FOCUS GROUP ON HIV AND SUBSTANCE ABUSE

Sponsored By:
The Office of National AIDS Policy

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Briefing Materials

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Thursday, July 28, 1994
9:00 a.m. to 12:00 p.m.
750 17th Street
6th Floor Conference Room
Washington, D.C. 20503

Focus Group on HIV and Substance Abuse

AGENDA

I.	**9:00 a.m.**	**Welcome** ***Kristine Gebbie, National AIDS Policy Coordinator*** **Introductions and Statement of Purpose** ***Frances Page, Prevention Specialist***
II.	**9:15 a.m.**	**What is the problem?** **Overview of Drug-Related HIV/AIDS Problem in America** ***Dr. Jacques Normand, Researcher***
III.	**9:30 a.m.**	**How have we tried to solve the problem?** **What are the previous and current strategies for prevention of HIV infection in injecting drug users?** **What were contributing factors to successes and failures?**
IV.	**10:30 a.m.**	**What are potential strategies that could be implemented to reduce HIV infection in this community?** **What are the barriers to implementation, and what strategies may be employed to overcome these barriers?** **How can we assess the effectiveness of each strategy?** **How do previous initiatives compare using these criteria?**
V.	**11:45 a.m.**	**Wrap-Up**
VI.	**12:00 p.m.**	**Closure**

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FACT SHEETS

Compiled by Drug Strategies Staff

Drug Abuse Affects Us All

- The 1992 National Household Survey on Drug Abuse found that 23 million people (11% of Americans age 12 and older) had used illicit drugs within the past year. Of this group, 11 million reported regular (monthly) drug use. *(Source: National Household Survey, 1992; Bureau of the Census, 1991)*

- Nearly half of all Americans (45%) know someone in their family or community addicted to illicit drugs. *(Source: Peter D. Hart Research Associates Survey, February, 1994)*

- In 1990, drug abuse cost society close to $70 billion in crime, motor vehicle accidents, and lost productivity. *(Source: Brandeis Report, 1993)*

- One third of state prison inmates say that they were under the influence of drugs when they committed the crime for which they are in prison. 1 in 4 women and 1 in 6 men committed the offense for money to buy drugs. *(Source: Survey of State Prison Inmates, 1991)*

- More than a third of new AIDS cases occur among injecting drug users or people having sexual contact with them. *(Source: Brandeis Report, 1993)*

- The crack epidemic tripled the number of New York City's child abuse and neglect cases in the late 1980s. Like children of alcoholics, children exposed to drugs in utero or brought up by drug-abusing parents often have emotional and behavioral problems. *(Source: Brandeis Report, 1993; Office of National Drug Control Policy, 1994)*

- Over 5 million Americans need drug treatment. *(Source: Institute of Medicine, 1990)*

Americans Know That the War on Drugs is Failing

- The majority of Americans (70%) believe that drug abuse is a greater problem today than it was five years ago. This pessimism persists despite substantial reductions in overall drug use in the past ten years. *(Source: Peter D. Hart Research Associates Survey, February, 1994; National Household Survey, 1991)*

- Since 1981, federal and state governments have spent over $100 billion on the drug problem. Over the past 12 years, federal drug control spending has increased more than eightfold, from $1.8 billion in 1981 to $12.3 billion in 1993. *(Source: Office of National Drug Control Policy, 1993, 1994)*

- State and local governments spend almost 50% more than the federal government on drug control activities: $16 billion compared to $11 billion in federal spending in 1991. *(Source: Office of National Drug Control Policy, 1993, 1994)*

- Most "drug war" funds are spent on the supply side--law enforcement, interdiction, and international programs. The demand side--prevention, education, and treatment--has always received less. Of the $12.3 billion the federal government spent in 1993, $7.96 billion was for supply reduction programs, and $4.3 billion was for demand reduction. *(Source: Office of National Drug Control Policy, 1994)*

- The amount of heroin seized annually in the U.S. has doubled since 1990, and the quantity of marijuana seized has increased by 50%. Despite the increasing quantity of drugs seized, there has been little effect on street availability and price. High school students continue to report that drugs are readily available, and the price of cocaine is lower now than it was five years ago. *(Source: Bureau of Justice Statistics, 1992, 1994; Johnston Survey, 1994)*

- In 1993, 8th, 10th, and 12th graders reported increased use of marijuana and inhalants. Young people's attitudes toward drug consumption are softening, becoming more tolerant; this may foreshadow continued increases in drug use. *(Source: Monitoring the Future Study, January, 1994)*

- For FY 1995, the ONDCP has requested a 21.7% increase in funds for international programs such as crop eradication and source country programs. Polls show little public support for these programs. *(Source: Office of National Drug Control Policy, 1994; Peter D. Hart Research Associates Survey, February, 1994)*

Correctional Costs Outpace Education, Health, Welfare Spending

- In 1992, the United States spent an estimated $25 billion on corrections. State and local governments spend almost 16 times more on prisons and jails than the federal government. *(Source: Edna McConnell Clark Foundation Report, 1993)*

- Corrections spending by state and local governments jumped 232 percent between 1970 and 1990, compared to a 79 percent increase in welfare spending and 71 percent growth in health care expenditures. *(Source: CQ Researcher, February, 1994)*

- On average, state corrections budgets have received more new funds than higher education for the past three years. *(Source: National Conference of State Legislatures, 1993)*

- 1994 state corrections spending is expected to increase almost 10 percent over 1993, in part because prisoners are staying longer as a result of tougher sentencing practices. *(Source: National Conference of State Legislatures, 1993)*

- About 80% of state drug control spending goes to the criminal justice system, compared to 20% for education and treatment. Correctional services receive the largest share: 43 percent, or $6.8 billion in fiscal year 1991. Yet, according to the National Institute of Drug Abuse, each dollar spent on treatment saves $4-$7 in reduced costs to the public and $3 in increased productivity. *(Source: Office of National Drug Control Policy, 1993, 1994)*

- For every dollar state and local governments spend on treatment and prevention, nearly four are spent on criminal justice activities. *(Source: Office of National Drug Control Policy, 1993, 1994)*

Mandatory Minimums
Crowd Prisons with Non-Violent Offenders

- Three-fourths of all state prisons were operating over their maximum capacity in 1992. California has the most overcrowding, operating at 91% above capacity. *(Source: CQ Researcher, February, 1994)*

- Since 1984, four out of five convictions under federal mandatory minimum statutes have been for drug offenses. *(Source: The Sentencing Project, 1992)*

- The average federal prison sentence for all types of offenses is 61 months; for violent offenses, 91 months; for drug offenses, 84 months. On average, violent offenders are released for parole after serving about two-thirds of their sentences; drug offenders, after serving nearly three-quarters of their time. *(Source: Department of Justice Report, 1994; Bureau of Justice Statistics, 1992; Sourcebook of Criminal Justice Statistics, 1992)*

- A 1994 Department of Justice study defined low-level federal drug offenders as those who have no violence in their records, no involvement in sophisticated criminal activity, and no prior commitment. These offenders, two-thirds of whom are serving mandatory minimum sentences:

  → comprise well over a third of all drug offenders in the prison system, and one-fifth of the total federal prison population;

  → have an average sentence of 6.8 years, which means that each offender will serve between 5 and 6 years before release; and

  → tend to receive sentences based primarily on the quantity of drug involved in the offense, not on their role in the crime. *(Source: Department of Justice Report, 1994)*

Treatment Works If You Can Get It

- Over 5 million Americans need drug treatment. Of those people, 4 out of 5 must rely on public programs; only 600,000 publicly funded treatment "slots" are available. *(Source: Institute of Medicine, 1990)*

- According to a 1994 national survey, 49% of Americans believe that providing government-funded drug treatment for everyone who sought it would make a major difference in drug-related crime. Only 14% said such a strategy would make no difference at all. *(Source: Peter D. Hart Research Associates Survey, February, 1994)*

- Of the 45% of Americans who personally know someone who became addicted to drugs, seven in ten believe that person would have been helped more by a supervised treatment program than by a prison term. *(Source: Peter D. Hart Research Associates Survey, February, 1994)*

- State and local governments spend less than a quarter of their drug control budgets on education and rehabilitation activities. For every dollar spent on treatment and prevention, nearly four are spent on criminal justice activities. Yet, the National Institute of Drug Abuse estimates that every dollar spent on treatment saves $4-$7 in reduced costs to the public and $3 in increased productivity. *(Source: Office of National Drug Control Policy, 1993, 1994)*

- In California, 1 in 20 pregnant women have used illicit and licit drugs, not including alcohol and tobacco. In 1992, more than 21,000 babies born in California were exposed to illicit drugs prior to birth. A 1991 *Journal of the American Medical Association* article notes that "pregnant women have been categorically excluded from most drug treatment programs" because they do not offer services they need such as prenatal care. *(Source: California Department of Alcohol and Drug Programs, 1993; Journal of the American Medical Association, 1991)*

- Treatment programs that work:
  - → are at least three months to a year in duration:
  - → are intensive, comprehensive, and highly structured;
  - → require therapy focusing on all aspects of the addict's life;
  - → include continuing participation in support groups;
  - → provide access to educational, vocational, and employment opportunities; and
  - → foster a sense of belonging to a community.

  (Source: Institute of Medicine, 1990)

Intensive Treatment of Criminal Offenders Dramatically Cuts Recidivism

- Daily users of heroin or cocaine report committing hundreds of crimes per year, including robbery, burglary, and drug trafficking. *(Source: Institute of Medicine, 1992)*

- One-third of state prison inmates were under the influence of drugs at the time they committed their offense. *(Source: Sourcebook of Criminal Justice Statistics, 1992)*

- Without treatment, three quarters of drug-abusing prisoners renew their criminal activity and drug use within 3 months of parole. In Texas, two-thirds of paroled drug offenders return to prison within three years. *(Source: Legal Action Center Testimony, 1993)*

- Extensive studies of prison drug treatment programs report reductions in recidivism by one-third or more after offenders are released from prison. A 1994 national survey found that 49% of Americans think these programs help reduce the crime rate. *(Source: Lipton Study, 1993; Peter D. Hart Research Associates Survey, February, 1994)*

- The majority of Americans (59%) think rigorous, closely supervised treatment for first-time drug offenders would make a major difference in reducing the drug-related crime rate. *(Source: Peter D. Hart Research Associates Survey, February, 1994)*

- Diversion programs for nonviolent drug offenders reduce recidivism. New York State's boot camp model provides drug and alcohol treatment, community building, and education, and supports its graduates after release with a job, a place to live, and drug rehabilitation. A recent study showed that less than half of the program graduates (46%) were rearrested in the year following release, and only 11% were returned to prison. By comparison, 63% of offenders who drop out of the boot camp program and serve a prison sentence are rearrested after release. One-third of the boot camp beds in the United States are located in New York State. *(Source: N.Y. State Division of Parole, 1993)*

- Repeat felony drug offenders who complete the Kings County, N.Y. Drug Treatment Alternative-to-Prison (DTAP) program are returned to court at a rate of 8 percent; comparable felons who serve prison sentences have a rate of 40 percent. *(Source: DTAP Program, 1994)*

- Prison drug treatment programs work when they contain the following elements:
  - → a competent and committed staff;
  - → adequate administrative and material support;
  - → separation from the general prison population;
  - → incorporation of self-help principles and ex-offender aid;
  - → comprehensive, intensive therapy aimed at all aspects of the addict's life; and
  - → continuity of care into the parole period. *(Source: Institute of Medicine, 1990)*

The Impact on Minorities

- The 1992 National Household Survey on Drug Abuse showed that 23 million people had used an illicit drug in the past year. Of the regular (monthly) drug users, almost 9 million were white, 1.5 million were black, and 885,000 were hispanic. *(Source: National Household Survey, 1992)*

- In 1992, whites accounted for nearly two-thirds of those who used cocaine at least once a month. Just over 17% of monthly cocaine users were black, and about 16% were Hispanic. *(Source: National Household Survey, 1990, 1991, 1992, Population Estimates)*

- In 1990, 56% of those convicted on felony drug charges in state courts were black; less than half (43%) were white. *(Source: Sourcebook of Criminal Justice Statistics, 1992)*

- Almost two-thirds of those convicted under federal mandatory minimum sentences are black or hispanic, and one-third of the total have no prior criminal record. In the past 10 years, about 85% of convictions under federal mandatory minimum statutes have been for drug offenses. *(Source: The Sentencing Project, 1992)*

- Almost one in four (23%) young black males in the age group 20-29 is under some type of correctional control (incarceration, probation, or parole). The proportions for young white males is 1 in 16; for young Hispanic males, 1 in 10. *(Source: The Sentencing Project, 1994)*

- In 1991, nearly a quarter of youth 16-24 with less than four years of high school were unemployed. Over 60 percent of those arrested and charged for crimes that year were between the ages of 13 and 29. In Washington, D.C., the unemployment rate for black youth is 22%; in New York State, the rate is 28%. A recent national survey showed that a majority of Americans (64%) believe that improving job opportunities and training programs could make a major different in drug-related crime. *(Source: Edna McConnell Clark Foundation Report, 1993; Peter D. Hart Research Associates Survey, February, 1994; Children's Defense Fund, 1993)*

Needle Exchange Does Not Encourage Drug Use -- And People Support It

- Research shows that needle exchange programs do not encourage new injection drug use. *(Source: Journal of the American Medical Association, January, 1994)*

- 55% of Americans support needle exchange programs as a means of slowing the spread of AIDS. *(Source: Peter D. Hart Research Associates Survey, February, 1994)*

- Of the more than 350,000 Americans with AIDS, nearly one third have been infected through contaminated needles or through sex with an infected addict. *(Source: Centers for Disease Control, October, 1993)*

- Because they reduce needle sharing, needle exchange programs can reduce the spread of HIV infection. *(Source: General Accounting Office, March, 1993, Centers for Disease Control Report, October, 1993)*

- There are now at least 37 needle exchange programs around the country. About one-half of these programs are legal, but funding is often unstable and most programs rely on volunteers. *(Source: Centers for Disease Control Report, October, 1993)*

- The Centers for Disease Control and Prevention has recommended that Congress lift the ban on federal funds for needle exchange programs, concluding that needle exchange can reduce HIV infection rates. *(Source: Centers for Disease Control Report, October, 1993)*

- Needle exchange programs generally result in HIV risk-reduction behavior among injection drug users. *(Source: Journal of the American Medical Association, January, 1994)*

- Drug addicts who joined a needle exchange program in Tacoma, Washington contracted hepatitis B at a quarter the rate of those not in the program. *(Source: New York Times, October 1, 1993)*

- Needle exchange programs provide care and education to many addicts who otherwise have no contact with medical and social programs. *(Source: Centers for Disease Control Report, October, 1993)*

Keeping Kids Off Drugs Should Be Our Top Priority

- Juvenile arrest rates for heroin and cocaine possession and distribution increased more than 700% between 1980 and 1990. Of the more than 800,000 children who enter the juvenile justice system each year, 80% admit to using illegal drugs. *(Source: Biden Report, 1994)*

- Teenage drug use is rising: the proportion of 8th graders using marijuana has increased by 50% in the last two years, from 6.2% to 9.2%. Tenth graders' use of marijuana has risen by about 25%. *(Source: Monitoring the Future Study, January, 1994)*

- The proportion of teenagers who believe regular marijuana use is risky has fallen from 79% in 1991 to 73% in 1993. Social norms against drug use have begun to soften as well. *(Source: Monitoring the Future Study, January, 1994)*

- Regular marijuana use in the general population has declined by about half and cocaine consumption by one-third over the past ten years. But recent trends in high school drug use threaten to erode this progress. *(Source: National Household Survey, 1991)*

- Effective youth prevention programs can reduce rates of new drug use by half and alcohol use by one-third. *(Source: Journal of the American Medical Association, 1989; Science, 1990)*

- Federally funded comprehensive drug education programs barely reach one-half of the nation's schoolchildren. *(Source: Biden Report, 1994)*

- Effective youth prevention programs:
  - → provide credible information;
  - → refute the notion that "everyone is doing it," thereby reducing peer pressure;
  - → teach children practical strategies for resisting drugs;
  - → actively involve youth through dynamic classroom exercises; and
  - → involve families and the surrounding community. *(Source: Falco, 1992)*

- When asked to choose between funding interdiction efforts or spending the money in local communities on prevention, education, treatment, and law enforcement, three in four Americans prefer to see the money spent locally. *(Source: Peter D. Hart Research Associates Survey, February, 1994)*

Alcohol is America's Most Popular Drug

- By twelfth grade, almost 90% of high school students will have tried alcohol, and 60% will have been drunk at least once. *(Source: Monitoring the Future, 1993)*

- Alcohol directly causes nearly twenty thousand deaths per year, and is indirectly responsible for over 88,000 deaths; the rate has remained constant for a decade. *(Source: Brandeis Report, 1993)*

- In 1990, alcohol abuse cost $10.5 billion in direct health care costs, more than three times the $3.2 billion amount for illicit drug abuse. *(Source: Brandeis Report, 1993)*

- Almost one-fifth of adults say that they lived with a problem drinker or an alcoholic when they were children. Children in alcoholic families often have emotional and adjustment difficulties including aggressive behavior, conduct problems, and hyperactivity. *(Source: Brandeis Report, 1993)*

- In 1991, there were over 3 million arrests for alcohol-related offenses, including driving under the influence, liquor law violations, public drunkenness, disorderly conduct, and vagrancy. *(Source: Sourcebook of Criminal Justice Statistics, 1992)*

- Of all psychoactive substances, alcohol is the only one whose consumption has been shown to commonly increase aggression. *(Source: National Institute of Justice, 1994)*

- One in four state prison inmates convicted of violent crimes were under the influence of alcohol at the time they committed their offense. An additional 16% were under the influence of both alcohol and drugs. *(Source: Survey of State Prison Inmates, 1991)*

- More than 18 million people who use alcohol need substance abuse treatment. *(Source: Brandeis Report, 1993)*

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NATIONAL

COMMISSION

ON AIDS

Report

The Twin Epidemics of Substance Use and HIV

July 1991

NATIONAL COMMISSION

ON

ACQUIRED IMMUNE DEFICIENCY SYNDROME

Report

The Twin Epidemics of Substance Use and HIV

July 1991

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Executive Summary

The failure of the federal government to recognize and confront the twin epidemics of substance use and HIV infection has become glaringly apparent to the Commission throughout its nearly two years of hearings and site visits. The federal government's strategy of interdiction and increased prison sentences has done nothing to change the stark statistics:

- Approximately 32 percent of all adult/adolescent AIDS cases are related to IV drug use.
- Of the pediatric AIDS cases related to a mother with/at risk for HIV infection, 70 percent are directly related to maternal exposure to HIV through IV drug use or sex with an IV drug user.
- 71 percent of all female AIDS cases are linked directly or indirectly to IV drug use.
- 19 percent of AIDS cases among men are directly linked to IV drug use, and an additional 7 percent of AIDS cases among men are linked to both homosexual/bi-sexual contact and IV drug use.
- African-American and Hispanic communities are being extremely hard hit by the twin epidemics. While African-Americans make up 28 percent of all diagnosed AIDS cases and Hispanics make up 16 percent; of the cases attributed to IV drug use, African-Americans account for 45 percent of cases and Hispanics for 26 percent.
- The city of New York has an estimated 200,000 IV drug users (who are 50 percent HIV positive) with only 38,000 publicly funded treatment slots.
- The National Institute on Drug Abuse (NIDA) recently estimated (based on provisional data) that approximately 107,000 persons are currently on waiting lists for drug treatment.

These twin epidemics transcend all economic, geographic and racial boundaries; everyone is affected. Substance use enhances the spread of HIV infection through the sharing of needles and the practice of unsafe sex related to crack (the smokeable form of cocaine), alcohol, and other substances. Despite this insidious and indisputable link between substance use and HIV infection, the Office of National Drug Control Policy continues to virtually ignore it, and neglect the real public health and treatment measures which could and must be taken to halt the spread.

Repeatedly, medical and treatment experts have come before the Commission and stressed the absolute importance of treatment on demand. Increasing treatment slots is a stated goal of the federal drug control policy, yet, as Dr. Robert Newman told the Commission, "...there seems to be nothing...to indicate that any government agency either at the federal or at any of the 50 state levels is indeed pursuing the objective of expansion

on a massive scale to make treatment for addicts who want it readily available." Providing quality treatment and treatment on demand may be an expensive proposition, but so is the unchecked spread of HIV infection. For a successful short and long-term solution we must shift our focus from expensive prison beds which represent society's failure, to less expensive treatment slots which represent our only hope, and provide easily accessible drug treatment to all those who need and request it. (See Appendix A) As the Commission Working Group on Social/Human Issues stated in its April, 1991 report, "...it is fundamentally unjust, as well as unwise, to tell those who seek treatment for drug addiction that there is no room; but then tell them that the taxpayers are willing to spend thousands of dollars a year to keep them in jail."

We must also take immediate steps to curb the current spread of HIV infection among those who cannot get treatment or who cannot stop taking drugs. Outreach programs which operate needle exchanges and distribute bleach not only help to control the spread of HIV, but also refer many individuals to treatment programs. Legal sanctions on injection equipment do not reduce illicit drug use, but they do increase the sharing of injection equipment and hence the spread of HIV infection.

If HIV transmission related to substance use is going to stop, the federal government must take a leadership role in coordinating public health and drug treatment on all levels and in creating and implementing a cohesive national plan. Currently, the issue of HIV and substance use is falling through the cracks, and without clear policy directives to the medical, public health and drug treatment communities it will continue to do so.

The federal government must also ensure that the great strides made from research and demonstration projects are not lost through cut-backs or lack of funding. Successful demonstration projects should be identified and funding made available for their continuation as active federal projects. Funding for research on substance use and HIV should be expanded, not cut back or simply held constant. Research, both sociological and epidemiological, holds the key to discovering the answers to crucial questions around HIV and substance use. Clinical trials, a key component to research, should be open to individuals with a history of, or current, substance use problems.

Finally, all levels of government and the private sector must work together to attack the deep-rooted social and economic problems which promote and sustain substance use. The poor of this nation, especially in communities of color, have been inordinately hard hit by the twin epidemics of HIV and substance use. In order to combat these epidemics which affect the entire nation, we must provide basic needs such as housing, medical care and food. HIV education and drug treatment often seem like luxuries to individuals who do not know where they will sleep at night or where their next meal will come from. To reach the point where our nation's drug epidemic is really a thing of the past, we must create communities and neighborhoods which promote health and hope, not addiction and despair.

RECOMMENDATIONS:

To help work toward these goals the Commission puts forward the following recommendations:

1. Expand drug abuse treatment so that all who apply for treatment can be accepted into treatment programs. Continually work to improve the quality and effectiveness of drug abuse treatment.
2. Remove legal barriers to the purchase and possession of injection equipment. Such legal barriers do not reduce illicit drug injection. They do, however, limit the availability of new/clean injection equipment and therefore encourage the sharing of injection equipment, and the increase in HIV transmission.
3. The federal government must take the lead in developing and maintaining programs to prevent HIV transmission related to licit and illicit drug use.
4. Research and epidemiologic studies on the relationships between licit and illicit drug use and HIV transmission should be greatly expanded and funding should be increased, not reduced or merely held constant.
5. All levels of government and the private sector need to mount a serious and sustained attack on the social problems that promote licit and illicit drug use in American society.

The Twin Epidemics of Substance Use and HIV

It is my firm belief that policies related to AIDS and policies related to drugs are so intertwined that commenting and really wrestling and getting to the solutions to one will impact the other, and that it is necessary to consider both national drug policy and national policies related to AIDS.[1]

-Kurt Schmoke, December 18, 1990

-Testimony before the National Commission on AIDS

INTRODUCTION

In this the tenth year of the HIV epidemic the nation continues to face not one epidemic, but two: the twin epidemics of substance use and HIV infection. Since the early 1980s the close and deadly link between the sharing of injection drug equipment* and HIV has been well recognized. More recently, the link between non-injectable substances, such as alcohol and crack, and unsafe sexual activity which can result in the spread of HIV infection has also become glaringly evident. Yet, instead of responding to these epidemics with public health and treatment measures to cope with both, the federal government's primary response has been imprisonment and increased jail sentences, often ignoring drug/HIV relationships. The dire results of this myopic criminal justice approach are shown in the following statistics:

- Within the estimated half to 1.5 million people who inject drugs in the United States, the rate of HIV infection has increased rapidly over the past decade.[2]
- Approximately 32 percent of all adult/adolescent AIDS cases are related to IV drug use. (IV drug use; Male homosexual/bisexual and IV drug use; and Heterosexual contact with an IV drug user).[3]
- Of the pediatric AIDS cases related to a mother with/at risk for HIV infection, 70 percent are directly related to maternal exposure to HIV through IV drug use or sex with an IV drug user.[4]
- 71 percent of all female AIDS cases are linked directly or indirectly (i.e. sexual transmission from an IV drug user) to IV drug use.[5]
- 19 percent of AIDS cases among men are directly linked to IV drug use, and an additional 7 percent of AIDS cases among men are linked to both homosexual/bi-sexual contact and IV drug use.[6]

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* The Commission uses "injection drug equipment" to refer to those paraphernalia that carry the potential for contamination: the syringe, needle, "cooker," cotton and rinse water.

- African-American and Hispanic communities are being extremely hard hit by the twin epidemics. While African-Americans make up 28 percent of all diagnosed AIDS cases and Hispanics make up 16 percent; of the cases attributed to IV drug use, African-Americans account for 45 percent of cases and Hispanics for 26 percent.[7]
- The city of New York has an estimated 200,000 IV drug users (who are 50 percent HIV positive) with only 38,000 publicly funded treatment slots.[8]
- The National Institute on Drug Abuse (NIDA) recently estimated (based on provisional data) that approximately 107,000 persons are currently on waiting lists for drug treatment.[9]

Despite these dreadful growing numbers, (see Appendices B and C) our national drug control strategy does not reflect the immediacy of the problem, the need for significant expansion of drug treatment to permit treatment on demand, or the obvious and critically important relationship between HIV infection and substance use. To address this huge public health threat, the National Commission on AIDS convened a hearing on "Substance Use and HIV" in January 1991. Through the testimony of experts and individuals who are experiencing the problems of HIV and substance use firsthand, the Commission was better able to identify certain key issues and the urgent actions the nation must take to deal with these twin epidemics. Current programs are seriously wanting.

OVERVIEW

Through the Commission's hearings and site visits over the last year and a half, the wide range and diverse nature of substance use and the population of substance users has become very much apparent. Substance use problems cross all lines of age, geography, ethnicity and economics. Infants, adolescents and adults, rural and urban, poor and rich -- all are affected. Of special concern to the Commission is the importance of recognizing the behaviors that put an individual at risk for exposure to HIV whether or not that individual believes he or she fits into the category of "drug addict." Some high school and college athletes share needles to inject steroids.[10] Individuals from cultures and countries with differing medical practices often share needles to inject vitamins.[11] Practicing these behaviors poses the danger of transmitting and acquiring HIV just as sharing a needle to inject heroin or cocaine does.

The Commission is also deeply concerned by the force with which these twin epidemics have struck communities of color, women, and adolescents. There are significantly elevated rates of HIV infection among blacks and Hispanics compared with whites.[12] The rates of HIV infection related to IV drug use are also growing among women, many of whom do not perceive that they are at risk.[13]

Adolescents are especially at risk. Adolescents, and others, who avoid intravenous drugs still expose themselves to the risk of HIV infection through unsafe sexual behavior

during the use of alcohol and other substances. It is important, when considering this issue, to be realistic about when young adults in the U.S. begin having sex. "In 1990, the researchers at the Alan Guttmacher Institute in New York and the Urban Institute in Washington analyzed federally funded surveys of boys and girls conducted in 1988. They reported [that] both boys and girls were more likely to be sexually experienced than those surveyed in the late '70s and early '80s. Half of girls had sex by age 17; half of boys by age 16." The survey also shows that, "...3 out of 4 unmarried 19-year old women and 5 out of 6 unmarried 19-year old men were sexually experienced."[14]

The linkage between sexual behavior and substance use is vividly reflected in the following example from Dr. Robert Johnson of Adolescent Medicine at the University of Medicine and Dentistry of New Jersey:

> [O]ur last four adolescents who had heterosexual transmission of the disease all had sexual behavior that was associated with alcohol use, particularly a drug form of 'wine cooler' named Cisco, and these young people who had used condoms in other situations did not use condoms [here]...

Adolescents, and others, are also at risk through the growing practice of trading drugs, especially crack (the smokeable form of cocaine), for sex. Dr. Johnson gave the following example which dramatically illustrates this connection:

> One particular crack dealer...in our adolescent clinic in Newark revealed that in the month of August he had sex with 30 different women in trade for crack. In addition, he carried on a sexual relationship with his girlfriend who did not use drugs. All of this activity occurred without the benefit of the protection of condoms. In that month, he and his girlfriend, and his girlfriend's new boyfriend, and his girl friend's new boyfriend's alternative sexual partner, all became infected with gonorrhea and chlamydia.[15]

While much of this, and other substance using activity, is concentrated in urban areas, there has been an increasing trend towards substance use, especially crack, in suburban and rural areas as well. The Commission previously highlighted this trend in its August 1990 report on HIV in rural America. Another disturbing trend, with serious implications for the HIV epidemic, is the resurgence of heroin use in the Northeast.[16]

It can be seen from even this small sample of issues that substance use plays a major role in the transmission of HIV disease – indeed, a much larger role than has been generally recognized. Clearly, our nation's drug control policies must recognize this inextricable linkage between drugs and HIV disease and be designed to address the two aggressively and simultaneously.

NATIONAL DRUG CONTROL POLICY

To date, the National Drug Control Policy has failed to address the coupling of the epidemics of HIV and substance use. Indeed, thus far, the Office of National Drug Control

Policy (ONDCP) and other federal agencies have barely recognized the linkages. In the 1991 report from ONDCP, (a 161 page report), there are only three paragraphs of text addressing this issue. The failure to acknowledge this -- the obvious -- is bewildering and tragic. The first step is for the ONDCP, and other federal drug agencies to fully recognize the problem. In order to do this, the federal government must recognize that HIV and substance use is one of the issues of paramount concern within the "war on drugs." Any program which does not deal with the duality of the HIV/drug epidemic is destined to fail.

The current national approach to the problems of substance use is to deal with those who are addicted primarily by means of the criminal justice system. Clearly, this approach is not working and a public health approach is desperately needed. Despite the fact that "we [a]re incarcerating people at a greater rate than any nation in the world, and incarcerate blacks at a higher rate than South Africa,"[17] substance use continues, and transmission of HIV related to injection drug use has increased rapidly over the past decade.[18] The criminal justice system is the least viable setting for providing treatment and addressing issues of HIV and substance use. Yet this has become the primary strategy in our "war on drugs." Those forums which should have a proactive role in dealing with substance use, namely the medical and public health communities, have been seriously neglected. We must develop a system which coordinates public health and health care with treatment and outreach, both of which have shown positive results.

RECOMMENDATION 1.

Expand drug abuse treatment so that all who apply for treatment can be accepted into treatment programs. Continually work to improve the quality and effectiveness of drug abuse treatment.

Repeatedly, medical and treatment experts have come before the National Commission on AIDS and stressed the absolute necessity of treatment on demand. It has been over three years since the Presidential Commission on HIV made their recommendations for developing "a plan for increasing the capacity of the drug treatment system so that the goal of treatment-on-demand can be met." Yet we still lack the commitment we need from the federal government to achieve this goal. While treatment expansion is a stated goal of the federal drug control policy, no real gains have been made on any level. As Dr. Robert Newman told the Commission, "...there seems to be nothing...to indicate that any government agency either at the federal or at any of the 50 state levels is indeed pursuing the objective of expansion on a massive scale to make treatment for addicts who want it readily available."[19] We must also work to ensure that the quality of treatment is constantly improving. Immediately available, effective, high-quality treatment slots are the final goal. The Commission recognizes that improved quality of treatment and treatment on demand are expensive; but so is the unchecked spread of HIV infection. As the following statement illustrates, we are putting the available, much needed resources elsewhere:

> Exactly a year ago the White House issued a strategy on drug abuse control in which it made reference to a request for $1.5 billion for one fiscal year to expand by 24,000 the number of prison beds in the federal system in addition to even more massive expansion of prisons at the state and local level.
>
> Contrast those very specific and massive goals with what was said in that strategy report with regard to treatment. It was proposed that $100 million, be added for treatment expansion to allow 11,000 additional treatment slots to be created and to put that into perspective, the Institute of Medicine within the last six months referred to an estimate of 66,000 people in our country currently being identified as on waiting lists for various types of treatment programs."[20]

The numbers are likely even higher. NIDA has made estimates based on provisional data which indicate that as many as 107,000 persons are currently on waiting lists for drug treatment.[21] And, as early as 1988, "more than half of New York City's estimated 200,000 IV drug users were infected with HIV. At any given time, about 33,000 publicly funded drug treatment slots were available to assist these people." As of September 1990, there were a little over 38,000 publicly funded treatment slots.[22]

The reality of these numbers was made clear to the Commission through the following eloquent testimony of a woman who lives every day with the epidemics of HIV and substance use:

> I still work the streets to support a $150 a day habit of heroin and crack. I am forced to have sex with approximately ten men per day to support my habit, which is putting me at risk of further HIV infection, sexually transmitted diseases, and rape or death. What I want to tell you is that if I ha[d] been accepted into a drug treatment program three years ago, I would not be sitting here in front of you today telling you that I am HIV infected.[23]

Federal response to treatment on demand

Federal officials have questioned the wisdom of treatment on demand on three major grounds: first, there are already enough open slots in treatment programs, but poor coordination results in waiting lists; second, the efficacy of treatment methods is still unknown; and third, treatment on demand may create a "revolving door" effect with substance users moving in and out of treatment programs without ever taking treatment seriously.[24]

The government has argued that with a computerized system and increased coordination we could fill all the available slots, thus rendering new slots redundant. Further coordination between treatment centers and a computerized program to help expand access are excellent ideas, but coordination can only do so much. Treatment programs need to be easily accessible to people in need -- being shunted to another part of the city to an open

treatment slot may make treatment impossible for many substance users. Open slots in certain treatment programs may also reflect programs which are not thought to work by the substance users themselves. Whether the perception is justified or not, research should be done on what draws substance users to a particular program or type of treatment, and what drives them away.

While the Commission recognizes this need to coordinate treatment programs to make the system of providing care as efficient as possible, it also recognizes that many of the "open slots" may, in fact, exist only on paper. Budget cuts on both the state and federal levels have limited the operating capacity of many treatment programs, while leaving the original operating capabilities "on the books." Therefore, a treatment center listed as having 100 slots may in fact have only enough staff and equipment to serve 70 individuals – leaving a "phantom" 30 spots "unfilled."

Questions about the efficacy of treatment have been raised by many medical problems. The Commission recognizes the frustration faced by those who try to treat substance use, and believes that further research into treatments for specific "new" and "multiple" substance use behaviors must be developed; at the same time we must continue to treat individuals with the methods which we have on hand. As the Commission's vice chairman Dr. David Rogers said in response to this argument, "We don't use the excuse of, 'We don't know quite how to treat you.....' to people with congestive heart failure...[or]...cancer."[25]

Finally, the Commission does not agree that treatment on demand will create a lax attitude among those who seek treatment, as officials of ONDCP have argued. Instead, the Commission recognizes the medical nature of substance use problems and the need to provide treatment for those problems. As Dr. Rogers said, "I know of no other fatal disease in which we say, 'Go away; we'll treat you later.' [Or, in which we] use the excuses of, '...[Y]ou may not behave; you may not stay in treatment.'"[26] The Commission recognizes the role of relapse in the process of drug treatment and believes strongly that treatment on demand can offer the substance user the hope of further treatment rather than the despair of waiting with further risk of death and disease.

In order for treatment to be truly available we also need to remove those barriers placed in the path of the substance user which can make it virtually impossible to gain access to care and treatment. As one witness told the Commission:

> The drug treatment system to many substance abusers is unworkable and unmanageable. Addicts must apply for treatment, and keep in mind that most are homeless and with no support services. They must have at least two pieces of identification, a permanent mailing address, be Medicaid eligible, give and pay for a urine test, have an initial first fee for screening for the screening day, go through a series of interviews and processes, and after all this they may be admitted and medicated. This is too much for an addicted person to face.[27]

Given these requirements, it is no wonder that there may be some open slots in drug treatment centers. Treatment programs, secondary to law enforcement efforts, housed in dilapidated centers, and poorly staffed, now have been charged with not only treating substance use, but also solving the problem of HIV. It is little wonder that the problem continues to grow.

RECOMMENDATION 2.

Remove legal barriers to the purchase and possession of injection equipment. Such legal barriers do not reduce illicit drug injection. They do, however, limit the availability of new/clean injection equipment and therefore encourage the sharing of injection equipment, and the increase in HIV transmission.

National drug policy must recognize the success of outreach programs which link needle exchange and bleach distribution programs with drug treatment. The Commission has visited numerous programs throughout the country which distribute bleach and some that exchange clean needles. These programs have demonstrated the ability to get substance users to change injection practices. Most significantly, these programs, rather than encouraging substance use, lead substantial numbers of substance users to seek treatment.

For example, the Tacoma, Washington project conducts a syringe exchange and other AIDS prevention activities, as well as providing some basic services. Soon after its establishment it became the "largest referral source to treatment in [the] county."[28] Studies of demonstration projects like these have shown that they are an immediate and effective way of addressing the public health threat of HIV and of reducing demand. Yet, state to state, and even city to city, policy and practice on this issue differs to such a degree that outreach workers may have the full cooperation of the local police in one area, and be arrested in another. There must be increased coordination between law enforcement officers and outreach workers. The very real fear that clean syringes and bleach vials will be used as evidence for arrest and prosecution may be having a "chilling effect" on drug users' practice of safer injection behaviors. These legal sanctions on injection equipment thus serve to increase the sharing of injection equipment and, through this behavior, the transmission of HIV. It is imperative that we remove these legal barriers so that the transmission of HIV can be lessened for those who cannot stop injecting drugs.*

* Twelve states currently require prescriptions to obtain needles.
Source: AIDS Policy Center, Intergovernmental Health Project, The George Washington University, June 1991.

Examples from some U.S. cities and the U.K., the Netherlands, and Australia show that cooperation of law enforcement and public officials can make a major difference in the success of outreach programs. In Tacoma, where the city and county jointly run the health department, all city and county representatives who sit on the health board have been educated about AIDS. The chief of police is also "AIDS educated" and was able to cooperate with the outreach programs in the city. This syringe exchange and basic needs outreach program in Tacoma has resulted in "approximately an 80 percent reduction in risk behavior in terms of injecting practices of the people that use the exchange as opposed to those who don't."[29] In the documentary "Taking Drugs Seriously," a film about the Merseyside Regional Health Authorities' harm reduction approach in the U.K., Allan Parry, Director of the Maryland House in Liverpool, believes that "the main reason we're keeping down the spread of the virus is because of the police support of [syringe exchange] activity." Detective Superintendent and Drug Squad Chief Derek O'Connell explains that while they do not support decriminalization..., "because of the AIDS problem which is now recognized by the government as a very, very serious problem, it would be remiss if we didn't give support wherever it was needed." In fact, since beginning their new "cautioning" program which steers individuals toward drug dependency programs instead of prosecuting, they have seen "an 85% success rate; that is, people not re-offending."[30]

RECOMMENDATION 3.

The federal government must take the lead in developing and maintaining programs to prevent HIV transmission related to licit and illicit drug use.

To date, no single agency or group has taken charge of this issue of overwhelming importance to the national health. In drug treatment programs, a level of awareness about AIDS which was never sufficient to control the epidemic now seems to be fading.[31] One woman with HIV disease told the Commission that "[i]n North Carolina, in Narcotics Anonymous, they do not talk about AIDS. It is considered an outside issue."[32] Some individuals with HIV disease are even denied access to treatment programs because of their HIV infection.[33]

Public health and health care agencies have ignored the problem from the other side -- not confronting the substance use issues involved with individuals who have HIV infection or who may be at risk. Although in the rest of the developed world, medical and public health professionals have directed national drug policy to target prevention of the spread of HIV within the injecting drug user community, there has been no parallel in claiming such policy-setting responsibility here in the U.S.

The real responsibility for these shortfalls lies with the federal government. Because of the lack of coordination and planning on the federal level with regard to HIV in general, and substance use and HIV in particular, groups in both public health/health care and drug

treatment lack direction in the face of the epidemic. The Commission applauds such efforts as the November 1990 "National Conference on HIV and Substance Abuse: State/Federal Strategies" sponsored by ADAMHA, ASTHO, CDC, HRSA, NAPO and NASADAD,* which attempted to coordinate state and federal agencies and discover new directions for action.

The conference focused on a number of inter-related issues: the need for increased coordination of traditional public health departments and substance abuse treatment programs; improvement of joint program planning by state health and substance abuse treatment systems; and the need to increase state and federal collaboration in addressing the HIV/substance abuse issue.[34] The recommendations which came out of the conference in the areas of provision of services, evaluation of services, training, and research are insightful and relevant. Examples include many recommendations which reflect the concerns of the Commission:

> Provide HIV prevention services in drug treatment settings and services for drug users in public health clinics; Provide outreach to drug users who are not in drug treatment and to the sex partners of drug users; Improve and expand the capacity of drug treatment; Provide drug treatment services in primary health care facilities; Provide primary health care in drug treatment centers; Provide training and cross-training of staff; and, Improve the evaluation of HIV/substance abuse programs.[35]

The question now is, where do we go from here? Without a cohesive national strategy which assigns responsibility, provides leadership and vision, and follows through on coordination, these excellent recommendations and advances will be lost. In order for coordination to truly work, there need to be incentives for public health and drug treatment providers to join together in seeking grants and other federal monies. The present system discourages rather than encourages such cooperation. Demonstration projects need to be set up with a component for evaluation and further funding already in place so that valuable people, time and resources are not lost. Increased federal action in the areas of evaluation, technical assistance and development of training, guidelines, and models can help bring about the cooperation and coordination of health care and drug treatment which are essential to meeting the goal of providing primary care to substance users with HIV disease.[36]

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* The Conference was sponsored by the following organizatons: Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA); Association of State and Territorial Health Officials (ASTHO); Centers for Disease Control (CDC); Health Resources and Services Administration (HRSA); National AIDS Program Office (NAPO); and the National Association of State Alcohol and Drug Abuse Directors (NASADAD).

RECOMMENDATION 4.

Research and epidemiologic studies on the relationships between licit and illicit drug use and HIV transmission should be greatly expanded and funding should be increased, not reduced or merely held constant.

While the definite link between HIV transmission and substance use is well-established, many questions about the relationship between substance use and HIV remain unanswered. What effect does continued substance use have on the progression of HIV disease? What behaviors place individuals at the greatest risk for transmission? Although further research is essential to help us answer and provide solutions for these and related questions, much has been learned thus far – policy makers are not in a scientific vacuum. Since the beginning of the epidemic we have learned much more about injection drug use and substance use and sexual practices which are linked to HIV. Research into these topics should not be relegated to private sponsors because of a mistaken perception that substance use and HIV are not critical national problems. Such research falls squarely under the aegis of the federal government.

There are two issues of particular concern to the Commission within the larger context of research on HIV and substance use. First, the future of projects funded through demonstration grants and second, the potential cuts in the number of federally funded investigator-initiated grants. The Commission's concern for demonstration projects is reflected in the discussion above on outreach projects. The whole concept of "demonstration" projects needs to be better defined; the evaluation process should be designed so that successful projects can be identified at an early stage. Funding can then be made available for their continuation as on-going federal projects. A consistent policy must be developed to prevent the shut down of successful programs and the loss of trust, staff and progress.

The Commission is also concerned with proposed cuts in funding for investigator-initiated grants and the numbers of programs to be covered in the coming years. The Commission believes strongly that funding for research on HIV and substance use should be increased and is specifically concerned with the potential cuts in the numbers of grants available under ADAMHA. The Commission believes that the basic and applied research funded through this mechanism is often among the most productive and creative and holds great potential for progress in finding the answers to crucial questions around HIV and substance use. To cut these innovative programs, either in funding amount or numbers of grants, would delay once again the answers to questions which are crucial in curbing the spread of these epidemics.

Clinical trials are a key component of research and can offer both immediate and future benefits in treatment and care of HIV disease. The Commission believes strongly that those with a history of, or current, substance use problems should be actively enrolled in clinical trials. As with the provision of primary care, it may be appropriate to look to

increased cooperation with treatment centers for finding participants and conducting these clinical trials.

RECOMMENDATION 5.

