change, the pure economic advantages of such funding should be clear to all citizens. The cost of treating an AIDS patient currently approximates $150,000 over a one to two year period,[40] while the costs of maintaining an addict in a methadone clinic costs about $3,000 per year.[49]

Local community resistance to new drug treatment facilities simply must be overcome. In New York City no new treatment programs have been able to open in eight years because of vigorous local opposition. Changing the locale of these clinics from neighborhood centers to hospitals and local city medical clinics with already established ties to the community would probably generate less opposition. Offering communities such incentives as increased police surveillance may encourage communities to tolerate such centers. State health commissioners frequently have the authority to declare a health emergency and to overrule local opposition to such clinics, but clearly this authority should be used only if all else fails.

Drug treatment and support services. The type and quantity of supportive services needed to support drug treatment clinics remains controversial. The method used in Hong Kong—providing methadone without dealing with the underlying causes of addiction or rehabilitation of the addict—has been effective there, but is generally considered inadequate in the United States. But during our present crisis this needs real examination. Drug abuse in the United States is more complex, involving polydrug use and needle sharing, and is often only part of a spectrum of social and psychological difficulties,[48] any simple means to reduce intravenous needle usage needs exploration. Probably social workers and counselors teaching vocational and resocialization skills will also be needed. Because methadone clinics are often drug users' only source of medical care, medical services must also be provided. Help with housing, legal assistance, family planning, and other social services are often critical to keeping the drug user in treatment. Without help in coping with such basic needs as shelter, jobs, and food, the addict has little chance of initiating, even less of succeeding, in the enormously difficult task of stopping drug use. In the past, drug treatment programs could be designed to suit the provider. For patients interested in treatment there was little choice. But stakes are now too high to continue a seller's market that dictates the type and quality of treatment available. These programs must be made appealing and must attract as many drug users as possible.

In some places effective community organizations exist to assist the drug user. These services should be strengthened and expanded before new and redundant organizations are developed. However, in most areas, to provide needed services will require enormous expansion of staff and resources.

Clearly, present staffing patterns are not adequate in most areas and disincentives to accept positions in this field are many. Current staff are underpaid and stretched too thin. There is a very high level of burnout, and dedicated, experienced, and talented staff members are leaving drug programs. Pay scales must be raised and more people trained and encouraged to enter this field.

Providing sterile equipment. Even if every drug user who desires treatment is enrolled in a program, tens of thousands will elect to continue intravenous drug use. Providing sterile equipment or the materials needed to clean equipment would decrease the likelihood of transmission of HIV or other infections by direct needle sharing.

Critics of making sterile equipment available to addicts fear an increase in drug use from apparent condoning of drugs or the implication that drug use has become safe. However, where attempted, there is no evidence that distributing free needles increases the use of intravenous drugs. In Amsterdam and Australia needle exchange programs have been operating for years without measurable increase in the use of intravenous drugs.[44]

The simplest way to make sterile needles available to drug users is to adopt a universal policy already in effect in 38 states; permit needles and syringes to be purchased in pharmacies without a prescription. To add needle exchange programs would increase the addicts' contact with the health care system. This might allow more exposure to risk reduction programs that emphasize precautions, sexual and drug associated, for those who still inject. As addicts learn to trust the health care system and recognize that it responds to their needs, they are more likely to accept treatment for their addictions.

Recently the overwhelming nature of the increasing epidemic of drug use have led several mayors and congressmen to advocate legalization of all drugs.[41] It has been suggested that if drugs were legalized, billions of dollars in illegal profits would stop flowing into the hands of the drug lords, governments and politicians would no longer be corrupted, and muggings, violent crimes against people, and murders of law enforcement officers, members of the drug community, and ordinary citizens, would decrease. Clearly, the costs to society of drug use are enormous whether legal or not. Critics of the legalization approach argue that easy access to cheap drugs would have yet more severe medical and social consequences, and the morass of practical issues associated with legalization would be overwhelming. Thus, while this suggestion deserves an objective look, most current evidence suggests that this might create more problems than it would solve. The need for such measures would become moot if society could successfully reduce demand and use through massively increased efforts in prevention and treatment.

SOCIETAL CHANGES

The epidemic of intravenous drug abuse and AIDS has starkly highlighted the weaknesses in how we deal with unpleasant social problems and how we attempt to address (or avoid confronting) large health issues. We are failing miserably to provide either adequate medical care or social support for many of those already infected or those potentially afflicted with AIDS. We are unable to prevent the initiation of drug use, especially among the children most susceptible—poor inner city black and Hispanic youth, often those with single or no parents. To change patterns of drug use, profound and significant changes in how our society establishes its priorities and deals with difficult and complex sociomedical problems will be needed.