All levels of government and the private sector need to mount a serious and sustained attack on the social problems that promote licit and illicit drug use in American society.

The combined epidemic of HIV and substance use has hit hardest the individuals in our society who are least equipped to deal with it – the poor. The poor of this nation, especially within communities of color, lack access to medical care, housing, food, and other basic needs. Substance use treatment and HIV education may often seem like luxuries to people who do not know where they will sleep at night or where their next meal will come from. As Sandra Vining-Bethea of the Bridgeport Women's Project told the Commission, "It's hard to educate a woman who is homeless and hungry."[37]

Those who live in poverty are also subject to extremes of social neglect which can add to the likelihood of substance use and risk practices. As Dr. Robert Fullilove of the Psychiatric Institute in New York told the Commission:

> The one thing we know about poverty in this country in the last 20 years is that it has really altered the structure of many of the neighborhoods in the United States. Blacks and Latins are increasingly concentrated in areas that are becoming poorer and poorer, and with that concentration has come a tremendous increase, not just in HIV infection, not just in the prevalence of drug abuse, but a whole host of other serious social problems ranging from crime to just about anything that you can possibly describe."[38]

If the nation is to provide treatment and education which will move people away from substance use problems and the risk of HIV infection, it must recognize the role which poverty plays in this dilemma.

As Dr. Fullilove went on to tell the Commission:

> ...the most common feature of drug abuse is relapse. And we think relapse is related to environmental factors, the degree to which people live in neighborhoods where the neighborhood itself is a toxic agent that promotes addiction. ....Unless we are able to stabilize the communities in which drug abuse, (particularly non-white communities), unless we're able to stabilize these neighborhoods and provide them with some kind of economic base, the underground economy which pushes and promotes crack cocaine addiction is going to do far more to damage our efforts to reach individuals....[39]

While attacking the problems of HIV and substance use in the short-term with the methods discussed above, the federal government must lead the way in simultaneously addressing the larger social issues of poverty, homelessness and lack of medical care. We must work cooperatively with both the public and private sectors to remove these barriers to prevention and treatment.

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Appendices

Presentation

SOCIETY, DRUG INJECTORS, AND AIDS

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AT THE 1991 AIDS UPDATE CONFERENCE in San Francisco, Don Francis presented a plenary talk on prevention strategies entitled "The virus or the people, whose side are we on?"[1] Similarly, in this paper, we highlight how social, economic, and political structures have contributed to the spread of human immunodeficiency virus (HIV) and hampered efforts to fight the epidemic. We also discuss the ways in which one of the most stigmatized groups of people in our society—drug injectors—have responded to the epidemic.

It is easy for us, as the authors, to miss our step in a paper such as this over *intentions*. Americans are individualistic and moralistic, and thus judge social issues in terms of individual intentions and guilt. Hence, statements about social structures that impoverish or oppress people tend to be perceived as claims that the people who run dominant institutions want to be exploitative or oppressive. As a result, issues concerning socioeconomic structure get reduced to speculation about the personal guilt or innocence of the powerful. The other side of this individualistic interpretation is that those who are oppressed or exploited are seen as the causes of their own poverty or diseases.

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Instead of this moralistic approach, we want to analyze society in a less personally judgmental way. To a large extent, everyone in the system has reasons to act the way they do, and these actions usually seem "good" to them. Thus, the disasters that occur on a daily basis, and the ongoing miseries that afflict the lives of millions of persons, are the products of the actions of well-meaning people who respond in defensible ways to the necessities and opportunities offered by our system.

Having said this, it is time to characterize the system. We live in a society where racial and gender inequalities are integral elements of both social stratification and collective beliefs, and where the perceived and the latent needs of a business economy dominate priorities, agendas, and our daily lives. In this paper, we discuss how the nature of this society might be reflected in the AIDS epidemic, in drug injectors' lives, and in the ways people and institutions respond to the epidemic.

As a final prefatory note, it is important to be clear that this model of the interaction of our society with AIDS and drugs is offered as a guide for future research, rather than as a finished piece of work. Very little research has studied the interactions of large-scale socioeconomic structure with either AIDS or drug use. Ten years into the AIDS epidemic, however, it is past time for us to begin raising these issues and highlighting some of their implications for research and social action.

AIDS and the demographics of drug injectors

Blacks and Latinos are more likely to get AIDS than are whites. Among men 15 years of age or older, blacks were 2.8 times as likely as whites to get AIDS as of January 18, 1988, and Latinos 2.7 times as likely. Among women, the risk of getting AIDS was lower than for men, but the *relative* risks for black women and Latinas, compared to white women, were 13.2 and 8.1, respectively.[2] To a large extent, these disparities are due to racial/ethnic differences in the likelihood of contracting AIDS by being a drug injector or receiving heterosexual transmission from a drug injector, but blacks and Latinos were also more likely than whites to contract AIDS as a homosexual male, bisexual male, or woman whose partner was a bisexual man.

The higher black and Latino risk of becoming a drug-injector AIDS case is a product of two dynamics. The first is that there is considerable evidence that black and Latino drug injectors are more likely to become infected, although the reasons are not yet clear. The second, which will be discussed below, is that blacks and Latinos seem to be more likely to become drug injectors in the first place. Black and Latino intravenous (IV) drug users have been more likely than whites to be HIV-seropositive in many, although not all, studies.[3-18] For example, Chaisson et al. found that six percent of white, 10 percent of Latino, and 26 percent of black drug injectors in a San Francisco drug treatment sample were seropositive.[6] Although two early studies using drug abuse treatment samples[13,18] were able to explain racial differences in seroprevalence in terms of

differences in drug-injection frequency and shooting gallery use, most subsequent studies (of both treatment and of street samples) find that race remains a significant predictor of seropositivity even after behavioral controls have been entered into the risk equations.[6,8,11,19,20]

Unfortunately, data have not been collected on either the income level of United States AIDS cases or on job characteristics, so it is not possible to study the influence of class on who gets AIDS. It also is not possible to determine the extent to which class may contribute to racial/ethnic differences in the prevalence of AIDS. Furthermore, given the difficulty in defining income among drug injectors, little research has been conducted on how income (or other stratification variables) affects HIV infection.

However, in one of the few studies to date, Schoenbaum et al. did find that being black, being Latino, and having a reported family income below $10,000 a year were independent predictors of HIV infection.[21] Second, available data indicate that use of hard drugs and drug injection are more common among poor and minority persons than others—although these data are by no means definitive. Thus, a 1986 New York State household survey found that lifetime heroin and cocaine use was more likely to be reported by blacks and Latinos than whites.[22] Having used cocaine in the previous six months was more likely among the unemployed than among the employed, but also more likely among those with yearly incomes of $100,000 per year or more than among those with lower incomes. Thus, while racial subordination and impoverishment may contribute to drug use, it is also important to study whether the system creates alienation or other effects that predispose sections of the upper-middle class to use drugs.

Drug injectors' response to the HIV epidemic

The moralism of this society makes it highly conducive to demonizing myths. One set of these myths, highly influential both in popular perception and in political discourse, sees drugs as leading users to become utterly selfish, uncaring, and incapable of tending to their own affairs (except possibly getting and using drugs). Yet the evidence from the AIDS epidemic challenges these myths. For example, if drug users are so selfish, why did one New York study[23] find that after drug injectors discovered they were infected, they quit having sex in order to protect their partners? Or why did a Geneva study[24] discover that 29 percent of seronegatives but only five percent of seropositives—people whose primary risk was infecting others—continued to share syringes? Furthermore, outreach workers in a project to recruit drug injectors for HIV antibody testing have told us that a number of the users who do not respond to arguments for getting tested to protect themselves do respond when told that knowing your antibody status can help you protect others.

Moreover, evidence that drug injectors have considerable competence comes from a number of studies. More than half of a sample of methadone clients reported having taken steps to reduce their risk by 1984—well before

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there were any AIDS education programs or outreach directed at drug users—and risk reduction has increased since.[25] Similar risk reduction has been reported in many cities, accompanied by leveling off of seroprevalence in New York, San Francisco, Geneva, Bangkok, and elsewhere. Evaluations by researchers regularly report that interventions lead to considerable risk reduction.[26] We also found, in a follow-up interview in a neighborhood where we had been organizing drug injectors, that 59 percent of the respondents said they had taught others how to use bleach to decontaminate injection equipment. One-third of the subjects in this study reported they were using condoms every time they had sex—a claim supported both by comparison of the data with the numbers of condoms our project had distributed (5,000 per month) and by ethnographic observation of the norms and interactions of local users.[27-29]

Survey data indicate that although behavioral risks among drug injectors vary by race, there is no clear pattern. One discernible tendency is worth noting, however. Although our New York studies of drug abuse treatment clients have found that white injectors inject less frequently than do blacks or Latinos, blacks report more deliberate risk reduction efforts than the other groups when they do inject.[30] In Worcester, Massachusetts, blacks are less likely than whites to have shared needles or to have recently used shooting galleries, whereas Latinos report more frequent drug injection and more use of shooting galleries than do whites.[11] In a 19-city study of street-recruited drug injectors, blacks were more likely than whites or Latinos to report using sterile syringes, and were also most likely to report using bleach or alcohol as a decontaminant when they used a previously used needle.[27]

In addition, the degree of collective action against AIDS by drug users' own organizations belies the myths of drug-user incompetence and indifference to others. The Dutch drug users' unions (*junkiebonden*), formed by street drug users in the early 1980s, initiated campaigns against the stigmatization of drug users and for improved drug treatment. They also instigated the first syringe-exchange programs to combat a hepatitis B epidemic, and have promulgated AIDS outreach, other syringe exchanges, and safer injection and sexual practices among drug users in the Netherlands. Drug users have also established organizations in Germany (JES, which stands for junkies, ex-users, substitutionists) and Australia. These organizations have all won respect—and financial support—for their work against AIDS. They also show that drug users, despite the weighty demands on their time and finances that stem from addiction, are able and willing to volunteer time and effort to help others.[31]

The stigmatization and social exclusion that drug users face in organizing against AIDS in the United States seem to have retarded the process of self-organization here. Still, some ex-users' organizations, such as ADAPT (the Association of Drug Abuse Prevention and Treatment) and NAMA (National Association of Methadone Advocates), have managed to form, and to engage in AIDS-related work. Further, a group of drug users in Baltimore has recently set up a newsletter and organization (Street Voice) as "an outreach tool for education and survival." Nevertheless, research is needed to understand why a

country with as many drug injectors as the United States has so far seen so little organizing by them. Here, we should consider the literature on social movements. We would suggest, as working hypotheses, that self-organization by drug users in the U.S. is hindered by: 1) police repression; 2) the extreme stigmatization and moralism that convince many users that they do not deserve to have rights or respect; and 3) extreme poverty and homelessness. We also hypothesize that self-organization is facilitated by welfare policies (such as those in the Netherlands) that provide the impoverished with livable housing and income levels, as well as by the willingness of groups such as churches and some political or community organizations to cooperate with and provide facilities to drug users' organizations.

Public response to the HIV epidemic among drug injectors

AIDS prevention efforts in the United States have been greatly complicated by the current realities and enduring legacy of racial and ethnic discrimination. Drug abuse problems in the U.S. have historically been attributed to specific subordinated groups: opium smoking to the Chinese, marijuana to persons of Mexican origin, cocaine and (since World War II) heroin to blacks.[32-34] Since AIDS in the United States often stigmatizes its victims, public linking of AIDS, minorities, and illicit drug use creates the possibility of synergistic stigmatization, which has presented black and Latino leaders with a difficult strategic problem: How to prevent the spread of HIV in their own communities without provoking further discrimination from the dominant society.

The discrimination against racial/ethnic minority groups in the United States has also created a legacy of distrust of public-health officials. The "Tuskegee experiment," in which public-health officials refused to provide syphilis treatment to blacks under the guise of conducting research on the disease, has become a powerful symbol of this suspicion.[35,36] The distrust has surfaced with respect to AIDS prevention efforts; African-Americans in particular have claimed that they are discriminated against in AIDS prevention programming.[37,38] Perhaps the most extreme expression of this distrust is the belief that AIDS is a man-made virus that was deliberately introduced into Africa and into selected groups in the U.S. Although it is not possible to quantify the effects of this distrust of public-health authorities on prevention programming, or on the actual transmission of HIV in the United States, it has made it harder to mobilize black communities against AIDS.[39]

Although these obstacles to building an effective response by black and Latino communities are important in themselves, it is necessary to view them in the proper context of continuing racism, cutbacks in social services, widespread unemployment, and jobs that do not allow a minimally decent livelihood. It is also a context in which the federal government and other centers of power and wealth have failed to provide the leadership or resources for adequate campaigns to prevent the spread of HIV, or for care of the sick.

Outreach. The federal response to the HIV epidemic among drug injectors has been inadequate at best, and at times downright harmful. AIDS was discovered in 1981, and it quickly became clear that drug injectors were at risk. Even then, before the discovery of HIV in 1983,[40] it was evident that transmission of some agent via shared needles was a probable cause of AIDS. By 1984, there was no longer serious reason to doubt the role of needle-sharing in AIDS. Had drug injectors been persons with high societal status, emergency programs would have been mounted promptly on a massive scale. Yet for the most part, federally funded prevention efforts aimed at drug injectors or their sexual partners did not appear until 1987.

On the positive side, the National AIDS Demonstration Research (NADR) and the AIDS Targeted Outreach Model (ATOM) projects, which the National Institute on Drug Abuse funded between 1987 and 1991, both spurred a large amount of outreach and allowed considerable experimentation to discover effective forms of intervention. Data presented to date indicate that these projects have had considerable behavioral impact.[41] They received only limited funding, however, and the future of federally funded AIDS outreach remains in doubt (Figures 1 and 2). This can be clearly seen by comparing the total NADR/ATOM budget over five years ($138,000,000)—plus those for a successor Cooperative Agreement program—with other government expenses for a single year (Figure 3). Furthermore, these expenditures on outreach have clearly been inadequate to the scale of the need. New York City has never had as many as 75 outreach workers through all funding sources combined, to work with its 200,000 drug injectors. San Francisco, with approximately 50 outreach workers for 20,000 injectors, has fared somewhat better.

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FIGURE 1
FEDERAL EXPENDITURES FOR INTERDICTION AND OUTREACH

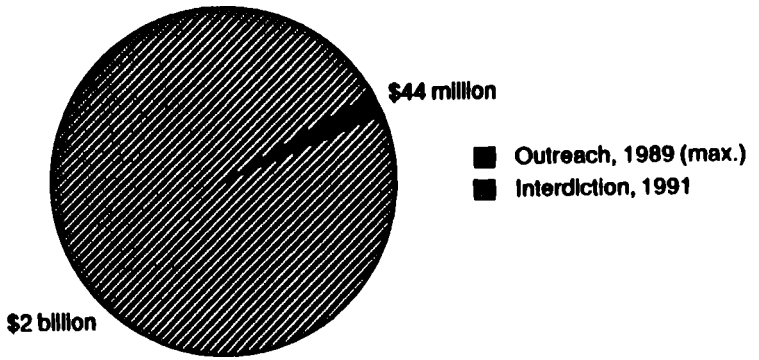


FIGURE 2
ANNUAL NIDA EXPENDITURES ON MAJOR MULTI-CITY OUTREACH PROGRAMS

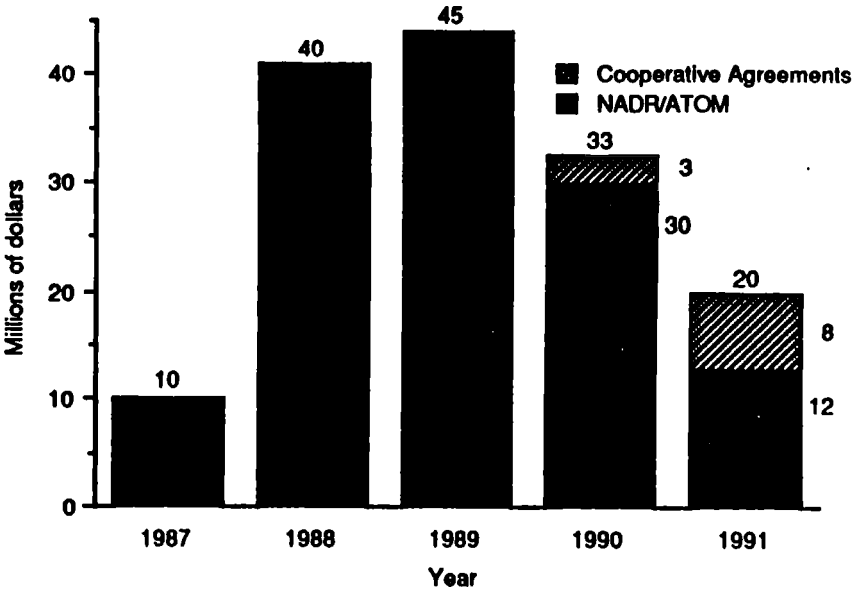
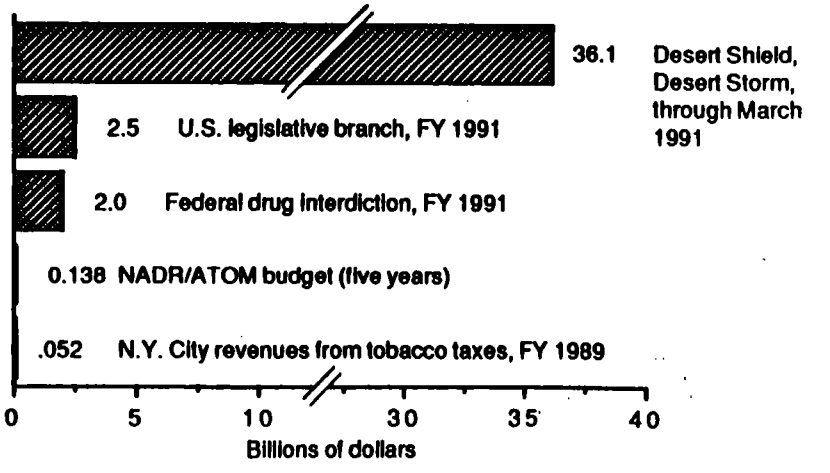


FIGURE 3
COMPARISON OF SELECTED BUDGET ITEMS



Drug abuse treatment. There is complete agreement among researchers and practitioners in the fields of drugs and of AIDS that drug abuse treatment needs large-scale expansion in the United States (although there remain longstanding arguments about the relative effectiveness or appropriateness of different forms of treatment). On any given day, many drug users have no interest in entering treatment, but there is some evidence to indicate that hundreds of thousands of users would enter drug treatment if it were available.[42,43] Drug abuse treatment has been widely studied, and the preponderance of evidence suggests that it helps many drug injectors and other users to quit using drugs; that many others drop out of treatment and continue using drugs; and that some clients continue using drugs (though often in a more controlled manner) while in treatment.[44] Thus, treatment is not a panacea, but it can clearly make a major contribution to reducing the spread of HIV.

In spite of the consensus among professionals on the need to expand treatment to reduce the spread of HIV—and despite the opposition of some community and political leaders to needle-exchange and other intervention programs on the grounds that treatment is the only effective solution to the problem—treatment has expanded very little during the 10 years since the discovery of AIDS. Moreover, much of what little expansion has occurred has targeted crack smokers as much as or more than heroin or cocaine injectors. National Institute on Drug Abuse data indicate that the total patient census for drug abuse treatment increased between 1982 and 1987 from about 160,000 to about 260,000: from 71,000 to 81,000 for methadone clients; from 74,000 to 144,000 for other outpatients; from 15,000 to 27,000 for residential treatment; and from 3,000 to 11,000 for special in-hospital programs.[45] Yet this increase of 100,000 persons is comparatively small, given the estimated total of 5.5 million persons, including approximately one million drug injectors in the United States[46], who need treatment. The discrepancy is particularly vast if we exclude the aforementioned increase in 70,000 "other outpatients" on the basis that these treatment approaches are likely to be ineffective with drug injectors. With this exclusion, the number of treatment slots from 1982 to 1987 increased only slightly from 89,000 to 119,000—a 30,000 increase that amounts to 3 percent of the estimated 1,000,000 drug injectors.

Syringe exchange controversy. Syringe exchange is already a major, established component of AIDS prevention programming in a number of countries. It has been much more controversial in the United States. Although our focus here is on the sociopolitical aspects of this controversy, it should first be pointed out that existing studies suggest that the evidence of effectiveness is overwhelmingly positive. Evaluations of syringe exchanges have found that: 1) syringe exchangers reduce high-risk behavior; 2) exchanges can reduce the number of used syringes left lying in the streets and can provide a way for drug injectors to dispose of used equipment safely; 3) the presence of an exchange in a city does not lead to an increase in the number of persons who begin to take (or inject) drugs; and 4) in Amsterdam, Tacoma, and San Francisco, the start-up

or expansion of an exchange has been followed by a decline in seroconversion rates for either HIV, hepatitis B (HBV), or both.[25,47-58] Although syringe exchanges are by no means a panacea, they do seem to make a major contribution to slowing the spread of HIV. Furthermore, no study has found any indication that they lead to more drug use, regardless of whether the needle exchange is located in a street setting or in a drug treatment program. Thus, syringe exchanges should be widely implemented as a large-scale public health measure.

Nonetheless, both the executive and legislative branches of the United States government have opposed syringe exchanges. Not only have they banned the use of federal money to conduct such programs, but so far they have even banned any expenditure to evaluate their impact. Some knowledge, apparently, is considered too dangerous. This policy is defended on the basis that syringe exchanges "send the wrong message." That is, at a time when government is trying to mobilize the population in support of a War on Drugs that centers around stigmatizing and punishing any and all drug users, it is improper to tolerate taking steps that save drug injectors' lives, because the measures might imply tolerance of illicit drug injection itself. Officials have adhered to this position despite evidence, first from European and Australian studies, and more recently from studies funded by the American Foundation for AIDS Research, the state of Connecticut, and institutions directly involved in the projects, which show that syringe exchanges do not lead to increased drug use.

The apparent illogic of sustained governmental opposition to syringe exchanges in the face of considerable evidence that they do no harm raises an issue: Is this behavior simply irrational, or might there be a different context in which it is indeed logical? We suggest that there is such a logic, rooted in the broad issue of maintaining social control in a society that is undergoing serious social and economic stresses. Governmental commitment to the war on drugs and opposition to syringe exchanges can be explained (if not justified) as a strategy to maintain control, which the government considers much more important than public health. Here, we do not mean social control only in the obvious sense of controlling drug-related crime (although this is an important issue). More broadly, political leaders who are cutting back on social services, allowing cities to decay, and conducting an economic strategy that leads to reductions in absolute real income for a large part of the population have a serious political problem: How to prevent those whose lives are being hurt from coalescing into an effective opposition. Thus, the War on Drugs can be seen as part of a divide-and-rule strategy that helps keep the middle class, working class, and poor quiescent. Social protest can be reduced to the extent that millions of people are convinced that urban decay and other problems in their lives are due to drug users. Likewise, the development of alternative agendas and coalitions can be retarded to the extent that potential participants are preoccupied with arguing with each other over AIDS or drug policy. Thus, like the attack on abortion, the War on Drugs serves as what political strategist Kevin

P. Phillips in 1969 termed a "social issue"—one which can divide potential opposition to *laissez-faire* economics, cutbacks, and social retrenchment.[59]

More interesting, and more difficult to understand, are the varying reactions to syringe-exchange proposals in different communities. In New York, many black political officials and church leaders strongly objected to syringe-exchange efforts at first, even going so far as to call them "genocidal." Yet black drug injectors, and many other African-Americans in the neighborhoods where the underground syringe exchanges have been operating, are quite supportive of these efforts. Recently, some black leaders such as Reverend Calvin Butts of the Abyssinian Baptist Church have reconsidered their earlier positions and come out in favor of syringe exchanges.[60] In San Francisco, community reaction among black leaders and others was generally more favorable to syringe exchanges from the time they were first proposed for that city. In New Haven and Baltimore, black city administrations, and some but not all of the local black leadership, have supported syringe exchanges.

We need careful sociological studies of the different responses to syringe exchanges in different cities and groups. In discussing such studies, it is important to remember the point we made early on—namely, that good people, acting for defensible reasons in terms of the logic and needs generated by the social system, may be led by this same logic and these very needs to act in ways that create major problems for other people. Issues that should be examined include the political histories of each city, including the extent to which political leaders have fostered racial divisiveness and hatred. Class needs to be considered as well as race, particularly in terms of how both lead to the neglect of black and Latino problems or to attacks upon minorities. Class can also affect the ways in which different groups within minority communities have responded. It is essential, of course, as part of any study of how different communities have reacted to syringe exchange and other projects, to study the concrete realities of how drug use itself has affected different groups. The proliferation of drug use has in many ways been a scourge for users, families, neighbors, and institutions in many minority communities. Nevertheless, neighborhoods differ widely in the extent to which drug injectors are accepted as part of the neighborhood rather than being viewed as the enemy. Even in New York City, there are neighborhoods where the users, drug dealers, and their neighbors get along amicably.

Social roots of drug injection: Research needs

Very little research has been conducted into possible social causes of drug injection. Such research is not easy. One strategy is to determine the causes of variation in drug use. Thus, one might study whether there is variation among nations in the extent of drug abuse, or whether the extent of drug abuse varies over time in a given nation. Adequate data to conduct such analyses, however, are not now available. On the other hand, abundant evidence does suggest that patterns of drug use vary by place and time. For example, cocaine use became

widespread in the United States after 1970, but is still relatively rare in Europe. Further, the proportion of drug users who take their drugs by injection varies among nations. We would roughly estimate that at least 50 percent of current heroin users in the United States are injectors, as opposed to about 20 percent in the Netherlands. These facts suggest that socioeconomic factors probably do affect drug use patterns, but they do not tell us how.

Studying the social roots of drug injection by examining the factors associated with variations in drug use has one glaring weakness: it is difficult to determine whether characteristics that are shared by all nations might nevertheless be important causes of drug use patterns. For example, the abuse of psychoactive substances is extremely widespread, but so are class domination, alienation, and the restriction of effective power to relatively small portions of the population. There may not be enough variation in these latter characteristics among existing societies to allow statistical determination of whether they are associated with drug use. However, if social change in one or more future societies were to lead to the reduction or elimination of class domination, alienation, and powerlessness, it might then become possible to analyze their impact on drug use patterns.

To some extent, studies of the characteristics of individuals who do or do not use drugs in a given way can also help us understand the social roots of drug use. Thus, since the studies cited above find that blacks and Latinos are more likely to have used heroin and cocaine at least once in their lives, and that the unemployed and persons earning at least $100,000 per year are more likely to have used cocaine in the last six months, it seems likely that racial stratification, an economic system that produces unemployment, and some characteristic of the work or the lifestyle of upper-income persons help shape who uses hard drugs. However, these data alone do *not* allow us to conclude that racism, unemployment, or a system that contains both poverty and large numbers of persons with $100,000 incomes necessarily increases the total amount of hard drug use in a society.

In spite of the difficulties and limits inherent in this research, we will clearly come to know much more about the causes of drug use and of drug injection if we conduct longitudinal studies that examine cross-national, cross-city, and interpersonal variations in drug use, together with social, economic, and other characteristics of these nations, cities, and individuals. The projects currently initiated by the World Health Organization's Program on Substance Abuse, to collect data on substance use and abuse patterns in a number of countries, are clearly a useful beginning. Much more is needed, however, including careful consideration of what social theory might suggest about hypotheses to be tested. In particular, we suggest that structures of social and economic power and powerlessness, and their associated effects on alienation, lack of respect, and despair, are important starting places from which to formulate theories and hypotheses about the social roots of patterns of drug use and abuse.

The data do not currently exist that would allow us to demonstrate conclusively that the social structures of racism, sexism, or a business-oriented society cause or facilitate the spread of HIV. Indeed, given the current state of social scientific theory and methodology, it is not at all clear what kind of evidence would be required to prove these hypotheses. Nevertheless, data have been presented that black and Latino drug injectors are more likely to be seropositive than white injectors, and that whites are less likely to be drug injectors. Are these findings the consequences of a racist society? It seems likely, with connecting links including the greater poverty and powerlessness of minorities and their neighborhoods, and on another level the likelihood that racism has shaped which drugs are outlawed or strongly policed. The impact of a business-oriented society comes into play here, too, we would suspect. One example may have occurred in the 1970s, when changes in urban land prices led to widespread dislocation of poor minorities from relatively stable neighborhoods.[61,62] The familial displacement that results when the residents of such neighborhoods must move may destroy social networks that might otherwise restrain displaced youths from becoming involved in hard drugs. Similarly, if gentrification or urban renewal sometimes drives infected drug injectors from one neighborhood to another, the migration may accelerate the transmission of HIV.

Sexism probably also affects the spread of HIV. To the extent that women are deprived of social and economic power, and insofar as society accepts the practice of physical or other punishment for wives or girlfriends who disobey their male partners, women are less able to insist upon safe sex practices. To the extent that he-man ideologies are influential, men are less likely than women to initiate safe sex, or even to fully consider the appropriateness of doing so. Such convictions also make it much harder to generate and sustain programs to restrict the spread of HIV among gay men.

The operation of a business economy creates winners and losers The poor and others who see themselves as losers in economic competition are stigmatized, and many of them internalize lowered self-images.[63] Alienation also abounds, and probably characterizes a wide range even of upper-level occupations.[64] We suggest that research into the links between these forces, drug injection, and HIV might well show important causal links.

Finally, racism, sexism, and the latent and perceived needs of a business economy shape the extent to which resources are allocated for drug abuse treatment and for HIV prevention programs. These factors interact with American moralism to create a situation where Congress forbids or puts severe limits on a wide variety of AIDS prevention programs that are explicit regarding sexual or drug-related behavior, or which might appear to condone the use of drugs or the practice of sex by anyone but heterosexual married couples. Projects that contravene the most restrictive moralism must undergo extremely stringent evaluations and proof of efficacy before they will even be considered; in some cases—syringe exchange, for example—the use of federal funds for such research is itself banned. On the other hand, the government uses police

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power assiduously, minimizing attention to human rights and failing even to consider the need to evaluate the impact of these actions, in spite of numerous instances in which police shootings have led to increased alienation and hostility in minority neighborhoods—and, perhaps, to increased divisiveness between white and minority neighborhoods that might otherwise be able to cooperate in fighting government cutbacks.

Thus, although many of these causal links remain unproved, we would argue that there is considerable reason to suspect that major elements of American social structure are implicated in the spread of HIV. Research to determine the existence and strength of these links is clearly appropriate, although it is unlikely to receive serious funding from most governmental and foundation sources.

Implications

What, then, do these data and interpretations mean for interventions surrounding drug use and AIDS? On the one hand, they suggest that individual-focused programs such as outreach programs and needle exchanges should be expanded—but also that the socioeconomic organization of our society creates many obstacles to such expansion.

Second, it appears that structural forces in our society can influence the effectiveness of such programs. For example, Des Jarlais et al.[65] found that drug injectors in Bangkok reduced their HIV-related risks more quickly after they found that the virus was spreading among them than did drug injectors in New York City. The researchers suggest that the difference may lie in the fact that the Asians face less severe stigma and are more likely to have homes and jobs. Thus, the integration of drug users into society may make it easier for them to slow the spread of AIDS, whereas widespread exclusion from jobs and housing may make risk reduction more difficult. Similarly, the greater ability of drug users in the Netherlands to organize on their own behalf seems to be due at least in part to their greater access to housing and to the higher levels of welfare benefits in that country as compared to the United States.

In conclusion, it seems likely that HIV spread and drug injection are rooted in such socioeconomic structures as racism, class distinctions, and a business-based economy. Such structures are deeply rooted, and attempts to change them will meet strong resistance both from persons who benefit from the current structure and from others who believe in it as fair and just. Nonetheless, if we are serious about stopping AIDS and ending the social and personal damage that stems from widespread drug abuse, we have to start addressing ways to change these basic structures.

This does not mean that specific measures to reduce HIV spread or drug injection are unimportant. Outreach, drug users' organizations, syringe exchanges, drug treatment programs, and job programs for youth are needed. But working for such programs is not enough. There is a need to eliminate or at least reduce racism and other socioeconomic structures that hurt millions of people.

We do not know the precise means, but we do insist that it is an important area for research and for action. From what we have seen during our lifetimes, mass movements that draw upon the lessons of previous upsurges, such as those against racism and militarism in the U.S. in the 1960s, the French May of 1968, or Solidarity in Poland in the early 1980s, seem to be the most promising models for the needed social change.

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The Ethnography of Needle Sharing Among Intravenous Drug Users and Implications for Public Policies and Intervention Strategies

Harvey W. Feldman and Patrick Biernacki

INTRODUCTION

In California, as in several other States where the AIDS epidemic has taken hold among intravenous (IV) drug users, the total activity of drug consumption from the point of purchase to the actual injection takes place under clandestine conditions. These secretive and furtive arrangements, usually made in concert with other IV drug users, are necessary because both the drugs that users inject and the equipment required for injection are prohibited by State statutes.

The apparent rationale for these public policies is to discourage such undesirable behavior by creating harsh criminal sanctions which will act as deterrents, punishing individuals so that people who do not follow societal expectations as defined by public policy will serve as negative examples. The philosophical underpinnings for this public policy are not all that clear but are somehow connected to government's responsibility to protect the health of individuals (although there is considerable confusion regarding why some harmful substances are included in the policy, while other equally or more harmful substances are not). This policy of prohibiting access to drugs and narcotics through criminal sanctions has been in effect for over 70 years and dates back to the Harrison Act of 1914, which was implemented shortly after the end of World War I. During this 70-year period, each decade has managed to produce a substantial number of IV drug users, and the total numbers have varied from Federal Bureau of Narcotics Commissioner Harry Anslinger's estimate in 1962 of 65,000 nationally, to 600,000 during the Nixon War on Drugs in the early 1970s. These

numbers, we might add, estimated only heroin addicts and did not, to the best of our knowledge, include speed or cocaine injectors.

If the goal of the policy has been to discourage current users from continuing their drug use and to dissuade new injectors from beginning, it appears that this public policy has been less than successful. Each successive decade has produced a substantial number of drug injectors who select this form of behavior even in the face of harsh criminal sanctions.

We have worked in the drug field in one capacity or another for 30 of the 70 years these policies have been in effect. One overriding observation we can make regarding the national drug policy of prohibition is that, while it may have discouraged many prospective individual candidates from using drugs and narcotics, it clearly has not succeeded in lessening the overall number of new recruits, nor has it discouraged succeeding generations from finding some attraction in the activity of injecting drugs. In fact, some street ethnographers who have examined the etiological issues of drug use (Preble and Casey 1969; Sutter 1969; Sutter 1972; Feldman 1968) have even suggested that the excitement, adventure, and action involved in securing and using drugs may, in fact, be the primary motivation—not the drug sensation itself—which accounts for the persistence of drug-using activities. This perspective suggests that these activities are carried out not despite official attempts to discourage them, but because of them. The excitement and action can be seen as one of the direct results of the game playing that takes place between street drug users and representatives of the social control system.

Now that the AIDS virus has entered IV-drug-using networks and threatens to spread within those populations and possibly beyond, into previously uninfected groups, it behooves those of us who are concerned about this epidemic and actively involved in attempting to slow its spread to develop a clearer understanding of how these public policies influence the social organization of IV drug users, and how the criminalizing of hypodermic syringes in some States contributes to the clandestine nature of drug use and constructs the social context that favors the efficient and rapid spread of human immunodeficiency virus (HIV).

THE CITY CONSORTI TO C AT AIDS

In San Francisco, the MidCity Consortium to Combat AIDS, a federation of five social, health, and research agencies, banded together to address the spread of HIV among out-of-treatment IV drug users. Under grants from the National Institute on Drug Abuse (NIDA) and a contract with the San Francisco Department of Public Health, the MidCity project has three components: (1) ethnographic studies of needle scenes in communities with the highest concentrations of needle users, (2) an education campaign to inform needle users of the dangers of AIDS and ways to avoid contracting the virus and transmitting it to others, and (3) a monitoring component designed to determine the prevalence of HIV among IV drug users.

ETHNOGRAPHIC STUDIES OF IV DRUG USERS

The aim of the ethnography was to identify, through direct observation and extended personal interviews, the various needle-using scenes and needle-using practices of IV drug users who were not in treatment, which in San Francisco is estimated to be approximately 75 percent of the 12,000 heroin and speed injectors believed to live there. To begin our work, we selected the two areas of San Francisco known to contain the highest concentrations of needle users: the Tenderloin and Mission Districts. Both areas contained users of heroin, amphetamines, and cocaine, as well as "speedballers" who inject mixtures of heroin and cocaine. Many of them were addicted, some were occasional users, and others used in sprees.

Demographically, the two areas differ. In the Mission, there are large numbers of Latino and non-English-speaking IV drug users as well as lesser numbers of black and Caucasian IV drug users. The Tenderloin, on the other hand, is a sex trade zone which contains small concentrations of Cuban refugees, black old-time "righteous dope fiends," large numbers of transvestites or "drag queens," adolescent runaways and young street hustlers, ex-convicts, and a substantial number of mentally ill who, as part of the deinstitutionalization trend, are no longer housed in hospitals and may mix antipsychotic prescription medicine with injected street drugs.

The studies themselves were carried out by experienced drug ethnographers, namely Biernacki and Feldman in the Tenderloin, and

Dr. Jerry Mandel d Vincente Matus in the Mission. All of us had carried out street drug studies during our research careers and grappled with issues of acceptance and credibility as we attempted to become acquainted with active IV drug users. With AIDS as the central focus of this study, we discovered that the period of testing (i.e., the establishment of acceptance and credibility) was considerably less than in our earlier work. Although there were clearly suspicions which needed to be addressed, concerns about this incurable, deadly disease permitted much quicker access to IV drug users.

Reported here are some of our findings, which helped shape the nature of our intervention, and comments on the policy implications of our research.

Findings

First, and most significant, was the finding that the at-risk needle-using population in both communities, almost without exception, had grave concerns about their potential for having been or becoming exposed to the AIDS virus. Whatever may be the stereotypical description of the "addict personality," the ethnographers found little support for this view or for the notion that addicts lack concern for their personal health. Instead, IV drug users showed great interest in the general topic of AIDS and their potential risk for becoming infected. At the start of the study, many of them believed that they might already be infected. In the summer of 1985, when we began our research, even though there were few heterosexual or even homosexual IV-drug-use AIDS cases in San Francisco, IV drug users were aware that the AIDS epidemic was in full force among needle users in New York City and New Jersey; and they believed, as did we, that it was only a matter of time until the AIDS epidemic reached and spread through San Francisco.

Second, the IV drug users who had committed themselves to drug-using careers were cooperative in all aspects of the study, allowing our ethnographers to observe them during episodes of needle sharing and participating in lengthy interviews which explored in detail descriptions of their drug-using and sexual activities. Further, they cooperated with the street-based intervention that followed the ethnographic research, and later with the serological testing and still more lengthy survey-type interviews. In short, the IV drug

users became deeply involved in helping us gather health information regarding AIDS and its means of transmission. They generally looked favorably on such efforts to involve them voluntarily and encouraged their friends to cooperate in a similar fashion.

Third, it was clear that the IV drug users we studied looked to health professionals and later to trained street workers to provide them with accurate, useful information as well as direction in order to help them avoid becoming infected and spreading the disease to others.

These findings are all optimistic, and collectively they offer observations contradictory to the usual portrait of addicts and other IV drug users who are often presented as little more than a composite of reprehensible traits.

Our optimism, however, was tempered by other findings. Most notable was the finding that needle sharing was common among all groups of IV drug users, even when users were aware that AIDS is spread through sharing contaminated hypodermic syringes. This was due to two factors: (1) the regulation of syringes which made possession a crime, and (2) scarcity, which made sharing a necessity. Further, we found that IV drug users' living arrangements influenced the frequency of needle sharing: those in hotel-based living arrangements tended to share needles at a greater level than those in house-based arrangements. In the residence hotels, particularly in the sex trade zones, there was more informality and spontaneity in visiting patterns. This often resulted in the kind of near anonymous needle sharing that might be comparable to the numerous anonymous sexual encounters which some people believe to be responsible for spreading the virus within the gay population.

Even though there were and are far fewer shooting galleries in the Greater Bay Area than are reported to be in the New York/New Jersey corridor, the hotel needle-sharing arrangement provided a similar setting in which several participants often used the same hypodermic syringes and needles. These hotels were not established for the purpose of needle sharing, nor do people move into residence hotels because of easy access to drugs, narcotics, or hypodermic syringes. However, by its nature, the hotel living arrangement brings together similar kinds of people involved in similar economic circumstances, lifestyles, occupations, and recreational activities. Under these circumstances, for individuals involved in

the use of injected drugs and narcotics, the inducements to needle sharing are favorable. For example, one of our ethnographers, assigned to the hotel-based groups, reported observing 10 different individuals in one hotel room sharing five different hypodermic syringes in a 1-hour period. When the ethnographer asked one of the central figures to calculate how many different people had come to that particular room and shared his needles since the previous Friday (the observation being made on a Monday), the man enumerated the persons by first name. The count quickly went to 27 before he began to search his memory.

When these ethnographic studies were carried out (prior to the development of the MidCity Consortium to Combat AIDS and its street-based intervention), the methods for cleaning hypodermic syringes between shared uses were another cause for concern. The ethnographers observed that cleaning practices—or more appropriately, the lack of cleaning—between needle-sharing episodes were highly conducive to the spread of the AIDS virus. In most cases, no effort was made to clean hypodermic syringes between shared uses. IV drug users frequently squirted warm water through the "works." This operation, however, was practiced mainly to keep the needle from clogging and only secondarily to cleanse it of bacteria or viruses. In most cases, the IV drug users under study were either unaware or unsure of cleaning practices which would protect them against contracting and transmitting the AIDS virus.

A final factor that tempered our optimism and contributed to the favorable conditions for the spread of HIV in San Francisco was the frequent overlap between the two major at-risk populations: the gay male and the IV drug user. Conceptually, there appeared to be a distinction between these two groups, as though needle users, particularly heroin addicts, were exclusively heterosexual. While this distinction may be more true of other urban areas, it is far less so in San Francisco. Rather than distinct separation, there appeared to be overlap in precisely those activities through which the virus is transmitted: namely, sexual activities and the shared use of injection equipment. Our research indicated that one of the major concentrations of needle scenes was in the sex trade zone of the Tenderloin, where several social networks bring together gay men and youth and heterosexual men and women, many of whom have both multiple sexual partners and share hypodermic syringes. In a sociological sense, they have a common interest in injecting drugs which results in sharing hypodermic syringes. Drug use,

however, is only one aspect of their lives. They are often bound together in small systems of mutual obligations and interdependencies that transcend sexual preferences and include many activities other than drug use. In many cases, their common bond is the state of being outcast (such as "drag queens" (transvestites) within the gay community or Caucasian ex-convicts within the white working class) and, more importantly, economically deprived. Many of these relationships are transitory or recent linkages that bring together marginal people who profit mutually by sharing resources--doubling up in a single room, splitting the cost of a meal, sharing a bag or balloon of heroin, or sharing a used hypodermic syringe. Preble and Casey (1969) noted that the basic unit in the heroin world of New York City was the "dyad," a partnership of two best buddies or lovers, in which both participants implicitly understand the common benefits of the partnership. Whether the relationships were of recent development or long standing--some of them, we found, had lasted as long as 20 years and withstood arguments, separations, and incarcerations--they seemed to have a binding quality founded on a desire for trust, and often concluded violently as a result of betrayal of that same trust.

As an underclass, these marginal people appear to be disenfranchised: relatively prosperous, middle-class transvestites; black "righteous dope fiends" who have lost contact with their families of origin and find identity in demonstrating a shrewd street competence; and homeless adolescents with youth and sexual energy to market. All these various social types are voluntarily located in specific geographic areas where the design of informal social policies (which determine access to food, shelter, recreation, and the other necessities of life) is based on short-term, often daily rather than weekly, timetables. Because of these features, disenfranchised IV drug users were distanced from AIDS risk reduction and health promotion information directed to what outsiders might view as their "natural" reference groups. Even though many of the disenfranchised were gay-identified or heterosexuals in close contact with gays, they did not have consistent access to the education or prevention programs which had been developed during the mid-1980s. It was especially surprising to find this level of ignorance among an at-risk population in San Francisco, a relatively small city which led the nation in alerting its citizens to the threat of AIDS.