The link between drug use and the lack of economic opportunity is strong. Teaching the skills required to find employment and integration into conventional society will be needed in any successful attempt to prevent initiation of drug use. It is not surprising that recreational drug use is concentrated among those who remain in poverty with little hope of improving their situations. Initiation into the drug subculture is not necessarily an irrational decision for those with no chance of escape from bleak socioeconomic futures. By ignoring this obvious hopelessness so common in a segment of society, we condemn the nation to the loss of their future potential, and, more important, we condemn them to violence, poverty, and premature death.

Major shifts in moral judgments will also be required to mount effective national informational programs to effect behavioral change. No minority group which feels socially rejected and disliked is going to hear what authorities espouse unless it is clear to them that the first priority of those authorities is to save the lives of members of that minority group. A precondition of appearing credible is that one seeks to preserve the life of one whose style needs alteration.[42] A recent statement of June Osborn emphasizes this point: "Our timid efforts at [education]...stem from the kind of arrogance which asserts a steep hierarchy of human values with one's own at the top. It is the sort of misappropriation of opportunity which denies plain warnings to those who need them the most, which places more value on tastefulness than on truth. In short, it is the withholding of mortal information in the name of morality."[43]

SUMMARY

The key to the future of the HIV epidemic is the intravenous drug user. In New York City the future has arrived—intravenous drug use is now the predominant risk factor among new cases of AIDS. Our limited knowledge of

most facets of drug abuse prevention and treatment and the emotional polarity and politicalization of the issues surrounding AIDS have made control of its spread among intravenous drug users very difficult. Clearly new research efforts are needed better to decide how to reduce the further spread of HIV infection among this group. But efforts to stop the spread cannot await these results. Intense and immediate efforts should focus on five areas for potential control of the spread of HIV infection among drug users: education, treatment on demand, expanding support services, providing sterile equipment, and readjustment of some of society's moral judgments that currently block action. Let us hope that in 10 years we do not look back and realize that we did too little too late while it was still possible to make a difference.

REFERENCES

1. New York State Department of Health AIDS Surveillance Update. September 13, 1988.
2. Center for Disease Control: AIDS Weekly Surveillance Report. June 6, 1988.
3. Joseph, S.: *AIDS: An Update*. Public Health Research Institute, New York City, May 11, 1988.
4. Stoneburner, R.L., Des Jarlais, D.C., Guigli, P., et al.: Increasing Mortality among Intravenous Drug Users in New York City and its Relationship to the AIDS Epidemic: Evidence for a Larger Spectrum of HIV-Related Disease. *American Public Health Association 115th Annual Meeting*. New Orleans, October 18-22, 1987.
5. Friedland, G.H., Harris, C., Butkus-Small, C., et al.: Intravenous drug abusers and the acquired immunodeficiency syndrome (AIDS) demographic, drug use, and needle-sharing patterns. *Arch. Intern. Med. 145:*1413-17, 1985.
6. Robertson, J.R., Bucknall, A.B.V., Welsby, P.D., et al.: Epidemic of AIDS related virus (HTLV-III/LAV) infection among intravenous drug abusers. *Br. Med. J. 292:*527, 1986.
7. Ginzberg, H.M.: Intravenous drug users and the acquired immune deficiency syndrome. *Public Health Rep. 99:*206-12, 1984.
8. Lambert, B.: Study finds antibodies for AIDS in 1 in 61 babies in New York City. *The New York Times:* A1,B4, January 13, 1988.
9. New York State Department of Health: AIDS Surveillance Monthly update. June/July 1988.
10. Chaisson, R.E., Moss, A.R., Onishi, R., et al.: Human immunodeficiency virus infection in heterosexual intravenous drug users in San Francisco. *Am. J. Public Health 77:*169-72, 1987.
11. Des Jarlais, D.C. and Friedman, S.R.: HIV Infection among intravenous drug users. Epidemiology and risk reduction. *AIDS 1:*67-76, 1987.
12. Hessol, N.A., Rutherford, G.W., et al.: The Natural History of HIV Infection in a Cohort of Homosexual and Bisexual Men: A Decade of Follow Up. *IV International Conference on AIDS*. Stockholm, Sweden, June 1988.
13. *Websters New Collegiate Dictionary*. Springfield, MA, Merriam, 1980:13.
14. Newman, R.G.: The need to redefine "addiction." *N. Engl. J. Med. 308:* 1096-98, 1983.
15. Pescor, M.J.: A statistical analysis of the clinical records of hospitalized drug addicts. *Public Health Rep* (Suppl.) *143:*1-30, 1943.
16. Vaillant, G.E.: The natural history of narcotic drug addiction. *Sem. Psych. 2:*486-98, 1970.
17. Robins, L.N.: *The Vietnam Drug User Returns*. Washington, D.C., Govt. Print. Off., 1974.
18. Robins, L.N., Helzer, J.E., Hesselbrock, M., and Wish, E.: Vietnam Veterans Three Years After Vietnam: How Our Study Changed Our View of Her-