ILLEGALITY OF POSSESSING DRUG INJECTION EQUIPMENT: EFFECTS ON NEEDLE SHARING

In attempting to understand the practice of needle sharing among IV drug users, the overriding issue was, and remains, the illegality of possessing hypodermic syringes in the State of California. This public policy accounts for the scarcity or unpredictable supply of hypodermic syringes, the chronic fear of arrest, and the necessity of constructing social arrangements that involve needle sharing. It is almost axiomatic that, while the supply of injectable drugs and narcotics remains relatively steady despite law enforcement efforts, the supply of needles is inconsistent. During periods of scarcity, needle sharing among IV drug users increases.

Similarly, the illegality of hypodermic syringes prevents many publicly labelled addicts from keeping needles in their possession, since another arrest for "oldtimers" may well result in jail sentences. For those persons with previous incarcerations, the periods of time in jail have been bitter experiences which they dread and strive to avoid repeating. The dramatic nature of this dilemma was stated boldly by one female heroin addict when one of our ethnographers questioned her on why she would not keep new, uncontaminated needles on her person so they would be available when she injected drugs. "Because," she answered, "I would rather get AIDS than go to jail."

Given the fact that AIDS has an incubation period that may last as long as 5 years or more, compared to the immediacy of jail, the option to share needles and risk becoming infected with the AIDS virus becomes socially realistic even if it is medically dangerous. Yet it typifies the dilemma the public policy poses to drug users who use injection equipment.

In California, as in New York, it appears unlikely that hypodermic syringes will be made freely available to IV drug users, as is done in some European cities such as Amsterdam in The Netherlands. The clear implication is that needle sharing will continue at approximately the same level as when the ethnographic studies were carried out. Without some dramatic effort at altering or monitoring this activity, the prediction for the future is that HIV, which has already entered some of the needle-sharing groups, will move quickly through the various IV-drug-using subsystems of the Greater Bay Area.

INTERVENTION STRATEGIES: SYRINGE AVAILABILITY AND DECONTAMINATION OF INJECTION EQUIPMENT

One of the purposes of this conference was to explore the impact of making hypodermic syringes available to IV drug users as a strategy to prevent the spread of the AIDS virus among this drug-using population and possibly beyond, into the general population. When our street ethnographers first began to study needle sharing as it related to the AIDS epidemic, one of the usual questions we posed to IV drug users was to ask what they thought would be an effective intervention. One of the first respondents we talked with was an oldtimer in New York who, in mid-1985, knew that the epidemic was gathering force in his city. This individual understood that the virus which caused the condition was passed from one IV drug user to another by sharing hypodermic syringes containing blood particles contaminated with the AIDS virus. He was conversant about "shooting galleries," the structure of social roles, the prices for various services the galleries offered, and their potential for being the informal social institution that fueled the epidemic among the New York and New Jersey IV drug users who frequented them. "If you guys are serious about stopping this epidemic," he said, "You'd see that every junkie had a new needle each time he shot drugs."

If we put aside all moral issues and differing opinions of addict behavior, the sheer simplicity of the argument is persuasive: if the virus is not on the injection equipment, then it cannot be transmitted into the bloodstream of the next person who uses it for IV injection. In San Francisco, the MidCity Consortium to Combat AIDS, unable to circulate sterile hypodermic syringes, created what we thought was the next best alternative. Newmeyer (this volume) describes the bleach protocol the MidCity Consortium developed and how, as part of the MidCity effort, Community Health Outreach Workers (CHOWs) take information on decontaminating hypodermic syringes with common household bleach directly into the hangouts and living quarters of IV drug users in San Francisco. The plan harks back to some old-time, traditional public health intervention measures, as well as the kind of street work that was done in many major cities during the 1950s with adolescent fighting gangs.

From the preliminary results of our own administrative evaluation, it appears that IV drug users for the most part have adopted our recommended protocol on cleaning hypodermic equipment between

shared uses. If this experiment with changing the behavior of IV drug users works, then the natural next question would be: What is the necessity of deregulating hypodermic syringes? This question becomes even more complicated by the reported seroprevalence rates in places where hypodermic syringes are not regulated. In Italy, for example, where hypodermic syringes are readily available, the seroprevalence rate among drug addicts is reported to be between 50 to 70 percent. Clearly, this high prevalence of seropositivity for HIV appears to be an argument against the easy availability of needles, until one finds that few, if any, educational efforts regarding the risk of contracting AIDS accompanied the circulation of hypodermic syringes. In a comparable sense, condoms were available to gay men in San Francisco during the period when the virus was spreading through the homosexual population. The fact that they were not used seems more the result of gay men not knowing that unprotected sex, particularly anal intercourse, allowed the virus to enter their bodies. The missing ingredient, we are suggesting, is the concerted education campaign that has now become the mandate of all governments if we are to slow a worldwide epidemic and literally keep many of our known cultures and civilizations from being dramatically altered and damaged.

RECOMMENDATIONS

The magnitude of the problem and its devastating consequences should direct us to ask not what minimal effort can be made to adjust our moral position to the necessities of this epidemic, but rather, what optimum measures should we take to avoid what the National Academy of Sciences has predicted will be a "catastrophe." Whatever may be the merits of punishment as a discouragement to socially undesirable behavior such as IV drug use--whether one believes it succeeds in stopping such behavior or merely acts as a statement of society's standards--the enforcement of repressive and prohibitive policies in the drug field has forced all activities associated with injecting drugs and narcotics outside of medical use to be done in a clandestine way. It seems that what we do not need, at this point in the epidemic, are policies that push this behavior farther away from the social and medical systems which can enlist IV drug users in protecting themselves and keeping the epidemic under some control. What we clearly do need are well-constructed

interventions which optimize the chances of reducing the number of new individuals who become infected and preventing seropositive individuals from becoming reinfected.

For now, we would like to recommend consideration of public policies and interventions which will bring IV drug users into cooperative relationships with public health measures rather than encourage resistance to them. This, we think, can be realized first by decriminalizing the possession of hypodermic syringes in those States where this applies; second, by developing needle exchange programs in order to insure that IV drug users have greater access to sterile injection equipment; and third, by providing the kind of prevention/education outreach efforts that bring IV drug users into face-to-face contact with trained, qualified educators who can counsel them and monitor their activities as a way to encourage compliance and affect referrals to other social, health, and drug treatment programs.

None of us can be certain just how any recommendation will eventually impact the epidemic, nor do we have the luxury of awaiting controlled experiments before developing public policies and intervention strategies (although all efforts should be rigorously evaluated). Our experience with the MidCity project indicates that a substantial portion of IV drug users will cooperate (with appreciation) in efforts to help them during this epidemic. Like us, they recognize the serious and ominous implications of the uncontrolled spread of this deadly, incurable disease.

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ASSOCIATION OF DRUG INJECTION PATTERNS WITH ANTIBODY TO HUMAN IMMUNODEFICIENCY VIRUS TYPE 1 AMONG INTRAVENOUS DRUG USERS IN BALTIMORE, MARYLAND

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Vlahov, D. (Dept. of Epidemiology, The Johns Hopkins U. School of Hygiene and Public Health, Baltimore, MD 21205), A. Muñoz, J. C. Anthony, S. Cohn, D. D. Celentano, and K. E. Nelson. Association of drug injection patterns with antibody to human immunodeficiency virus type 1 among intravenous drug users in Baltimore, Maryland. *Am J Epidemiol* 1990;132:847–56.

During 1988 and 1989, intravenous drug users recruited through extensive community outreach efforts in Baltimore, Maryland, were interviewed about drug injection and sex practices in the prior 11 years, with screening for antibody to human immunodeficiency virus type 1 (HIV-1). Neither interviewers nor subjects were aware of HIV-1 serostatus until 2 weeks after the interview. Among 2,616 intravenous drug users who last injected drugs within the same calendar year as screening, HIV-1 seroprevalence was 30.1% for those with any use of shooting galleries, 23.3% for those who shared needles but did not use shooting galleries, and 16.3% for drug users who denied both needle-sharing and gallery use between 1977 and 1987. Among 608 drug users who reported persistent use of shooting galleries since 1977 or subsequent initiation into drug use, there was a tendency for HIV-1 seroprevalence to increase with more recent onset of an injection career. Combined with a milder but similar tendency among 739 drug users who reported persistent sharing of needles, and a seroprevalence of 15.1% among participants who had just started injecting drugs in the 18 months prior to baseline, these data provide indirect evidence that a high risk for HIV-1 infection might occur early during a drug injection career.

acquired immunodeficiency syndrome; HIV seroprevalence; HIV-1; substance abuse, intravenous

Intravenous drug users are at high risk for infection with human immunodeficiency virus type 1 (HIV-1) (1). Previous cross-sectional studies have implicated sharing of needles and syringes and use of injection equipment obtained at "shooting galleries" (clandestine locations where needles and syringes can be borrowed, rented, or purchased) as behaviors that increase the risk of HIV-1 infection (2–6). A

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Abbreviations: AIDS, acquired immunodeficiency syndrome; HIV-1, human immunodeficiency virus type 1.

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positive and direct association between duration of these high-risk activities and HIV-1 seroprevalence might be expected due to an effect of cumulative exposure, but data on this association are sparse. Prior cross-sectional analyses have shown a tendency for HIV-1 seroprevalence to increase during the first several years of injection; HIV-1 seroprevalence tended not to vary substantially in subsequent years past initial intravenous drug use (7, 8). To further examine the association between HIV-1 seroprevalence and duration of drug injection practices, we analyzed HIV-1 serostatus by 11-year history of drug injection practices among 2,921 intravenous drug users in Baltimore, Maryland.

Materials and methods

Sample

The rationale, organization, and data collection methods for the study have been described in detail elsewhere (9, 10). In brief, between February 1988 and March 1989, the Infectious Disease Epidemiology Program of the Johns Hopkins University School of Hygiene and Public Health enrolled intravenous drug users in a study of the natural history of HIV-1 infection in a free-standing clinic (The ALIVE Study). Intravenous drug users were recruited by word-of-mouth from a variety of community agencies, including drug abuse treatment centers, city health department sexually transmitted disease clinics, local emergency rooms, state probation and parole offices, university hospital HIV-1/acquired immunodeficiency syndrome (AIDS) clinics, homeless shelters, and the street outreach AIDS prevention (SOAP) program of a local community education group (H.E.R.O.). Clinic staff also distributed brochures at selected housing projects and locations where intravenous drug use was evident. Finally, study participants were encouraged to refer eligible friends to the study clinic. Eligibility for enrollment in the study included an age of 18 years or older and a history of injecting illicit drugs at any time within the previous 11 years.

Data collection procedures

At the initial visit, eligible and consenting intravenous drug users were enrolled and were assigned a unique and confidential study number subsequently used as the coded identifier on data collection instruments. After venipuncture to collect serum for HIV-1 antibody assays, each participant was questioned face-to-face by a trained interviewer in a private room. This standardized baseline interview schedule elicited demographic data, a medical history, a year-by-year history of drug injection practices since 1977, and a 10-year history of sexual activity, as well as information on health insurance and medical services utilization (10).

As part of the section on history of drug injections, participants were asked to recall patterns of injection frequency, the proportion of injections that were shared, and attendance at shooting galleries for each year between 1977 and the year prior to interview. Choices for injection frequency pattern were never, once per year, several times per year, once per month, several times per month, once per week, 2–3 times per week, 4–6 times per week, once per day, and more than once per day. Pilot testing indicated that these intravenous drug users did not give consistent responses to more detailed questions about year-to-year changes in drug injection practices (e.g., frequency of cocaine injection vs. heroin injection), but answers about broad patterns and frequency of injection were more readily elicited.

The section of the baseline questionnaire on history of sexual practices followed the section on drug use. It asked about the number of different sex partners, by sex, for the previous 10 years and the proportions of partners with whom the participant engaged in oral-genital, genital-genital, and anal-genital sex.

The study procedures were reviewed and approved by the Institutional Review

Board of the Johns Hopkins University School of Hygiene and Public Health. Consent procedures included a description of the HIV-1 antibody test, interpretation of what test results could mean, and an explanation of study requirements; signed consent was obtained. Counseling about HIV-1 risk reduction was provided after completion of the interview.

Serologic tests

Antibody to HIV-1 was screened by the lymphadenopathy-associated virus enzyme immunoassay (Genetic Systems, Seattle, Washington). Specimens that were repeatably reactive in the enzyme-linked immunosorbent assay were assayed by the Biotech HIV-1 Western blot kit (DuPont Company, Wilmington, Delaware). A positive Western blot was defined as a band at p24 or p31 *and* either gp41 or gp>110. A blot with no bands was defined as negative; otherwise, any bands other than those in the criteria for positive were considered equivocal. Blots with equivocal bands (n = 18) were excluded from statistical analysis.

Data analysis

To examine the association between current seropositivity to HIV-1 and self-reported behaviors for the period 1977–1987, we restricted the sample to the 2,616 "current users," i.e., those whose most recent injection was within the same calendar year as the baseline interview. Ninety-two percent of these current users displayed readily visible stigmata of injection (e.g., needle tracks) (10). For these users, frequency distributions were generated for demographic characteristics and were then cross-classified by HIV-1 serostatus, with chi-square statistics used to aid interpretation.

Before analyses were performed for 11-year histories of injection, these data were examined for evidence of validity. As was reported elsewhere (10), the median number of shared injections for seropositives was elevated compared with that of seronegatives, and the peak year for median number of shared injections among seropositives with lower levels of T-helper lymphocytes (primary target cells for HIV-1 infection) preceded the peak year for seropositives with higher levels of T-helper lymphocytes.

In an effort to develop a simplified and parsimonious classification for temporal variation in drug injection practices, we divided the period 1977–1987 into four subperiods: 1977–1979, 1980–1982, 1983–1985, and 1986–1987. These categories of calendar time represented approximately equal periods for purposes of comparison. Within each of the four calendar periods, three codes were used to designate drug injection practices: 0 = non-use or light use of less than once per day, with neither sharing of needles nor use of shooting galleries; 1 = sharing of needles (more than once or twice per year) but no gallery use; and 2 = use of shooting galleries. Based upon preliminary analysis, a group of intravenous drug users who reported injecting drugs more than once per day but denied sharing needles or using shooting galleries demonstrated HIV-1 seroprevalence that was dissimilar to that of other nonsharing non-gallery-users; we were concerned that these persons, who injected drugs more than once per day for 2 or 3 years, might have actually shared needles, perhaps inadvertently during periods of intensive use when attention and memory were impaired. As a result, we grouped these participants with the needle-sharers (code = 1), and we note that this group accounted for no more than 16 percent of the needle-sharing category in any of the four calendar periods.

Each intravenous drug user was assigned a concatenated four-digit code to reflect his or her drug use pattern (0, 1, 2) for each of the four calendar periods. For example, a current intravenous drug user who started injecting drugs in 1983 and who shared needles between 1983 and 1987 but never went to a shooting gallery was assigned the value of 0 for 1977–1979, 0 for 1980–1982, 1 for 1983–1985, and 1 for 1986–1987.

These values yielded a pattern sequence of 0011 in this example. In practice, a frequency distribution showed that the 2,616 currently active users fitted into 77 (95 percent) of 81 possible pattern sequences (i.e., 3^4), and that 1,907 (73 percent) of these intravenous drug users fitted into 12 distinct pattern sequences with $n > 50$. The remaining 65 (77 − 12) observed pattern sequences were subdivided further to reflect those who shared needles during any period but did not go to shooting galleries (composite 1) and those who reported any history of shooting gallery use (composite 2). Analysis was performed using 10 of the 12 original pattern sequences which reflected persistence of behavior over time; remaining patterns reflecting transition between behaviors over time were separated into two composites (i.e., those who ever shared needles without ever using shooting galleries and those who ever used shooting galleries).

To examine the strength of association between drug injection practices and HIV-1 serostatus, we calculated odds ratios for intravenous drug users who reported use of shooting galleries at any time between 1977 and 1987 and for intravenous drug users who reported needle-sharing but no use of shooting galleries at any time between 1977 and 1987, using intravenous drug users who reported neither as the reference. We used logistic regression methods to examine the simultaneous association of HIV-1 serostatus and history of needle-sharing with use of shooting galleries, selected demographic characteristics, and the sex history variables (11).

To examine the association between duration of drug injection practices and HIV-1 serostatus, we first restricted analysis to intravenous drug users who reported persistent use of shooting galleries across calendar periods, and then restricted it to intravenous drug users who reported persistent needle-sharing but no gallery use across calendar periods. HIV-1 serostatus, by calendar period of onset, was compared for persistent gallery users and persistent needle-sharers by means of chi-square tests (11).

Results

Of the 2,921 intravenous drug users enrolled in the ALIVE Study, 2,616 (89.6 percent) reported a recent injection occurring during the same year as the baseline interview. The proportion of these currently active users with antibody to HIV-1 was 25.3 percent, significantly higher than the 13.8 percent in the 305 users who reported injecting drugs more than 1 year prior to the baseline interview ($p < 0.001$). When the seroprevalence data were analyzed by year drugs were last injected (figure 1), a significant linear trend for proportion with antibody to HIV-1 was observed (Mantel-Haenszel chi-square = 22.16, df = 1, $p < 0.001$).

Among the 2,616 currently active users (table 1), the median age was 32 years; 90.4 percent were black, 80.8 percent were male, 43.8 percent had completed at least 12 years of school, and 73.4 percent had a legal income of less than $5,000 in the year prior to interview. The median number of different sex partners since 1977 was 10, and 5.2 percent reported engaging in receptive anal intercourse at least once since 1977. On univariate analysis, factors found to be significantly higher for risk of antibody to HIV-1 included age of 25–44 years, black race, homosexual or bisexual orientation, and a history of receptive anal intercourse ($p < 0.05$). HIV-1 seropositivity among participants reporting receptive anal intercourse, when stratified by sex, was statistically greater for males ($p < 0.001$) but not for females ($p = 0.854$). Sex and number of sex partners were not associated with antibody to HIV-1; neither was educational achievement or legal income ($p > 0.05$).

A total of 449 of the 2,616 currently active intravenous drug users (17.2 percent) denied both needle-sharing and use of shooting galleries between 1977 and 1987; 943 (36.0 percent) reported needle-sharing

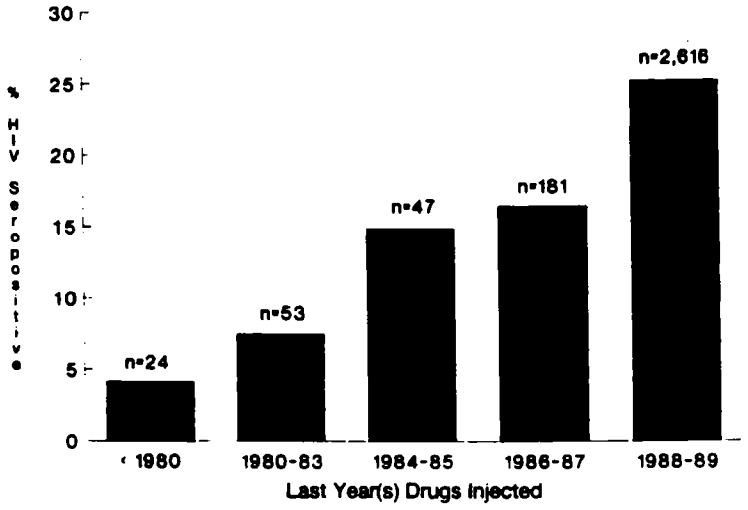

FIGURE 1. Prevalence of antibody to human immunodeficiency virus (HIV) type 1, by year(s) of most recent drug injection, among 2,921 intravenous drug users, Baltimore, Maryland, 1988–1989.

but denied use of shooting galleries, and 1,224 (46.8 percent) reported needle-sharing and use of shooting galleries. HIV-1 seroprevalence in these groups was 16.3 percent, 23.3 percent, and 30.1 percent, respectively (overall chi-square = 36.1, 2 df, $p < 0.001$; table 2). These three categories of drug injection practices were entered into a multiple logistic regression model for HIV-1 seroprevalence that included all demographic and sex practice variables identified as statistically significant at $p < 0.01$ (table 1). Black race and history of receptive anal intercourse since 1977 were independently significant in the final model with the drug injection practice variables, but the adjusted odds ratios obtained from this multivariate regression model (table 3) were not too different from those obtained in the initial univariate model (table 2).

To facilitate evaluation of HIV-1 seroprevalence by duration of drug injection practices in this cross-sectional analysis, we generated six subsets of drug injection patterns based upon the three categories used in table 3 by the four calendar periods of 1977–1979, 1980–1982, 1983–1985, and 1986–1987. As table 4 shows, the six subsets included: 1) intravenous drug users who initiated drug use after August 1987; 2) intravenous drug users who initiated use prior to 1987 but denied needle-sharing and gallery use; 3) "persistent needle-sharers" who maintained needle-sharing throughout all calendar periods since 1977 or since initiation into intravenous drug use; 4) "persistent gallery users" who maintained gallery use throughout all calendar periods since 1977 or since initiation into intravenous drug use; and two composite groups including 5) intravenous drug users with variable patterns which included needle-sharing but no gallery use, and 6) intravenous drug users with variable patterns with transitions between nonsharing/non-gallery use, needle-sharing, and/or gallery use. Consistent with the data in table 2, HIV-1 seroprevalence in subsets that included gallery use tended to be higher (22.2–43.5 percent) than that in subsets restricted to needle-sharing (21.6–25.8 percent) and subsets involving neither needle-sharing nor gallery use (15.1–16.9 percent). HIV-1 seroprevalence among 159 intravenous drug users reporting initiation into drug use after August 1987 was 15.1 percent.

To examine HIV-1 seroprevalence by duration of high-risk activities, we restricted analysis to two groups of intravenous drug

TABLE 1

Selected demographic and sexual characteristics of 2,616 active intravenous drug users interviewed in Baltimore, Maryland, 1988–1989

Characteristic	No. (%)	% HIV-1*-positive	Odds ratio	p
Age (years)				
≥45	183 (7.0)	15.9	0.76	
35–44	971 (37.1)	26.3	1.43	
25–34	1,271 (48.6)	26.7	1.47	
18–24	191 (7.3)	19.9	1.00	0.004
Race†				
Black	2,358 (90.4)	27.0	3.47	
Nonblack	249 (9.6)	9.6	1.00	<0.001
Sex				
Female	501 (19.2)	27.0	1.11	
Male	2,115 (80.8)	24.9	1.00	0.336
Education (grades completed)				
≥12	1,145 (43.8)	24.7	1.37	
9–12	1,253 (47.9)	26.8	1.52	
1–8	217 (8.3)	19.4	1.00	0.105
Legal income (dollars/year)‡				
≥5,000	686 (26.6)	22.9	0.84	
<5,000	1,895 (73.4)	26.2	1.00	0.208
Sexual orientation§				
Female	501 (19.2)	27.0	1.16	
Male homosexual/bisexual	205 (7.9)	30.2	1.47	
Male heterosexual	1,900 (72.9)	24.1	1.00	0.037
No. of sex partners (10 years)‖				
>20	719 (27.6)	26.0	0.95	
6–20	987 (37.8)	24.6	0.88	
2–5	755 (28.9)	24.9	0.89	
0–1	148 (5.7)	27.0	1.00	0.868
Receptive anal intercourse (ever in 10 years)¶				
Male, yes	46 (2.2)	73.9	9.07	
Female, yes	90 (18.0)	27.8	1.23	
Female, no	410 (82.0)	26.8	1.17	
Male, no	2,059 (97.8)	23.8	1.00	<0.001**

* HIV-1, human immunodeficiency virus type 1.
† Data missing for nine subjects.
‡ Data missing for 35 subjects.
§ Data missing for 10 subjects.
‖ Data missing for seven subjects.
¶ Data missing for 11 subjects.
** Comparison made for males only.

users, the persistent needle-sharers and the persistent gallery users. Each of the two groups was further subdivided by the total number of calendar periods for which the respective activity was reported—i.e., all four calendar periods of 1977–1987, only the three most recent periods of 1980–1987, only the two most recent periods of 1983–1987, and only the most recent period of 1986–1987. This stratification by calendar period of onset enabled us to make comparisons between intravenous drug users with remote onset of a high-risk activity and intravenous drug users with more recent onset of the same high-risk activity; this comparison was further characterized by the more-remote-onset intravenous drug users' not only passing through the same

TABLE 2

Odds ratio for antibody to human immunodeficiency virus type 1 (HIV-1), by 11-year history of needle-sharing and use of shooting galleries, among 2,616 intravenous drug users in Baltimore, Maryland, 1988–1989

Drug injection history*	No. of subjects (% HIV-1-positive)	Odds ratio (95% CI†)
Did not share needles/did not use shooting galleries	449 (16.3)	1.00
Shared needles/did not use shooting galleries	943 (23.3)	1.57 (1.16–2.11)
Shared needles/used shooting galleries	1,224 (30.1)	2.21 (1.67–2.94)

* Categories represent "ever" within 11 years prior to baseline interview.
† CI, confidence interval.

TABLE 3

Logistic regression for antibody to human immunodeficiency virus type 1, by demographic and drug use variables, among 2,616 currently active intravenous drug users, Baltimore, Maryland, 1988–1989

Variable	Adjusted odds ratio	(95% CI*)
Needle-sharing, no use of shooting galleries†	1.59	(1.17–2.16)
Needle-sharing, use of shooting galleries†	2.21	(1.65–2.96)
Black race‡	3.90	(2.45–6.20)
Receptive anal intercourse§		
Yes, males	11.53	(5.72–23.22)
Yes, females	1.24	(0.96–1.60)
No, females	1.24	(0.76–2.03)

* CI, confidence interval.
† Reference category, no needle-sharing, no use of shooting galleries.
‡ Reference category, whites.
§ Reference category, males with no history of receptive anal intercourse.

calendar time but also continuing to engage in the same high-risk activity as the more-recent-onset intravenous drug users.

As table 4 shows, among persistent gallery users, HIV-1 seroprevalence increased across the 1977–1987 users (30.9 percent), the 1980–1987 users (37.2 percent), and the 1983–1987 users (43.5 percent), which reflects a statistically significant trend (Mantel-Haenszel chi-square, $p = 0.02$). However, HIV-1 seroprevalence among the most-recent-onset group of persistent gallery users (1986–1987) was 22.2 percent, which represents a departure from the earlier trend. Among persistent needle-sharers, HIV-1 seroprevalence also tended to increase somewhat across the four subgroups defined by calendar period; this trend was not statistically significant.

DISCUSSION

This study shows that HIV-1 seroprevalence among intravenous drug users was associated with needle-sharing and especially with use of injection equipment obtained at shooting galleries. In this respect, these data from a sample derived by extensive community outreach are consistent with results obtained from prior cross-sectional surveys of intravenous drug users in drug abuse treatment facilities (4–6).

However, the tendency toward increasing HIV-1 seroprevalence with more recent initiation of risk-increasing behavior among persistent gallery users and persistent needle-sharers is counterintuitive. A positive and direct association between seroprevalence and duration of risky behaviors might have been expected, due in part to an effect of cumulative exposure. Failure to observe this might have resulted partly from an increasing prevalence of HIV-1 infection in the local time frame. Temporal trends of increasing HIV-1 prevalence have been reported among intravenous drug users in other urban centers (12–14); this is consistent with data on Baltimore intravenous drug users shown in figure 1, where the prevalence of HIV-1 seropositivity was

TABLE 4

Prevalence of antibody to human immunodeficiency virus type 1 (HIV-1), by 11-year cumulative drug injection pattern, among 2,616 intravenous drug users, Baltimore, Maryland, 1988–1989

Drug injection pattern	No. of subjects	% HIV-1-positive
1. Non-drug-users (prior to 1987)	159	15.1
2. Non-needle-sharers/non-shooting gallery users (prior to 1987)	290	16.9
3. Persistent needle-sharers (without shooting gallery use)		
A. 1977–1987	312	22.8
B. 1980–1987	129	24.8
C. 1983–1987	139	21.6
D. 1986–1987	159	25.8
4. Persistent shooting gallery users		
A. 1977–1987	346	30.9
B. 1980–1987	78	37.2
C. 1983–1987	85	43.5
D. 1986–1987	99	22.2
Transitional patterns		
5. Non-needle-sharing and needle-sharing (no shooting gallery use)	204	22.6
6. Non-needle-sharing, needle-sharing, and/or shooting gallery use	616	28.1

inversely associated with time since cessation of intravenous drug use.

A temporal increase in HIV-1 seroprevalence implies an increase in the reservoir from which continued transmission might occur, and suggests that drug injection behaviors have become more dangerous over time as HIV-1 has spread in this community. However, this is insufficient to fully account for the observed findings. Because the groups generated for comparison had not only different periods of initiation into risk-increasing behaviors but overlap of these practices through calendar time, an effect of increasing prevalence would be expected to produce either similar prevalence between groups or, allowing for a residual effect of cumulative exposure, a slightly higher prevalence among intravenous drug users with use of longer duration.

The finding that rates tended to be higher among more recent initiates to drug use between 1977 and 1987 may be due to two other factors. First, a higher rate of HIV-1 seroprevalence among those who reported shorter durations of risk-increasing behaviors might be due to a survivor bias. Relatively more HIV-1 seropositive persons with longer durations of high-risk behavior, and presumably longer durations of HIV-1 infection, simply might have been unavailable to volunteer for the study because of debility associated with onset of HIV-1-related disease or death. The argument for a survivor bias is most plausible if progression to AIDS is primarily a function of time since onset of infection. Although this has been reported for infected homosexual men (15), the data on intravenous drug users are equivocal. Des Jarlais et al. (16) reported an inverse association between the rate of decline in CD4 cell levels and the frequency of injection, but Schoenbaum et al. (17) did not replicate this finding. If the inverse association holds true, the present findings might be important in light of increases in the use of cocaine (18), which is associated with higher frequency of injection because

of its shorter half-life compared with that of heroin. These findings, then, might suggest that temporal trends in the frequency of injection related to the onset and spread of the cocaine epidemic might partially offset an effect of time since onset of infection for progression to AIDS and other HIV-1-related diseases in drug users.

Second, a higher rate of HIV-1 seroprevalence among more recent initiates into persistent risk-increasing behaviors might reflect a phenomenon related to the dynamics of social networks among intravenous drug users. In particular, Zinberg (19) reported that initiation into intravenous drug use tends to occur through the assistance of relatively short-duration or recent-onset drug users rather than users of long duration. In addition, Howard and Borges (20) noted that the early phases of a drug injection career may be characterized by the higher frequencies of needle-sharing and use of shooting galleries. In the context of increasing HIV-1 seroprevalence over time within a community, which translates into expansion of the reservoir from which transmission might occur, these points suggest the possibility that the early phase of an injection career may be a time of particularly high risk for HIV-1 infection among at least a subset of intravenous drug users. The importance of social network dynamics in the transmission of HIV-1 infection within a community of intravenous drug users has been suggested by others (6, 21). However, without additional data, the scope and extent of social network dynamics within this population remain issues for speculation and new research.

The finding that the prevalence of HIV-1 was higher among intravenous drug users of shorter duration also might be related to a temporal change in the type of drug injected from heroin to cocaine. Chaisson et al. (22) reported that injection of cocaine was an independent risk factor for HIV-1 infection. Data from Baltimore indicate a linear trend for cocaine as the first-injected drug from 30 percent in 1982 to 60 percent in 1987 (23), suggesting that risk of infection may also have increased over calendar time. However, analysis of the entire cohort for types of drugs injected immediately prior to entry into the study showed that 92 percent reported injection of cocaine alone or cocaine in combination with other drugs (9), indicating that the use of cocaine was not limited to recent initiates but was widespread in this population. Therefore, temporal trends in type of drug injected are probably not likely to account for the observed findings by themselves.

Although there was a tendency to observe higher seroprevalence among cohorts with a shorter duration of use within the persistent risk-increasing behavior groups, an exception is the "persistent gallery users during 1986–1987" group. With a seroprevalence of 22 percent, this group represents the most notable departure from the overall trend. Whether these results represent an effect due to recent onset of active risk reduction practices, a naturally occurring phenomenon in a delay of risk, or simply sampling variation cannot be discerned from the available data.

Before firm conclusions are drawn, several study limitations should be acknowledged. First, participants were requested to recall and report risk-increasing behaviors over the previous 11 years. The retrospective interview technique may have been influenced heavily by more recent behaviors, which could produce the appearance of stability in risk-increasing behaviors. However, this potentially biasing influence was addressed by a deliberate measurement strategy in which participants were instructed to recall behavior starting with the most remote calendar period, and the interviewing stressed the possibility of change from one year to the next (10). Second, categories of behavior sought in the study instrument and used for data analysis were broad; it is plausible that differences found could be due in part to variables not represented in this study's ascertainment of risk behaviors. However, attempts to obtain more complete ascertainment of risk behaviors during pilot

tests of the instrument provoked inconsistent responses, resistance, and frustration in the intravenous drug users questioned. Additional studies which prospectively assess risk behaviors in detail may clarify the findings reported here.

In conclusion, although the evidence is indirect, results from this study suggest that for many intravenous drug users, a period of high risk for HIV-1 infection may occur early in the course of a drug injection career. Among those who reported initiation of drug use within 18 months prior to serologic evaluation for this study, 15 percent were already HIV-1-seropositive. These data indicate that HIV-1 prevention efforts should be expanded to reach drug users early in their injection careers and to help develop and refine drug prevention programs.

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HIV Seroconversion and Disinfection of Injection Equipment among Intravenous Drug Users, Baltimore, Maryland

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To examine the putative protective effect of disinfectant use on HIV seroconversion among intravenous drug users, we conducted a nested case-control study comparing 22 black heterosexual HIV seroconverters with 95 persistent seronegatives matched on gender, use of cocaine, date of study entry, and duration of follow-up. For intravenous drug users who reported using disinfectant all the time, the odds of seroconversion was 0.77 (95% CI: 0.25–2.38) compared with those who reported no use of disinfectants; for those who used disinfectants some of the time, the corresponding odds ratio was 0.91 (95% CI: 0.26–3.31). The odds ratio for use of disinfectant all the time was 0.63 (95% CI: 0.10–3.91) for those injecting at galleries and 1.08 (95% CI: 0.35–3.11) for those not injecting at galleries. These data suggest a limited protective effect of disinfectant use in the field which may be more beneficial to those injecting in shooting galleries. (Epidemiology 1991;2:444–446)

Keywords: human immunodeficiency virus, acquired immunodeficiency syndrome, substance abuse, prevention, disinfectants.

Intravenous drug users are at increased risk of infection with human immunodeficiency virus (HIV), primarily through the use of contaminated injection equipment.[1] The risk factors for HIV infection among a large cohort of intravenous drug users in Baltimore include: frequency of injection, cocaine injection, using shooting galleries, female gender, homosexual/bisexual orientation, and black race.[2] Several strategies to prevent HIV infection among intravenous drug users have been proposed: promoting abstinence from drug use, reducing the frequency of high-risk behaviors, the use of sterile injection equipment, and disinfection of equipment. Beginning in 1986, the San Francisco Mid-City Consortium began promoting sodium hypochlorite (bleach) as a needle and syringe disinfectant.[3] In vitro studies showed HIV to be highly susceptible to chemical disinfectants, including bleach and alcohols.[4,5] Because bleach is inexpensive, widely available, and recognized as a cleaning agent, its use and distribution have been widely accepted as a preventive strategy. The purpose of this study was to examine the putative protective effect of disinfectant use on HIV seroconversion among active intravenous drug users.

Subjects and Methods

As described in detail elsewhere,[2] between February 1988 and March 1989, intravenous drug users were recruited into our cohort study, principally by word of mouth. Eligibility criteria were age 18 years or older, drug injection within the prior 11 years, and freedom from acquired immunodeficiency syndrome (AIDS). At baseline, 703 persons were HIV positive, and 2,218 seronegatives were encouraged to return at six-month intervals for continuing study; 1,331 seronegatives returned at least once for repeat serologic screening. As part of the interviews, we collected demographic information, a recall of frequency of injection, type of drug injected, number of different needle-sharing partners, use of shooting galleries, number of sexual partners, and details of

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sexual practices. In addition, participants who reported sharing needles and syringes were asked to describe the procedures they used to prepare their injection equipment immediately before use. This open-ended question was coded by the interviewer by type of solution used and technique described. After June 1989, we asked how frequently drug users used procedures to clean or disinfect their equipment. Neither interviewer nor subjects were aware of the subject's HIV seroconversion status at the time of interview. Antibody to HIV-1 was screened by ELISA, and repeat positive tests were assayed by Western blot using standard criteria.[5]

To investigate the hypothesized protective association between disinfection of injection equipment with bleach or alcohol and HIV seroconversion, we conducted a matched case-control analysis nested within a prospective study. To each documented HIV seroconverter, up to five persistently negative controls were matched on potentially confounding variables (gender, cocaine use, date of study entry, and duration of follow-up). As only 7 of 97 seroconverters were white, they were excluded, as were subjects who denied needle sharing. Analysis was limited to participants interviewed after June 1989 when questions on disinfection frequency were added to the interview. To incorporate the matching factors and study several exposures simultaneously, we used a conditional logistic regression model.[6]

TABLE 1. Conditional Logistic Regression Analysis of HIV Seroconversion and Use of Disinfectants* among 22 Intravenous Drug-Using Seroconverters and 95 Matched† HIV Seronegative Controls, Baltimore, Maryland, 1989–1990

Model 1: Frequency of disinfection variables only

Characteristic	Odds Ratio	95% CI
No disinfectant use	1.00	—
Disinfectant use		
"Less than all the time"	0.91	0.26–3.31
"All the time"	0.77	0.25–2.38

(Deviance: 70.82)

Model 2: Interaction of Gallery Use and Disinfectant Use "All the Time" Relative to "Not All the Time"

Gallery Use	Disinfectant Use "All the Time"	Odds Ratio	95% CI
No	No	1.00	—
No	Yes	1.08	0.35–3.11
Yes	No	1.00	—
Yes	Yes	0.63	0.10–3.91

(Deviance 67.853)

*Disinfectants = sodium hypochlorite (bleach) or alcohol.

†Matching criteria: date of study entry (±3 mos), time of follow-up (control duration greater than seroconverters), gender, and injection of cocaine (yes/no) in past six months.

Results

From February 1988 through December 1990, 97 seroconverters were detected among 1,331 subjects returning for repeat serologic rescreening. Of these, 90 were black, with no history of homosexual behavior; 39 of them reported recent needle sharing. Of these, 22 (56%) had their first seropositive visit after June 1989. The remaining seroconverters are excluded from further analysis. Of the 22 seroconverters and 95 matched seronegative controls, 40% were 34 years of age and older, nearly two-thirds reported injecting more than once a day, one-half reported more than one needle-sharing partner, and 27% visited shooting galleries. Overall, 79% reported use of bleach or alcohol to disinfect injection equipment, of whom 58% reported such use "all the time."

Table 1 shows a modest protective estimated association between needle disinfection and HIV seroconversion using conditional logistic regression (model 1). Compared with subjects who reported no bleach or alcohol use, the odds ratio for seroconversion among those reporting disinfection some of the time and among those reporting disinfection all the time were 0.91 and 0.77, respectively. By comparison, the odds ratio associated with shooting galleries was 2.45 and was 1.66 for more than one shooting partner (data not shown).

Owing to our limited study size, we formed a new reference group by combining all subjects that reported disinfection "less than all the time" or never. In a model that included disinfection and gallery use, we detected an interaction term with an intriguing trend. Namely, among intravenous drug users who reported no use of shooting galleries, there was no protective effect by disinfectant. On the other hand, the odds ratio for HIV-1 seroconversion among gallery users who reported frequent use of disinfectants was 0.63, compared with gallery users who did not report frequent use of disinfectants (Table 1, model 2).

Discussion

If disinfection with bleach or alcohol protects against HIV infection, then HIV-negative intravenous drug users who practice disinfection should have a lower rate of seroconversion than those not practicing disinfection. These preliminary data suggest only a modest decrease in risk of HIV seroconversion with increased frequency of

disinfection. More important, however, the data point toward the possibility that bleach or alcohol disinfection all the time may be more beneficial for intravenous drug users who attend high-risk shooting galleries.

Clearly, there are some methodological limitations inherent in our analysis. The small study size limits our precision, and there are concerns with selection bias, in that individuals who engage in more risky behaviors may be more likely to adopt use of bleach. In addition, differential reporting of use and frequency of disinfection might underestimate our associations. Certainly, socially desirable responses may be operating, and the reliability of our measures of disinfection is unknown. Finally, the potential role of sexual transmission cannot be excluded, although earlier studies have noted that parenteral modes tend to overwhelm sexual modes of transmission among actively injecting intravenous drug users.[19]

With methodological limitations acknowledged, two principles of disinfection merit consideration, namely, bioburden and contact time.[20] First, bioburden involves the amount of protein material present in contaminated injection equipment to which a disinfectant might bind and therefore be unavailable for virucidal activity. Reduction of bioburden through mechanical cleaning with a dilute detergent before disinfecting might enhance the effects of disinfectants on infectious agents. Second, contact time involves the duration of contact between disinfectant and the infectious agent. In vitro studies have reported efficacy of bleach or alcohol against HIV-1 when contact time has been at least one minute.[15]

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Risk Factors for Needle Sharing Among Methadone-Treated Patients

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Objective: This paper examines the sociodemographic and psychiatric characteristics of patients taking methadone who continue to share needles. Method: Three hundred twenty-three patients were recruited from four methadone programs. Data were collected by using questionnaires and interviews. Psychiatric symptoms were measured with the SCL-90, the Beck Depression Inventory, and the Addiction Severity Index. Results: Twenty percent of these subjects reported sharing needles within the previous 6 months. Those who shared reported greater difficulty in acquiring new needles, more legal difficulties, more severe drug problems, and higher levels of psychiatric symptoms. Conclusions: These data suggest that patients who continue to share needles are a more disturbed subgroup of the methadone maintenance population. Efforts designed to reduce needle sharing may need to be more sharply focused on patients who are at greatest risk of infection, and these patients may require more intensive psychiatric services.

(Am J Psychiatry 1991; 148:636–640)

The role played by intravenous drug users in the spread of AIDS has gained considerable public, political, and scientific attention. This is due in large part to the growing number of confirmed AIDS cases that have been related either directly or indirectly to needle sharing. Intravenous drug use is the second greatest risk factor among all confirmed AIDS cases in the United States, and in some geographic areas it is the leading factor (1, 2). Additionally, in 1988 55% of the persons who became infected as a result of heterosexual activity were the sexual partners of intravenous drug users, and 70% of all children infected through perinatal transmission had mothers who were intravenous drug users or the sexual partners of intravenous users (2).

Because of the slow progression of AIDS, data on its prevalence document the consequences of past needle sharing and unprotected sexual contact. Current evidence suggests that the time between exposure to the virus and the development of AIDS will exceed 7 years for the majority of intravenous drug users (3 and presentations by F. Aiuti et al. and J.R. Robertson et al. at the Sixth International Conference on AIDS, San Francisco, June 20–24, 1990). Thus, even the most current AIDS case reports reflect high-risk behavior that may have occurred many years earlier.

In contrast to AIDS prevalence reports, studies of HIV infection rates provide insight into more recent high-risk behavior. In the United States, such studies have shown seropositivity ranging from less than 5% to over 60%, with considerable variation by regions of the country, by cities within regions, by neighborhoods within cities, and by involvement in treatment within neighborhoods (4–7).

While information from AIDS and HIV prevalence studies is important, such studies are also limited in their ability to provide specific information about persons presently at risk. In this regard, perhaps the most important factor contributing to the AIDS epidemic among intravenous drug users is their current needle sharing. Although it is no unrelated, this current practice cannot be determined from AIDS case data or studies of HIV infection alone. Even in areas with low rates of infection and few confirmed AIDS cases, needle sharing can be quite common, providing an opportunity for rapid transmission of the virus. Thus, the future course of the epidemic among intravenous drug

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users can be best understood by examining current needle-sharing practices.

This article describes the characteristics of patients treated with methadone who share needles. This patient population provided an opportunity to study a group of intravenous drug users who, by virtue of their treatment status, had increased access to AIDS information, drug counseling, methadone, and other related resources. By studying needle sharing within this context, we hoped to identify the individual characteristics associated with continued needle sharing. In particular we were interested in determining whether this high-risk behavior is related to knowledge of how the virus is transmitted, to fear of contracting AIDS, or to other demographic, social, or psychological characteristics.

METHOD

The data were collected from 323 subjects participating in an ongoing study of the effectiveness of methadone treatment. All subjects were volunteers selected through extensive recruitment activities in four outpatient methadone treatment programs located in Philadelphia and New Jersey. The mean±SD age of the group was 38±7.2 years; 70% (N=227) were male. Whites and blacks were equally represented, with each accounting for 47% (N=153) of the total; Hispanics accounted for the remainder of the sample (5%, N=17). Self-reported drug use during the previous month was common. Forty percent (N=124) of those responding to this question reported using heroin at least once, 47% (N=150) reported using cocaine, and 51% (N=163) reported benzodiazepine use, primarily unprescribed. These figures reflect a significantly lower rate of drug use than that found among a comparable group of opiate addicts not in treatment (presentation by D.S. Metzger et al. at the Sixth International Conference on AIDS, San Francisco, June 20–24, 1990).

The study group represented approximately 35% of the average daily census of the methadone programs. Two procedures were implemented to assess the representativeness of the sample. After the subjects were enrolled in the study, their characteristics were examined by the staff from each of the participating programs. These reviews identified no obvious sampling bias. Statistical analyses of the characteristics of the sample and the available characteristics of all patients admitted to methadone treatment in the city of Philadelphia during the study's recruitment phase were also performed. These analyses found no differences in gender, race, high school graduation rate, or employment status. Thus, given the relatively large sample size, the multisite recruitment strategy, the staff reviews, and the statistical comparisons, we have confidence that the sample adequately represented the patient population from which it was drawn.

After they had given informed consent, the subjects were divided into groups of six to 10 and asked to fill out comprehensive risk assessment questionnaires. These data collection sessions were closely supervised by research staff members who were present to answer questions, assist those with reading difficulty, and screen questionnaires for missing data. The questionnaire assessed demographic information, treatment history, knowledge of ways in which AIDS is transmitted, drug use patterns, arrests and illegal activities, needle use, and fear of infection. Current psychological symptoms were measured with the SCL-90 (8) and the Beck Depression Inventory (9). Forty percent (N=128) of the 323 subjects were randomly selected and invited to participate in a personal interview that included the Addiction Severity Index (10), a structured interview which assesses the need for treatment in seven problem areas: medical, family/social, legal, employment, drug, alcohol, and psychiatric.

We examined variables from these measures as they relate to the high-risk practice of needle sharing. All analyses were conducted with the Statistical Package for the Social Sciences (11). It is important to note that these analyses were exploratory and were intended to generate specific hypotheses to be tested in prospective studies, which are currently underway.

RESULTS

Respondents were classified into three risk groups on the basis of their reported needle use during the preceding 6 months. Of the 323 subjects, 38% (N=123) reported that they had not injected drugs, 42% (N=135) indicated that they had injected drugs but had not shared needles, and 20% (N=65) reported that they had injected drugs and shared needles at least once. These overall rates were compared across programs, and although rates of sharing varied from a low of 15% to a high of 26%, the interprogram differences were not significant ($\chi^2=3.67$, df=6, n.s.).

The three risk groups differed significantly only in race ($\chi^2=13.62$, df=4, $p<0.05$). Needle sharing was reported at a higher rate among whites (25%, N=38) and Hispanics (35%, N=6) than among blacks (14%, N=21). These three needle-sharing groups were equivalent on all other demographic variables. No differences in age or level of education were found. In all three risk groups about 70% of the subjects were unemployed. A somewhat higher proportion of men (21%, N=48) than women (18%, N=17) reported sharing needles, but this difference was not significant.

Respondents were asked to indicate the frequency of their use of heroin, cocaine, amphetamines, benzodiazepines (diazepam and alprazolam), marijuana, and alcohol during the month preceding assessment. Since the rate of use of the drugs commonly administered by injection in this population (heroin and cocaine) was quite low among those not injecting, tests of significance were performed in which only the two needle-using groups were compared. No significant differences in the frequency of use of any drugs except benzodiazepines were identified (table 1). The needle-

TABLE 1. Frequency of Drug Use During the Preceding Month by Needle-Using Subjects Who Shared or Did Not Share Needles

Drug and Frequency of Use	Subjects Not Sharing Needles N[a]	%	Subjects Sharing Needles N[b]	%	χ^2 (df=3)
Heroin					1.24
Daily	4	2.9	2	3.3	
A few times a week	21	15.4	9	14.8	
A few times a month	54	39.7	29	47.5	
Not at all	57	41.9	21	34.4	
Cocaine					0.83
Daily	12	8.9	6	9.7	
A few times a week	26	19.3	15	24.2	
A few times a month	49	36.3	22	35.5	
Not at all	48	35.6	19	30.6	
Benzodiazepines					11.16[c]
Daily	14	10.2	16	25.4	
A few times a week	15	10.9	11	17.5	
A few times a month	39	28.5	15	23.8	
Not at all	69	50.4	21	33.3	
Marijuana					1.64
Daily	4	2.9	2	3.2	
A few times a week	10	7.3	4	6.3	
A few times a month	30	21.9	19	30.2	
Not at all	93	67.9	38	60.3	
Alcohol					2.30
Daily	8	5.8	6	9.5	
A few times a week	17	12.4	10	15.9	
A few times a month	39	28.5	20	31.7	
Not at all	73	53.3	27	42.9	

[a]Total N for each drug varied from 135 to 137.
[b]Total N for each drug varied from 61 to 63.
[c]With the Bonferroni method, $p<0.05$.

TABLE 2. Psychiatric Symptom Scores of 323 Drug-Using Subjects Divided According to Their Method of Drug Intake

Measure	Score: Subjects Not Injecting Drugs (N=123)	Subjects Not Sharing Needles (N=135)	Subjects Sharing Needles (N=65)	F (df=2, 308)
Beck Depression Inventory	13.15	14.42	20.03	8.96[a,b]
SCL-90 scale				
Somatization	0.7987	0.7635	1.2800	9.06[b]
Obsessive-compulsive	0.8099	0.7915	1.4525	13.82[b]
Interpersonal sensitivity	0.6706	0.6981	1.2951	14.04[b]
Depression	0.9107	0.9872	1.7285	17.99[b]
Anxiety	0.6655	0.6572	1.3425	16.60[b]
Hostility	0.6487	0.6593	1.4483	20.43[b]
Phobic anxiety	0.3855	0.4119	0.6978	3.83
Paranoid ideation	0.6883	0.7206	1.4000	16.18[b]
Psychoticism	0.4879	0.4508	0.9360	11.18[b]
General symptom inventory	0.6350	0.6928	1.2608	15.13[b]

[a]df=2, 313.
[b]Score of needle-sharing subjects significantly higher than scores of the other two groups, $p<0.01$ with the Bonferroni method.

sharing group reported significantly higher rates of benzodiazepine use. Forty-three percent (N=27) of the needle-sharing group reported use of diazepam and alprazolam a few times a week or every day, more than twice the rate reported by those not sharing needles.

Subjects were also asked about their access to new needles. Interestingly, the degree of difficulty in acquiring new needles differed significantly ($\chi^2=21.54$, df=2, $p<0.001$) among the three risk groups. Overall, 19% (N=38) of the 199 subjects who had injected drugs and who answered this question indicated that it was difficult to get new needles. Of the 135 who had injected but not shared, only 10% (N=14) found it difficult to get new needles. The rate was nearly four times greater (38%, N=24) for the 63 respondents who had injected and shared.

There were no differences in the length of time that the three risk groups had been in their current treatment programs (33 months). The groups did not differ with regard to number of past entries into treatment or current methadone dosage. Overall, the mean±SD daily methadone dose was 44±20 mg.

Members of the three risk groups were compared on their knowledge of effective ways to prevent HIV transmission. Consistent with previous findings, knowledge of preventive measures was widespread and did not differ significantly among the risk groups. The most frequently cited methods were "don't share needles or inject" (88%) and "use condoms" (68%).

Subjects were asked to indicate how worried they were 1) about getting AIDS and 2) that they had already been exposed to the AIDS virus. There was no significant difference among the three risk groups in the degree of fear of contracting AIDS. Sixty-nine percent (N=45) of the needle-sharing group, 57% (N=70) of the noninjecting group, and 56% (N=76) of the injecting group were at least moderately concerned about becoming infected. The three groups were also compared regarding their fear that they might already have been exposed to HIV; significantly more concern was expressed among respondents to this question in the needle-sharing group (57%, N=35) than in the no-injection group (32%, N=38) and the no-sharing group (31%, N=42) ($\chi^2=23.28$, df=8, $p<0.01$).

During the 6 months preceding our assessment, the needle-sharing group had been arrested significantly more often ($F=3.6$, df=2, 317, $p<0.05$) than the other two groups. Considering all charges, the average number of arrests per group was 0.13 for those who had not injected drugs, 0.18 for those who had injected drugs but not shared needles, and 0.35 for those who had shared needles. Despite this difference in arrest rates, subjects in the three groups did not differ with regard to the amount of time they had been incarcerated.

Psychological symptoms were significantly associated with needle sharing (table 2). The differences in Beck Depression Inventory scores not only were statistically significant but also represented clinically important differences. Similarly, significant differences in scores on each of the subscales of the SCL-90 were

TABLE 3. Composite Scores From the Addiction Severity Index of 128 Drug-Using Subjects Divided According to Their Method of Drug Intake

Problem	Score: Subjects Not Injecting Drugs (N=48)	Score: Subjects Not Sharing Needles (N=58)	Score: Subjects Sharing Needles (N=22)	F (df= 2, 125)
Medical	0.36	0.29	0.43	0.29
Employment	0.73	0.79	0.73	0.79
Alcohol	0.09	0.12	0.07	0.32
Drug	0.18	0.28	0.34	14.05*
Legal	0.04	0.09	0.18	4.23
Family/social	0.16	0.23	0.34	4.24
Psychiatric	0.21	0.25	0.45	9.54*

*Score of needle-sharing subjects significantly higher than scores of the other two groups, $p<0.05$ with the Bonferroni method.

found (table 2), again indicating significantly higher symptom levels in the group that shared needles. The other two groups (noninjectors and nonsharing injectors) did not differ significantly. In order to make corrections for the use of repeated univariate tests of significance, critical values for significance were adjusted by using the Bonferroni method (12). Even with this more stringent criterion of significance, scores on all but the phobic anxiety subscale were found to be significantly higher for the needle-sharing group than for the other two groups.

As can be seen in table 3, the data produced by the Addiction Severity Index were quite similar to those obtained from the questionnaire. The needle-sharing group had higher composite scores on the legal and family/social sections. They also had higher composite drug scores, reflecting a higher frequency of drug use, use of multiple substances, and higher severity ratings of problems associated with drug use. The composite scores on psychiatric problems were consistent with those on the SCL-90 and the Beck inventory: the Addiction Severity Index identified higher levels of psychiatric disturbance among the needle-sharing group. Composite scores for employment, alcohol, and medical problems did not differ among the three risk groups. When levels of significance for results of these tests were adjusted with the Bonferroni method, the group differences in the composite scores for the legal and family/social sections of the Addiction Severity Index were no longer significant, while the drug and psychiatric scores remained significantly different.

DISCUSSION

The question we asked in these preliminary analyses was, Which methadone patients continue to share needles in the midst of the AIDS epidemic? The answers that emerged identified characteristics associated with recent needle sharing that may be important for understanding continued high-risk behavior. These characteristics included more arrests and legal difficulties, more severe drug problems, higher levels of psychiatric symptoms, and greater difficulty in obtaining new needles. All but the last of these characteristics are similar to those of patients classified in earlier studies as having severe psychiatric problems (13–15). When considered together, these characteristics describe a group of patients that may require more aggressive interventions than are generally available in methadone programs.

Contrary to our expectations, fear of AIDS was not associated with safer injection practices. Thus, our findings do not support the notion that reductions in needle sharing can be achieved by increasing the fear of infection, at least among this methadone-treated group. Perhaps most important, knowledge of methods of self-protection from infection was also not found to relate to needle sharing. As reported by others (16–18 and presentations by J.K. Watters and by J. Jackson and L. Rotkiewicz at the Third International Conference on AIDS, Washington, D.C., June 1987), such knowledge was nearly universal among the study group. Thus, for many of these subjects, awareness of risk coupled with knowledge about means of avoiding infection was not sufficient to eliminate needle sharing.

The relationship between restricted access to new needles and needle sharing is also noteworthy. Only a small part of this sample (12%, N=38) reported difficulty in obtaining new needles, yet among those who did, needle sharing occurred at a significantly higher rate. This finding supports the proposition that greater access to new needles might help reduce sharing among a small but potentially important group of intravenous drug users.

The association between psychological distress and recent needle sharing is particularly important. The SCL-90, the Beck inventory, and the Addiction Severity Index each indicated that the subjects who had shared needles within the preceding 6 months had significantly more psychiatric symptoms than those who had not shared. Regardless of the direction of the causal relationship between psychological distress and AIDS risk behavior, the strength of their association suggests that psychological factors need to be addressed in working with this high-risk population. Reduction of psychiatric symptoms may play an effective role in changing high-risk behavior.

The finding that patients with psychiatric symptoms were more likely to share needles is not surprising. In the past, higher levels of depression and anxiety have been associated with poor treatment outcome and relapse (13, 19, 20). Our data may merely reflect the limited ability of methadone treatment programs to have an impact on individuals with higher levels of psychological disturbance. However, with the exception of benzodiazepine use, treatment failure as measured by continued drug use was not related to needle sharing. Of course, high levels of psychiatric symptoms may also reflect the AIDS disease process itself. It is possible that the needle-sharing group included a

higher proportion of individuals who were currently infected with HIV. Given the potential neurotropic effects of HIV, the higher level of psychiatric symptoms may have been indicative of early HIV infection. Our studies were not able to include serological or neuropsychological testing, but such assessments are necessary to address this question adequately, and they are currently underway.

These data suggest that in the midst of the AIDS epidemic, it is not sufficient for methadone programs simply to identify continued drug use. Increased monitoring of needle sharing and other high-risk behavior is demanded. Program staff members must be trained to discuss use of needles, methods of injection, and cleaning of injection equipment as an extension of their current response to identified drug use. This may pose a dilemma for some treatment personnel who feel that open discussion of these issues is an endorsement of drug use. However, we feel that such discussions are an essential component of drug counseling and may, in fact, provide further opportunities for effective interventions.

In this regard it must be noted that our subjects may have felt comfortable reporting needle sharing to the research staff because of the protection of confidentiality afforded by the research protocol. It is not clear whether patients will be equally open in discussing needle use with treatment staff members. The ability to discuss and change needle sharing and other high-risk behavior is probably a function of the counselor-patient relationship and program policies. The importance of this issue demands that programs develop and encourage counseling skills that will allow all high-risk behavior to be openly discussed. Program policies that will allow staff members to explore these areas without mandated punitive sanctions are also needed.

As we have demonstrated, elevated levels of psychiatric symptoms are associated with continued needle sharing among drug abuse patients in treatment. The higher level of symptoms may be the result of high-risk behavior, or it may be the force behind the high-risk behavior. In either case, our findings suggest that it may be possible to identify methadone-treated patients who are at relatively greater risk for HIV infection. Our findings also suggest that the behavior of patients who continue to share needles may be particularly intractable and will most likely require the establishment of additional psychiatric services within treatment programs. Involvement in methadone treatment is an important first step in AIDS risk reduction, but it may not be sufficient for the more disturbed and perhaps antisocial subgroups. Methadone programs will probably need to expand and intensify services in order to address the needs of those patients who continue to be most at risk for becoming infected and for spreac the infection to others.

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THE INTERCONNECTED EPIDEMICS OF DRUG DEPENDENCY AND AIDS

*Larry Gostin**

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Introduction

A half-century ago the humanist Edward M. Brecher reported a mid-winter epidemic of malaria in Chicago, New York City, St. Paul, and San Francisco. The epidemic occurred despite the absence of a single live mosquito, a common carrier of the disease. Drug-dependent people in these cities were sharing the needles and syringes they used to inject heroin. If the drug-dependent person were infected with malaria parasites, his or her needle-sharing partner ran the risk of acquiring the infection.[1] The epidemic increased the next summer when mosquitoes bit malaria-infected drug users and transmitted the infection to the wider public.

Brecher's report demonstrated, as early as 1940, that intravenous (IV) drug users could spread an infectious disease to their needle-sharing partners, and from the partner to other women, men, and children.[2] Indeed, needle sharing has proven to be an effective secondary mode of transmission for a diverse range of blood-borne and sexually transmitted diseases such as bacterial endocarditis,[3] syphilis,[4] hepatitis,[5] cellulitis,[6] and soft-tissue infections.[7]

Needle sharing among drug-dependent people is fueling the modern human immunodeficiency virus (HIV) epidemic in a pattern strikingly similar to its role in spreading other needle-borne infections. The transmission of HIV occurs when infected drug users self-administer heroin, cocaine,[8] amphetamines or other

[1] Brecher, *The Case of the Missing Mosquitoes*, READER'S DIGEST, Feb. 1941, at 56. Heroin dealers attempted to impede the needle-borne malaria epidemic by adding quinine to the heroin "bag" to kill the malaria parasites. Brecher, *Needles and the Conscience of a Nation*, 1 DRUG POL'Y LETTER 5–6 (1989). *See also* E. BRECHER, LICIT AND ILLICIT DRUGS (1972).

[2] *See Drugs and Edward Brecher*, N.Y. Times, Apr. 25, 1989, at A28, col. 1.

[3] Inflammation of the endocardium, or lining membrane of the heart, is caused by the direct invasion of bacteria and leads to deformity of the valve leaflets. STEDMAN'S MEDICAL DICTIONARY, 510 (25th ed. 1990) [hereinafter STEDMAN'S].

[4] Syphilis is an acute and chronic infectious disease caused by *Treponema pallidum* (*Spirochaeta pallida*) and transmitted by direct contact, usually through sexual intercourse. The late stages of the disease are marked by formation of gummas and cardiovascular and central nervous system lesions. STEDMAN'S, *supra* note 3, at 1544.

[5] Hepatitis is an inflammation of the liver. The viral h, type B form of hepatitis is caused by hepatitis B virus (HBV) (*serum hepatitis virus*). Necrosis of liver cells is characteristic, and jaundice is a common symptom. STEDMAN'S, *supra* note 3, at 704–05. Transmission of HBV sexually and through contaminated needles is the model often used for HIV. *See* Blumber & Fox, *The Daedalus Effect: Changes in Ethical Questions Relating to Hepatitis B*, 102 ANNALS INTERNAL MED. 390, 394 (1985).

[6] Cellulitis is the inflammation of cellular or connective tissue. STEDMAN'S, *supra* note 3, at 273.

[7] *See* NATIONAL RESEARCH COUNCIL, AIDS: SEXUAL BEHAVIOR AND INTRAVENOUS DRUG USE 189 (C. Turner, H. Miller & L. Moses eds. 1989) [hereinafter NATIONAL RESEARCH COUNCIL REPORT].

[8] Cocaine affects the HIV epidemic in two significant ways. First, cocaine can be injected. Indeed, intravenous cocaine users have to inject more frequently than heroin users to achieve the same high, thus posing a greater risk of transmission of HIV. Currently, there is no chemical treatment for cocaine use comparable to methadone for heroin use. For a discussion of methadone maintenance programs, see *infra* notes 251–253 and accompanying text. *See also* NATIONAL INSTITUTE ON DRUG ABUSE, U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, NIDA MONOGRAPH NO. 88, MECHANISMS OF COCAINE ABUSE AND TOXICITY (1988) [hereinafter NIDA MONOGRAPH NO. 88]. Second, the exchange of sex for cocaine, particularly in crack houses, is fanning the HIV epidemic. *See* Fullilove, Thompson, Bowser & Gross, *Risk of Sexually Transmitted Disease Among Black Adolescent Crack Users in Oakland and San Francisco, California*, 263 J.A.M.A. 851 (1990). The sexual highs, the payment of money, and the propensity of cocaine users to

drugs through an injection into a vein, under the skin or into a muscle ("skin popping"). The needle, syringe and possibly the "cooker"[9] may contain small amounts of HIV-infected blood. To ensure that no trace of the drug remains in the syringe, the user often draws his blood into the syringe and reinjects it into his vein, a practice known as "booting." The "works" are then shared with another drug-dependent person who draws his own blood into the syringe, mixing it with the blood from his partner. Thus, the syringe and needle sharing results in a highly efficient method of transmitting an infection.[10]

The needle-borne HIV epidemic is a public health problem of broad dimensions. Intravenous drug users are the second largest risk group for HIV infection in the American population. Twenty-nine percent of all cases of AIDS reported to the U.S. Centers for Disease Control involve IV drug users.[11] The serological prevalence of HIV in the IV drug use community is higher still. Epidemiological studies in major urban areas, particularly New York, Northern New Jersey, and Connecticut, demonstrate HIV seroprevalence rates of fifty percent or more.[12] Moreover, HIV disease

neglect safer sexual practices are all reasons for deep concern about the drug's impact on the HIV epidemic.

[9] A cooker is a spoon or bottle cap used to dissolve the drug in water prior to injection.

[10] *See* Des Jarlais, Friedman & Strug, *AIDS and Needle Sharing Within the IV Drug Use Subculture*, in THE SOCIAL DIMENSIONS OF AIDS: METHODS AND THEORY 111 (D. Feldman & T. Johnson eds. 1986); Ginzburg, *Intravenous Drug Abusers and HIV Infection: A Consequence of Their Actions*, 14 LAW, MED. & HEALTH CARE 268 (1986); Stryker, *IV Drug Use and AIDS: Public Policy and Dirty Needles*, 14 J. HEALTH POL'Y, POL. & LAW 719 (1989).

[11] CENTERS FOR DISEASE CONTROL, HIV/AIDS SURVEILLANCE: U.S. CASES REPORTED THROUGH SEPTEMBER 1990, at 8 (1990) [hereinafter CENTERS FOR DISEASE CONTROL, SEPT. 1990]. Cumulative totals of reported AIDS cases show that 22% were IV drug users and 7% were IV drug users and had had homosexual contact. Indeed, a significant number of deaths of IV drug abusers may be attributable to HIV disease but are not reported as CDC-defined AIDS. These deaths may represent a spectrum of HIV-related disease that has not been identified through AIDS surveillance and has resulted in a large underestimation of the impact of AIDS on IV drug users, African Americans and Hispanics. Stoneburner, Des Jarlais, Benezra, Gorelkin, Sotheran, Friedman, Schultz, Marmor, Mildvan & Maslansky, *A Larger Spectrum of Severe HIV-1-Related Disease in Intravenous Drug Users in New York City*, 242 SCIENCE 916 (1988); *see* NATIONAL RESEARCH COUNCIL REPORT, *supra* note 7, at 234–37.

[12] *See* Des Jarlais, Friedman & Stoneburner, *HIV Infection and Intravenous Drug Use: Critical Issues in Transmission Dynamics, Infection Outcomes, and Prevention*, 10 REV. OF INFECTIOUS DISEASES 151 (1988); Des Jarlais, Wish, Friedman, Stoneburner, Yancovitz, Mildvan, El-Sadr, Brady & Cuadrado, *Intravenous Drug Use and the Heterosexual Transmission of the Human Immunodeficiency Virus: Current Trends in New York City*, 87 N.Y. ST. J. MED. 283 (1987); Robertson, Bucknell, Welsby, Roberts, Inglis, Peutherer & Brettle, *Epidemic of AIDS Related Virus (HTLV-III/LAV) Infection Among Intravenous Drug Users*, 292 BRIT. MED. J. 527, 529 (1986). Needle-borne transmission of HIV, moreover,

in drug-dependent populations is an epidemic that strikes disproportionately the urban poor, African Americans and Hispanics.[13] Ethnographic studies of this population describe it as "street drug abusers," the vast majority of whom is homeless, unemployed, or underemployed. Many also suffer from multiple physical dependencies on drugs and alcohol.[14] These studies point to the vulnerability of the drug-dependent population and its frequent inability to meet its own health care needs.

HIV among IV drug users is also the single most important source for the spread of the infection to non-risk groups. It is likely that if heterosexual transmission of HIV becomes self-sustaining, IV drug users will be the source of infection.[15] Nearly seventy-two percent of all heterosexual cases of AIDS reported in the United States involve persons who have had sexual contact with an IV drug user.[16] The connection between pediatric AIDS and IV drug use is even more striking. Seventy-nine percent of all children born infected with HIV have a mother who either was an IV drug user or had sexual relations with an IV drug user.[17]

is an international phenomenon with comparably high rates of AIDS and HIV infection among IV drug users in parts of Europe. Approximately 18% of reported cases of AIDS in Europe indicate IV drug use as a risk factor (3% of these cases also had homosexual contacts). The percentage of people with AIDS who are IV drug users is significantly higher in certain countries. For example, in Italy and Spain, IV drug users account for 65% and 59% of adult cases of AIDS, respectively. WORLD HEALTH ORGANIZATION, PROGRESS REPORT NO. 4, 8, GLOBAL PROGRAMME ON AIDS (1988); *see* Angrarano, Pastore, Monno, Santantonio, Luchena & Schiraldi, *Rapid Spread of HTLV-III Infection Among Drug Addicts in Italy*, 2 LANCET 1302 (1985).

[13] Over 43% of all cases of AIDS reported to the CDC involve African Americans (28%) or Hispanics (nearly 16%). CENTERS FOR DISEASE CONTROL, SEPT. 1990, *supra* note 11, at 12; *see also* Des Jarlais & Friedman, *HIV Infection Among Persons Who Inject Illicit Drugs: Problems and Prospects*, 1 J. ACQUIRED IMMUNE DEFICIENCY SYNDROME 267, 269 (1988) (higher HIV seroprevalence among ethnic minority drug users). The risk factors are related to behavior, but not race. "To label a pigment as a risk factor is to promote . . . racist notions that have hampered HIV research, thwarted access to care, and tainted educational efforts about HIV." Dawson, *HIV in Intravenous Drug Users*, 322 NEW ENG. J. MED. 632 (1990).

[14] Feldman & Biernacki, *The Ethnography of Needle Sharing Among Intravenous Drug Users and Implications for Public Policies and Intervention Strategies*, in NATIONAL INSTITUTE ON DRUG ABUSE, U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, NIDA MONOGRAPH NO. 80, NEEDLE SHARING AMONG INTRAVENOUS DRUG ABUSERS: NATIONAL AND INTERNATIONAL PERSPECTIVES 28 (1988) [hereinafter NIDA MONOGRAPH NO. 80].

[15] NATIONAL RESEARCH COUNCIL REPORT, *supra* note 7, at 2186.

[16] CENTERS FOR DISEASE CONTROL 1990, *supra* note 11, at 9. This figure excludes females born outside the United States in Pattern II countries, where heterosexual transmission patterns are more evident. In New York City almost 90% of the heterosexual transmission cases of AIDS involve sexual relations with an IV drug user. Des Jarlais & Friedman, *The Psychology of Preventing AIDS Among Intravenous Drug Users*, 43 AM. PSYCHOLOGIST 865 (1988).

[17] CENTERS FOR DISEASE CONTROL, SEPT. 1990, *supra* note 11, at 9. This figure

Drug dependence and HIV are America's two most pressing epidemics,[18] interconnected by a cycle of urban poverty, physical dependence and a culture of sharing needles and syringes.[19] Extant political strategies to curb these interconnected epidemics involve two traditional approaches. The first—law enforcement and interdiction—is designed to limit the supply of illicit drugs to the marketplace. This strategy is advanced by broad criminal sanctions against importing, selling, distributing, medically prescribing, or possessing illicit drugs or drug paraphernalia. The second strategy to combat the drug and HIV epidemics involves reducing the demand for illicit drugs. Education, counseling, and treatment (detoxification, maintenance, and rehabilitation) are all designed to reduce dependence on drugs, and are called demand-side policies. For those who cannot stop drug use, public health strategies seek to alter dangerous sharing behavior or to encourage the sterilization of works.

Supply-side and demand-side policies are often in conflict, and this conflict reduces the efficiency of the programs and thwarts the public health goals that underlie both types of policies. For example, counseling, education, and outreach programs designed to teach drug-dependent people safer ways to engage in unlawful behaviors appear to condone or even foster drug use. Drug users who follow public health advice and carry clean injection equipment or bleach to sterilize that equipment may provide law enforcement personnel with evidence of criminal behavior. Similarly, ex-addicts hired by public health departments to distribute drug-injection equipment in shooting galleries come close to aiding and abetting the commission of a crime. Finally, needle and syringe exchange programs require the distribution of equipment with the knowledge that it will be used to inject drugs. Such acts are specifically prohibited under present drug-paraphernalia statutes.

The conflict between supply-side and demand-side policies is also reflected in the relative funding that the federal government commits to law enforcement and public health. Less than two

excludes females born in Pattern II countries where heterosexual transmission patterns are more evident.

[18] *See generally* NATIONAL RESEARCH COUNCIL REPORT, *supra* note 7; REPORT OF THE PRESIDENTIAL COMMISSION ON THE HUMAN IMMUNODEFICIENCY VIRUS EPIDEMIC 94–104 (1988) [hereinafter REPORT OF THE PRESIDENTIAL COMMISSION]; Schuster, *A Federal Agency Perspective on AIDS*, 43 AM. PSYCHOLOGIST 846, 848 (1988).

[19] *See Three Plagues*, N.Y. Times, Feb. 23, 1989, at A22, col. 1.

decades ago only 44.1% of the federal drug abuse budget went to activities related to interdiction, eradication and other law enforcement, with the remaining funds going to drug treatment, prevention, and education. By 1976 the proportion was still relatively even with 50.4% going to law enforcement. In the last decade, however, expenditures for law enforcement rose substantially to between 73% and 82% of the drug abuse budget.[20] The increase in the enforcement budget reflects the current government philosophy that strong supply-side efforts that emphasize the criminal and immoral aspects of drug use will yield health benefits for the public.

The uniting theme of this Article is that government should pursue a consistent policy on drug use that explicitly prefers therapeutic and public health goals to law enforcement goals when these two are in conflict.[21] Such a preference for therapeutic goals is needed because of the seriousness of the HIV epidemic and because the sweep of criminal prohibitions and government regulation often renders public health measures ineffective.[22] A preference for public health over law enforcement is justified on both conceptual and empirical grounds.[23] The *raison d'être* of the supply-side policies is to protect the health of the user and of the public. Thus the human tragedy of the drug and HIV epidemics is not simply that people are acting unlawfully or immorally, but that drug dependency is destructive to a person's health and to the health of the community. The goal of supply-side policies should be to protect the health and safety of the individual and the community, not simply to punish "immoral, self-gratifying" behavior. Thus, the measure of effectiveness of those policies should be whether they succeed in lowering rates of drug dependency and

[20] Brecher, *Needles and the Conscience of a Nation*, *supra* note 1, at 5–6; *see infra* notes 276–282 and accompanying text.

[21] Some European countries have explicitly affirmed the importance of public health over law enforcement as a strategy for confronting the needle-borne HIV epidemic. *See* Fox, Day & Klein, *The Power of Professionalism: Policies for AIDS in Britain, Sweden, and the United States*, 118 DAEDALUS 93 (1989).

[22] Supply-side policies appropriately criminalize the importation and sale of illicit drugs, but they go further to impose criminal sanctions on people who are physically dependent on drugs. To be sure, the Constitution prohibits the criminal law from penalizing a person for the status of drug dependency. Robinson v. California, 370 U.S. 660 (1962). But penalties for simple possession of drugs or even drug paraphernalia go as far as is constitutionally permissible to impose criminal sanctions on individuals as a direct result of their medical illness.

[23] *See* Gostin, *An Alternative Public Health Vision for a National Drug Strategy: "Treatment Works"*, 28 U. HOUS. L. REV. (forthcoming 1991).

needle-borne transmission of infection. If supply-side policies fail this test, they defeat the very objective for which they were formulated and lose their validity.

The nation's law enforcement strategy to curb the drug dependency and HIV epidemics has not been successful. The rate of serious drug use and the needle-borne spread of HIV are both growing in ways that are profoundly detrimental to the health of the public.[24] The United States has not attempted a comprehensive public health approach to confront the dual epidemics of drugs and HIV. Yet, as this Article will demonstrate, scientific studies show that public health policies will be effective in reducing the demand for drugs, the sharing of drug-injection equipment, and the overall risk of HIV infection. Consistent with these studies and with a focus on demand-side policies, this Article presents three strategies for controlling the spread of HIV in the drug-dependent population.

The first public health strategy is to prevent the sharing of drug-injection equipment. Sharing could be prevented through the creation or expansion of education, counseling, and outreach programs. Highly disparate HIV prevalence rates exist among IV drug populations in the United States and abroad. The risk of HIV transmission does not exist if drug-dependent people use and reuse their own needles and syringes. Accordingly, the first strategy for breaking the cycle of HIV infection among drug-dependent people is to prevent the sharing of works.

The second public health strategy is to ensure that drug-dependent people use sterile injection equipment. Drug-dependent people can obtain access to safe injection equipment by sterilizing it themselves, by purchasing it over the counter, or by receiving it without charge pursuant to a publicly sponsored program. Education and counseling designed to teach safer forms of behavior cannot be successful unless the drug-dependent person has access to sterile injection equipment. This Article will discuss strategies

[24] The decline in casual drug use is a notable achievement of efforts to reduce illicit drug use. NATIONAL INSTITUTE ON DRUG ABUSE, NATIONAL HOUSEHOLD SURVEY ON DRUG ABUSE: POPULATION ESTIMATES 1988 (1989). However, this reduction in casual drug use may reflect prevention and education efforts in schools and significant cultural changes rather than the effectiveness of current law enforcement techniques. Moreover, the decline in casual use is more than offset by a marked increase in drug dependency and regular use of highly addictive drugs such as cocaine. THE WHITE HOUSE, NATIONAL DRUG CONTROL STRATEGY 1 (1989).

aimed at making the use of sterile equipment a realistic option for drug users.

The third public health strategy is to provide medical treatment and rehabilitation so that the drug user is no longer dependent on drugs or can satisfy the craving through lawful use of a prescribed drug such as methadone. However, formidable obstacles stand in the way of universal access to drug treatment. These obstacles include inadequate resources for treatment facilities, the sometimes prohibitive cost of treatment for individuals, zoning laws, and methadone regulations. This Article will develop ideas for substantially increasing the role of the health care and criminal justice systems in the treatment of drug dependency.

None of these strategies, standing alone, will significantly impede the spread of HIV in the drug-dependent population. But the cumulative effect of education, counseling, and outreach to reduce sharing of works; of clean-needle programs to increase the use of sterile injection equipment; and of comprehensive medical treatment in specialized and mainstream health facilities to reduce dependence on drugs provides the best opportunity to impede the needle-borne HIV epidemic. The political justification for the sweeping changes in law, policy, and public funding needed to meet this health imperative is found in saving the lives and health dollars of the drug-dependent population, their sexual and needle-sharing partners, their children, and, ultimately, the general population. A public health policy not only would effect a fundamental reduction in the morbidity and mortality stemming from the HIV epidemic, but would also lessen the severity of future needle-borne epidemics, which, as history has already demonstrated, will occur.

I. Education About Risk Avoidance Practices: Public Policies Designed to Reduce Sharing of Drug Paraphernalia

The sharing of works is the most critical factor in the transmission of HIV in the IV drug use populations.[25] Works are usually

[25] *See, e.g.*, Becker & Joseph, *AIDS and Behavioral Change to Reduce Risk: A Review*, 78 AM. J. PUB. HEALTH 403 (1988); Chaisson, Moss, Onishi, Osmond & Carlson, *Human Immunodeficiency Virus Infection in Heterosexual Intravenous Drug Users in San Francisco*, 77 AM. J. PUB. HEALTH 169 (1987); Schoenbaum, Hartel, Selwyn, Klein, Davenny, Rogers, Feiner & Friedman, *Risk Factors for Human Immunodeficiency Virus Infection in Intravenous Drug Users*, 321 NEW ENG. J. MED. 874 (1989). For a useful description of the social context of needle sharing, including friendship networks and shooting galleries, see NATIONAL RESEARCH COUNCIL REPORT, *supra* note 7, at 190–93.

shared out of practical necessity, but sometimes sharing of works occurs as part of the drug subculture, as a form of social bonding or camaraderie within the group.[26] Drug-dependent persons share works with sexual partners, members of a friendship group or other users in a "shooting gallery."[27] A shooting gallery is a place where a person can inject illicit drugs. Most galleries are located near a "copping" place where drugs can be purchased.[28] Needles are sometimes obtained "free" with the drug purchase;[29] others, kept by dealers for renting or lending to customers, are called "house works."[30] After the house works are used, they are then returned and used again by another customer. Needles and syringes may be used repeatedly in this way until they become clogged with blood, too dull to use, or break.[31] Most users in research studies report that they obtain their needles from street sellers and shooting galleries.[32] Shooting galleries and house works

[26] *See* Des Jarlais, Chamberland, Yancovitz, Weinberg & Friedman, *Heterosexual Partners: A Large Risk Group for AIDS*, 2 LANCET 1346 (1984); Des Jarlais, Friedman, Sotheran & Stoneburner, *The Sharing of Drug Injection Equipment and the AIDS Epidemic in New York City: The First Decade*, in NIDA MONOGRAPH No. 80, *supra* note 14, at 160, 163–64; Dolan, Black, DeFord, Skinner & Rabinowitz, *Characteristics of Drug Abusers that Discriminate Needle-Sharers*, 102 PUB. HEALTH REP. 395 (1987); Friedman, Des Jarlais & Sotheran, *AIDS Health Education for Intravenous Drug Users*, 13 HEALTH EDUC. Q. 383, 385 (1986); Feldman & Biernacki, *supra* note 14, at 32–34.

As one commentator put it: "Although pre-AIDS sharing of injection equipment reflected positive social relationships among IV drug users in overcoming limited supplies of injection equipment, IV drug users must now come to understand that sharing unsterilized injection equipment can lead to a protracted and painful death." Des Jarlais & Friedman, *supra* note 16, at 869; *see* Conviser & Rutledge, *The Need for Innovation to Halt AIDS Among Intravenous Drug Users and Their Sexual Partners*, 3 AIDS & PUB. POL'Y. J. 43 (1988).

[27] For economic reasons, shooting galleries are usually located in areas with a high concentration of IV drug users. Des Jarlais & Friedman, *Transmission of HIV Among Intravenous Drug Users*, in AIDS: ETIOLOGY, DIAGNOSIS, TREATMENT AND PREVENTION 385 (V.T. DeVita, S. Hellman & S.A. Rosenberg eds. 1988). Also, they are more frequently located in the Northeast Corridor of the United States than on the West Coast, although San Francisco hotels where drug users gather provide a similar setting. Feldman & Biernacki, *supra* note 14, at 32.

[28] Des Jarlais & Friedman, *supra* note 27, at 385–95.

[29] Des Jarlais & Friedman, *supra* note 16, at 867; Stryker, *supra* note 10, at 722.

[30] Des Jarlais & Friedman, *supra* note 27, at 386.

[31] Des Jarlais, Friedman, Sotheran & Stoneburner, *supra* note 26, at 164; *see also* Hopkins, *Needle Sharing and Street Behavior in Response to AIDS in New York City*, in NIDA MONOGRAPH No. 80, *supra* note 14, at 18, 24 (in one study, users said they used the same needle to inject drugs 1 (19%), 2–5 (36%), 6–21 (31%), more than 21 (11%) times).

[32] The majority of shooters surveyed buys its needles from street sellers (45%) and snooting galleries (16%). Injection equipment is also obtained from doctors or pharmacies (20%) and diabetics (8%). Some sellers steal needles from hospital garbage bins or forge prescriptions. Hopkins, *supra* note 31, at 25. Some "former addicts report extensive use of 'hitters' (a person who find[s] a vessel for injection for a fee without regard for sterile technique)." D'Aquila & Williams, *Epidemic Human Immunodeficiency Virus (HIV) Infection Among Intravenous Drug Users*, 60 YALE J. BIO. MED. 545, 553 (1987).

are particularly detrimental to the public health because they involve sharing needles beyond a small group of friends or sexual partners.

Current education programs have successfully disseminated basic information about how AIDS is transmitted.[33] However, a striking dissonance still exists between what IV drug users know and how they behave.[34] Even though many addicts know that sharing is a high-risk behavior, they continue to share works because drug-dependent people going through withdrawal are concerned primarily with a rapid injection of heroin or cocaine.[35] Possession of heroin itself may create a premature withdrawal and craving in a long-term addict through a form of classical conditioning.[36] Withdrawal is extremely unpleasant, and thus an addict will not stop to plan or consider the health consequences when he

[33] *E.g.*, Des Jarlais & Friedman, *HIV Infection Among Intravenous Drug Users: Epidemiology and Risk Reduction*, 1 AIDS 67, 70 (1987); Feldman & Biernacki, *supra* note 14; Friedman, Des Jarlais & Sotheran, *supra* note 26, at 386 (93% of the sample knew that IV drug use was a way to get AIDS); Selwyn, Feiner, Cox, Lipshultz & Cohen, *Knowledge About AIDS and High Risk Behavior Among Intravenous Drug Abusers in New York City*, 1 AIDS 247 (1987) (97% of the sample had accurate AIDS-related knowledge); Stimson, Donoghoe, Alldritt & Dolan, *HIV Transmission Risk Behavior of Clients Attending Syringe-Exchange Schemes in England and Scotland*, 83 BRIT. J. ADDICTION 1449, 1451 (1988) (95% of the sample had accurate AIDS-related knowledge).

[34] Becker & Joseph, *supra* note 25. *See also* Ginzburg, French, Jackson, Hartsock, MacDonald & Weiss, *Health Education and Knowledge Assessment of HTLV-III Diseases Among Intravenous Drug Users*, 13 HEALTH EDUC. Q. 373, 377 (1986) (although the study shows a high level of knowledge about AIDS, the survey was unable to determine what modifications in their behavior IV drug users make based on this knowledge). Studies show that a high proportion of addicts repeatedly use the same contaminated needle, and share needles with intimate partners, dealers and casual acquaintances. Black, Dolan, DeFord, Rubinstein, Penk, Rabinowitz & Skinner, *Sharing of Needles Among Users of Intravenous Drugs*, 314 NEW ENG. J. MED. 446 (1986) (those reporting sharing did so in 40% of all drug use episodes); Feldman & Biernacki, *supra* note 14, at 32 (sharing injection equipment was "common"); Hopkins, *supra* note 31 (53% of the sample report always or sometimes sharing injection equipment); Magura, Grossman, Lipton, Siddiqi, Shapiro, Marion & Amann, *Determinants of Needle Sharing Among Intravenous Drug Users*, 79 AM. J. PUB. HEALTH 459 (1989); Stimpson, Donoghoe, Alldritt & Dolan, *supra* note 33 (36% of the sample report always or sometimes sharing injection equipment); Watters, *A Street-Based Outreach Model of AIDS Prevention for Intravenous Drug Users: Preliminary Evaluation*, in CONTEMPORARY DRUG PROBLEMS 411, 412 (1987) (over 90% of sample said that injection equipment is typically shared). Several studies also suggest that the sexual behavior of drug users is highly resistant to change. Des Jarlais & Friedman, *supra* note 16, at 866–67; Des Jarlais & Friedman, *supra* note 13, at 270 (five studies all found a higher percentage of intravenous drug users adopting risk-reduction activities relating to needle use than in sexual behavior).

[35] Stimson, Donoghoe, Alldritt, Dolan, *supra* note 33 (drug users in the sample reported that they shared injection equipment because of the scarcity of equipment (51%), need for a fix (50%) and/or peer influence (35%)); Becker & Joseph, *supra* note 25.

[36] Des Jarlais, Friedman & Hopkins, *Risk Reduction for the Acquired Immunodeficiency Syndrome Among Intravenous Drug Users*, 103 ANNALS INTERNAL MED. 755 (1985).

is in need of a fix. Research indicates that addicts will use whatever equipment is available when they are in withdrawal.[37] Users, however, cannot rely on dealers and shooting gallery proprietors as a safe source of sterile equipment, since these dealers and proprietors sometimes repackage contaminated needles and syringes and sell them as new.[38] Since sterile injection equipment is not readily available, education programs must teach drug users how to sterilize the needles and syringes by themselves.

Risk-reduction education must also be designed to overcome the ingrained behavior of needle sharing and to help form new patterns of behavior in the drug-dependent population. Although complete abstention from drug use is an admirable goal, for many it will never be achieved. If society truly desires to promote health and save lives among persons who continue to inject drugs, risk-reduction education is critically important.

A. Can Education Work?

Public and political opposition to risk-reduction programs are evident across the nation.[39] Opponents often argue that these programs are unlikely to be effective because of the inherent characteristics of the IV drug-using population: physiological dependence, illiteracy and lack of formal education.[40] Opponents of risk reduction also argue that drug users have a fundamental lack of concern about their health. Finally, opponents point to the difficulty of reaching a group engaged in a criminal enterprise that the dominant population regards with hostility.

[37] D'Aquila & Williams, *supra* note 32, at 553; Des Jarlais, Friedman & Hopkins, *supra* note 36.