oin. In: National Research Council Committee: *Problems of Drug Dependence*. Washington, D.C., Nat. Acad. of Sciences, 1977, pp. 24-40.
19. Hartnoll, R., Roger, L., Mitcheson, M., and Bryer, S.: Estimating the prevalence of opioid dependence. *Lancet 1:*203-05, 1985.
20. Coye, M.J.: *Citizen's Commission on AIDS*, New York, February 23, 1988.
21. Drucker, E.: AIDS and addiction in New York City. *Am. J. Drug. Alc. Abuse 12:*165-81, 1986.
22. Friedman, S.R., Des Jarlais, D.C., Sotheran, V.C., Garber, J., Cohen, H., and Smith, D.: AIDS and self organization among IV drug users. *Int. J. Addict. 22:*202-19, 1987.
23. Preble, E., Casey, J.J., Jr.: Taking care of business—the heroin user's life on the street. *Int. J. Addictions 4:*1-24, 1969.
24. Friedman, S.R., Des Jarlais, D.C., and Sotheran, J.L.: AIDS health education for intravenous drug users. *Health Ed. Quart. 13:*383-93, 1986.
25. Selwyn, P.A., Cox, C.P., Feiner, C., et al.: Knowledge About AIDS and High-Risk Behavior Among Intravenous Drug Abusers in New York City. *Annual Meeting of the American Public Health Association*. Washington, D.C., November 18, 1985.
26. Des Jarlais, D.C., Friedman, S.R., and Hopkins, W.: Risk reduction for the acquired immunodeficiency syndrome among intravenous drug users. *Ann. Intern. Med. 103:*755-59, 1985.
27. *Cocaine Use in America: Epidemiological and Clinical Perspectives*. DHS Publication No. (ADM) 85-1414, 1985.
28. Leventhal, H. and Cleary, P.: Review of the research; theory of behavioral risk modification. *Psych. Bull. 88:*370-405, 1980.
29. Troyer, R. and Markle, G.: *Cigarettes*. New Brunswick, N.J., Rutgers University Press, 1983.
30. Robinson, E.J.: Analyzing the impact of scientific reporting. *Journalist Quart. 40:*306-14, 1963.
31. Irwin, C.E., Jr., and Millstein, S.G.: Biopsychosocial correlates of risk-taking behaviors in adolescence: can the physician intervene. *J. Adolesc. Health Care 7* (Suppl.):82S-96S, 1986.
32. Greydanus, D.E.: Risk-taking behaviors in adolescence. *J.A.M.A. 258:*2110, 1987.
33. Black churches, endangered children. Editorial. *New York Times:*A18, May 23, 1988.
34. Dole, V.P. and Nyswander, M.E.: Heroin addiction—a metabolic disease *Arch. Intern. Med. 120:*19-24, 1967.
35. Newman, R.G.: Methadone treatment defining and evaluating success. *N. Engl. J. Med. 317:*447-50, 1987.
36. Landis, B.: Hooked: The madness in methadone maintenance. *Village Voice:* 31-38, April 5, 1988.
37. Weinberg, D.S. and Murray, H.W.: Coping with AIDS: The special problems of New York City. *N. Engl. J. Med. 317:*1469-72, 1987.
38. An interview with WHO's Jonathan Mann. *Epidemiol. Monitor 1:*1-7, 1988.
39. *Report of the Presidential Commission on the Human Immunodeficiency Virus Epidemic*. June 24, 1988.
40. Hardy, A.M., Rauch, K., Echenberg, D., et al.: The economic impact of the first 10,000 cases of Acquired Immunodeficiency Syndrome in the United States. *J.A.M.A. 255:*209-11, 1986.
41. Kerr, P.: The unspeakable is debated: Should drugs be legalized. *The New York Times:*A1, 24, May 16, 1988.
42. Hampden-Turner, C.: Naught for Your Comfort: Social Scenarios on the Future of AIDS. *Centre for Explorations in Social Concern*. The Grubb Institute, November 1987.
43. Osborn, J.: *Cornell Health Policy Conference IV, AIDS: an Action Agenda for New York City*. New York, February 25-26, 1988.
44. Des Jarlais, D.C. Personal communication.
45. Dole, V.P. Personal communication.
46. Joseph, H. Personal communication.
47. Serrano, Y. Personal communication.
48. Millman, R. Personal communication.
49. Peyser, N. Personal communication.