[38] Des Jarlais & Hopkins, *Free Needles for Intravenous Drug Users at Risk for AIDS: Current Developments in New York City*, 313 NEW ENG. J. MED. 23 (1985).

[39] To be sure, much of this opposition is grounded upon profound moral disapproval of the drug-dependent population and its culture. *See, e.g.*, Lambert, *Myers Opposes Needle Projects to Curb AIDS*, N.Y. Times, Apr. 10, 1990, at B4, col. 6; LaFranchi, *Texas Program on AIDS and Addicts Hits Snag*, Christian Science Monitor, Mar. 16, 1988, at 7, col. 2.

[40] Many people stereotype drug users as incapable of change. It is suggested that they do not fear, and are not concerned with, the risks of contracting HIV because they already accept significant health risks by taking drugs in the first place. In short, they are viewed as having a fatalistic acceptance of the risk of death as part of their lifestyle. *See, e.g.*, Beck, *Changing Behavior is a Prescription Many Still Resist*, Chicago Tribune, June 15, 1989, at 23, col. 1.

Arguments that risk-reduction programs cannot be effective ignore relevant data.[41] Studies show that an overwhelming majority of users know and understand the behavior that puts them at risk for HIV infection.[42] More significantly, drug-dependent persons have shown a willingness to change socially ingrained activities—evidenced by greater use of sterile injection equipment, fewer needle-sharing partners, and less IV drug use—when provided with education and counseling and given the means to change their behavior.[43] As a result of risk-reduction programs, drug users are demanding that dealers and proprietors of shooting galleries provide sterile injection equipment.[44] They have also sought out public health department programs, such as bleach and sterile needle distribution, and drug treatment.[45] Thus, risk-reduction education has successfully disseminated important information to drug users. An education program aimed at teaching drug users needle sterilization techniques and at breaking down sharing behavior should be similarly successful.

[41] Some, probably most, intravenous drug users have altered their needle-sharing behavior to avoid the risk of transmission of HIV. Des Jarlais & Friedman, *HIV and Intravenous Drug Use*, 2 AIDS S65, S65–66 (Supp. 1, 1988); Des Jarlais, Friedman & Stoneburner, *supra* note 12, at 156; Friedman, Des Jarlais, Sotheran, Garber, Cohen & Smith, *AIDS and Self Organization Among Intravenous Drug Users*, 22 INT'L J. ADDICTIONS 201 (1987); Guydish, Abramowitz, Woods, Black & Sorenson, *Changes in Needle Sharing Behavior Among Intravenous Drug Users: San Francisco, 1986–1988*, 80 AM. J. PUB. HEALTH 995 (1990); Selwyn, Feiner, Cox, Lipshultz & Cohen, *Knowledge About AIDS and High Risk Behavior Among Intravenous Drug Abusers in New York City*, 1 AIDS 247 (1987). *See also* Centers for Disease Control, *Risk Behaviors for HIV Transmission Among Intravenous Drug Users Not in Treatment*, 39 MORB. & MORT. WKLY REP. 273 (1990); Friedman, Des Jarlais & Sotheran, *supra* note 26. Similar reductions in needle sharing are reported in Europe, including parts of Italy, France and the United Kingdom. Olievenstein, *Drug Addiction and AIDS in France in 1987*, in NIDA MONOGRAPH No. 80, *supra* note 14, at 114; Stimson, *Injecting Equipment Exchange Schemes in England and Scotland*, in NIDA MONOGRAPH No. 80, *supra* note 14, at 89; Tempesta & Di Giannantonio, *Sharing Needles and the Spread of HIV in Italy's Addict Population*, in NIDA MONOGRAPH No. 80, *supra* note 14, at 100.

[42] *See supra* note 33.

[43] *E.g.*, Becker & Joseph, *supra* note 25, at 403; Des Jarlais & Friedman, *supra* note 41, at S70–71; Robertson, Skidmore & Roberts, *HIV Infection in Intravenous Drug Users: A Follow-Up Study Indicating Changes in Risk-Taking Behaviour*, 83 BRIT. J. ADDICTION 387 (1988).

[44] Des Jarlais, Friedman & Hopkins, *supra* note 35, at 758. Almost 82% of the needle sellers queried reported demand for sterile injection equipment increased since the AIDS epidemic, although only a small proportion of them attributed the increased demand directly to the AIDS epidemic. High street prices also reflect the increased demand for sterile equipment. A 25-cent needle and syringe could cost $2.00–5.00 on the illicit market. Des Jarlais & Friedman, *supra* note 41, at S66.

[45] Des Jarlais & Friedman, *supra* note 33, at 73; Des Jarlais & Friedman, *supra* note 41, at S65 ("It is now safe to conclude that some, probably most, intravenous users will change their behavior in order to reduce their chances of developing AIDS").

B. Current Education Policies

The Congress and many states have already mandated AIDS education.[46] Yet the statutes that implement these mandates are quite general, often stating only that public health departments should provide "AIDS education."[47] Many statutes concentrate their efforts on low-risk populations such as the general public, school or university students, or marriage applicants.[48] Moreover, the ongoing tension between law enforcement and public health objectives has led to ambivalent policies and ineffective educational programs.

The Congress' ambivalence toward AIDS education is manifested in the federal Health Omnibus Programs Extension Act of 1988.[49] The 1988 Act thwarts public health objectives by allowing morality-based law enforcement goals to distort its educational message. The Act prohibits, *inter alia*, obscene informational materials and educational programs designed directly to promote or encourage homosexual or heterosexual activity or intravenous substance abuse.[50] Almost paradoxically, the Act goes on to say that this limitation should not be construed to restrict the ability of an education program to provide accurate information. The ambivalent approach of the federal Health Omnibus legislation has been adopted in at least seven states. These states require schools to stress abstinence from sex and substance abuse.[51] The dominance of law enforcement over public health in educational programs is also found in the federal Anti-Drug Abuse Act of 1988.[52] That Act

[46] *See* Barnes, *Towards Ghastly Death: The Censorship of AIDS Education*, 89 COLUM. L. REV. 698 (1989); Clark, *AIDS Prevention: Legislative Options*, 16 AM. J. LAW & MED. 107, 108–30 (1990); Gostin, *Public Health Strategies for Confronting AIDS: Legislative and Regulatory Policy in the United States*, 261 J. A.M.A. 1621, 1624 (1989).

[47] *See, e.g.*, 1987 Conn. Acts 389, §§ 19a–121c (Reg. Sess.) (directing the state department of health services "to establish a public information program for the distribution of materials . . . on AIDS"); ARK. STAT. ANN. § 20-15-902 (1988) (requiring the state department of education and health to conduct public education seminars, but not specifying the type of information to be provided, the frequency of the seminars or the source of funding for the seminars).

[48] A few states, however, specifically direct public health departments to distribute graphic literature to higher risk groups including IV drug users. *See* Gostin, *supra* note 46.

[49] For a discussion of the conflict between health education goals and current government policy, see Gostin, *A Decade of a Maturing Epidemic: An Assessment and Directions for Future Public Policy*, 16 AM. J. LAW & MED. 1 (1990).

[50] *See* 42 U.S.C. § 300dd-32(e) (1988).

[51] *See* Gostin, *supra* note 46, at 1624.

[52] *See* 42 U.S.C. § 300x-3(c) (1988).

prohibits most federal funding for programs providing drug users with clean needles.

Restrictions on education impede the ability of public health officials to disseminate effective AIDS prevention materials. It is difficult to instruct a person to inject a drug safely without tacitly encouraging drug use. Instructional programs also cannot be effective unless they provide the instruments for behavioral change, in this case clean needles. Efforts to stifle candid materials that discuss safer injection practices and provide the means to do so may take a toll in human lives. Of course, it can be argued that advertisements that advise drug users to "use clean needles" or show them how to sterilize their works conform with the law because they encourage precaution, not drug use. Still, in a conservative political climate federal administrators or law enforcers might chill the presentation of effective educational materials, particularly if the materials were accompanied by a vial of bleach or a sterile hypodermic needle.

Statutes that control the content of educational messages do so on moral, not public health or legal grounds. However, lawmakers should not be overly concerned with morality in this area. Instead, their overarching concern must be to secure changes in behavior that are conducive to the health of the drug-dependent population. Legislatures must understand that behaviors of a physically addicting or socially habitual nature are difficult to alter. Drug users require focused, graphic information about the safer use of drug paraphernalia, where it can be obtained, and the most effective methods for needle sterilization. Thus, the information must be explicit, understandable and directly relevant to the target audience.

C. Proposals for an Effective Education Program

Risk-reduction theory and research provide useful leads for developing effective education programs and policies. Two components of efficacious educational programs are promoting knowledge about how to behave more safely to avoid contracting HIV and altering social organizations and cultural rituals surrounding the sharing of drug-injection equipment.[53] The critical variables are

[53] Social learning theory suggests three components for successful health education:

the process of dissemination and the content of the educational messages.

1. Education in the Sterilization of Works

Existing public health education programs have broadly accomplished the goal of providing basic information to drug users about HIV transmission. Drug users demonstrate high knowledge of the fact that sharing of equipment can transmit HIV.[54]

Health education programs, however, have had much less success in providing clear, practical instruction on how to disinfect injection equipment. Rituals for cleaning injection equipment already exist among intravenous drug users, but often are ineffective.[55] Many IV drug users "clean" their hypodermic needle and syringe by flushing them with tap water. Flushing with water may unclog the equipment and make it appear visibly clean, but it does not destroy the AIDS virus.[56] Studies of needles and syringes discarded at shooting galleries show the presence of the virus in works that have no visible signs of blood.[57]

Educational programs should move beyond providing basic information about how HIV is transmitted and start including practical and simple instruction on the safest and most convenient methods for sterilizing injection equipment. Of the various methods of effective sterilization, most public health officials advocate

knowledge, increased availability of means for behavior change, and reinforcement of new behavioral patterns. Des Jarlais & Friedman, *AIDS Prevention Among Intravenous Drug Users: Experience in High Prevalence States*, in AIDS IN CHILDREN, ADOLESCENTS AND HETEROSEXUAL ADULTS: AN INTERDISCIPLINARY APPROACH TO PREVENTION 396 (R.F. Schinazi & A.J. Nahmias eds. 1988); Des Jarlais & Friedman, *supra* note 16, at 865; *see also* A. BANDURA, SOCIAL LEARNING THEORY (1977).

[54] *See supra* note 33 and accompanying text.

[55] D'Aquila & Williams, *supra* note 32, at 553–60 (in a study in San Francisco, practically all users cleaned their equipment prior to injection, yet fewer than 20% used methods that provide effective decontamination. Even those who effectively decontaminate their needles may undermine their efforts by not disinfecting the cooker).

[56] *See* Watters & Cheng, *HIV Infection and Risk Reduction Among Intravenous Drug Users in San Francisco: Preliminary Results and Implications*, 14 J. CONTEMP. DRUG PROBS. 397 (1987).

[57] Chitwood, McCoy, Inciardi, McBride, Comerford, Trapido, McCoy, Page, Griffin, Fletcher & Ashman, *HIV Seropositivity of Needles from Shooting Galleries in South Florida*, 80 AM. J. PUB. HEALTH 150, 152 (1990). (Needles were collected from shooting galleries and tested for the presence of HIV antibodies. When the needles appeared to contain blood residue, 20% were HIV-positive; where there was no visible blood residue, 5.1% were HIV-positive. These findings suggest that needles used in shooting galleries are vectors of transmission, and that although visual inspection of the needles may be useful, even "clean" needles may result in transmission of infection.)

the use of household bleach because it is both readily available and highly effective in decontaminating the equipment.[58] Immersion of a hypodermic needle and syringe in a diluted bleach solution (10:1) will effectively decontaminate the works. Other methods are less convenient or effective. Boiling the "works" can kill the virus, but the fifteen minutes needed for this to be effective is too long for a drug user to wait when in withdrawal. A seventy-percent solution of isopropyl alcohol can also kill the virus, but this is a substance that drug users might be tempted to ingest, causing health risks of its own. Moreover, intravenous drug users may employ the lesser strengths of alcohol found in wine, beer or gin, in the mistaken belief that they are effective disinfectants.[59]

2. Altering Social Organizations and Cultural Rituals

Some drug users report that even if they did have access to sterile equipment, they would still share works because others in their social group continue to do so.[60] Sharing is associated with initiation into IV drug use and, thereafter, serves as a social bonding mechanism.[61] In order to change an individual's sharing behavior, education, counseling and outreach must seek to change practices in the social organizations to which users belong. As indicated earlier, much of the necessary change in social organizations may result simply from effective educational programs.

Penetrating the insular culture of IV drug users to alter the social fabric of the group is particularly daunting. The most effective ways of altering the social organizations and cultural rituals of drug users involve understanding their language, culture and thinking; gaining their trust by providing services rather than punishment; and using the communication networks in their communities. Innovative programs use current and former addicts to provide AIDS education, bleach or alcohol for sterilization, and access to services and welfare benefits.

[58] Many disinfectants will destroy the AIDS virus *in vitro*. But public health officials recommend a disinfectant that is quick, inexpensive and safe. Newmeyer, *Why Bleach? Development of a Strategy to Combat HIV Contagion Among San Francisco Intravenous Drug Users*, NIDA MONOGRAPH No. 80, *supra* note 14, at 151, 154.

[59] Stryker, *supra* note 10, at 722–23.

[60] Des Jarlais & Friedman, *supra* note 16; Des Jarlais & Friedman, *supra* note 53.

[61] *See supra* note 26 and accompanying text.

Visible signs that public programs are motivated by a desire to protect the health and lives of drug-dependent people, rather than to stigmatize and punish them, may make it easier for an addict to look beyond his immediate social circle for support. Present policies that hold drug users criminally and morally accountable for their behavior drive them underground and reduce their exposure to alternate forms of behavior. Clear policies and practices unequivocally directed toward the health of the drug-dependent population are more likely to aid in reducing the subculture's influence on users' behavior.

D. Reaching Out to the Drug-Dependent Population: Increasing Access Points for Education and Counseling

Even if health education programs are properly designed, there are formidable problems in making them accessible to IV drug users. The clandestine character of the drug-dependent population is well known. Drug consumption activities, from the point of purchase to the actual injection, are secret and furtive.[62] Drug-dependent people are exceedingly hard to reach. They understandably have little confidence that public officials will try to ease their discomfort, assuage their fears and alienation, or protect their health. Thus, drug users are unlikely to come forward voluntarily for care.

Moreover, unlike the gay community, which is also struggling with the HIV epidemic, IV drug users do not have organized support, self-help, or advocacy groups. Traditional educational approaches through television, radio and written materials are unlikely to reach the drug subculture since, generally, this population neither has access to nor interest in these sources of information.

The problem of reaching drug sub-cultures can be approached in three ways. First, support, self-help and advocacy groups for drug-dependent people might be formed, analogous to the groups that have been so successful in the gay community.[63] Second, addicts can be reached through the use of former addicts who volunteer or who are paid by public health departments to interact with drug users in shooting galleries, hotels and "copping places."

[62] Feldman & Biernacki, *supra* note 14, at 28.

[63] *See* R. BAYER, PRIVATE ACTS, SOCIAL CONSEQUENCES: AIDS AND THE POLITICS OF PUBLIC HEALTH (1989).

Former addicts are particularly important to successful outreach programs because they know where drugs are bought, sold and injected and are in the best position to gain the trust of users.

Third, educational programs must be located in places where users are likely to go. The two systems that have the most contact with the drug use community are the health care and criminal justice systems. A comprehensive health care structure that could be used to provide detailed education about practical methods for safer drug injection already exists. Educational programs could operate from numerous health care outlets around the country: physicians' offices, emergency rooms, group health clinics, health maintenance organizations, community hospitals, and clinics for the treatment of substance abuse and sexually transmitted diseases. Use of existing health care outlets for new educational initiatives would be inexpensive. Furthermore, integrating education into the health care system would ensure frequent exposure to education since drug users often have multiple medical needs that require interaction with the health care system.

Drug users also have frequent contact with the criminal justice system. Key points of contact are arrest, trial and post-sentencing procedures. Wide-ranging powers already exist to require testing, education, and treatment of criminal defendants. These powers could be exercised as a condition of bail, probation or other disposition. Requiring a drug user to attend testing, education and treatment programs as an alternative to incarceration would be more protective of the public health and safety than current non-mandatory measures. Without systematic attempts to alter their dependent behaviors, drug users are likely to continue their habits both in prison and after they leave. The potential for the spread of HIV in prison, particularly in meeting new sexual partners and establishing new friendship groups, poses a substantial threat to the public health. Using the connection with the criminal justice system to provide testing, counseling, education and treatment could be an effective way to alter a drug user's established patterns of substance abuse and sharing of injection equipment.

II. Strategies for Increasing the Supply of Sterile Injection Equipment

Sharing drug-injection equipment is not merely a learned response or a function of the unfathomable culture and routines of the drug world. Sharing is also the direct result of a limited supply

of needles and syringes, which can deny drug users any realistic opportunity to engage in safer behavior. This Part discusses how the limited needle supply represents a conscious policy choice and explores alternatives that would provide users with a readily available supply of sterile injection equipment.

Policy choices to make sterile injection equipment more available to IV drug users are fraught with political, jurisprudential and moral conflicts. The dominant society has a fundamental ideological objection to making injection equipment available to IV drug users. The majority argues that such policies detract from educational messages directed to the general public, to school children and to residents of urban areas to "say no" to drugs.[64] They argue that legalizing possession of clean needles, and particularly distributing them, appears to condone and encourage drug use since it provides the means for injecting illicit and dangerous substances into the body.

Minority communities and church groups in poor inner city areas are particularly vehement in their opposition to clean-needle programs. Understanding the depth of feeling and the reasoning behind such opposition is critical to future policy development in this area. The intensity of feeling is manifested in characterizations of the drug epidemic[65] and of the distribution of needles or even bleach as genocidal campaigns.[66] The social disintegration, economic drain, morbidity and mortality associated with the drug epidemic in poor African-American and Hispanic communities

[64] *See* Boodman, *N.Y. 'Needle Exchange': Curbing AIDS or Condoning Drug Use?*, Wash. Post, Mar. 6, 1989, at A1, col. 1.

[65] One prominent voice in the African American community describes the cocaine epidemic as "Genocide, 1990's style": "when the spirit of a people is destroyed, when the culture of a people is eradicated, when basic human relationships are ripped apart, when large numbers of people are killed because of drug-related crimes and overdoses. I am talking about the spiritual and physical death of a race." Williams, *Crack is Genocide, 1990's Style*, N.Y. Times, Feb. 15, 1990, at 31, col. 1.

[66] *See* Kolata, *Black Group Assails Giving Bleach to Addicts*, N.Y. Times, June 17, 1990, at 20, col. 1 (the Black Leadership Commission on AIDS called bleach "a Trojan horse for the African American community in that it is superficially attractive but contains a grave element of risk"). The reaction of community leaders to New York City's needle-exchange program is illustrative of the hostility shown. *See* Marriott, *Needle Exchange Angers Many Minorities*, N.Y. Times, Nov. 7, 1988, at 1, col. 2 (Hilton B. Clark described needle exchange as a genocidal campaign); *Council Calls for End to Free-Needles Plan*, N.Y. Times, Dec. 7, 1988, at 10, col. 1 (the New York City Council voted 31-0 to dismantle the program). The New York City needle-exchange program is described more fully in *infra* notes 144–160. There are some African American and Hispanic leaders who have continually supported needle-exchange programs such as the Association for Drug Abuse Prevention and Treatment (ADAPT). Marriott, *supra*.

cannot be underestimated. Community leaders argue that clean-needle programs may increase the number of injections by current users and entice new recruits into intravenous drug use while having only a negligible effect on the spread of HIV infection. Even if there are no data demonstrating these harmful effects of clean-needle programs, there is revulsion at the thought that poor, minority communities will bear the risk of experimentation.[67]

Public health officials who disregard minority objections to clean-needle programs not only reaffirm the perceptions of indifference to and disrespect for minority views, but also fail to serve the health of the community. Cooperation through shared human resources is necessary for successful public health programs in the inner city. Health officials will undermine public confidence if they thrust a program on a community that resents it, fears it and has its reasoned arguments discounted. A clean-needle program forced upon an untrusting community will almost certainly fail.

This Article's purpose is not to force clean-needle programs upon minority communities. Rather, it presents data showing that clean-needle programs, in combination with an array of health care, prevention and educational services, would stem the epidemics of drug use and HIV infection that have overwhelmed minority communities. The policy analysis may be framed in this question: if we were to start with no prohibitions on the sale and distribution of drug paraphernalia—and with no political symbolism attached to such distribution—would we adopt policies strictly limiting the supply of sterile injection equipment? To answer this question it is necessary first to explain paraphernalia laws; second, to examine their objectives and whether these objectives are met; and third, to consider what policy alternatives exist.

A. Present Statutory Limitations on the Sale, Distribution or Possession of Syringes and Needles

As early as 1921 the United States Supreme Court recognized the states' authority to exercise their police power to regulate the manufacture, sale, prescription and use of dangerous drugs.[68] The

[67] Rev. Reginald Williams of the Addicts Rehabilitation Center in East Harlem asked of the New York needle-exchange program: "Why must we again be the guinea pigs in this genocidal mentality?" Marriott, *supra* note 66.

[68] *See* Minnesota *ex rel.* Whipple v. Martinson, 256 U.S. 41 (1921).

court subsequently made clear that the "range of valid choice which a State might make in this area is undoubtedly a wide one . . . ."[69] Pursuant to these broad powers, states have long maintained a policy of limiting the supply of equipment needed for the injection of illegal drugs.

Although a state cannot constitutionally penalize a person's drug-dependent status,[70] it clearly has constitutional authority to control the instruments of drug use, even in the case of a person who has no control over her habit.[71] Broadly speaking, there are two categories of legislation that directly affect the supply of sterile drug-injection equipment: drug-paraphernalia laws and needle-prescription laws.

1. Drug-Paraphernalia Laws

Drug-paraphernalia laws are in effect in virtually every state in the nation.[72] These statutes ban the manufacture, sale, distribution or possession of a wide range of devices if it is known that they may be used to introduce illicit substances into the body. Drug-paraphernalia laws, therefore, require criminal intent to supply or use the equipment for an unlawful purpose.[73] Selling or

[69] Robinson v. California, 370 U.S. 660, 665 (1962); *see* Whalen v. Roe, 429 U.S. 589 (1977).

[70] *See Robinson*, 370 U.S. 660 (state law that made the "status" of drug dependence a criminal offense for which a person could be prosecuted at any time before he reformed violated the fourteenth amendment).

[71] Indeed, the state probably could prohibit the public appearance of a person under the influence of drugs, "which may create substantial health and safety hazards . . . , and which offends the moral and esthetic sensibilities of a large segment of the community." Powell v. Texas, 392 U.S. 514, 532 (1968). In *Powell* the Supreme Court upheld the conviction of an alcoholic for public drunkenness. The Court distinguished *Powell* from *Robinson* because in *Powell* the state did not seek to punish the mere status of drug dependency, nor did it attempt to regulate a person's behavior in the privacy of his own home. Still, the Court would allow a person to be convicted, not for possessing and using an illicit substance but merely for being under its influence in public. This comes perilously close to allowing a status offense provided the person exhibits signs of physical dependence in public. Courts have also upheld the constitutionality of drug-paraphernalia laws despite the claim that they violate the eighth amendment prohibition against cruel and unusual punishment. Convictions for possession of injection equipment have been upheld even though the equipment was used to satisfy a craving for an addictive narcotic such as heroin. Wheeler v. United States, 276 A.2d 722 (D.C. 1971); People v. Nicholson, 64 Cal. App. 3d Supp. 31, 134 Cal. Rptr. 623 (1976); *see* Tompkins v. United States, 272 A.2d 100 (D.C. 1970) (the court saw no need to consider defendant's eighth amendment claim regarding a drug-paraphernalia conviction because there was no evidence that he was addicted to heroin).

[72] Forty-five states and the District of Columbia have enacted drug-paraphernalia laws. In all jurisdictions the statutes are drawn broadly enough to include the prohibition of syringes and hypodermic needles. Thirty-six of these states and the District of Columbia have laws based upon the MODEL DRUG PARAPHERNALIA ACT (Drug Enforcement Administration 1979). The Model Act is reprinted in Note, *The Model Drug Paraphernalia Act: Can We Outlaw Headshops—and Should We?*, 16 GA. L. REV. 137 (1981). The other nine states have enacted similar statutes.

The jurisdictions that have followed the Model Act are Alabama, ALA. CODE § 13A-12-260 (1989); Arizona, ARIZ. REV. STAT. ANN. § 13-3415 (1989); Arkansas, ARK. STAT. ANN. §§ 5-64-403, -505, -802, -805 (1990); California, CAL. HEALTH & SAFETY CODE §§ 11014.5, 11364.5, 11364.7 (Deering 1990); Connecticut, CONN. GEN. STAT. §§ 21a-240, -262, -267, -270, -271, -277 (1985); Delaware, DEL. CODE ANN. §§ 4701, 4771–75, 4784 (1983 & Supp. 1988); District of Columbia, D.C. CODE ANN. §§ 33-601 to -604 (1990); Florida, FLA. STAT. §§ 893.145–147 (1989); Georgia, GA. CODE ANN. §§ 16-13-32.1 to -32.2 (1990); Idaho, IDAHO CODE §§ 37-2701, -2732, -2734A, -2734B, -2740, -2744, (1990); Indiana, IND. CODE ANN. § 35-48-4-8.1-3 (Burns 1985 & Supp. 1990); Kansas, KAN. STAT. ANN. §§ 65-4150 to -4158 (1988); Kentucky, KY. REV. STAT. ANN. §§ 218A.500, .510 (Michie/Bobbs-Merrill 1989); Louisiana, LA. REV. STAT. ANN. §§ 40:1031 to :1036 (1989); Maine, ME. REV. STAT. ANN. § 1111-A (1989); Maryland, MD. CODE ANN., art. 27, § 287A (1987); Massachusetts, MASS. GEN. LAWS ANN. ch. 94C, § 32I (West 1990); Minnesota, MINN. STAT. §§ 152.01, .092–.095, .205 (1990); Mississippi, MISS. CODE ANN. §§ 41-29-139, -153 (1990); Missouri, MO. REV. STAT. §§ 195.010, .135, .140, .233, .235, .244 (1989); Montana, MONT. CODE ANN. §§ 45-10-101 to -107 (1989); Nebraska, NEB. REV. STAT. §§ 28-439 to -440 (1989); Nevada, NEV. REV. STAT. §§ 453.554, .556, .558, .560, .562, .564, .566 (1986); New Jersey, N.J. STAT. ANN. §§ 2C:36-1 to -9, 24:21-51 to -53 (1987); New Mexico, N.M. STAT. ANN. §§ 30-31-2, -25.1, -34, -35 (1984 & Supp. 1990); North Carolina, N.C. GEN. STAT. §§ 90-113.20 to .24 (1985); Ohio, OHIO REV. CODE ANN. § 2925.14 (Baldwin 1990); Oklahoma, OKLA. STAT. tit. 63, §§ 2-101, -101.1, -405, -503 (1989); Pennsylvania, PA. STAT. ANN. tit. 35, § 780-113 (1977 & Supp. 1990); Rhode Island, R.I. GEN. LAWS § 21-28.5-1 to -4 (1989); South Dakota, S.D. CODIFIED LAWS ANN. §§ 22-42A-1 to -4 (1990); Texas, TEX. HEALTH & SAFETY CODE ANN. §§ 481.002, .111, .125, .157, .159, .183 (1989); Utah, UTAH CODE ANN. §§ 58-37a-1 to -6 (1990); Vermont, VT. STAT. ANN. tit. 18, §§ 4475–4477 (1989); Virginia, VA. CODE ANN. §§ 18.2-265.1 to .5 (1990); Washington, WASH. REV. CODE §§ 69.50.102, .412 (1989); West Virginia, W. VA. CODE §§ 47-19-1 to -8, 60A-4-403a (1990); and Wyoming, WY. STAT. §§ 35-7-1002, -1049, -1056, -1057 (1988).

The states with statutes similar to the Model Act include: Colorado, COLO. REV. STAT. §§ 12-22-501 to -506 (1990); Hawaii, HAW. REV. STAT. §§ 329-1, -43.5, -55 (1989); Illinois, ILL. REV. STAT. ch. 56 1/2, ¶¶ 2101–07 (1988); Michigan, MICH. COMP. LAWS §§ 333.7451, .7453, .7455, .7521 (1990); New Hampshire, N.H. REV. STAT. ANN. §§ 318-B:1, -B:2, -B:17-b, -B:26 (1989); New York, N.Y. PENAL LAW §§ 220.50, .55 (McKinney 1990); Oregon, OR. REV. STAT. §§ 475.525, .535, .545, .555, .565 (1989); Tennessee, TENN. CODE ANN. §§ 39-17-402, -424, -425 (Supp. 1990); and Wisconsin, 1989 Wis. Laws 121.

See also Pascal, *Intravenous Drug Abuse and AIDS Transmission: Federal and State Laws Regulating Needle Availability*, in NIDA MONOGRAPH No. 80, *supra* note 14, at 124 (setting forth a slightly different list of state statutes based on the Model Act).

[73] The Model Drug Paraphernalia Act makes the following behaviors into criminal offenses under the UNIFORM CONTROLLED SUBSTANCES ACT, 9 U.L.A. Part II (1988): to use or intend to use paraphernalia for the introduction of drugs into the human body; to deliver or possess with intent to deliver drug paraphernalia, knowing or reasonably knowing that it will be used to introduce drugs into the human body; to deliver paraphernalia to a minor with intent; and to advertise paraphernalia where a person knows, or should know, that the purpose is to promote the sale of objects designed for introduction of drugs into the human body. MODEL DRUG PARAPHERNALIA ACT, art. 2 (Drug Enforcement Administration 1979). The Model Act, then, has a wide scope, but requires knowledge or intent to use the equipment for ingestion or injection of illicit drugs.

Most modern drug-paraphernalia laws, like the Model Act, define the prohibited activity in terms of objects "intended" for unlawful uses, "marketed" for unlawful uses or in some other way introduce the element of intent. The requirement of intent does not refer to that of the ultimate user of the paraphernalia but to the intent of the accused. Village of

distributing hypodermic needles and syringes where there is no knowledge that they will be used to inject illicit drugs are not offenses under these statutes. Thus, a pharmacist who sells hypodermic syringes and needles over the counter, believing they will be used by a diabetic to inject insulin, commits no offense under drug-paraphernalia laws.

The development of drug-paraphernalia laws can be traced back to the 1950s.[74] The early statutes specifically prohibited the distribution or possession of equipment used for administering illicit drugs, including hypodermic syringes, needles and bottle cap cookers. Some of the more broadly worded statutes rendered it unlawful merely to possess the "instruments of a crime."[75] Such statutes are no longer in force in most states because of their vagueness and overbreadth. The laws failed because they appeared to proscribe items that clearly had legitimate as well as illegitimate purposes and did not require subjective knowledge or intent to use the items for the injection of illicit substances.[76]

Hoffman Estates v. The Flipside, Hoffman Estates, Inc., 455 U.S. 489, *reh'g denied*, 456 U.S. 950 (1982). Where statutes require that an actor know or reasonably should know that an item will be employed to use drugs, courts have found them to be constitutional. *See, e.g.*, Stoianoff v. Montana, 695 F.2d 1214 (9th Cir. 1983); Casbah, Inc. v. Thone, Governor of Nebraska, 651 F.2d 551 (8th Cir. 1981), *cert. denied*, 455 U.S. 1005, *reh'g denied*, 456 U.S. 950 (1982). Moreover, courts have specifically read a scienter requirement into the MAIL ORDER DRUG PARAPHERNALIA CONTROL ACT, 21 U.S.C. § 857 (1986), the MODEL DRUG PARAPHERNALIA ACT (Drug Enforcement Administration 1979) and similar laws. *See* Garner v. White, 726 F.2d 1274, 1279 (8th Cir. 1984); Nova Records v. Sendak, 706 F.2d 782, 787 (7th Cir. 1983); General Stores v. Bingaman, 695 F.2d 502, 504 (10th Cir. 1982); Levas v. Antioch, 684 F.2d 446, 450 (7th Cir. 1982); Tobacco Accessories and Novelty Craftsmen Merchants Ass'n of La. v. Treen, 681 F.2d 378, 383–85 (5th Cir. 1982); United States v. Main Street Distributing, Inc., 700 F. Supp. 655 (E.D.N.Y. 1988).

[74] Drug-paraphernalia statutes arose from a concern that criminal proscriptions of the possession and sale of narcotics were insufficient in the fight against drugs. It was believed that the unrestricted sale of the instruments of narcotic use actually encouraged and glamorized its use. *See* Mid-Atlantic Accessories Trade Ass'n v. Maryland, 500 F. Supp. 834, 841 (D. Md. 1980). Accordingly, many states and municipalities enacted laws to prohibit or control the sale of equipment that could be used to ingest, inhale or inject illicit substances. *See* Levas v. Antioch, 684 F.2d 446 (7th Cir. 1982). Outlets used to sell drug paraphernalia in the 1970s were often referred to as "head shops," and early attempts to proscribe them became known as "head shop laws." *See* Annotation, *Validity, Under Federal Constitution, of So-Called "Head Shop" Ordinances or Statutes, Prohibiting Manufacture and Sale of Drug Use Related Paraphernalia*, 69 A.L.R. FED. 15 (1984); Annotation, *Prosecutions Based Upon Alleged Illegal Possession of Instruments to be Used in Violation of Narcotics Laws*, 92 A.L.R.3D 47 (1979).

[75] *See* McKoy v. United States (Case 2), 263 A.2d 649 (D.C. 1970); McKoy v. United States (Case 1), 263 A.2d 645 (D.C. 1970); Keith v. United States, 232 A.2d 92 (D.C. 1967).

[76] Although the courts often reached inconsistent results, some courts had constitutional difficulties with broadly worded statutes that did not contain an intent requirement. *See, e.g.*, Bambu Sales v. Gibson, 474 F. Supp. 1297 (D.N.J. 1979); Record Museum v. Lawrence Township, 481 F. Supp. 768 (D.N.J. 1979). For reviews of early drug-paraphernalia laws, see Davis, *Drug Paraphernalia Laws: Clearing A Legal Haze*, 13 CUMB. L. REV. 273 (1982–1983); Johnson, *The Constitutionality of Drug Paraphernalia Laws*, 81 COLUM. L. REV. 581 (1981); Katkin, Hunt & Bellington, *Drug Paraphernalia in Perspective: The Constitution and The Spirit of Temperance*, 21 CRIM. L. BULL. 293 (1985); Lucansky & Hansen, *Up in Smoke: A Review of Drug Paraphernalia Legislation*, 70 ILL. B.J. 320 (1982).

The modern drug-paraphernalia laws that have replaced these older versions establish a requirement of subjective intent.[77] However, the modern statutes still regulate a broad range of behavior: they comprehensively proscribe the manufacture, delivery, possession or advertisement of drug paraphernalia.[78] In addition, the term "drug paraphernalia" is widely defined to include any equipment, product or material of any kind that is primarily intended for use in introducing controlled substances into the human body.[79]

The modern trend toward comprehensive drug-paraphernalia laws began with the formulation of a Model Act by the Drug Enforcement Administration of the Department of Justice in 1979.[80] At least forty-seven states and the District of Columbia have enacted the Model Act or similar legislation.[81] The United States Supreme Court's decision in *Village of Hoffman Estates v. Flipside, Hoffman Estates, Inc.* also advanced this trend.[82] The Court upheld the constitutionality of broadly worded local laws not based on the Model Act. Many courts have followed *Flipside* and have upheld statutes with broad definitions of drug paraphernalia.[83]

[77] *See generally* Pascal, *supra* note 72, at 119.

[78] *See supra* note 73 and accompanying text.

[79] The Model Drug Paraphernalia Act has an exceptionally broad definition that includes all equipment, products and materials of any kind that are to be used, intended for use or designed for use, in planting, propagating, cultivating, growing, harvesting, manufacturing, compounding, producing, processing, preparing, testing, packaging, storing, concealing, injecting, inhaling or otherwise introducing into the human body a controlled substance in violation of the CONTROLLED SUBSTANCES ACT, 9 U.L.A. Part II (1970). The definition specifically includes hypodermic syringes, needles and other objects used, intended for use or designed for use in parenterally injecting controlled substances into the human body. MODEL DRUG PARAPHERNALIA ACT, art. I (Drug Enforcement Administration 1979).

[80] MODEL DRUG PARAPHERNALIA ACT (Drug Enforcement Administration 1979).

[81] *See supra* notes 72–73.

[82] 455 U.S. 489, *reh'g denied*, 456 U.S. 950 (1982). *Flipside* concerned a facial challenge to the overbreadth and vagueness of a municipal statute that made it unlawful for any person "to sell any items, effect, paraphernalia, accessory or thing which is designed or marketed for use with illegal cannabis or drugs . . . ." *Id.* at 492. The Supreme Court upheld the constitutionality of the ordinance. The Court found that the ordinance's language "designed . . . for use" is not vague since it is clear that it encompasses items principally used with illegal drugs because of their objective features (a "roach clip," for example). *Id.* at 501. The "marketed for use" standard requires scienter on the part of the retailer.

[83] *See, e.g.*, Garner v. White, 726 F.2d 1274 (8th Cir. 1984); Camille Corp. v. Phares,

In 1986 the federal government expanded paraphernalia prohibitions by enacting an umbrella statute designed to reach any activity involving paraphernalia crossing interstate lines.[84] Although the Mail Order Drug Paraphernalia Control Act of 1986[85] was originally designed to prohibit use of the postal service to send drug-injection equipment,[86] the plain language of the statute extends to "any offer for sale and transportation in interstate or foreign commerce," of drug paraphernalia.[87] The Act also contains a broad definition of drug paraphernalia,[88] and it has survived constitutional scrutiny.[89]

The importance of the federal statute is its extension of federal jurisdiction to an area traditionally reserved to the states.[90] Both federal and state statutes allow a wide margin of discretion in enforcement and prosecution. A state could make a deliberate choice to repeal or not to enforce a drug-paraphernalia law based upon the public health imperatives of the HIV epidemic. However, even if a state were to make one of these choices, federal authorities conceivably could take a different view and rigorously enforce the Mail Order Act. The Act thus creates a need to harmonize objectives, not only between law enforcement and public health authorities but also between federal and state agencies.

705 F.2d 223 (7th Cir. 1983); Stoianoff v. Montana, 695 F.2d 1214 (9th Cir. 1983); Levas v. Village of Antioch, 684 F.2d 446 (7th Cir. 1982); People v. Nelson, 171 Cal. App. 3d Supp. 1, 218 Cal. Rptr. 279 (1985).

[84] The exercise of police powers to protect the public health is traditionally within the domain of the states and not the federal government. *See* Jacobson v. Massachusetts, 197 U.S. 11 (1905); Gostin, *The Future of Public Health Law*, 12 AM. J.L. & MED. 461 (1987). However, Congress enacted the Mail Order Drug Paraphernalia Control Act in 1986 under its constitutional authority to regulate interstate commerce. Depending on how liberally the Act is construed and how actively it is enforced, the Act has the "potential for dramatically inserting the Federal Government into the regulation and control of drug paraphernalia, including hypodermic needles and syringes." Pascal, *supra* note 72, at 122.

[85] Anti-Drug Abuse Act of 1986, §§ 1821–23, Pub. L. No. 99-570 (codified at 21 U.S.C. § 857 (1988)).

[86] *See* 132 CONG. REC. H6655–56 (daily ed. Sept. 11, 1986) (statement of Rep. Levine).

[87] 21 U.S.C. § 857(a) (1988).

[88] 21 U.S.C. § 857(d) (1988). The Act also authorizes seizure and forfeiture of drug paraphernalia. 21 U.S.C. § 857(c) (1988).

[89] United States v. Main Street Distributing, Inc., 700 F. Supp. 655 (E.D.N.Y. 1988). The court upheld the statute because it implied a scienter requirement. In particular, the legislative history suggests that the intent of the *accused* is essential. *See Mail Order Drug Paraphernalia Control Act: Hearings on H.R. 1625 Before the Subcomm. on Crime of the House Comm. on the Judiciary*, 99th Cong., 2d Sess. 19–21 (1986). The court, following Village of Hoffman Estates v. Flipside, Hoffman Estates, Inc., 455 U.S. 489, *reh'g denied*, 456 U.S. 950 (1982), also found that the statute was not unconstitutionally vague.

[90] Pascal, *supra* note 72, at 122.

Drug-paraphernalia laws, including the federal Mail Order Act and comprehensive enactments at the state level, erect formidable obstacles for IV drug users attempting to comply with public health advice to use sterile injection equipment. Even if the user can buy a sterile hypodermic syringe over the counter, he still can be prosecuted under these statutes if the syringe is found in his possession. In order to escape prosecution the user must demonstrate that she has a valid medical purpose for possessing the equipment.[91] Drug-paraphernalia laws, therefore, not only significantly limit the supply of sterile equipment on the street, but also provide a marked disincentive for users to have sterile equipment in their possession when they frequent a "copping place." Since this is precisely the time users most need to have a sterile hypodermic in their possession, drug-paraphernalia laws constitute a significant barrier to effective public health practices.

2. *Needle-Prescription Laws*

Drug-paraphernalia laws do not prohibit or regulate the sale of hypodermics if the seller has no reason to believe that the equipment will be used for injection of illicit drugs. Accordingly, over-the-counter sales of hypodermic syringes and needles are permitted in most jurisdictions. Pharmacists are not obliged to question the buyer's intention in purchasing the equipment, and wide variations in sales practices exist. Some pharmacists will sell to any buyer, while others will not sell to a buyer who shows visible signs of intravenous drug use or who is unable to present a plausible medical justification for his request to purchase the equipment.[92]

[91] A diabetic, for example, could demonstrate that she needed the syringe for the injection of insulin.

[92] The scant literature on this issue suggests that there is wide variability in the practices and attitudes of pharmacists in relation to AIDS and drug abuse. In jurisdictions where over-the-counter sales of hypodermic syringes and needles are permitted, only a proportion of pharmacists do in fact sell to customers they believe to be drug-dependent. Goldberg, *AIDS and Intravenous Drug Use*, 294 BRIT. MED. J. 906 (1987) ("Only 16% of the pharmacies [studied in Glasgow, Scotland] were prepared to sell needles and syringes in areas considered to have large populations of intravenous drug users, and indeed many of these areas had no retail source of needles and syringes whatsoever. Of those prepared to sell, most did so reluctantly, and usually only diabetic syringes (often unacceptable to drug users because of the size of the barrel and needle) were available"); Glanz, Byrne & Jackson, *Role of Community Pharmacies in Prevention of AIDS Among Injecting Drug Misusers: Findings of a Survey in England and Wales*, 299 BRIT. MED. J. 1076 (1989)

Eleven states and the District of Columbia significantly restrict over-the-counter sales of hypodermic needles and syringes.[93] These jurisdictions' "needle-prescription" laws, dating back to the New York Boylan-Town Act of 1914,[94] prohibit the sale, distribution or possession of hypodermic syringes or needles without a valid medical prescription.[95] Needle-prescription laws are more onerous than drug-paraphernalia laws because they do not require criminal intent.[96]

Under needle-prescription laws, physicians may write prescriptions for hypodermic syringes and needles for patients under their care only if there is a legitimate medical purpose for them to do so. A wholesale druggist or surgical supplier must keep careful records of the sale of syringes and needles. Persons charged with illegal possession of a hypodermic syringe or needle have the burden of proving that they have sufficient authority or license to possess them.[97]

The "legitimate medical purposes" doctrine strengthens the regulatory effect of needle-prescription laws. The doctrine is intended to hold a prescription invalid unless it is issued in good faith for a therapeutic purpose.[98] Many physicians have had their

(measures willingness of pharmacists to sell injecting equipment to known or suspected drug users, and their attitudes toward exchanging syringes, keeping a "sharps" box (impervious container in which used needles can be discarded) for use by drug abusers and offering face-to-face advice and leaflets; proposes promoting the participation of pharmacists in preventing needle sharing as a viable policy, while recognizing that attitudinal problems would have to be overcome).

[93] NATIONAL ASSOCIATION OF BOARDS OF PHARMACY, 1988–1989 SURVEY OF PHARMACY LAW INCLUDING ALL 50 STATES, D.C. AND PUERTO RICO 42 (1989) (significant restrictions on over-the-counter sales in California, Connecticut, Delaware, Illinois, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania and Rhode Island).

[94] 1914 N.Y. Laws ch. 363; *see* COMMITTEE ON MEDICINE & LAW, ASS'N OF THE BAR OF THE CITY OF NEW YORK, *Legalization of Non-Prescription Sale of Hypodermic Needles: A Response to the AIDS Crisis*, 41 REC. A. B. CITY N. Y. 809, 811 (1986) [hereinafter N.Y.C. B. A., *Legalization*]. The purpose of the Boylan-Town Act was to make it more difficult to obtain the instruments needed for the administration of drugs. *See* People v. Gordon, 336 N.Y.S.2d 753 (1972); D. MUSTO, THE AMERICAN DISEASE: ORIGINS OF NARCOTIC CONTROL (1973).

[95] *See, e.g.*, LA. REV. STAT. ANN. § 40 (West 1977); MASS. GEN. LAWS ANN. ch. 94C, § 27 (West 1990); N.Y. PENAL LAW § 220.45 (Consol. 1989).

[96] Needle-prescription laws, which are regulatory and do not impose criminal liability on the buyer, have been upheld by courts, despite the lack of an intent requirement. *See* People v. Bellfield, 33 Misc. 2d 712, 230 N.Y.S.2d 79 (1961), *aff'd*, 11 N.Y.2d 947, 183 N.E.2d 230 (1962). *But see* State v. Birdsell, 235 La. 396, 104 So. 2d 148 (1958).

[97] *See, e.g.*, Commonwealth v. Jefferson, 377 Mass. 716, 387 N.E.2d 579 (1979); MASS. GEN. LAWS ANN. ch. 94C, § 27 (West 1990).

[98] Authority to possess hypodermics can also be granted under most of these laws by the Commissioner for Health. *See, e.g.*, N.Y. PUB. HEALTH LAW § 3381(2) (McKinney

licenses revoked or have been convicted for improperly prescribing drugs or drug paraphernalia.[99] A physician may write a prescription for a patient under her immediate charge for the administration of certain controlled substances. If the prescription is not to treat or to cure a patient but to satisfy the craving of an addict, the physician has overstepped the boundaries of the statute.[100] Thus, a physician may not prescribe narcotics or paraphernalia to an addict solely because he is an addict.[101]

However, the constitutional boundaries of lawful prescription are not clearly delineated. In some early cases the Supreme Court held that prescribing an illicit drug for the purpose of relieving conditions incident to addiction is not unlawful in every situation.[102] Nevertheless, physicians who departed from the usual course of medical practice were subject to the same penalties as street pushers.[103]

There is no customary medical practice for prescribing drug-injection equipment. Faced with the exigencies of the HIV epidemic, a physician might want to prescribe a hypodermic in order to prevent her patient from contracting or transmitting HIV. While providing paraphernalia in this situation would not comport with prevailing medical practice, the overwhelming consensus among public health officials is that IV drug users should have access to sterile equipment in order to further legitimate public health goals.[104]

1985). The legitimate medical purposes doctrine can be traced to the Harrison Narcotic Act of 1914, 38 Stat. 785 (1914) (codified as amended at 26 U.S.C. §§ 4701–06, *repealed by* Pub. L. No. 91-513, § 1101(b)(3)(A)). The Harrison Act was ostensibly enacted as "a taxing act with the incidental purpose of minimizing the spread of addiction to the use of poisonous and demoralizing drugs." United States v. Balint, 258 U.S. 250, 253 (1922). The Act confines sales of narcotics to registered physicians dispensing them for legitimate medical purposes. United States v. Doremus, 249 U.S. 86 (1919).

[99] *See, e.g.*, Minnesota *ex rel.* Whipple v. Martinson, 256 U.S. 41 (1921); Jin Fuey Moy v. United States (Case 2), 254 U.S. 189 (1920); *Doremus*, 249 U.S. 86; Webb v. United States, 249 U.S. 96 (1919); United States v. Jin Fuey Moy (Case 1), 241 U.S. 394 (1915).

[100] Webb v. United States, 249 U.S. 96, 99 (1919).

[101] *See generally* Ginzburg, Illicit Drug Use in the United States: The Evolution of the Federal Judicial and Legislative Interventions (Dec. 1988) (unpublished manuscript available from American Society of Law & Medicine, Boston, Mass.).

[102] *See, e.g.*, Boyd v. United States, 271 U.S. 104 (1926) (the mere fact that a physician prescribes a dose of a narcotic that exceeds that required for a single dosage does not make it unlawful); Linder v. United States, 268 U.S. 5, 18 (1925) (addicts are "diseased and proper subjects for . . . treatment"; the determination of what constitutes treatment of an addict is primarily a concern of the physician).

[103] *Jin Fuey Moy*, 254 U.S. at 193–94; *Webb*, 249 U.S. at 99–100.

[104] *See, e.g.*, Friedman, Des Jarlais & Sterk, *AIDS and the Social Relations of Intravenous Drug Users*, 68 MILBANK Q. 85 (Supp. 1 1990).

B. The Public Health Impact of Limiting the Supply of Sterile Injection Equipment

Denying IV drug users sterile injection equipment has been seriously detrimental to the public health. Nevertheless, needle-borne transmission of infectious disease was barely discussed during formulation of the Model Drug Paraphernalia Act in 1979[105] or during decades of judicial review of drug-paraphernalia legislation.[106] Perhaps most remarkably, the federal Mail Order Drug Paraphernalia Control Act of 1986 was enacted at the pinnacle of our current HIV epidemic.[107]

Numerous indicators suggest that these laws have contributed significantly to needle sharing.[108] The demand for sterile injection equipment vastly outstrips its supply. The great majority of persons selling injection equipment reports that the illicit market is thriving.[109] The over-the-counter cost of a hypodermic syringe and needle can be as low as 25 to 50 cents. Yet, the cost on the black market is about $3.00 and sometimes as high as $10.00 for "blue"[110] syringes.[111] While this price appears low relative to the cost of drugs, the extremely high number of injections, particularly among cocaine users, means that numerous hypodermics are required over time. Although some users will pay the additional cost of new injection equipment, they still must rely on the integrity of dealers. Unscrupulous dealers "repackage" the equipment after

[105] For the legislative history and purpose of Pub. L. No. 99-570, see 1086 U.S. CODE CONG. & ADMIN. NEWS 5393.

[106] *See supra* notes 72–83.

[107] Anti-Drug Abuse Act of 1986, §§ 1821–23, Pub. L. No. 99-570 (codified at 21 U.S.C. § 857).

[108] Since distribution of sterile injection equipment is unlawful, systematic research documenting the public health impact of drug-paraphernalia and needle-prescription laws does not exist.

[109] Morgan, *Inside a Shooting Gallery: New Front in the AIDS War*, N.Y. Times, Feb. 6, 1988, at B1, col. 2; *see also* Des Jarlais, *AIDS and Intravenous Drug Use*, NAT'L INST. JUST. AIDS BULLETIN, Feb. 1988, at 1, 4; Des Jarlais & Friedman, *Transmission of Human Immunodeficiency Virus among Intravenous Drug Users*, in AIDS: ETIOLOGY, DIAGNOSIS, TREATMENT, AND PREVENTION (V. DeVita, S. Hellman, and S. Rosenberg eds. 1988) at 385, 386; Hopkins, *supra* note 31, at 18, 26. The increased market for sterile injection equipment is also apparent in marketing efforts to sell drugs, whereby clean needles are provided free with the purchase of bags of heroin, or "two for one" needle sales are offered. Council on Scientific Affairs, American Medical Association, *Reducing Transmission of Human Immunodeficiency Virus (HIV) Among and Through Intravenous Drug Abusers*, 4 AIDS & PUB. POL'Y J. 3, 143 (1987) [hereinafter AMA, *Reducing Transmission of HIV*].

[110] "Blue" is the street name for the highest-quality injection equipment.

[111] Des Jarlais, Friedman & Hopkins, *supra* note 36, at 758; Morgan, *supra* note 109; *see also* Des Jarlais & Friedman, *supra* note 16, at 866; Hopkins, *supra* note 31, at 26.

rinsing it out with water. And some users will save the cost of new equipment by borrowing house works or sharing with friends. Restricting the supply of sterile injection equipment thus increases the incidence of unsafe sharing practices and unnecessarily aggravates the HIV epidemic.

C. Proposals for Statutory Reform Consistent with Public Health Objectives

Drug-paraphernalia laws have two ostensible objectives, neither of which they achieve. The first is to discourage illegal drug use. However, no data support the proposition that access to sterile injection equipment causes people to begin, continue, or increase IV drug use.[112] The percentage of IV drug users in the United States has been relatively stable for many years, both before and after the introduction of drug-paraphernalia statutes.[113] Further, there are no reports among the research literature that suggest that people use, or fail to use, drugs based upon the availability of equipment. Economic incentives ensure that drug dealers will provide some form or quality of injection equipment to drug users. A diminished supply only means that users must rent or share, instead of possessing their own sterile equipment.

The second objective of drug-paraphernalia laws is to give law enforcement officers an additional ground upon which to arrest drug users. If the police cannot charge a person for possession of illicit drugs, they can still sustain a charge of possession of drug paraphernalia. However, this is probably the most pernicious aspect of paraphernalia laws. To avoid potential prosecution, IV drug users have learned not to carry with them any of their equipment.[114] Therefore, they are forced to use the often contaminated equipment that they can rent or share at a shooting gallery or

[112] *See infra* notes 121–128 and accompanying text.

[113] The number of heroin users in emergency rooms in metropolitan areas across the country, for example, increased from 1984 to 1988. Adams, Blanken, Ferguson & Kopstein, *Overview of Selected Drug Trends*, in *Efficacy of Drug Abuse Treatment Program, Part II: Hearing Before the House Select Comm. on Narcotics Abuse and Control*, 101st Cong. 156 (Aug. 2, 1989). The NATIONAL INSTITUTE ON DRUG ABUSE (NIDA) NINTH PERIODIC HOUSEHOLD SURVEY (1989) also documented an increase in serious drug use. *See* THE WHITE HOUSE, NATIONAL DRUG CONTROL STRATEGY (1990).

[114] AMA, *Reducing Transmission of HIV*, *supra* note 109 at 143; Connors & Galea, Anthropological Investigations of the Meaning and Practices of Needle Use and Sharing Among Intravenous Drug Users (IVDU), presented at the Fourth Int'l Conf. on AIDS, Stockholm (June 1988).

hotel. Drug users have even been arrested for carrying vials of bleach.[115] This is based upon the questionable legal theory that household bleach used to sterilize injection equipment can be classified as drug paraphernalia under the broad definition of paraphernalia in modern statutes. Ironically, under this theory, drug users attempting to engage in safer behavior would be the ones most likely to be punished.[116]

1. Narrow the Focus of Drug-Paraphernalia Laws

Drug-paraphernalia laws, if they are to be consistent with public health objectives, should focus their prohibitions only on the sale, rental, or distribution of drug-injection equipment, excluding possession. These prohibitions would affect a drug dealer or proprietor of a shooting gallery, but not a health care professional, pharmacist, or druggist. The law would regulate the sale of hypodermic syringes and needles in much the same way as existing law—ensuring that they are sold only in appropriate places (e.g., pharmacies and not candy stores) by trained and experienced professionals, and in a safe, sterile condition. However, there would be no pretense that the authorized seller did not know what the equipment was going to be used for. More important, the drug-dependent person would not be chilled from buying, possessing, or using the sterile injection equipment by the threat of criminal sanctions. Any sale or distribution of equipment by an unauthorized person, however, would continue to be subject to criminal penalties.

These legal modifications are justified on two grounds. First, the new law would focus its proscriptions precisely where the

[115] *See* Stryker, *supra* note 10, at 729 ("a vial of bleach would certainly tip off a policeman who came across it while frisking a suspect, even in the absence of any drugs or injection equipment").

[116] Solutions to this problem include exercising prosecutorial discretion or simply not enforcing drug-paraphernalia laws. Prosecutorial discretion was proposed by Pascal, *supra* note 72, at 125–27. However, Stryker, *supra* note 10, points out that drug-paraphernalia laws exist at federal, state, and local levels. "A consistent message must emanate from the entire hierarchy of law enforcement officials, from the prosecutor to the cop on the beat; the public health and criminal justice systems must operate in harmony." *Id.* at 729. In the United Kingdom, chief constables and local police have announced a policy of nonenforcement of drug laws. *See* Lohr, *There's No Preaching, Just the Clean Needles*, N.Y. Times, Feb. 29, 1988, at 4, col. 1; Robertson, Bucknell, Welsby, Roberts, Inglis, Peutherer & Brettle, *supra* note 12; Lezak & Leonard, *The Prosecutor's Discretion: Out of the Closet, Not Out of Control*, 63 Or. L. Rev. 247 (1984).

danger to health and well-being occurs—illicit drug dealers and shooting gallery or hotel proprietors. Illicit sellers of hypodermics are unreliable and not subject to effective quality control or regulation. The probability that they will provide used or shared equipment justifies the criminal proscription. Second, just as society does not allow dealers to profit from the sale of drugs, so too should it refuse to allow them to profit from trade in drug paraphernalia. Drug-paraphernalia laws applied to illicit sellers would provide an appropriate alternative vehicle for arrest or charge. If the police can demonstrate an intent to sell drug paraphernalia outside of a regulated pharmacy or other authorized place, that should provide sufficient justification for prosecution, even if the dealer is not in possession of heroin or cocaine.

A new law that focuses on illicit sale of hypodermics, but not on authorized sale and purchase, would have the benefit of allowing drug users to possess sterile equipment, thus encouraging safer injection practices. It would also quickly end the thriving black market for the sale of hypodermic syringes and needles, which poses a significant danger to the health of the public.[117]

2. Repeal Needle-Prescription Laws

Along with modification of drug-paraphernalia laws, some states would also need to repeal needle-prescription laws to allow pharmacists and other authorized retailers to sell hypodermics over the counter, without a medical prescription. This repeal would be less controversial than needle distribution programs[118] because the state would not be directly involved in the distribution of drug-injection equipment. Moreover, repeal of these laws would have no revenue impact for state legislatures. It would simply remove the state as an affirmative obstacle to providing IV drug users with the sterile equipment necessary to protect their health.

Repeal of needle-prescription legislation is already supported by respected public health and bar associations.[119] More important,

[117] The marketplace would help end the black-market sale of needles and syringes because sterile injection equipment would be readily available to the drug-dependent person at an inexpensive price.

[118] *See infra* text accompanying notes 131–142.

[119] *See* N.Y.C. B. A., *Legalization*, *supra* note 94, at 809; ABA, AIDS: The Legal Issues: Discussion Draft of the ABA AIDS Coordinating Committee 233 (1988); Committee on Law and Reform of the New York County Lawyers Association, Report on

thirty-nine states and several European nations already permit over-the-counter sales of hypodermic syringes and needles.[120] Experience in these jurisdictions shows that they are better able to control the needle-borne spread of HIV, and that allowing over-the-counter sales does not result in greater drug use.[121]

Proposals to repeal needle-prescription laws would affect only twelve jurisdictions. However, these are predominately areas of high drug use and seroprevalence that have had great difficulty controlling the needle-borne spread of HIV. These jurisdictions include the tri-state area of New York, New Jersey, and Connecticut, which has some three-quarters of all nationally reported cases of AIDS in IV drug users; other high prevalence states such as California; and medium prevalence states such as Illinois, Massachusetts, and Pennsylvania.[122]

Comparing states with needle-prescription laws and others selected for their comparable urban populations yields two conclusions.[123] First, the estimated percentage of HIV-infected IV drug users is markedly higher in states that ban over-the-counter needle sales.[124] Data from other countries that allow nonprescription sales also show relatively lower serological prevalence in the IV drug community.[125] Second, the overall rate of IV drug use in states that allow over-the-counter sales is also considerably lower.[126]

Broad correlative data can only supplement the reports of drug users and researchers that sharing occurs, in part, because of the inaccessibility of sterile equipment.[127] Although the repeal of needle-prescription laws alone may not significantly alter seroprevalence or drug use, the potential for some change in behavior

Drug Related AIDS and the Legal Ban on Over-the-Counter Hypodermic Needle Sales 1 (Jan. 12, 1988) (unpublished manuscript on file with the American Society of Law and Medicine, Boston, Mass.) [hereinafter Committee on Law and Reform Report].

[120] *See supra* note 93 and accompanying text; *infra* note 167.

[121] *See infra* note 174 and accompanying text.

[122] *See* Committee on Law and Reform Report, *supra* note 119.

[123] It should be noted that comparisons of jurisdictions with and without needle-prescription laws have no strict scientific validity because there may be many reasons for differential rates of infection and drug use.

[124] *See* Committee on Law and Reform Report, *supra* note 119.

[125] The U.S. and European data is collected by the Committee on Law and Reform of the New York County Lawyers Association, in Committee on Law and Reform Report, *supra* note 119, at 3–4.

[126] *See* Committee on Law and Reform Report, *supra* note 119.

[127] *See supra* notes 109–111 and accompanying text.

is high. The likelihood that repeal would have an adverse effect on the frequency of drug use is remote. Repeal of needle-prescription statutes need not mean that the state must abandon any attempt to regulate the sale of hypodermic needles and syringes. State legislators concerned with the sensitivity of local communities can require that sales take place only in certain locations, such as pharmacies, and that the equipment is not placed on display in view of customers. At the least, policy makers owe drug-dependent people the opportunity and means for protecting themselves and others from the needle-borne spread of HIV.[128]

D. Affirmative Measures: State-Sponsored Efforts to Increase the Supply of Sterile Injection Equipment

The most frequently mentioned advantage of repealing needle-prescription statutes is also the proposal's most notable deficiency. Relying on private sales, as opposed to public distribution, is politically easy because the state can claim that it plays no direct role in supplying a disfavored population with the tools to abuse drugs. However, if the state is not a player in needle distribution, it loses a valuable opportunity to provide services to a hard to reach population.

The best way to reach underserved populations is to offer them benefits and services. Offering sterile syringes and needles breaks down barriers of distrust by demonstrating the state's humane commitment to the health and well-being of drug-dependent people. Needle distribution programs can also provide critically important points of access for education, test-linked counseling,[129] distribution of bleach and condoms, and medical services including

[128] Another alternative would be to loosen the legal regulations on prescriptions for sterile needles. Physicians could prescribe a sterile needle expressly for the purpose of preventing transmission of disease through dirty equipment. Such prescriptions could be filled at specially licensed pharmacies or distribution centers, where HIV education programs could occur. Clearly, there are practical problems with this approach. Physicians who generally do not practice in the drug-dependency area would be faced with hard choices, and physicians and pharmacists might feel uncomfortable with such a legal responsibility. Such discomfiture, however, could be addressed through separately licensing these practitioners or pharmacies. Additionally, state licensure boards could mandate continuing education programs that would address the scope of the practitioners' duties and constraints in this area.

[129] "Test-linked counseling" refers to HIV-related counseling provided before and after the administration of an HIV antibody test.

primary care and treatment for drug dependency or sexually transmitted diseases.

Needle distribution programs can take many forms, ranging from established government distribution centers to on-the-street distribution by ex-addicts or even at vending machines.[130] Most versions of needle distribution are called "needle exchange" because drug-dependent persons can exchange used needles for sterile ones. In this way the state keeps control over the number of needles in circulation.

1. Experience with Needle Exchange and Bleach Distribution in the United States

Needle-exchange programs in the United States are politically charged and their establishment, even on an experimental basis, has been seriously delayed. The overarching message of law enforcement and community leaders is that drug use is profoundly detrimental to a person's health and to the social fabric of local neighborhoods. Most drug opponents actively denounce such programs, fearing that clean-needle programs will lead to an increase in drug use because of the mixed message a community with needle exchange receives. While Boston leaders debated whether to adopt a needle-exchange program, Cardinal Bernard F. Law, Catholic Archbishop of Boston, said, "The answer to drugs must be an unequivocal no. It is difficult to say that convincingly while passing out clean needles."[131] Law enforcement and community leaders recognize the conflict between legal and moral dictates and public

[130] A needle-exchange program in Tacoma, Washington was begun by a former drug counselor, David Purchase, in violation of state law, but with the support of the chief of police. Subsequently, the city voted to pay Mr. Purchase a salary and to institute the program formally. *See* Gross, *Needle Exchange for Addicts Wins Foothold Against AIDS in Tacoma*, N.Y. Times, Jan. 23, 1989, at A8, col. 4; *see also* SAN FRANCISCO AIDS FOUNDATION, NEEDLE EXCHANGE PROGRAMS 9–11 (1989). In other instances the authorities have not been so understanding. Jon C. Parker, a student at the Yale School of Public Health and an ex-addict, broke state needle-prescription laws by distributing injection equipment to addicts in Massachusetts and Connecticut. He was arrested in Boston, but the Judge subsequently dismissed the charges without explanation. Lambert, *AIDS Battler Gives Needles Illicitly to Addicts*, N.Y. Times, Nov. 20, 1989, at A1, col. 1.

[131] *Bostonians Split on Mayor's Idea of Needle Swap*, N.Y. Times, Mar. 24, 1988, at A16, col. 1; *see also* Primm, *Needle Exchange Programs Do Not Solve the Problem of HIV Transmission*, AIDS PATIENT CARE, Aug. 1989, at 18, 20 ("[s]upplying addicts with needles and syringes gives the wrong message and muddies the whole effort of stopping people from using drugs").

health objectives but consistently press for punitive measures to deal with the drug problem.

Needle-exchange programs cannot proceed without the cooperation of the very groups that traditionally oppose them—law enforcers and community leaders. The conflict between public health and criminal justice is well illustrated by the dilemmas inherent in needle exchange: public health officials in some of the highest seroprevalence cities cannot establish exchange programs without first obtaining authorization from the state under needle-prescription laws; the police must agree not to arrest and the district attorney not to prosecute people using drug paraphernalia distributed under the needle-exchange program; and community leaders must agree to the location of needle distribution centers, which, if they are to be effective, need to be situated in poor urban areas.[132]

Forging political and social consensus around needle exchange in the United States has been exceedingly difficult. The history of needle exchange[133] is a story of political conflict and legal obstacles that have delayed or stopped the establishment of effective exchange programs. In 1988 New York City Health Commissioner Stephen Joseph expressed his frustration with the political and legal delays: "We have lost so much time, and an enormous number of lives."[134]

Needle-exchange programs that were strongly supported by city public health departments were successfully blocked in Bos-

[132] Cooperation is made more difficult by interagency conflict over needle-exchange programs. Such conflict occurred on the federal level in 1989 when the U.S. Secretary for Health and Human Services (HHS), Dr. Louis Sullivan, encouraged communities to establish needle exchange, even though the Justice Department and the Director of National Drug Control Policy opposed such policies. *See Incoming HHS Chief Backs Needle Exchange*, Boston Globe, Mar. 9, 1989, at 1, col. 2. After pressure from the White House, the HHS Secretary quickly withdrew his support. Kosterlitz, *A Doctor in the Pulpit*, 22 NAT'L JOURNAL 2466 (1990). Moreover, the Anti-Drug Abuse Act of 1988, 42 U.S.C. § 300x-3(c)(2)(a) (1988), specifically prohibits most federal funding of programs that distribute needles. Rep. Charles B. Rangel, Chair of the House Narcotics Committee, has said that the justification for barring federal support for programs to distribute needles to IV drug users is that free needles do little but prolong drug addiction. Rangel, *Needle Exchanges Hurt the Fight Against Drugs*, USA Today, Apr. 28, 1989, at 10A, col. 4.

[133] Needle-exchange programs were proposed as early as 1986, when the Institute of Medicine stated that "[i]t is time to begin experimenting with public policies to encourage the use of sterile needles and syringes by removing legal and administrative barriers to their possession and use." INSTITUTE OF MEDICINE, NATIONAL ACADEMY OF SCIENCES, CONFRONTING AIDS: DIRECTIONS FOR PUBLIC HEALTH, HEALTH CARE, AND RESEARCH 110 (1986).

[134] Wade, *For Addicts: A Death Penalty*, N.Y. Times, July 6, 1988, at A22, col. 1.

ton,[135] San Francisco,[136] Los Angeles[137] and Chicago.[138] The nation's first needle-exchange program, in New York City, experienced significant problems in formation and operation.[139] The Portland, Oregon needle-exchange program also initially experienced problems. The program was less controversial than others because it was run by a non-profit social services agency administering a grant from the American Foundation for AIDS Research. In addition, the state already allowed over-the-counter sales of hypodermic syringes and needles. Nonetheless, implementation of the program was delayed because of the difficulty in obtaining insurance and because of legal challenges to the program. In responding to political pressures, Portland's mayor stressed that the program did not actually involve the *city itself* in the distribution of injection equipment.[140] Needle-exchange programs have also been established in Tacoma, Washington;[141] Boulder, Colorado;[142] and Hawaii.[143]

[135] *Bostonians Split on Mayor's Idea of Needle Swap*, *supra* note 131; *Legalize Syringe Sales, Say Activists*, Boston Globe, Mar. 20, 1989, at 19, col. 5.

[136] Heilig, *AIDS. Needles and Public Health: Difficult Choices*, SAN FRANCISCO MEDICINE, March 1987, at 15.

[137] Zonana, *N.Y. Begins Giving Needles to Addicts in AIDS Battle*, L.A. Times, Nov. 8, 1988, at 1, col. 5.

[138] N.Y. Times, Jan. 30, 1989, at A1, col. 3; *Dinkins to End Needle Plan for Drug Users*, N.Y. Times, Feb. 14, 1990, at B1, col. 5.

[139] Merz, *First Needle-Exchange Program Approved: Other Cities Await Results*, 259 J.A.M.A. 1289 (1988).

[140] Raymond, *U.S. Cities Struggle to Implement Needle Exchanges Despite Apparent Success in European Cities*, 260 J.A.M.A. 2620 (1988); *Addicts in Portland, Ore., Will Get Free Hypodermic Needles*, N.Y. Times, June 10, 1988, at A13, col. 1.

[141] *See* Gross, *supra* note 130. The legality of the Tacoma program was upheld in Allen v. City of Tacoma, No. 89-2-09067-3 (Wash. Super. Ct., Pierce County, May 9, 1990). In January 1989 the Tacoma County Board of Health voted to fund a needle-exchange program. Gross, *Needle Exchange for Addicts Wins Foothold Against AIDS in Tacoma*, N.Y. Times, Jan. 23, 1989, at A12, col. 4. In July 1989 the Attorney General for Washington State issued an opinion that the program violated the state's drug-paraphernalia act, WASH. REV. CODE § 69.50 (1985 & Supp. 1990). The County Public Health Commissioner filed the *Allen* case seeking a declaratory judgment that the exchange program was lawful. The *Allen* court held that the needle-exchange program does not violate the drug-paraphernalia statute since that statute exempts government officials engaged in the lawful performance of their duties from liability. WASH. REV. CODE § 69.50.506 (1985 & Supp. 1990). The court also noted that Washington's AIDS law, WASH. REV. CODE § 70.24.400 (Supp. 1990), authorizes locally developed public health programs designed to control the needle-borne spread of AIDS. *Allen*, slip op. at 3–9.

[142] Boulder County began a publicly funded needle-exchange program on Feb. 14, 1989. The program is modeled after the Tacoma program, discussed *supra* note 128. Health Department outreach workers visit homes and gathering places of IV drug users. SAN FRANCISCO AIDS FOUNDATION, *supra* note 130, at 13.

[143] *See* 1990 Haw. Sess. Laws 280 §§ 2–4 (allowing a two-year pilot needle-exchange program).

a. Needle Exchange: The Unhappy Legacy of the New York City Experience

In New York City the HIV seroprevalence is estimated to be between fifty and sixty percent among the 200,000 IV drug users.[144] Proposals for a needle-exchange program in New York City were put forth in 1985 and 1987 by successive city health commissioners.[145] Establishing a needle-exchange program in New York City required permission by the state because the needle-prescription law could be waived only by authority of the public health commissioner.[146] The state governor and public health department initially opposed the proposals ostensibly because they were scientifically unsound.[147] However, on August 11, 1988 the state granted a waiver under the statute for the demonstration project. Even after announcement of the waiver, some local police officers, who had opposed the program, expressed the view that the state had no authority to waive the statutory requirement and vowed to uphold the statute anyway.[148]

The New York project included an evaluation component and a counseling requirement. Participants received a free sterile needle only during drug counseling sessions and could exchange the needle at another session. Monitoring included an analysis of residues on the needles turned in for the presence of more than one blood type. Participants' entry into treatment was also monitored.[149]

[144] INSTITUTE OF MEDICINE, NATIONAL ACADEMY OF SCIENCES, CONFRONTING AIDS: UPDATE 84 (1988) [hereinafter CONFRONTING AIDS]; NEW YORK CITY DEPARTMENT OF HEALTH, THE PILOT NEEDLE EXCHANGE STUDY IN NEW YORK CITY: A BRIDGE TO TREATMENT 4 (1989) [hereinafter N.Y. DEP'T HEALTH, A BRIDGE TO TREATMENT].

[145] *See generally* Joseph & Des Jarlais, *Needle and Syringe Exchange as a Method of AIDS Epidemic Control*, AIDS UPDATE, Sept.-Oct. 1989, at 4.

[146] N.Y. PUB. HEALTH L. § 3381 (McKinney 1985); N.Y. PENAL L. § 220.45 (McKinney 1989).

[147] The several hundred drug users included in the demonstration project were considered an insufficient sample. *N.Y. State Rejects Plan to Give Drug Users Needles*, N.Y. Times, Mar. 17, 1987, § 1, at 38, col. 1. Yet, when the program was finally approved it still had a study design consisting of needle distribution to only 200 persons. *N.Y. Begins Giving Needles to Addicts in AIDS Battle*, L.A. Times, Nov. 8, 1988, § 1, at 1, col. 5; *New York to Begin Free-Needle Plan For Drug Addicts*, N.Y. Times, Aug. 12, 1988, at A1, col. 4. There were also strong protests from minority groups in the city. *See* Marriott, *supra* note 66.

[148] Merz, *supra* note 139, at 1289.

[149] *Drug Needle Exchange is Gaining but Still Under Fire*, N.Y. Times, June 7, 1989, at B1, col. 2.

New York City's needle-exchange program did not actually begin until November 1988. The public health department could not gain local agreement for four proposed sites accessible to IV drug users. The mayor acquiesced to neighborhood groups, declaring any site unsuitable if it was within 1000 feet of a school or day care center. The program was, therefore, located in one site only, the city Health Department itself. The Department is located in the heart of the financial district, "confined to a former X-ray clinic hardly larger than a one-car garage" and situated adjacent to a city jail, the courts and central Police Headquarters.[150]

Two hundred and fifty persons were recruited and evaluated in the New York City needle-exchange pilot program through December 1, 1989.[151] Fifty-one percent of the program population was already infected with HIV.[152] The city health commissioner strongly recommended the continuation and expansion of the program based upon the results of the pilot study.[153] Even given the methodological concerns in performing a rigorous scientific evaluation of needle-exchange programs,[154] the New York City pilot program was highly successful.

First, the pilot program was effective in providing a bridge to treatment. Seventy-eight percent of its clients accepted a referral to treatment, including methadone maintenance and detoxification.[155] Second, the program effectively utilized the increase in personal contact between illicit drug users and health care workers to provide an array of services. Program workers were successful in identifying individuals in need of a variety of health and social services including housing, primary health care, treatment for sexually transmitted diseases and physical problems associated with chronic drug use.[156] These two results reinforce the notion that increasing health care contact points will improve treatment services for drug users, their sexual partners and their children.

[150] N.Y. Times, Jan. 30, 1989, at A1, col. 3.

[151] Two-thirds were male; the mean age was 33.4 years; 27% were African American, 53% Hispanic, and 18% white; 14% had a temporary domicile and 32% were homeless. N.Y. DEP'T OF HEALTH, A BRIDGE TO TREATMENT, *supra* note 144, at 10–11.

[152] *Id.* at 10.

[153] *Id.* at 18.

[154] These concerns include the difficulty of constituting a reliable control group, the reliability of self-reported changes in behavior, the unrepresentative nature of individuals who volunteer for the program and who choose to make a return visit, and the small sample size. Joseph & Des Jarlais, *supra* note 145, at 3–4.

[155] N.Y. DEP'T HEALTH, A BRIDGE TO TREATMENT, *supra* note 144, at 11–12.

[156] *Id.* at 14.

Another success of the syringe exchange program was reducing the incidence of sharing. Upon enrollment, 82% of the clients reported sharing needles in their lifetime, with 62% reporting sharing within the past thirty days. Only 5% of those clients who revisited the exchange program reported sharing since their last visit.[157] In other syringe programs, self-reported sharing behaviors declined over time, with continued program participation.[158]

The final success of the needle-exchange program was the safe disposal of a large amount of potentially contaminated injection equipment. Sixty percent of the 110 enrollees who returned for a second visit returned their needles.[159] A syringe exchange program permits disposal of dirty needles, rather than risking the use of discarded, contaminated injection equipment by addicts not participating in the program.

No definitive empirical data exist to support or detract from the claim that needle-exchange programs encourage illicit drug injection. Instead, the experience in New York and elsewhere suggests that needle exchange can provide a bridge to treatment, taking drug users off the streets and out of the drug demand cycle.

The experimental program in New York City was aborted by the new mayor early in 1990 after only two years of operation.[160] The program was terminated because it had too few enrollees. The program's lack of enrollees is not surprising, however, considering its inaccessibility to most of the city's drug users.

b. Bleach-Distribution Programs

Another way for the state to increase the supply of sterile injection equipment is to distribute disinfectants to the drug-de-

[157] *Id.* at 12–13. Self-reporting of sharing behaviors may be more reliable than blood-type analysis of residue on the needles. Many syringes are returned clean enough that it is impossible to detect any blood residue; moreover, many clients will have the same blood type as those with whom they shared, thus blood-type detection will not reveal such instances of sharing. For these reasons, an objective monitoring of returned syringes based on blood types is "a crude measure at best." *Id.*

[158] *Id.* at 13.

[159] *Id.* at 12.

[160] *Dinkins to End Needle Plan for Drug Users*, N.Y. Times, Feb. 14, 1990, at B1, col. 5. A few months later the newly appointed Commissioner for Health in New York City eliminated a city financed program that taught drug users how to avoid exposure to HIV when injecting drugs. For example, the program instructed addicts in how to disinfect their needles with bleach. *Health Chief Is Criticized on AIDS Shift*, N.Y. Times, May 10, 1990, at B1, col. 5. The Commissioner, Dr. Woodrow A. Myers, Jr., is also opposed to legalizing the sale of needles without a prescription. *Id.*

pendent population. Innovative programs that distribute vials of bleach to encourage sterilization of works are already under way in New York,[161] New Jersey[162] and San Francisco.[163] Drug-dependent persons are instructed to rinse their works with household bleach and then twice with water so that traces of the bleach are not injected.

The importance of actually distributing vials of bleach is illustrated by experiences with bleach programs in Baltimore.[164] The public health departments there distributed detailed information about AIDS, including directions on how to sterilize needles and syringes through boiling or the use of alcohol and bleach. Residents of neighborhoods that participated in these outreach programs had significantly greater knowledge of what constitutes dangerous behavior than those in neighborhoods that did not participate. Yet, no significant differences were measured in the number of injections, sterilization, or sharing practices in the "knowledgeable" neighborhoods.

The importance of providing an array of "means" to comply with public health advice is reinforced by ethnographic studies of behavior while in withdrawal. Withdrawal has been shown to be a critical factor retarding safer injection practices.[165] The severe physical discomfort and the craving for relief drives users to resort to any readily available needle and syringe for injecting the drug. Asking a drug-dependent person to prolong withdrawal in order to obtain uncontaminated injection equipment virtually guarantees failure in risk-reduction efforts. The design of public health programs must ensure that IV drug users have immediate, unimpeded access to sterile equipment prior to the time of injection. Distributing vials of bleach, coupled with education about their proper use, will achieve just that goal.

2. *The Experience with Needle Exchange Abroad*

Needle-exchange programs in other parts of the world have not usually encountered the same political and public obstacles they face in the United States.[166] Many countries have been able effectively to harmonize the objectives of law enforcement and public health and have gained broad consensus for needle-exchange programs.[167] The World Health Organization has formed a global working group to support needle-exchange and -distribution programs. Outlets for sterile injection equipment have been established in a number of countries in Western Europe[168] as well as in Canada[169] and Australia.[170] Government sponsored research in Australia,[171] Great Britain[172] and the Netherlands[173] concluded that the distribution projects were successful and made recommendations for their continuation. Preliminary results indicate that the availability of sterile injection equipment has not increased drug use. More significantly, these results also show some decline in HIV seroprevalence rates.[174] The programs also tend to attract individuals with no prior contact with drug treatment programs.

[161] Des Jarlais & Friedman, *supra* note 16, at 865–70.

[162] Jackson, Rotkiewicz, Quinones & Passannate, *A Coupon Program—Drug Treatment and AIDS Education*, 24 INT'L J. ADDICTION 1035, 1035–51 (1990).

[163] Chaisson, Osmond, Moss, Feldman & Bernacki, *HIV, Bleach, and Needle Sharing*, 20 LANCET 5 (1987).

[164] McAuliffe, Breer & Doering, *An Evaluation of Using Ex-Addict Outreach Workers to Educate Intravenous Drug Users about AIDS*, 4 AIDS & PUB. POL'Y J. 218 (1989).

[165] *See supra* notes 35–37 and accompanying text.

[166] *See generally* Karpen, *A Comprehensive World Overview of Needle Exchange Programs*, AIDS PATIENT CARE, Aug. 1990, at 26.

[167] *See* Fox, Day & Klein, *supra* note 21.

[168] *See, e.g., infra* notes 172, 173.

[169] *See* Blatherwick, *How to "Sell" a Needle Exchange Program*, 80 CAN. J. PUB. HEALTH 26 (1989). Vancouver initiated a multifaceted needle-exchange program in March 1989. As of the end of October 1989, about 2600 users had registered. The needle-exchange rate increased steadily, reaching a peak of 93%. Bardsley, Turvey & Blatherwick, *Vancouver's Needle Exchange Program*, 81 CAN. J. PUB. HEALTH 39 (1990).

[170] SAN FRANCISCO AIDS FOUNDATION, *supra* note 130, at 20–24 (1989); Wodak, *Needle Exchange Succeeding in Australia*, N.Y. Times, Mar. 26, 1990, at A16, col. 4.

[171] Wolk, Wodak & Guinan, HIV Seroprevalence in Syringes of Intravenous Drug Users Using Syringe Exchanges in Sydney, Australia, presented at the Fourth Int'l Conf. on AIDS, Stockholm (June 1988) (reported in Des Jarlais, *AIDS Prevention Programs for Intravenous Drug Users: Diversity and Evolution*, 1 INT'L REV. PSYCHIATRY 101, 102 n.19 (1989)); *see also* Wolk, Wodak, Morlet, Guinan & Gold, *HIV-Related Risk Taking Behavior, Knowledge and Serostatus of Intravenous Drug Users in Sydney*, 152 MED. J. AUSTL. 453 (1990).

[172] Hart, Carvell, Woodward, Johnson, Williams & Parry, *Evaluation of Needle Exchange in Central London: Behaviour Change and Anti-HIV Status Over One Year*, 3 AIDS 261 (1989); *see also* Morrison & Plant, *Drug Problems and Patterns of Service Use Amongst Illicit Drug Users in Edinburgh*, 85 BRIT. J. ADDICTION 547 (1990). *See generally* Stimson, *AIDS and HIV: The Challenge For British Drug Services*, 85 BRIT. J. ADDICTION 329 (1990)

[173] Buning, van Brussel & van Santen, *Amsterdam's Drug Policy and Its Implications for Controlling Needle Sharing*, in NIDA MONOGRAPH No. 80, *supra* note 14, at 59 (1988).

[174] *See* Raymond, *supra* note 140, at 2621; Joseph & Des Jarlais, *supra* note 145, at 3–4. Since 1984 a steadily increasing number of drug stores in Geneva has sold sterile injection equipment. Robert, Deglon, Wintsch, Martin, Perrin, Bourquin, Garbriel & Hirschel, *Behavioral Changes in Intravenous Drug Users in Geneva: Rise and Fall of HIV Infection, 1980–1989*, 4 AIDS 657 (1990). A study of behavioral change in IV drug users showed that HIV seroprevalence among IV drug users increased rapidly from 1981 to 1983 (from 6% to 38%) before the program was put in place. Since that time, needle sharing has decreased dramatically, and the seroprevalence rate among IV drug users has actually diminished. *Id.*

a. The Netherlands

Amsterdam has approximately 3000 IV drug users.[175] As of March 1988, only 4.7% of the cumulative total of reported AIDS cases in Amsterdam involved individuals whose only risk factor was drug use.[176] The needle-and-syringe-exchange program in Amsterdam began in the summer of 1984 through an initiative of the "junkiebond," a league of drug users. The primary health concern at the time was needle-borne transmission of hepatitis B. The Municipal Health Service brought injection equipment to the junkiebond, and collected the used needles for disposal; approximately 1200 syringes and needles were exchanged weekly.[177] The number of needles distributed increased to 720,000 in 1988. There are eleven distribution centers, consisting of drug organizations, treatment centers and methadone buses.[178] Condoms and leaflets on safer sex can also be obtained at needle-distribution centers. An estimated 38% of all needles and syringes used by drug injectors are obtained from exchange programs, and most of the rest are bought in medical shops, pharmacies and other outlets.[179]

Many of the "harm reduction" objectives of the exchange program have been met. First, the safe disposal of injection equipment has increased over time: 70% of needles were returned in 1986, 86% in 1987, and 95% by September 1988.[180] Second, borrowing and lending injection equipment among current users decreased sharply over time: 56% reported such activity after the first visit, 26% after the second visit, and 16% after the third visit.[181] Third, there was a sharp increase in the proportion of IV

[175] *See* Des Jarlais, *supra* note 171, at 104.

[176] GEMEENTELIJKE GENEES KUNDIGE ENOEZUNDHEIDSDIENST AMSTERDAM, THE AMSTERDAM MUNICIPAL HEALTH SERVICE AND THE AIDS-PROBLEM 1 (1988) [hereinafter THE AMSTERDAM MUNICIPAL HEALTH SERVICE].

[177] Buning, van Brussel & van Santen, *Amsterdam's Drug Policy and Its Implications for Controlling Needle Sharing*, in NIDA MONOGRAPH NO. 80, *supra* note 14, at 67–73 (1988).

[178] Hartgers, Buning, van Santen, Verster & Coutinho, *The Impact of the Needle and Syringe-Exchange Programme in Amsterdam on Injecting Risk Behaviour*, 3 AIDS 571, (1989). *See also* Des Jarlais, *supra* note 171, at 103–04.

[179] Hartgers, Buning, van Santen, Verster & Coutinho, *supra* note 178, at 572.

[180] SAN FRANCISCO AIDS FOUNDATION, *Needle Exchange in the United States and Abroad*, in NEEDLE EXCHANGE PROGRAMS 22 (1989); Hartgers, Buning, van Santen, Verster & Coutinho, *supra* note 178, at 571.

[181] van den Hoek, van Haastrecht & Coutinho, *Risk Reduction Among Intravenous Drug Users in Amsterdam Under the Influence of AIDS*, 79 AM. J. PUB. HEALTH 1355, 1356 (1989).

drug users making exclusive use of the exchange program to obtain sterile injection equipment: from 13% after the first intake period to 66.7% after the fourth intake period.[182] The number of IV drug users followed in longitudinal studies is too low to examine accurately the HIV seroconversion rates. However, the percentage of IV drug users among reported AIDS cases in Amsterdam is much lower than the corresponding percentage in the United States, which has failed to adopt many large-scale needle-exchange programs.[183] Finally, researchers, unable to find any evidence that non-IV drug users in the study groups started intravenous use as a consequence of the availability of sterile equipment, concluded "that the Amsterdam AIDS prevention campaign did not increase the intravenous use of drugs . . . ."[184]

b. United Kingdom

The percentage of AIDS cases attributable to IV drug use in the United Kingdom (16%)[185] is somewhat lower than that in the United States (29%).[186] In the U.K., as in the United States, there is substantial evidence that needle sharing has been common among IV drug users.[187] In response to this problem, the British government established fifteen pilot needle exchanges in April 1987.[188]

The report on the pilot needle-exchange programs indicated they had reached clients who had not previously been in contact with drug treatment services.[189] A primary goal, then, was to offer

[182] *Id.* at 1356–57.

[183] Compare the 4.7% of cumulative AIDS cases in Amsterdam, THE AMSTERDAM MUNICIPAL HEALTH SERVICE, *supra* note 176, at 1, with the 19% in the United States through September 1990, CENTERS FOR DISEASE CONTROL, SEPT. 1990, *supra* note 11, at 15.

[184] van den Hoek, van Haastrecht & Coutinho, *supra* note 181, at 1357; *see also* Ginzburg, *Needle Exchange Programs: A Medical or a Policy Dilemma?*, 79 AM. J. PUB. HEALTH 1350 (1989); Hartgers, Buning, van Santen, Verster & Coutinho, *supra* note 178.

[185] Farid, *AIDS and Drug Addiction Needle Exchange Schemes: A Step in the Dark*, 81 J. ROYAL SOC. MED. 375 (1988).

[186] CENTERS FOR DISEASE CONTROL, SEPT. 1990, *supra* note 11, at 15.

[187] *See, e.g.*, Mulleady & Green, *Syringe Sharing Among London Drug Abusers*, 2 LANCET 1425 (1985); Robertson, Bucknell, Welsby, Roberts, Inglis, Peutherer & Brettle, *supra* note 12.

[188] Glanz, *Drug Misuse and AIDS Prevention: Policy on the Right Track*, 83 BRIT. J. ADDICTION 1237 (1988); Stimson, Alldritt, Dolan & Donoghoe, *Syringe Exchange Schemes for Drug Users in England and Scotland*, 296 BRIT. MED. J. 1717, 1718 (1988).

[189] *See* Stimson, Alldritt, Dolan & Donoghoe, *supra* note 188, at 1718 (noting that 31% of the clients at the pilot needle-exchange programs had received no previous drug treatment).

treatment, counseling and education services. Clients of needle-exchange programs reported less frequent needle sharing than other IV drug users, but this may be attributed to self-selection. The greatest problem with the pilot programs was the high attrition rate, with 61% staying for a second visit and only 17% for a tenth visit.[190] To attract more clients and keep them, the Liverpool exchange scheme is not routinely offering counseling and treatment referral.[191] The English experience suggests that there may be a trade-off between attracting and keeping clients and providing a full range of health and social services.[192]

c. Australia

Although the HIV incidence rate in Australia is among the highest in the world, there has been a low seroprevalence rate among IV drug users.[193] Only 4.6% of the cumulative total of AIDS cases in Australia involve individuals whose only high-risk behavior is IV drug use.[194]

A syringe exchange program was established in New South Wales (NSW), Australia in December 1986. The NSW government amended existing legislation that had prohibited the sale and possession of drug-injection equipment. The exchange program is

[190] G. STIMSON, INJECTING EQUIPMENT EXCHANGE SCHEMES 5 (1988) (Final Report, Monitoring Research Group, University of London, Goldsmith's College). Recent evaluations of the London program showed high rates of referral to drug treatment programs, particularly among clients who had long histories of drug use and very little contact with the public health care system. *See* Carvell & Hart, *Help-Seeking and Referrals in a Needle Exchange: A Comprehensive Service to Injecting Drug Users*, 85 BRIT. J. ADDICTION 235 (1990); Stimson, Dolan, Donoghoe & Lart, *The Pilot Syringe Exchange Project in England and Scotland—A Summary of Evaluation*, 84 BRIT. J. ADDICTION 1283 (1989).

[191] Lohr, *supra* note 116.

[192] In an effort to increase attendance and compliance, one exchange facility in London has an "open access" policy. The facility eschews rigorous eligibility requirements and detailed interviewing about commitment to abstinence oriented treatment. Hart, Woodward & Carvell, *Needle-Exchange in Central London: Operating Philosophy and Communication Strategies*, 1 AIDS CARE 125, 129–30 (1989).

[193] *See* Blacker, Tindall, Wodak & Cooper, *Exposure of Intravenous Drug Users to AIDS Retrovirus, Sydney 1985*, 16 AUSTL. & N.Z. J. MED. 686 (1986) (only one HIV-positive person found among 200 IV drug users at five Sydney drug referral and treatment centers).

[194] Wodak & Whyte, *AIDS and Intravenous Drug Users in Australia*, 2 AIDS LAW & POLICY J. 47 (1989). This compares with 19% in the United States, CENTERS FOR DISEASE CONTROL, SEPT. 1990, *supra* note 11, at 15, and 64% in Italy. WORLD HEALTH ORGANIZATION COLLABORATING CENTRE ON AIDS, Q. REP. NO. 20, AIDS SURVEILLANCE IN EUROPE (Dec. 31, 1988).

carried out by a network of pharmacies throughout the state.[195] Pharmacists actively participate in the program and display favorable attitudes toward it.[196]

Those who have studied the NSW exchange program have recommended its continuation, and have concluded that it was successful in meeting its goals of removing contaminated syringes from circulation, referring people into treatment, and reducing needle sharing.[197]

3. Evaluation of Needle-Exchange Programs: Meeting Valid Public Health Objectives

Preliminary data show that needle exchange, in conjunction with other strategies, could be an effective public health policy[198] to slow the drug and HIV epidemics.[199] Perhaps the most promising aspect of the various studies is the indication of the potential value of needle exchange as a bridge to drug treatment and to a wide array of other health and social services.[200] Although drug users often have pressing health and welfare needs, they are exceedingly difficult to reach. Offering a benefit to drug users facilitates positive contact with them. Using needle exchange as a way to offer drug users HIV testing, counseling, sex education, treatment referrals,

[195] Tsai, Goh, Welbeck & Mullins, *Prevention of Human Immunodeficiency Virus Infection Among Intravenous Drug Users in New South Wales, Australia: The Needles and Syringes Distribution Programme Through Retail Pharmacies*, 2 ASIA-PACIFIC J. PUB. HEALTH 245 (1988).

[196] *Id.*

[197] Wodak, Dolan, Imrie, Gold, Wolk, Whyte & Cooper, *Antibodies to Human Immunodeficiency Virus in Needles and Syringes Used by Intravenous Drug Abusers*, 147 MED. J. AUSTL. 275 (1987); Wodak, *Needle Exchange Succeeding in Australia*, N.Y. Times, Mar. 26, 1989, at A16, col. 4; Wodak & Penny, *A Report of the National Advisory Committee on Acquired Immunodeficiency Syndrome's Workshop on Human Immunodeficiency Virus Infection and Intravenous Drug Abuse*, 149 MED. J. AUSTL. 373 (1988).

[198] *See generally* Wood, *Needle Exchange Programs Stop AIDS!*, 4 AIDS PATIENT CARE 14 (1990).

[199] Admittedly, the data collected from needle-exchange programs in the United States and abroad are decidedly insufficient because of small sample size and methodological concerns. *See supra* notes 151–154 and accompanying text. Comparative research is also difficult to evaluate, since data from one country are not necessarily transferable to another culture. Still, the urgency associated with drug use and the needle-borne transmission of infectious disease suggests that programs that show some promise of being effective ought to be more carefully evaluated.

[200] *See supra* notes 155–156 and accompanying text.

housing and social support is well worth the moderate cost of exchange programs.[201]

However, exchange programs that thrust services on clients have difficulty attracting and keeping clients.[202] Programs that "don't preach" and only distribute needles have lower client attrition.[203] To be sure, it is difficult to attract and keep illicit drug users within any traditional public health program. Nonetheless, it makes little sense to give up a major benefit of the program in order to attract clients. Instead, exchange programs should be designed and advertized with the user in mind: they should operate out of convenient and non-threatening locations; the staff should be attuned to the drug culture; the services should be offered in a non-coercive rather than compulsory manner; the programs should be confidential; and non-discrimination on the basis of HIV infection should be the norm.[204]

An explicit goal of exchange programs is reducing the incidence of needle sharing. Data show that the longer the user attends exchange programs the more likely he is to report significant reductions in sharing behavior.[205] Moreover, the longer the client attends the more likely it is that the exchange program will be his exclusive source of injection equipment.[206] The incidence of needle-borne transmission will be reduced if users alter their usual sharing behavior and rely upon public health programs instead of dealers and shooting gallery proprietors for their works. Evidence of reduced sharing suggests that drug users are aware of AIDS risks, concerned about their health and willing to alter their behavior to avoid needle-borne infections.[207]

[201] The cost for operating the New York City Pilot Program for 10 months was $178,370. The pilot program served 294 persons, with a further 61 in a comparison group. N.Y. DEP'T HEALTH, A BRIDGE TO TREATMENT, *supra* note 144, at 10. This compares with a cost of between $25,000 and $60,000 per case for treating a person with AIDS, and approximately $3,000 per patient per year for drug treatment. *See* INSTITUTE OF MEDICINE, *supra* note 133, at 12; Fox & Thomas, *The Cost of AIDS: Exaggeration, Entitlement, and Economics*, in AIDS AND THE HEALTH CARE SYSTEM 197 (L. Gostin ed. 1990).

[202] *See supra* notes 191–192 and accompanying text.

[203] Lohr, *supra* note 116.

[204] In Doe v. Centinela Hospital, 57 U.S.L.W. 2034 (C.D. Cal. 1988), for example, a federally funded drug treatment program refused to admit a person because he was infected with HIV. The court held that this action violated section 504 of the Rehabilitation Act of 1973. 29 U.S.C. § 794 (1988). *See* Gostin, *The AIDS Litigation Project: A National Review of Court and Human Rights Commission Decisions, Part II: Discrimination*, 263 J. A.M.A. 2086, 2089 (1990).

[205] *See supra* notes 157–158 and accompanying text.

[206] *See supra* note 182 and accompanying text.

[207] *See supra* notes 43–45 and accompanying text.

It is extraordinarily difficult to demonstrate that reduced HIV seroprevalence rates are due to the establishment of needle-exchange programs. So many factors affect the rate of HIV transmission that the effect of one cannot be scientifically measured. Nevertheless, widespread sharing in cities with tight restrictions on needle supply has been linked to the disproportionately high prevalence of HIV in those cities.[208] HIV seroprevalence rates are lower in cities that make sterile injection equipment more readily available, such as Amsterdam.[209] While these figures establish no definite causal link between limits on sterile injection equipment and the HIV seroprevalence rate, they do indicate that supply limitations are not decreasing seroprevalence rates and that readily accessible supplies are not resulting in a feared increase in HIV infection.[210]

An important advantage exchange programs have over programs that simply distribute injection equipment is that they reduce the supply of contaminated needles in circulation. More established programs such as the one in Amsterdam have experienced excellent rates of one-for-one exchanges.[211]

Needle-exchange programs do not cause the various harms feared by their opponents.[212] Government sponsored researchers in the United States and abroad have concluded that there is no measurable increase in drug use associated with needle exchange.[213] Drug users who participate in exchange programs have demonstrated either the same or lower rates of drug injection as other drug users over the same time periods.[214] Longitudinal studies of programs such as the Amsterdam exchange could detect no increase in drug injection over time.[215] Indeed, one study showed no increase in the rate of drug injection in clients at a methadone clinic that operated adjacent to the needle-exchange program.[216]

[208] For example, New York has both needle-prescription and drug-paraphernalia laws and a seroprevalence rate among IV drug users of from 50 to 60%. *See supra* note 144 and accompanying text.

[209] *See* THE AMSTERDAM MUNICIPAL HEALTH SERVICE, *supra* note 176.

[210] *See generally* Des Jarlais, *AIDS Prevention Programs for Intravenous Drug Users: Diversity and Evolution*, 1 INT'L REV. OF PSYCHIATRY 101, 102 (1989).

[211] *See supra* notes 180–182 and accompanying text.

[212] O'Brian, *Needle Exchange Programs: Ethical and Policy Issues*, 4 AIDS & PUB. POL'Y J. 75, 79 (1989).

[213] *See supra* note 174 and accompanying text.

[214] *See* Joseph & Des Jarlais, *supra* note 145.

[215] *See supra* note 184 and accompanying text.

[216] *See* Wodak, *Needle Exchange Succeeding in Australia*, *supra* note 170.

A person who has not injected drugs would be unlikely to do so simply because of the operation of a government sponsored exchange program. At most programs, a person cannot obtain equipment unless he has demonstrated that he is an intravenous drug user and has a used needle to exchange.[217] In any event, new recruits into drug use can readily obtain injection equipment from the dealer. Moreover, if exchange programs succeed in referring clients for treatment who have not previously been accessible to the public health community, their net impact is favorable to anti-drug efforts.

The concern that needle-exchange programs appear to sanction an unlawful and unhealthy activity, particularly in vulnerable minority areas already ravaged by the drug epidemic, could be addressed through the dissemination of culturally appropriate anti-drug messages at exchange centers. These messages should stress that exchange programs are designed to help drug users reduce their dependence through counseling and treatment. A more difficult problem with needle-exchange programs is that they may be thrust on local communities without consultation and without a comprehensive strategy for combatting drug abuse. Needle-exchange programs would be more palatable to those communities as part of a comprehensive and well-funded package of services—education, drug treatment and health care—designed to interrupt the cycle of poverty, drug use and AIDS.

III. Providing Treatment to Confront the Dual Epidemics of Drug Dependency and AIDS

A thirty-four-year-old crack addict from the South Bronx decided he wanted to get well. After being turned away from numerous treatment clinics and hospitals, he gave up on the health care and drug treatment systems, and sought treatment through the criminal justice system. He smashed windows in two police stations and displayed a hypodermic syringe and a crack vial in a third, only to find himself back on the streets.[218] His efforts to be

[217] "None of the exchanges has reported a person who had not previously injected coming to a syringe exchange." Joseph & Des Jarlais, *supra* note 145, at 4.

[218] Lambert, *Fight in War of Drugs and AIDS*, N.Y. Times, Dec. 23, 1988, at B1 (city ed.); *see also* N.Y. Times, Jan. 10, 1990, at A1, col. 5 (crack addict moved in with his sister because of the absence of treatment. He spent four months indoors, afraid to face the temptation of the streets).

arrested were unavailing. This user's experience in New York City reflects conditions in two-thirds of America's large urban areas, where there are waiting lists of up to six months or more for drug treatment programs.[219]

Delays in providing treatment for IV drug users cost human lives and scarce health care dollars. Drug dependency contributes substantially to the spread of AIDS. A drug user who is turned away from treatment will in all probability continue the dangerous cycle of drug dependency, needle sharing, crime and prison. Imprisonment does not address the problem: when the user is released from prison, the cycle will probably repeat itself.[220] The result is an ever increasing spiral of drug use, violence and HIV infection. Moreover, society may have lost any opportunity to recruit the user into treatment.

The lifestyles of drug-dependent people often drive them to seek immediate relief from the physical and psychological effects of drugs. A user cannot be relied upon to reappear for a treatment slot that becomes available at some future time. For this reason, the goal of public health must be treatment on demand.[221]

Provision of treatment services does not generate the same political conflicts as other strategies for confronting drug dependency and AIDS. Public health and law enforcement agencies can reach a consensus on drug treatment because it aims to reduce or eliminate the injection of illicit drugs. The public health goal of treatment, therefore, is consistent with prevailing moral values and criminal proscriptions.

Despite the profound public health benefits of drug treatment, and the agreement among the criminal justice and health care systems, existing treatment services are inadequate. The government and the public apparently undervalue rehabilitation as a policy option because of the belief that "treatment does not work."[222]

[219] The Institute of Medicine heard "dramatic testimony about users willing to sign up for treatment such as methadone maintenance, only to be told of waiting periods of months." INSTITUTE OF MEDICINE, *supra* note 133, at 108–09; *see* CONFRONTING AIDS, *supra* note 144, at 84–85; REPORT OF THE PRESIDENTIAL COMMISSION, *supra* note 18, at 96.

[220] *See generally* MAJORITY STAFFS OF THE SENATE JUDICIARY COMMITTEE AND THE INTERNATIONAL NARCOTICS CONTROL CAUCUS, FIGHTING DRUG ABUSE: A NATIONAL STRATEGY 66–71 (1990).

[221] *See, e.g.*, REPORT OF THE PRESIDENTIAL COMMISSION, *supra* note 18, at 94–104.

[222] Criticism and calls for rejection of correctional treatment programs peaked in 1974 with the publication of a review of 231 treatment evaluation studies between 1945 and 1967. This review concluded that treatment does not significantly reduce drug use or recidivism, and asked, "Does nothing work?" Martinson, *What works?—Questions and Answers About*

This insupportable perception is based upon outdated and inaccurate scientific studies, the poor performance of treatment programs that did not possess an adequate number of experienced personnel, and the absence of sufficient funding and commitment to make the programs work.[223] Moreover, asking the question "Does treatment work?" is an overly simplistic approach to analyzing the benefits of treatment because many variables affect the process and ultimate outcomes of treatment.[224] A more appropriate question is whether treatment can work, if properly conceived, funded and administered.

A. Can Treatment Work?

1. Treatment Evaluation Studies: Achieving Enduring Reductions in Drug Use and Criminality

One explanation for the low level of funding and community support for drug treatment is the common view that drug dependency is a chronic, relapsing illness that is resistant to treatment. Yet, a great deal of evaluative research demonstrates the efficacy of treatment in reducing drug use, needle sharing and criminality, and in increasing employment and social adjustment.[225] Further, the longer the treatment process, the more likely that it will be

Prison Reform, 35 PUB. INTEREST 48 (1974); *see* NATIONAL CRIMINAL JUSTICE ASS'N, U.S. DEP'T. OF JUSTICE, TREATMENT OPTIONS FOR DRUG-DEPENDENT OFFENDERS: A REVIEW OF THE LITERATURE FOR STATE AND LOCAL DECISIONMAKERS 9–10 (1990) [hereinafter TREATMENT OPTIONS].

[223] Even Martinson renounced his position that "nothing works" based upon more recent evaluations of 555 treatment programs: "Contrary to my previous position, some treatment programs do have an appreciable effect on recidivism. Some programs are indeed beneficial. New evidence from our study leads me to reject my original conclusion. I have hesitated up to now, but the evidence in our survey is simply too overwhelming to ignore." Martinson, *New Findings, New Views: A Note of Caution Regarding Sentencing Reform*, 7 HOFSTRA L. REV. 252–54 (1979).

[224] Jerome Jaffe writes: "They will continue to ask, 'Does treatment work?' They may be annoyed when they are told that the question can no longer be put in such simple terms." Jaffe, *Evaluating Drug Abuse Treatment: A Comment on the State of the Art*, in NATIONAL INSTITUTE ON DRUG ABUSE, U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, NIDA MONOGRAPH NO. 51, DRUG ABUSE TREATMENT EVALUATION: STRATEGIES, PROGRESS, AND PROSPECTS 20 (1984 & reprint 1986, 1988) [hereinafter NIDA MONOGRAPH NO. 51].

[225] *See* TREATMENT OPTIONS, *supra* note 222, at 2–5 ("[d]rug experts and criminal justice practitioners almost universally agree that reducing the demand for drugs through prevention and treatment holds the greatest hope for controlling drug abuse. Because prevention is not a viable option for an already addicted offender, treatment is the only vehicle for breaking the cycle of addiction and crime for such an individual.").

effective in ameliorating the profound physical, psychological and social problems of drug-dependency.

Two major evaluative research projects have led social scientists to the nearly unanimous conclusion that treatment works: the Treatment Outcome Prospective Study ("TOPS")[226] and the National Treatment System Based on the Drug Abuse Reporting Program ("DARP").[227] The TOPS project was a longitudinal study of 11,750 people admitted to thirty-seven treatment programs in ten cities from 1979 to 1981. The treatment modalities studied were methadone maintenance, residential therapeutic treatment (therapeutic community treatment) and out-patient detoxification treatment. The participants were tracked for five years.

The TOPS study showed that each of the treatment modalities was effective in causing significant and enduring declines in drug use. Overall fewer than 20% of the participants in any modality were regular users of the drugs studied three to five years after entering treatment. These effects were evident for non-opioid[228] as well as opioid[229] drugs. Even under the most rigorous outcome standard, abstinence from cocaine, the treatment was successful. Abstinence rates in the year after treatment ranged from between 40 to 47% among the three treatment modalities.[230] The Drug Abuse Report Program, conducted before TOPS, involved almost 44,000 admissions to treatment. Similar abstinence and improvement rates were found in the DARP study.[231]

[226] R. HUBBARD, M. MARSDEN, J. RACHAL, H. HARWOOD, E. CAVANAUGH & H. GINZBURG, DRUG ABUSE TREATMENT: A NATIONAL STUDY OF EFFECTIVENESS (1989) [hereinafter The TOPS Study].

[227] The primary source for the DARP study is found in THE EFFECTIVENESS OF DRUG ABUSE TREATMENT: EVALUATION OF TREATMENT OUTCOMES FOR 1971–1972 DARP ADMISSION COHORT (S. Sells & D. Simpson eds. 1976) [hereinafter DARP]. One important caveat, however, is that neither TOPS nor DARP were controlled trials. Controlled trials to evaluate drug treatment outcomes are badly needed.

[228] "Three to five years after treatment, the percentage of regular cocaine users was 6–16% in any of the modalities." Abstinence rates in the year after treatment were 40% (methadone), 42% (out-patient/drug-free), and 47% (residential). The TOPS Study, *supra* note 226, at 108–09.

[229] Regular heroin use also declined among participants studied three to five years after treatment: methadone (63.5% to 17.5%); residential (31.9% to 11.8%), and outpatient/drug-free (from 8.6% to 4.6%). *Id.* at 102–03. The TOPS study did not find the same levels of reduction in regular marijuana use. *Id.* at 117.

[230] "Reductions in prevalence [of heroin use] were most dramatic for clients in outpatient methadone and residential programs." *Id.* at 103. Otherwise, few significant differences were detected based upon the modality of treatment, and no clear understanding emerged about why treatment is effective. *Id.* at 102–21.

[231] *See generally* Simpson, *National Treatment System Evaluation Based on the Drug Abuse Reporting Program (DARP) Followup Research*, in NIDA MONOGRAPH NO. 51, *supra* note 224, at 29.

Numerous smaller studies have repeatedly re-affirmed the findings of TOPS and DARP: treatment is effective in reducing drug use; treatment's effectiveness increases with duration; and treatment achieves results that endure over time. The research literature has focused upon treatment for opioid use because it was the drug of choice.[232] However, non-opioid drugs, particularly injectable and crack cocaine have emerged as the most frequently used drugs in the late 1980s and the early part of this decade.[233] Treatment and program evaluation of cocaine use has been less rigorous than for opioid drugs. Nevertheless, some studies have reported similar levels of treatment efficacy for cocaine abuse.[234]

In addition to reducing drug use, treatment reduces crime. The association between drug use and crime is inescapable. Many drug-dependent people commit their crimes as a means of obtaining money to purchase their drugs.[235] Jails, courts and prosecutors in major urban areas are overloaded with drug-dependent offenders. However, because of case overload, most offenders receive little or no prison time and no treatment.[236] Social scientists almost universally report that reducing demand for drugs through prevention and treatment reduces the level of drug-related criminal activity. Both the TOPS[237] and DARP[238] studies concluded that treatment produces a dramatic decrease in criminal behavior.

TOPS, DARP and the host of smaller studies point to the conclusion that treatment can work. Convincing policymakers and

[232] *See, e.g.*, NATIONAL INSTITUTE ON DRUG ABUSE, U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, NIDA MONOGRAPH NO. ADM 83-1281, RESEARCH ON THE TREATMENT OF NARCOTIC ADDICTION: STATE OF THE ART (1983) [hereinafter NIDA MONOGRAPH NO. ADM 83-1281]; Simpson & Savage, *Drug Abuse Treatment Readmissions and Outcomes*, 37 ARCHIVES GEN. PSYCHIATRY 896 (1980).

[233] *See* NATIONAL INSTITUTE ON DRUG ABUSE, *supra* note 24, at 29–39; N.Y. Times, May 11, 1990, at A18, col. 5 (Senate Judiciary Report estimates nearly 2.2 million Americans use cocaine each week).

[234] *See, e.g.*, Simpson, Joe, Lehman & Sells, *Addiction Careers: Etiology, Treatment, and 12-year Follow-up Outcomes*, 16 J. DRUG ISSUES 107 (1986) (38% of opioid users used cocaine before treatment, 18–22% used it one to six years after treatment, but 39% used it in the 12th year after treatment, possibly because of the increased popularity of the drug).

[235] Greenberg & Adler, *Crime and Addiction: An Empirical Analysis of the Literature, 1920–1973*, 3 CONTEMP. DRUG PROBS. 221 (1974); TREATMENT OPTIONS, *supra* note 222 at 1–2. *See also* TOPS, *supra* note 226 at 1, 152, and ch. 6.

[236] TREATMENT OPTIONS, *supra* note 222, at 1; U.S. GENERAL ACCOUNTING OFFICE, CONTROLLING DRUG ABUSE: A STATUS REPORT 19 (1988).

[237] TOPS found that three to five years after leaving treatment, the proportion of clients involved in predatory crimes was one-third to one-half of the pre-treatment level. The TOPS Study, *supra* note 226, at 128.

[238] *See* Simpson, *supra* note 231, at 31–33.

the general public of this fact is the next important step towards ensuring that treatment programs receive the attention and funding they deserve.

2. *Methadone Maintenance Programs*

Methadone hydrochloride maintenance is a prime modality of the drug treatment system.[239] Methadone hydrochloride given to heroin addicts at clinically appropriate daily doses blocks the effects of the drug so that withdrawal cravings are reduced or eliminated.[240]

Methadone maintenance has been exhaustively studied and has been demonstrated to be safe[241] and effective.[242] Intravenous drug abusers achieve immediate and substantial reductions in heroin use while on methadone maintenance. Studies have shown that a significant percentage of drug users abstain from illicit opiate use while in treatment.[243] Positive effects are strengthened the longer the person remains in the maintenance program.[244]

Methadone treatment has features that make it particularly effective in impeding the needle-borne spread of HIV.[245] It has the

[239] Naltrexone and buprenorphine are two other drugs that are used for the treatment of opioid addiction. Naltrexone is a long-acting competitive antagonist at opioid receptors that blocks the responses produced by intravenous use of heroin. *See* Gonzalez & Brogden, *Naltrexone: A Review of its Pharmacodynamic and Pharmacokinetic Properties and Therapeutic Efficacy in the Management of Opioid Dependence*, 35 DRUGS 192 (1988). Buprenorphine has also been shown to control opioid use. *See* Goodwin, *Buprenorphine May Be Therapeutic Alternative for Opiate Addiction*, 263 J. A.M.A. 2725 (1990); Kosten & Kleber, *Buprenorphine Detoxification from Opioid Dependence: A Pilot Study*, 42 LIFE SCIENCE 635 (1988). As to the benefits of buprenorphine for non-opioid addiction, see *infra* note 253.

[240] Clinical success in rehabilitation of heroin addicts with maintenance treatment requires stability of the blood level in a pharmacologically effective range, optimally, 150 to 600 ng/mL. The molecular biological explanation for the effects of methadone are uncertain, but effects have been consistently demonstrated by empirical research. *See* Dole, *Implications of Methadone Maintenance for Theories of Narcotic Addiction*, 260 J. A.M.A. 3025 (1988).

[241] The safety of methadone when administered by competent health care professionals in clinically indicated doses is beyond doubt. *See* Cooper, *Methadone Treatment and Acquired Immunodeficiency Syndrome*, 262 J. AM. MED. A. 1664 (1989); Kreek, *Health Consequences Associated with the Use of Methadone*, in NIDA MONOGRAPH NO. ADM 83-1281, *supra* note 232, at 456.

[242] *See* Cooper, *supra* note 241; *see also* The TOPS Study, *supra* note 226, at 5.

[243] *See* McLellan, Luborsky, O'Brien, Woody, & Druley, *Is Treatment for Substance Abuse Effective?* 247 J. A.M.A. 1423 (1982).

[244] *See* Simpson, *supra* note 231, at 33.

[245] *See* Cooper, *supra* note 241, at 1664; Dole, *Methadone Treatment and the Acquired Immunodeficiency Syndrome Epidemic*, 262 J. A.M.A. 1681 (1989).

highest client retention rate of all of the treatment modalities.[246] Client retention is important because length of treatment is one of the best predictors of successful outcome.[247] Methadone treatment also lowers risk behavior for HIV transmission by significantly reducing the number of injections and the sharing of injection equipment. Although reductions in injections and sharing are evident across the range of treatment modalities, methadone maintenance has the most pronounced effect.[248] HIV seropositivity of addicts enrolled in methadone maintenance is also consistently lower than that of addicts not in treatment.[249]

Despite the overwhelming evidence of methadone's ability to combat the dual epidemics of AIDS and drugs, such programs remain highly controversial. The concerns of opponents of methadone expansion are not well articulated, but can be grouped into three categories: methadone merely substitutes one long-term addiction for another;[250] methadone clients suffer from prejudice and are viewed as dangerous and anti-social;[251] and methadone treatment is itself immoral because of society's expressed preference for a drug-free lifestyle.[252]

These essentially ideological objections to methadone maintenance are hardly powerful given the practical effectiveness of the drug. We may be bewildered by the chemical reasons why the body seems to adapt so well to the long-term narcotic effects of methadone,[253] and we may prefer, both morally and socially, a

[246] *See* Joe & Simpson, *Retention in Treatment of Drug Users: 1971–1972 DARP Admissions*, 2 AM. J. DRUG & ALCOHOL ABUSE 63 (1975); Cooper, *supra* note 241, at 1664.

[247] Within the first three months of treatment, only 14% of new methadone patients drop out, while 40–50% drop out in other modalities. *Id.*

[248] *See* Ball, Lange, Myers & Friedman, *Reducing the Risk of AIDS Through Methadone Maintenance Treatment*, 29 J. HEALTH & SOC. BEHAV. 214 (1988).

[249] *See* Cooper, *supra* note 241, at 1665.

[250] D'Amico, *Methadone Treatment and Acquired Immunodeficiency Syndrome*, 263 J. A.M.A. 658 (1990); *see* Kirn, *Methadone Maintenance Treatment Remains Controversial Even After 23 Years of Experience*, 260 J. A.M.A. 2970 (1988).

[251] *See* Senay, *Methadone Maintenance Treatment*, 20 INT'L J. ADDICTION 803 (1985).

[252] Rosenthal, *Methadone Clone: A Bad Quick Fix*, N.Y. Times, July 1, 1989, at 23, col. 2. *See* Cooper, *supra* note 241, at 1665.

[253] Perhaps the major drawback to methadone is that it is effective only in blocking opioids. Cocaine is now surpassing heroin as the drug of choice and is fanning the flames of the HIV epidemic. There are no FDA-approved chemical treatments for cocaine dependence. There is, however, experimental evidence that buprenorphine suppresses the craving for cocaine. Because buprenorphine is already recognized as safe and effective pharmacotherapy for heroin dependence, buprenorphine treatment may also one day be used to attenuate dual abuse of cocaine and heroin. Mello, Mendelson, Bree & Lukas, *Buprenorphine Suppresses Cocaine Self-Administration by Rhesus Monkeys*, 245 SCIENCE 859 (1989). Buprenorphine is a pain reliever that, "like methadone, induces a generalized feeling of contentment rather than heroin's precipitate rush and euphoria. It is at least as effective as methadone in easing physical withdrawal and reducing cravings, and it is significantly more potent in blocking heroin's high if the addict tries to shoot up again. Unlike methadone, buprenorphine is relatively non addictive and carries almost no risk of overdose." Purvis, *Can Drugs Cure Drug Addiction?*, TIME, Dec. 11, 1989, at 104; *see also* Kosten & Kleber, *Buprenorphine Detoxification from Opioid Dependence: A Pilot Study*, 42 LIFE SCIENCES 635 (1988).

person who is drug-free. Yet, few public health interventions have been demonstrated to be as effective and safe as methadone. Substantial expansion of methadone maintenance would be a potent tool for reducing drug abuse, crime and HIV transmission.

3. Compulsory Versus Voluntary Treatment

Drug treatment professionals understandably have been reluctant to recommend compulsory interventions when there are long waiting lists for persons actively seeking treatment.[254] Compulsory intervention also contravenes the intuition that drug-dependent people must be self-motivated in order to benefit from treatment.[255] This intuition, however, simply is not borne out by the relevant data. In fact, there appears to be little difference in the efficacy of treatment between those who volunteer for it and those who are coerced into it.[256]

Compulsory treatment for drug abuse can be accomplished through civil commitment or through the criminal justice system.

[254] A panel of drug abuse treatment professionals met under the auspices of the National Institute on Drug Abuse in January 1987 to examine the demand-reduction potential of mandatory treatment. Leukefeld & Tims, *An Introduction to Compulsory Treatment for Drug Abuse: Clinical Practice and Research*, in NATIONAL INSTITUTE ON DRUG ABUSE, U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, NIDA MONOGRAPH NO. 86, COMPULSORY TREATMENT: RESEARCH AND CLINICAL PRACTICE 1–2 (1988) [HEREINAFTER NIDA MONOGRAPH NO. 86]. The strong consensus of the meeting was to reject compulsion as a primary strategy. (The author was a member of the NIDA steering group and is reporting his conclusions on the outcome of the meeting).

[255] Coercion also runs contrary to the humanistic traditions of psychiatry. *See* Schottenfeld, *Involuntary Treatment of Substance Abuse Disorders—Impediments to Success*, 52 PSYCHIATRY 164 (1989).

[256] *See* Anglin, Brecht & Maddahian, *Pre-treatment Characteristics and Treatment Performance of Legally Coerced versus Voluntary Methadone Maintenance Admissions*, 27 CRIMINOLOGY 537 (1989); Leukefeld & Tims, *Compulsory Treatment: A Review of Findings*, in NIDA MONOGRAPH NO. 86, *supra* note 254, at 236; *see also* Anglin, *The Efficacy of Civil Commitment in Treating Narcotic Addiction*, in NIDA MONOGRAPH NO. 86, *supra* note 254, at 31–32; Maddux, *Clinical Experience with Civil Commitment*, in NIDA MONOGRAPH NO. 86, *supra* note 254, at 35.

Civil commitment as a form of compulsory treatment has been legally possible in the last twenty-five years. The first state programs included the California Civil Addict Program[257] and the New York Narcotic Addiction Control Commission;[258] currently twenty-five states have civil commitment statutes in effect. The Federal Narcotic Addict Rehabilitation Act ("NARA")[259] also authorizes compulsory admission for drug treatment.[260] Studies of the effectiveness of civil commitment in the decade from 1965 to 1975, when it was actively used, demonstrate that it was at least as effective as voluntary treatment.[261] Despite the continuing statutory authority for civil commitment, however, relatively few drug-dependent individuals have been civilly detained and treated since the mid-1970s.[262]

Mandatory treatment through the criminal justice system is also authorized under numerous statutes that provide for treatment as a condition of release on bail, probation and parole.[263] While treatment under many of these schemes is technically voluntary, failure to agree to and carry out the treatment program can result in incarceration.[264] Under this scheme the drug-dependent person clearly has a vested interest in opting for treatment.

[257] Anglin, *The Efficacy of Civil Commitment in Treating Narcotics Addiction*, 18 J. DRUG ISSUES 527 (1988); Anglin & McGlothlin, *Outcome of Narcotic Addict Treatment in California*, in NIDA MONOGRAPH NO. 51, *supra* note 224, at 109.

[258] *See* Inciardi, *Compulsory Treatment in New York: A Brief Narrative History of Misjudgment, Mismanagement, and Misrepresentation*, 18 J. DRUG ISSUES 547 (1988); Winick, *Some Policy Implications of the New York State Civil Commitment Program*, 18 J. DRUG ISSUES 561 (1988).

[259] *See* Lindblad, *Civil Commitment Under the Federal Narcotic Addict Rehabilitation Act*, 18 J. DRUG ISSUES 595 (1988).

[260] For other examples of civil approaches to involuntary treatment, see Bursten, *Post-hospital Mandatory Outpatient Treatment*, 143 AM. J. PSYCHIATRY 1255 (1988); Herrington, *Outpatient Commitment: A Care Option Offering Structured Therapy with Less Restriction*, PSYCHIATRIC NEWS, Feb. 7, 1986, at 7. As to the constitutionality of civil commitment, see Rosenthal, *The Constitutionality of Involuntary Civil Commitment of Opiate Addicts*, 18 J. DRUG ISSUES 641 (1988).

[261] *See supra* note 256 and accompanying text.

[262] *See* NIDA MONOGRAPH NO. 86, *supra* note 254; Anglin, *A Social Policy Analysis of Compulsory Treatment for Opiate Dependence: Introduction*, 18 J. DRUG ISSUES 503 (1988) (introduction to volume devoted to civil commitment); W. MCGLOTHLIN & M. ANGLIN, COMPULSORY TREATMENT OF OPIATE DEPENDENCE (1988).

[263] *See, e.g.*, 18 U.S.C. § 4251 (1984).

[264] Many jurisdictions direct eligible drug-dependent individuals from the criminal justice to the treatment system. Under federal law, for example, this can take place as a condition of bail, or in lieu of a trial or sentence. 18 U.S.C. § 4251f (1984). Unfortunately, this statute has been repealed, effective November 1, 1992. Comprehensive Crime Control Act of 1984, Pub. L. No. 98-473, § 218, 98 Stat. 2027.

Extensive research has been undertaken concerning the success of mandatory treatment in the criminal justice system.[265] The criminal justice system is nearly twice as likely as any other source to refer young users into treatment.[266] Both the TOPS[267] and DARP[268] studies show benefits to individuals under mandatory treatment equal to, or greater than, voluntary treatment.[269]
The major model for treatment in the criminal justice system is the Treatment Alternatives to Street Crime ("TASC") program. The goals of TASC are to identify drug users who come into contact with the criminal justice system, to refer them to clinically appropriate treatment, to monitor their progress, and to return violators to the criminal justice system.[270] TASC employs creative strategies including deferred prosecution, community sentencing, diversion to the civil treatment system, and pretrial intervention to help funnel drug users into treatment. TASC also utilizes traditional strategies such as probation and parole supervision for probable and proven crimes.[271]

More than forty evaluations of TASC have concluded that it has intervened effectively to reduce drug abuse and criminal activity and that it has identified previously unrecognized drug-dependent persons.[272] Indeed, researchers have concluded that criminal justice treatment clients do as well or better than clients in other drug abuse treatment programs. Successes of compulsory treatment include significantly reduced drug use and criminal activity, and increased employment and social coping skills.[273] Sim-

[265] *See generally* E. WISH, M. TOBORG & J. BALLASSAI, IDENTIFYING DRUG USERS AND MONITORING THEM DURING CONDITIONAL RELEASE: ISSUES AND PRACTICES (1988) (because of the strong relationship between addiction and crime and the lower drug and crime rates for persons in treatment, some researchers propose compulsory treatment); M. STITZER & M. MCCAUL, CRIMINAL JUSTICE INTERVENTIONS WITH DRUG AND ALCOHOL ABUSERS: THE ROLE OF COMPULSORY TREATMENT (1987) (criminal justice strategies for treatment lack "systematic contingencies"); NIDA MONOGRAPH NO. 86, *supra* note 254.

[266] Leukefeld & Tims, *supra* note 256, at 239–40.

[267] *See supra* note 226.

[268] *See supra* note 227.

[269] *See supra* note 256.

[270] *See* Hubbard, Collins, Rachal & Cavanaugh, *The Criminal Justice Client in Drug Abuse Treatment*, in NIDA MONOGRAPH NO. 86, *supra* note 254, at 57 (discussing TASC study).

[271] *See* Cook & Weinman, *Treatment Alternatives to Street Crime*, in NIDA MONOGRAPH NO. 86, *supra* note 254, at 99.

[272] TREATMENT OPTIONS, *supra* note 222, at 9.

[273] Hubbard, Collins, Rachal & Cavanaugh, *The Criminal Justice Client in Drug Abuse Treatment*, in NIDA MONOGRAPH NO. 86, *supra* note 254, at 76. *See* Leukefeld & Tims, *supra* note 256, at 238

ilarly successful outcomes are evident for correctional institution-based treatment[274] and aftercare for probationers and parolees.[275]

Compulsory treatment's proven effectiveness may persuade even groups that are morally opposed to drug use to choose treatment over punitive measures. A mandatory treatment program could make a user's otherwise useless time in the criminal justice system highly productive. Since a clear nexus exists between treatment duration and treatment success, extended treatment in the criminal justice system would significantly increase the probability of a positive outcome. Despite the limits it places on personal autonomy, compulsory treatment promises a brighter future for drug-dependent persons than currently practiced punitive measures.

B. Present Treatment Programs: The Gulf Between Treatment Needs and Service Availability

Politicians[276] and public opinion polls[277] alike place drug abuse and the needle-borne spread of HIV infection among the country's most pressing social problems. Total federal funds budgeted for drug programs increased from $1.5 billion in Fiscal Year 1980 to $5.669 billion in Fiscal Year 1989. For Fiscal Year 1991 the Administration proposed a total of just over $10.6 billion.[278] The rise in funding,[279] the National Drug Control Strategy,[280] and the tough public talk about a "drug war"[281] reflect the federal government's social priorities. But noticeably absent from the spending, planning, and rhetoric is a comprehensive strategy for treatment and prevention. Surprisingly, no exact government figures are kept on the percentage of federal funds that go to treatment and prevention as opposed to law enforcement, eradication and interdiction. But by any account, the percentage is low. Two decades ago more than 50% of the total drug abuse budget went to treatment and prevention; it was reduced to between 18 and 27% during the Reagan years in the 1980s and is approximately 29% for Fiscal Year 1991.[282]

Commission and press reports have repeatedly drawn attention to the inability to meet treatment needs across the nation.[283] States estimate that less than 12% of the more than 12 million drug-dependent people needing treatment are actually receiving treatment services.[284] As of September 25, 1989, 66,766 persons in

[274] H. WEXLER, A MODEL PRISON REHABILITATION PROGRAM: AN EVALUATION OF THE "STAY'N OUT" THERAPEUTIC COMMUNITY (1988); Platt, Perry & Metzger, *The Evaluation of a Heroin Addiction Treatment Program within a Correctional Program*, in EFFECTIVE CORRECTIONAL TREATMENT (R. Ross & P. Gendreau eds. 1980).

[275] J. BAGLIN, THE IMPACT OF THE FEDERAL DRUG AFTERCARE PROGRAM 5–6 (Federal Judicial Center, 1986). One major study concludes that "criminal and drug use behavior, as well as social functioning, were significantly improved during treatment for the three groups [high, moderate and low legal coercion groups] and remained improved following treatment. Further, the level of improvement was not related to legal coercion . . . . Clearly, the beneficial impact of treatment of the measured behaviors did not differ for addicts with legally coerced versus voluntary treatment entry." Anglin, Brecht & Maddahian, *Pretreatment Characteristics and Treatment Performance of Legally Coerced versus Voluntary Methadone Maintenance Admissions*, 27 CRIMINOLOGY 537, 553–54 (1989).

[276] *See, e.g.*, REPORT OF THE WHITE HOUSE CONFERENCE FOR A DRUG FREE AMERICA (June 1988) ("Our forces are out manned, out gunned and out spent . . . . Our losses include children born addicted, and other children recruited to crime before their teens"); THE WHITE HOUSE, NATIONAL DRUG CONTROL STRATEGY 1 (1989) ("most Americans remain firmly convinced that drugs present the gravest present threat to our national well being—with good reason. Because a wealth of other, up-to-date evidence suggests that our drug problem is getting worse, not better").

[277] *Gallup Poll Shows Nation's Attitudes On Health Are Contradictory, BCBSA Says*, 17 PENSION REP. (BNA) No. 29, at 1252 (July 16, 1990) (Drug abuse was considered the "most important problem facing this country today" by 40% of respondents; the next highest concerns were poverty and homelessness (9%) and the budget deficit (5%)).

[278] NATIONAL ASS'N STATE ALCOHOL AND DRUG ABUSE DIRECTORS, TREATMENT WORKS: A REVIEW OF 15 YEARS OF RESEARCH FINDINGS ON ALCOHOL AND OTHER DRUG ABUSE TREATMENT OPTIONS 3 (1990) [hereinafter TREATMENT WORKS].

[279] *See* THE WHITE HOUSE, NATIONAL DRUG CONTROL STRATEGY: BUDGET SUMMARY (1990).

[280] *See* THE WHITE HOUSE, NATIONAL DRUG CONTROL STRATEGY (1989).

[281] *See* Letter from President Bush to the Speaker of the House and President of the Senate, Sept. 5, 1989, in THE WHITE HOUSE, NATIONAL DRUG CONTROL STRATEGY ("Americans' fight against epidemic illegal drug use cannot be won on any single front alone; it must be waged *everywhere*—at every level of Federal, State, and local government and by every citizen in every community across the country").

[282] *See* Brecher, *Needles and the Conscience of a Nation*, *supra* note 1, at 5–6; THE WHITE HOUSE, NATIONAL DRUG CONTROL STRATEGY: BUDGET SUMMARY (1990) (demand reduction represents 29% of the proposed $10.6 billion FY1991 budget). Compare the current expenditures with those proposed in MAJORITY STAFFS OF THE SENATE JUDICIARY COMMITTEE AND THE INTERNATIONAL NARCOTICS CONTROL CAUCUS, FIGHTING DRUG ABUSE: A NATIONAL STRATEGY (1990) (38% of the $14.6 billion proposed total for Fiscal Year 1991 is recommended to be earmarked for demand reduction services). Senator Daniel Partick Moynihan argues that the Anti-Drug Abuse Act of 1988 envisions a 50-50 split on treatment and law enforcement, but the budget provides only 26% for treatment. Pear, *Drug Policy Debate Turns to Feud Between Moynihan and Bennett*, N.Y. Times, June 18, 1990, at A20, col. 4.

[283] *See, e.g.*, REPORT OF THE PRESIDENTIAL COMMISSION ON THE HIV EPIDEMIC 94–103 (1988); Marriott, *Addicts Awaiting Treatment Often Face Delays and Panic*, N.Y. Times, Jan. 10, 1990, at A1, col. 5; Pinkney, *Resources Lacking in Fight to Break AIDS-IV Drug Link*, Am. Med. News, Mar. 18, 1988, at 1, 9; Kerr, *Shortage of Drug Treatment Imperils AIDS Control*, N.Y. Times, Oct. 4, 1987, at 32, col. 1.

[284] TREATMENT WORKS, *supra* note 278, at app. 1 (41 states and Washington, D.C. reported that a total of 1,407,519 persons per year are currently receiving treatment for alcohol or drug dependency. These jurisdictions estimate that an additional 10,596,419 persons need treatment).

forty-four states responding to a national survey were on treatment waiting lists; one half of these people had been waiting for at least thirty days, and in many major urban states and the District of Columbia, between 90 and 100% of persons on the lists had waited at least thirty days.[285] In some areas addicts can wait for six months to a year for treatment.[286] Waiting lists, moreover, may be grossly understated because many programs are so full they do not add people to their lists.[287] Addicts on waiting lists exhibit increased involvement in crime and less interest in entering treatment.[288] The absence of adequate treatment services is also evident in correctional facilities. Studies indicate that the vast majority of inmates who are seriously drug-dependent are not in treatment.[289]

The relatively low percentage of expenditure on demand reduction, and the long waiting lists for treatment, are symbolic of society's perception of drug-dependent people as morally blameworthy rather than ill and of the low value given to treatment relative to punishment. As an expert on drug treatment programs has written, "[t]he ultimate measure of the value of policies and programs is not the sum of their effects minus their shortcomings, flaws, and abuses, but rather what alternative policies and programs might be developed, which, when weighed in some balance that is sensitive to symbols as well as costs, would be better than that which now exists."[290] Expenditures on demand reduction to bridge the gulf between services and current needs would not only be a symbol of humanity toward a historically reviled and vulnerable population but would also be a cost-effective way to reduce drug abuse and crime.

[285] *Id.* The District of Columbia, Florida, and New Jersey have 100% of the people on their lists waiting over 30 days, while New York and Rhode Island have 90% of the people on their lists waiting for over 30 days. A 42-city survey found that in three of four cities there were waiting lists for drug-dependent people seeking admission to treatment. The average wait was seven weeks. U.S. CONFERENCE OF MAYORS, THE ANTI-DRUG ABUSE ACT OF 1986: ITS IMPACT IN CITIES ONE YEAR AFTER ENACTMENT—A 42-CITY SURVEY 1 (1987).

[286] Kerr, *U.S. Drug 'Crusade' Is Seen as Undermining Itself*, N.Y. Times, Oct. 26, 1987, at A1, col. 3.

[287] Malcolm, *In Making Drug Strategy No Accord on Treatment*, N.Y. Times, Nov. 19, 1989, at A1, col. 1.

[288] Brown, Hickney, Chung, Craig & Jaffe, *The Functioning of Individuals on a Drug Abuse Treatment Waiting List*, 15 AM. J. DRUG & ALCOHOL ABUSE 261 (1989) [hereinafter Brown].

[289] *See* J. PETERSILIA, WHICH INMATES PARTICIPATE IN PRISON TREATMENT PROGRAMS? 7 (1978) (fewer than 20% of inmates needing drug rehabilitation actually participated in a treatment program); J. PETERSILIA & P. HONIG, THE PRISON EXPERIENCE OF CARVER CRIMINALS 32 (1980).

[290] Jaffe, *The Swinging Pendulum: The Treatment of Drug Abusers in America*, in HANDBOOK ON DRUG ABUSE 16 (1979).

C. *The Cost-Effectiveness of Drug Treatment*

In times of economic downturn, it is argued that federal and state governments cannot afford the cost of treatment expansion. Federal and state policy makers legitimately may inquire whether scarce resources should be refocused on reducing demand, rather than supply. The questions addressed here are what results policy makers can reasonably expect from treatment programs and the cost of programs set on reducing the incidence of drug use and HIV infection.

The Presidential Commission on the HIV Epidemic observed that treatment on demand can save money as well as lives. At a purely economic level, the Commission reported, the annual cost of keeping a person in prison is $14,500, but as little as $3,000 is needed for drug treatment.[291] The cost of treatment compares favorably with the $50,000 or more lifetime cost of treating a person with AIDS.[292]

Comprehensive cost/benefit analyses conducted by the TOPS[293] and Tabbush[294] studies conclude that state level funding of drug abuse programs is economically justified. The studies focused on reduced arrest, prosecution, and incarceration costs; reduced loss due to property theft; reduced social costs due to an improved labor market; and reduced medical treatment costs. The TOPS study concluded that there was an 11–30% decline in these indirect costs as a consequence of drug abuse treatment. The Tabbush study found a benefit-cost ratio of 1:11.54—for every dollar spent for effective drug treatment, $11.54 of social costs is saved.[295]

[291] Estimates for drug treatment costs for IV drug users in 1987 were $3,000 (outpatient methadone maintenance), $2,300 (outpatient drug-free) and $14,600 (non-hospital residential drug-free). TREATMENT WORKS, *supra* note 278, at 25.

[292] *See* Fox, *The Cost of AIDS: Exaggeration, Entitlement, and Economics*, in AIDS AND THE HEALTH CARE SYSTEM 197 (L. Gostin, ed. 1990); Fox, *Financing Health Care for Persons with HIV Infection: Guidelines for State Action*, 16 AM. J. LAW & MED. 223 (1990).

[293] *See supra* note 226.

[294] V. TABBUSH, THE EFFECTIVENESS AND EFFICIENCY OF PUBLICLY FUNDED DRUG ABUSE TREATMENT AND PREVENTION PROGRAMS IN CALIFORNIA: A BENEFIT COST ANALYSIS (1986).

[295] *Id.* at 94.

D. Expanding Access to Demand Reduction Services

If policy makers concur that prevention and treatment—properly designed, funded and executed—is beneficial to the individual and is cost effective, the remaining question is how best to reach the drug user to reduce demand. The fundamental problem with existing treatment services is that they are often far removed from the silent world of the illicit drug user. Virtually all treatment services are delivered through traditional drug treatment facilities that are separated from the mainstream health care system.

Drug treatment occurs, if at all, when a drug user himself seeks out services, has the persistence to wait his turn on the list, and voluntarily remains in treatment for the duration necessary to obtain results. This system is, at best, haphazard and idiosyncratic and, at worst, designed to perpetuate the revolving door between drug use, needle sharing, and brief stays in detoxification or in prison. Indeed, all the evidence points to (1) large numbers of unrecognized cases of serious drug dependence;[296] (2) cases that do come forward and are placed on lists where the individual progressively loses interest in treatment;[297] (3) short periods of detoxification with few individuals logging sufficiently long stays in treatment to make a difference;[298] and (4) repeated contacts with emergency medical services and with the criminal justice system.[299] This pattern suggests that the current segregated treatment system is neither capable of recruiting large numbers of drug users nor of keeping them in treatment.

The lesson for policy makers from the social science research is therefore relatively simple. The most effective strategy to reduce the dual epidemics of drugs and AIDS is to identify as many unrecognized cases as possible and to give them the opportunity to enter and remain in treatment for durations that maximize the chance of a positive outcome.

Two distinct foci for enhancing the capacity to identify and treat drug-dependent persons are the health care and criminal

[296] *See infra* notes 301, 318–322 and accompanying text.

[297] *See* Brown, *supra* note 288, at 261 (51.7% of all persons on a waiting list become less interested in entering treatment).

[298] Sheffet, Quinones, Lavenhar, Doyle & Prager, *An Evaluation of Detoxification as an Initial Step in the Treatment of Heroin*, 133 AM. J. PSYCHIATRY 337 (1976) (only 9.6% of patients admitted to a detoxification unit sought long-term treatment).

[299] *See infra* notes 300–322 and accompanying text.

justice systems. Large numbers of otherwise unrecognized and untreated drug users come into contact with both systems. It simply makes no sense to have a seriously dependent person pass through an emergency room, hospital, courtroom, or prison and fail to identify her as a person who needs treatment. Even if the person is properly identified, there presently is insufficient capacity in these settings to provide treatment or even to make a referral. The settings are not designed or funded to provide treatment, and the training and experience of staff is inadequate to provide expert care for seriously drug-dependent persons. However, both the health care and criminal justice systems could remedy these problems.

1. The Health Care System

Seriously drug-dependent people are likely to have multiple health problems, not only because of the physical and psychological effects of their dependency, but because they are likely to be poor, malnourished, even homeless. As a result of their multiple health problems, drug-dependent persons are likely to come into contact with the health care system in traditional venues such as hospitals, emergency rooms, community health and mental health centers, family physician offices, health maintenance organizations and the like.

The number of drug related hospital admissions increased by 121% between 1985 and 1988. Included in this figure is a twenty-eight-fold increase in hospital admissions involving smoked cocaine (crack).[300] Unidentified drug users, many already HIV-positive, pass through the health care system. Blinded studies of sentinel hospitals throughout the United States suggest that as many as 80,000 cases of HIV infection pass undetected through American hospitals each year.[301] In large urban areas up to 50%

[300] THE WHITE HOUSE, NATIONAL DRUG CONTROL STRATEGY 3 (1989).

[301] *See* Kelen, DiGiovanna & Bisson, *Human Immunodeficiency Virus Infections in Emergency Department Patients*, 262 J. AM. MED. A. 518 (1989) (of 2544 consecutive emergency department patients at Johns Hopkins Hospital, 152 (6%) were HIV-positive and 95 (63%) were not previously known to be infected); Soderstrom, Furth, Glasser, Dunning, Groseclose & Cowley, *HIV Infection Rates in a Trauma Center Treating Predominately Rural Blunt Trauma Victims*, 29 J. TRAUMA 1526 (1989) (1.7% of patients at the Statewide Trauma Center in Baltimore were HIV-positive); Gordin, Givert, Hawley & Willoghby, *Prevalence of the Human Immunodeficiency Virus and Hepatitis B Virus in Unselected Hospital Admissions: Implications for Mandatory Testing and Universal Pre-*

or more of these cases of HIV infection are likely to be among unrecognized and untreated IV drug users.[302] Studies of medical centers and emergency rooms indicate that a substantial number of patients have recently used an illicit drug, and many may be seriously dependent.[303] Testing of all patients for recent drug use would be easy enough to implement, but in the present political and legal climate such testing would raise serious privacy concerns. These concerns would not be as serious if a drug user did not have to fear criminal prosecution.

Even if seriously drug-dependent people were identified in traditional health care settings, they would be unlikely to receive the expert care needed to ameliorate their long-term dependencies. Traditional medicine is ill-prepared, at the most fundamental levels, to provide effective drug abuse treatment. Research shows that medical school training in the area of drug abuse is quite poor. Although it is improving, the number of qualified instructors, specific courses, time spent in the curriculum and contact with drug-dependent clients generally is low.[304] The rest of medical education, from internship through residency, rarely exposes students to addicts and the problems of drug dependency.[305] Even primary

cautions, 161 J. INFECTIOUS DISEASES 14 (1990). In the CDC sentinel hospital study the HIV prevalence rate ranged from 0.1 to 7.6%. Counseling and Testing for HIV Infection in Acute Care Hospitals, CDC Strategic Planning Meeting (April 5–6, 1990); St. Louis, Rauch, Petersen, Anderson & Domdero, *Seroprevalence Rates of Human Immunodeficiency Virus Infection at Sentinel Hospitals in the United States*, 323 N. ENG. J. MED. 213 (1990).

[302] *See supra* note 12 and accompanying text.

[303] *See* Lindenbaum, Carroll, Daskal & Kapusnick, *Patterns of Alcohol and Drug Abuse in an Urban Trauma Center: The Increasing Role of Cocaine Abuse*, 29 J. TRAUMA 1654 (1989) (74% tested positive for illicit or prescription drugs in their blood, including cocaine (54.4%), cannabinoids (37.2%), barbiturates (7.1%), amphetamines (4.7%) and opiates (9%)); Marzuk, Tardiff, Leon, Stajic, Morgan & Mann, *Prevalence of Recent Cocaine Use Among Motor Vehicle Fatalities in New York City*, 263 J. A.M.A. 250 (1990) (18.2% of both drivers and passengers tested positive for cocaine use); Bailey, *Cocaine Detection During Toxicology Screening of a University Medical Center Patient Population*, 25 J. CLINICAL TOXICOLOGY 71 (1987) (10% tested positive for cocaine).

[304] Bigby, *Substance Abuse Education During Internal Medicine Training*, 74 J. GEN. INTERNAL MED. 74 (1989); Confusione, Jaffe & Rosen, *Drug Abuse Training as Part of a Family Medicine Clerkship*, 57 J. MED. EDUC. 409 (1982); Fassler, *Views of Medical Students and Residents on Education in Alcohol and Drug Abuse*, 60 J. MED. EDUC. 562 (1985); Glass, *Substance Abuse and Professional Education: A Tops-down or Bottoms-up Approach*, 83 BRIT. J. ADDICTION 999 (1988); Helwick, *Substance Abuse Education in Medical School: Past, Present, and Future*, 60 J. MED. EDUC. 707 (1985); *see also* Pokorny & Solomon, *A Follow-up Survey of Drug Abuse and Alcoholism Teaching in Medical Schools*, 58 J. MED. EDUC. 316 (1983).

[305] Coulehan, Zettler-Segal, Block, McClelland & Schulberg, *Recognition of Alcoholism and Substance Abuse in Primary Care Patients*, 147 ARCH. INTERN. MED. 349 (1987);

care physicians themselves feel they are incompetent to treat substance abuse.[306] The beliefs of physicians are confirmed by studies showing pitifully low levels of accuracy in identifying and diagnosing substance abuse.[307] Even when substance abuse is recognized, it is the health care problem most likely to be referred outside the primary care physician's practice.[308] Physicians have had little reason to study substance abuse since addicts are either shipped off to prison or never identified. It is likely that if public health objectives prevailed, medicine would quickly respond with better education and more active practice.

Current medical school students may possess the same kinds of biases against substance abusers as the general population. Their perception of the "skid row individual with a poor social and medical prognosis" only grows deeper during medical education.[309] Medical training to dispel these myths and improve treatment skills has been wholly inadequate.[310] Even if attitudes toward drug-dependent persons in the general population do not change, medical schools would do well to change the tenor in the classroom.

The inadequate medical education, and the poor attitudes toward drug users among physicians, are not the only problems in providing drug treatment services in the mainstream health care

see also Galanter, *Subspecialty Training in Alcoholism and Drug Abuse*, 146 AM. J. PSYCHIATRY 8 (1989); Galanter, Kaufman, Taintor, Robinowitz, Meyer & Halikas, *The Current Status of Psychiatric Education in Alcoholism and Drug Abuse*, 146 AM. J. PSYCHIATRY 35 (1989); Taliaferro, Rund, Brown, Goldfrank, Jorden, Ling & Gallery, *Substance Abuse Education in Residency Training Programs in Emergency Medicine*, 18 ANN. EMERGENCY MED. 1344 (1989).

[306] Kennedy, *Chemical Dependency: A Treatable Disease*, 81 OHIO ST. MED. J. 77 (1985) (71% of physicians felt either incompetent or ambivalent about treating alcoholism); Fassler, *Views of Medical Students and Residents on Education in Alcohol and Drug Abuse*, 60 J. MED. EDUC. 562 (1985) (28% felt incompetent to treat alcoholism).

[307] Lewis & Gordon, *Alcoholism and the General Hospital: The Roger Williams Intervention Program*, 59 BULL. N.Y. ACAD. MED. 181 (1983) (although substance abuse is evident in 20–50% of general hospital admissions, it is diagnosed in fewer than 5% of admissions).

[308] *See generally* Gottlieb, Mullen & McAlister, *Patients' Substance Abuse and the Primary Care Physician: Patterns of Practice*, 12 ADDICTIVE BEHAV. 23 (1987).

[309] Lewis, Niven, Czechowicz & Trumble, *A Review of Medical Education in Alcohol and Other Drug Abuse*, 257 J. A.M.A. 2945 (1987).

[310] Committee on Adolescence, American Academy of Pediatrics, *The Role of the Pediatrician in Substance Abuse Counseling*, 72 PEDIATRICS 251 (1983); Health and Public Policy Committee, American College of Physicians, *Chemical Dependence*, 102 ANNALS INTERN. MED. 405 (1985). Model programs are under way to try to correct the problems in medical education. *See* Lewis, Niven, Czechowicz, & Trumble, *supra* note 309, at 2947 (discussing NIAAA and NIDA conferences and model programs for physician training in substance abuse).

system.[311] Physicians in most mainstream health care settings cannot legally prescribe methadone—the FDA approved chemical treatment for opiate abuse.[312] Prescribing methadone has, from its discovery and approval, been highly regulated. There are strict conditions for the use of methadone by which all health care providers must abide.[313] In particular, a provider cannot prescribe methadone unless she is specifically approved for the purpose, and approval is not granted unless there is compliance with detailed regulations concerning staff-patient ratios, counseling, and paperwork. The objective of the regulations is to ensure in-depth psychological and medical care and counseling so that methadone maintenance centers are not mere "watering holes" to continue addiction. However, the regulations have had the effects of (1) stifling the growth of methadone maintenance programs because of the inordinate costs in complying with the regulations; and (2) discouraging ordinary health care providers from offering drug abuse treatment at all. Consider the typical case where a seriously dependent person is in an emergency room or is an inpatient in a city hospital. The provider can treat all of the physical conditions associated with drug use, but is unable to prescribe anything related to the primary diagnosis of drug dependency. The provider's only realistic option is to place the patient on a waiting list for a separate drug treatment slot, with all of the known limitations of a waiting list placement.[314]

The Department of Health and Human Services has already issued proposed rules to try to ease the regulatory burden on methadone maintenance programs in response to the HIV epidemic.[315] The proposed rules authorize minimum service maintenance therapy to patients awaiting comprehensive maintenance treatment, and require counseling on the avoidance of HIV transmission. Professionals providing minimum service maintenance treatment are required to provide a medical examination and services, but not rehabilitative services and routine urine screening. These are regarded as interim measures only until the client can be transferred to a comprehensive program.[316]

Thus, although both drug-dependent people and physicians believe that drug treatment services should be more fully integrated into the health care system, and although the health care system has the unique capacity to identify and care for patients, there remain systematic problems in utilizing the mainstream health care system for these purposes. Integration of drug treatment into primary care, hospitals, community health and mental health centers, health maintenance organizations and other providers will require a sizable influx of resources for training, facilities, and staff. It will also require fundamental reform of federal regulations to allow physicians to prescribe methadone and future chemical treatments much in the same way that they can currently prescribe in other areas of medicine.

2. *Criminal Justice System*

Drug abuse is placing an extraordinary strain on law enforcement, courts, and prisons.[317] Considerable evidence exists showing the close relationship between drug use and crime. The Drug Use Forecasting (DUF) program of the National Institute of Justice monitors drug use among recently arrested persons in selected cities. DUF staff obtain voluntary, anonymous urine specimens from a sample of male arrestees from twenty-two cities. The prevalence of recent cocaine use (at least 50%) among arrestees is striking. This figure is, moreover, an underestimate since DUF significantly limits the participation in its studies of persons who are arrested on charges of possession or sale of drugs.[318] The finding that at least 20% of drug injectors in this study reported sharing needles indicates that there is a continuing risk for the

[311] *See generally* Evans, *Accessing Intravenous Drug Users via the Health Care System*, in NATIONAL INSTITUTE ON DRUG ABUSE, U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, NIDA MONOGRAPH NO. 93, AIDS AND INTRAVENOUS DRUG USE: FUTURE DIRECTIONS FOR COMMUNITY-BASED PREVENTION RESEARCH 277 (1990).

[312] *See supra* notes 239–253 and accompanying text.

[313] 21 C.F.R. § 291 (1990) (the Methadone Regulation).

[314] *See supra* notes 218–220 and accompanying text.

[315] Dep't of Health & Human Services, FDA, & NIDA, Methadone in Maintenance and Detoxification: Joint Revision of Conditions for Use, 54 (40) Fed. Reg. 8954 (1989) (to be codified at 21 C.F.R. § 291).

[316] *Id.* at 8973–74.

[317] *See generally* U.S. GENERAL ACCOUNTING OFFICE, GAO/GG 88-39, CONTROLLING DRUG ABUSE: A STATUS REPORT, SPECIAL REPORT FROM THE COMPTROLLER OF THE UNITED STATES (1988).

[318] Centers for Disease Control, *Urine Testing for Drug Use Among Male Arrestees—United States 1989*, 38 MORBIDITY & MORTALITY WEEKLY REP. 780 (1989). Urine tests were positive for cocaine most commonly in New York (76%), Philadelphia (74%), and the District of Columbia (65%), and least likely in the smaller cities of Indianapolis (26%) and San Antonio (24%). *See also National Institute of Justice, DUF: Drug Use Forecasting* (1989) (the incidence of cocaine use tripled in two years).

spread of HIV and other blood-borne infections.[319] Between 75 and 83% of persons incarcerated reported they had used drugs in the past, and between one-third and two-fifths reported they were under the influence of an illegal drug at the time of the offense.[320]

Many prisoners even take drugs after they are incarcerated and often share injection equipment with other prisoners.[321] One rural prison system reported that 26.9% of the inmate samples tested positive for illicit drugs. While the prison system was able to lower this rate to 9.2% with routine drug screening and punishments, it indicates that drug use among incarcerated inmates can be substantial.[322]

Despite the large number of drug-dependent persons coming into contact with the criminal justice system, there are few comprehensive treatment programs. One national survey found that only four percent of state prison inmates received any treatment, and almost half the nation's state prisons were not served by any identifiable drug abuse treatment program.[323] For many in the criminal justice system, routine urine testing is the only "treatment" provided.[324] The criminal justice system, particularly in corrections, often presents ideological, economic and practical reasons for not providing treatment for more people. This resistance to establishing effective drug treatment programs reflects once again the tension between the preventive and punitive goals of criminal justice and rehabilitation. Even if this conflict could be resolved, it is argued that severe prison overcrowding and the strain on resources make the provision of effective treatment very difficult.

The ideological aversion to rehabilitation is not a serious argument against sufficient and adequate treatment in the corrections

[319] Centers for Disease Control, *supra* note 318, at 783. The incidence of opiate use was considerably less than cocaine use. In 9 out of 14 cities less than 10% of arrestees tested positive for opiates. *See also* NATIONAL INSTITUTE OF JUSTICE, *supra* note 318.

[320] U.S. DEPARTMENT OF JUSTICE, OFFICE OF JUSTICE PROGRAMS, BUREAU OF JUSTICE STATISTICS, DRUGS AND CRIME FACTS, 1989, at 5 (1989).

[321] *See* Carvell & Hart, *Risk Behaviours for HIV Infection Among Drug Users In Prison*, 300 BRIT. MED. J. 1383 (1990).

[322] Vigdal & Stadler, *Controlling Inmate Drug Use Cut Consumption by Reducing Demand*, CORRECTIONS TODAY, June 1990, at 96. This study took place in the Wisconsin prison system. The number of inmates using drugs in urban prison systems is likely to be higher.

[323] F. TIMS, DRUG ABUSE TREATMENT IN PRISONS 13 (National Institute on Drug Abuse, Research Report No. ADM 86-1149, 1981, reprinted 1986).

[324] *See* Drug Testing: Drug Testing Common, Often Random, in INSTITUTIONS, PROBATION AND PAROLE CORRECTIONS COMPENDIUM 12 (Aug. 1986).

system. Rather, it is a mere abstraction fueled by the government's policy of holding users accountable or punishing them. To be sure, there are budgetary and practical constraints on treatment expansion in prisons. However, financial analyses continually show that treatment is highly cost effective.[325] Planners should carefully consider the future savings associated with effective treatment when attempting to work within present budgetary constraints.

Systematic and, if necessary, compulsory treatment of persons in the criminal justice system is fully consistent with the research presented earlier.[326] Criminal justice system settings (such as diversion, probation, prison and parole) provide optimal opportunities for treatment: large numbers of drug users come into contact with these programs; they are captive participants who otherwise have unproductive time; they are already subject to state control because of their offenses so that the same level of constitutional concerns raised by civil commitment or health system testing are not presented; and they may remain under control for considerable periods, thereby providing the best opportunity for successful treatment outcomes.

The National Treatment Alternative to Street Crimes (TASC) program has already shown that a demand reduction model works better, is more humane, and costs less than the model of punishment and retribution that has dominated government thinking for the last decade and more. Furthermore, making a real commitment to treatment might help ease present constitutional and civil rights concerns that limit the justice system's attempts to identify drug users.

Conclusion

The lesson learned more than a half-century ago in the mid-winter epidemic of malaria, and now in the cocaine-ravaged inner cities of America, is that drug use and the needle-borne spread of infection are primarily public health problems. Seriously drug-dependent people are neither uncaring about the affects of drug use and AIDS on themselves or their partners, nor are they unable to change their behaviors if given the education, means, and ser-

[325] *See supra* notes 293–295 and accompanying text.

[326] *See supra* notes 254–275 and accompanying text.

vices to do so. They are more ill, than bad, human beings, and mostly unable to escape from their physical dependencies by admonitions to "just say no" or draconian criminal penalties. Social science research has provided a clear agenda for confronting the dual epidemics of drug dependence and AIDS, if the national will and resources are devoted to achieving this end.

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II

Divider Title: _____

UNITED STATES NAVAL HOME

OPERATION AND MAINTENANCE

For operation and maintenance of the United States Naval Home, to be paid from funds available to the Naval Home in the Armed Forces Retirement Home Trust Fund, $10,775,000.

CAPITAL PROGRAM

For construction and renovation of the physical plant to be paid from funds available to the Naval Homes in the Armed Forces Retirement Home Trust Fund, $473,000, to remain available until expended.

TITLE V—GENERAL PROVISIONS

SEC. 501. No part of the funds appropriated under this Act shall be used to provide a loan, guarantee of a loan, a grant, the salary of or any remuneration whatever to any individual applying for admission, attending, employed by, teaching at, or doing research at an institution of higher education who has engaged in conduct on or after August 1, 1969, which involves the use of (or the assistance to others in the use of) force or the threat of force or the seizure of property under the control of an institution of higher education, to require or prevent the availability of certain curricula, or to prevent the faculty, administrative officials, or students in such institution from engaging in their duties or pursuing their studies at such institution.

SEC. 502. The Secretaries of Labor, Health and Human Services, and Education are authorized to transfer unexpended balances of prior appropriations to accounts corresponding to current appropriations provided in this Act: *Provided*, That such transferred balances are used for the same purpose, and for the same periods of time, for which they were originally appropriated.

SEC. 503. No part of any appropriation contained in this Act shall remain available for obligation beyond the current fiscal year unless expressly so provided herein.

SEC. 504. (a) No part of any appropriation contained in this Act shall be used, other than for normal and recognized executive-legislative relationships, for publicity or propaganda purposes, for the preparation, distribution, or use of any kit, pamphlet, booklet, publication, radio, television, or film presentation designed to support or defeat legislation pending before the Congress, except in presentation to the Congress itself.

(b) No part of any appropriation contained in this Act shall be used to pay the salary or expenses of any grant or contract recipient, or agent acting for such recipient, related to any activity designed to influence legislation or appropriations pending before the Congress.

SEC. 505. The Secretaries of Labor and Education are each authorized to make available not to exceed $7,500 from funds available for salaries and expenses under titles I and III, respectively, for official reception and representation expenses; the Director of the Federal Mediation and Conciliation Service is authorized to make available for official reception and representation expenses not to exceed $2,500 from the funds available for "Salaries and expenses, Federal Mediation and Conciliation Service"; and the Chairman of the National Mediation Board is authorized to make available for official reception and representation expenses not to exceed $2,500 from funds available for "Salaries and expenses, National Mediation Board".

SEC. 506. Notwithstanding any other provision of this Act, no funds appropriated under this Act shall be used to carry out any program of distributing sterile needles for the hypodermic injection of any illegal drug unless the Surgeon General of the United States determines that such programs are effective in preventing the spread of HIV and do not encourage the use of illegal drugs, except that such funds may be used for such purposes in furtherance of demonstrations or studies authorized in the ADAMHA Reorganization Act (Public Law 102-321). AIDS

SEC. 507. No funds appropriated pursuant to this Act may be expended by an entity unless the entity agrees that in expending the assistance the entity will comply with sections 2 through 4 of the Act of March 3, 1933 (41 U.S.C. 10a–10c, popularly known as the "Buy American Act").

SEC. 508. (a) Notwithstanding any other provision of law, monthly benefit payments under part B or part C of the Black Lung Benefits Act for months after December 1993 and before October 1994 shall be calculated as though the provisions of Federal law prescribing pay rates for Federal employees continued in effect, without amendment to or limitation of such provisions, after January 1993. 30 USC 922 note

(b) Of the amounts provided under title XII of Public Law 102-368, Additional Assistance to Distressed Communities, under the heading "Community Investment Program", $225,000,000 are rescinded.

SEC. 509. None of the funds appropriated under this Act shall be expended for any abortion except when it is made known to the Federal entity or official to which funds are appropriated under this Act that such procedure is necessary to save the life of the mother or that the pregnancy is the result of an act of rape or incest. Abortion

This Act may be cited as the "Departments of Labor, Health and Human Services, and Education, and Related Agencies Appropriations Act, 1994".

Approved October 21, 1993.

LEGISLATIVE HISTORY—H.R. 2518

HOUSE REPORTS: Nos. 103-255 (Comm. on Appropriations) and 103-275 (Comm. of Conference).
SENATE REPORTS: No. 103-143 (Comm. on Appropriations).
CONGRESSIONAL RECORD, Vol. 139 (1993):
June 30, considered and passed House.
Sept. 22, 24, 27-29, considered and passed Senate, amended.
Oct. 7, House agreed to conference report; receded and concurred in certain Senate amendments, in others with amendments.
Oct. 16, Senate agreed to conference report; concurred in House amendments.
WEEKLY COMPILATION OF PRESIDENTIAL DOCUMENTS, Vol. 29 (1993):
Oct. 22, Presidential statement.

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THE UNITED STATES CONFERENCE OF MAYORS

Needle Exchange: Public Health and Politics

HIV CAPSULE REPORT

Reports of local policy responses to the AIDS/HIV epidemic

Issue 1 • March 1992

This is the first issue of HIV Capsule Report. Augmenting AIDS Information Exchange, it is designed to report on various HIV prevention policy debates that are taking place at the local level. This issue will examine local needle exchange discussions around the country and the roles that have been played by policymakers (mayors, city council members, health directors), community activists, and police in confronting this controversial prevention strategy.

Ten years into the AIDS epidemic, educators continue struggling to identify effective ways to promote safer sex and needle using practices. When it comes to addressing the growing problem of transmission of HIV through intravenous drug use, many health educators working with injection drug users (IDUs) advocate a "harm reduction" approach—teaching a person who does not wish to or is simply unable to change high risk behaviors to minimize the amount of harm they do to themselves and others. Harm prevention options include educating IDUs and providing them with condoms and the means to inject safely (bleach, water, cotton, and/or sterile syringes) to reduce the chance of infection with HIV as a result of needle sharing.

Needle exchange—providing IDUs with sterile syringes in trade for used ones—is clearly the most controversial among harm reduction strategies. For communities looking at needle exchange, it presents a dilemma: is needle exchange a public health measure that will reduce the spread of HIV or promotion of an illicit and harmful activity?

Ultimately, the question is over whether needle exchange works in reducing the spread of HIV. Whom does it help? Whom does it hurt? Is it a practical policy option for local officials? What other options exist?

The need to provide risk reduction education to IDUs is reinforced by the dramatic increase in cases of AIDS among IDUs during the course of the epidemic. In 1984, IDUs comprised 17 percent of all AIDS cases. Today, 29 percent of the total cases diagnosed have been among IDUs. The estimated number of HIV infected IDUs is even more daunting, especially in certain cities. In New Haven, the rate of HIV infection among IDUs is estimated at between 52-69 percent; in New York City it is estimated to be 50 percent. Elsewhere, like Seattle, Takoma, Portland and other cities in the Northwest, the rate of HIV infection among IDUs is estimated to be less than 10 percent.

Equally significant is the fact that the majority of the cases of HIV infection among women and children are linked to injection drug use. The sexual partners of IDUs can become infected with HIV and women can pass HIV on to their unborn children.

The acceptance by policymakers and the public of "harm reduction" efforts varies greatly: bleach distribution for the cleaning of needles and syringes takes place freely in many areas but the provision of clean needles to IDUs has met with resistance in these same communities.

Needle exchange has been especially controversial in New York City. Representatives of African American and Hispanic communities and others opposed the nation's first city-run program, which was subsequently halted in 1990 by Mayor David N. Dinkins when he entered office.

— continued, page 2 —

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In 1991, upon reviewing data on New Haven's program pointing to success in reducing HIV transmission among IDUs, Mayor Dinkins established a "Needle Exchange Working Group," which recommended last November a privately-funded, community-based needle exchange pilot program as part of the city's overall HIV prevention strategy. Endorsing the working group's findings, Dinkins stated:

> *"The decision to relax my long-held resistance to needle exchange programs was not an easy one to reach because, as you know, I have had many questions and many more concerns. Members of the Working Group, their staff and I have had the opportunity to hear the views of leaders in the fight against AIDS and drug abuse. Having heard their views, I concluded that a needle exchange pilot program can only be one component of a more comprehensive effort to fight the overlapping epidemics of AIDS and drug abuse."*

Mayors Call For Further Study

Mayor Dinkins is not alone in his calls for demonstration programs. In an effort to provide answers to some of the questions concerning the efficacy and impact of needle exchange programs (NEPs), the Conference of Mayors in a June 1991 policy resolution (see *AIX* September 1991), called for the federal government to fund demonstration programs in a number of cities to study the efficacy of needle exchange in reducing HIV transmission and their effect on increasing the use of injection drugs.

Pros and Cons

There are many arguments for and against NEPs. Fundamental is the firm societal opposition to illegal drug use. Providing needles, opponents contend, sends conflicting messages to IDUs and the community in general and subsidizes the drug culture.

At the local level, those opposed to the distribution of needles contend that it will promote the use of drugs, be disruptive to the community, and will pose a safety hazard due to discarded syringes, especially to children. Opponents also argue that NEPs divert funds from drug treatment.

Proponents contend that needle exchange is a pragmatic HIV prevention measure that recognizes many people use drugs regardless of the availability of treatment. If financial comparisons are made between NEPs and drug treatment, supporters contend, NEPs are inexpensive to operate in comparison to the cost of drug treatment programs and may reduce the amount of public funds that may eventually be required to provide services and treatment to IDUs who become HIV infected.

Bridge to Treatment

Most supporters of needle exchange view reduction of HIV transmission as reason enough to develop a program. They also claim that the impact of such programs can extend beyond the prevention of AIDS: programs can provide IDUs referral to drug treatment, serve as a link to social services, and break down barriers between drug users and "the system."

In this respect, needle exchange is seen as a "bridge" to treatment and services and an opportunity to reach this hard-to-access target group. Some, but not all, of the existing NEPs in the U.S. have special arrangements with publicly funded drug treatment programs, giving priority to clients referred by program staff. Nevertheless, since drug treatment on demand is not available in many areas, it is still the case that many IDUs cannot immediately enter treatment once they have made the decision to quit.

Existing Programs

Authorized needle exchange programs operate with local funds in Honolulu, Portland, Seattle, Spokane, Takoma, Vancouver (WA), Boulder and New Haven. Unsanctioned needle exchange is presently carried out—by organized groups of volunteers supported by donations—in San Francisco, Boston, Washington, DC, New York City and several other areas. The level of tolerance varies on the part of local governments where these underground programs are carried out: some volunteers have been arrested for distributing needles, while in other areas elected officials and police allow underground programs to operate.

Recently in San Francisco, the newly-elected mayor Frank Jordan (former police chief of the city) stated that if the state's law prohibiting needle possession without a prescription is not revised, he will declare a state of emergency in the city to allow needle exchange to take place. The San Francisco Police Department issued a directive in January requiring officers to obtain permission from a commanding officer before arresting individuals involved in the city's unauthorized needle exchange. This strengthed an October 1991 policy supported by former Mayor Art Agnos establishing the enforcement of the needle and syringe possession law as a low priority for officers. ❑

LOCALITIES RESPOND

- Boulder County
- New Haven
- New York City
- Pierce County
  Portland
  San Francisco
- Seattle
- Takoma

Policy debates concerning needle exchange and efforts to implement programs have varied from community to community depending on local conditions. However, common arguments and concerns have arisen concerning this controversial approach to HIV prevention. The following section discusses the experience of several communities that have considered or implemented needle exchange programs as an HIV prevention measure.

Local Support Never Unanimous

Elected officials, community based organizations, health departments and local residents have come down on both sides of the needle exchange controversy. Advocates and opponents of needle exchange can point to the impact that coalitions have had in generating support or opposition.

- San Francisco's unauthorized needle exchange, when started several years ago, was opposed by the local NAACP and Urban League, but supported by then-Mayor Art Agnos, many community based organizations, and the influential publisher of the African American newspaper.

- In New York City, the Health Commissioner was a visible advocate for the 1989 city-run needle exchange program—the nation's first authorized program. However, community opposition kept operations to one, downtown Manhattan health department building, limiting access to the program. Opponents ultimately succeeded in ending the project after less than a year of operation when newly-elected Mayor David Dinkins cancelled the program as he promised he would during his campaign.

Elected Officials: Key Actors

Existing needle exchange programs have all enlisted support—or at least a commitment not to interfere—from elected and appointed local officials such as the mayor, the local health officer, city council members, and the chief of police. According to program organizers, their role is pivotal because they can facilitate implementation of a program or adopt/enforce policy that could prevent or limit its effectiveness. Because private funding sources are scarce, the support of local policymakers may also be a financial necessity.

- New York City again is an example, illustrating the significance of policymakers in the needle exchange debate. Although New York City's Mayor Dinkins stopped the city's needle exchange program, a year later he reevaluated his position and advocated development of a privately-funded needle exchange program. His support is likely to be a crucial part of the city's approach to needle exchange in the coming months.

- New Haven Mayor John Daniels pledged during his election campaign to support needle exchange, as did all the other candidates. With the Mayor's Task Force on AIDS, the health department, faculty members from Yale, and other supporters of needle exchange, the mayor was part of successful lobbying of the state legislature that enacted an exemption to the state's needle possession law and provided funding for the pilot program in New Haven.

Health Departments: Voice of Public Health

Advocates of needle exchange have portrayed needle exchange as a public health imperative. In localities with existing programs, this perspective has been conveyed through the key voice in the community for public health: the local health department and the director of health. On a practical level, ongoing health department support in these communities has helped provide linkages to other publicly-funded services such as HIV counseling and testing, medical or support services, and drug treatment.

- In early 1989 the Boulder County Board of Health approved the health department's plan for a needle exchange program coordinated by the department's substance abuse program and AIDS prevention program. The board of health directed the health department to evaluate the program every three months.

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- In Hawaii and New Haven, the state health department and local health department, respectively, were involved in coalitions that lobbied their state legislatures to allow needle exchange.

Drugs and Law Enforcement

Many see illegal drug use as a law enforcement issue, not a public health concern. Intrinsic to any needle exchange debate is the fact that IDUs are participating in an illicit activity for which they are subject to arrest.

The crime and violence that frequently accompany the drug epidemic increases reluctance on the part of law enforcement to participate in or allow a program that supports anything other than cessation of drug use. Proponents of needle exchange emphasize the need for police support—or at least noninterference at the site of the exchange—since IDUs are reluctant to come forward in an environment where they risk arrest.

Existing needle exchange efforts have actively sought the involvement of local law enforcement agencies, educating them about the goals of the program to gain their support. In some areas, law enforcement has become involved early in the planning process or in some type of review capacity. According to proponents, common arguments used to gain police support—or noninterference—have included:

- the need to reduce the spread of HIV,
- the ability of needle exchange to link IDUs with needed services/drug treatment, and
- the reduction in the number of used needles discarded in public places (because IDUs exchange them for clean needles).

Opponents of needle exchange and many in the law enforcement community see needle exchange as incompatible with efforts to combat drug use and believe facilitating drug use sends mixed messages to the community.

- In Hawaii, supporters of needle exchange experienced opposition from the Honolulu police department during their lobbying effort to gain exemption from the state's drug paraphernalia law. Once legislative approval was obtained, police were not willing to be associated with the program (police representatives declined an invitation to participate on the program oversight committee). The legislation allowing the program granted immunity from the drug paraphernalia law to needle exchange employees and participants only at the needle exchange site. Organizers feared that if police harassed or arrested participants outside of the site, the entire program could be jeopardized. However, there were no efforts on the part of the police department to impede the program.

- Takoma police have supported the program from the beginning, on the theory that needle exchange could serve as a bridge to other services for drug users and reduce the number of needles discarded on the street. Police in Seattle are also supportive. However, despite ongoing communication and cooperation, local efforts to control drug dealing may yet inhibit the Seattle and Takoma programs. Both cities have Stay Out of Drug Area (SODA) ordinances that require individuals convicted of drug related charges to stay out of designated areas as a condition of release. In response, both city programs established additional needle exchange sites outside of the SODA areas to maintain the availability of needles. Takoma also developed a mobile outreach component so that IDUs can call and arrange to meet outreach workers to obtain needles at a designated spot.

Some programs report that despite the support of the chief of police, individual officers may have a negative effect on the program by intimidating participants or confiscating program syringes. These programs have attempted to diminish this opposition by providing briefings about needle exchange to police personnel.

Coalitions Drive Efforts

Part of the public health argument for needle exchange is that additional services along with clean needles can be offered to hard-to-reach IDUs. For this reason, community organizations with linkages to the target population are frequently part of the debate in support of exchange efforts.

- The Sterile Needle Exchange Coalition in Hawaii lobbied the state legislature to approve needle exchange. It included, among others, the state Department of Health, Hawaii Nurses Association, Hawaii Medical Association, Hawaii Healthy Mothers/ Healthy Babies, the major Women's and Children's Hospital, and the Hawaii Council of Churches—all organizations with linkages or providing services to IDUs.

- The Mayor of New Haven, the Mayor's Task Force on AIDS, the local health department and faculty members from Yale Uni-

versity were joined by community based organizations (i.e., drug treatment facilities, community health centers and AIDS service organizations) as they lobbied the state legislature to decriminalize needle possession and allow the needle exchange program in New Haven. "If any one of the partners weren't there, needle exchange would not have happened," related New Haven Health Director William P. Quinn.

- In Seattle, ACT UP, an organization of AIDS activists, began needle distribution with needles donated by the Washington State Pharmacists Association. ACT UP informed both the local health department and the police department that they were initiating a program and invited their participation. ACT UP stated that it was committed to undertaking needle exchange alone or with others. They were joined on their first outing by health department outreach workers.

  Because needle exchange had been carried out in nearby Takoma for some time, the Seattle community was familiar with the goals of the program and was generally receptive to ACT UP's efforts. After two months, the city provided funding for the effort.

- A coalition of a different kind called for needle exchange to be implemented in San Juan. Mayor Hector Luis Acevedo formed a commission of 35 community members and 20 researchers from Harvard to develop a five-year strategic plan for HIV/AIDS. The strategic plan calls for the promotion of harm reduction strategies including aggressive bleach distribution for needle cleaning and needle exchange programs.

Not in My Back Yard

Proponents state that to be effective, needle exchange must be carried out in neighborhoods where IDUs congregate. Staff of the short-lived New York City needle exchange cited the downtown location of the exchange site, far away from neighborhoods where many IDUs live, as one of the reasons for low enrollment in the program. The downtown location was selected following opposition from residents of drug-plagued neighborhoods. Residents believed the program would encourage or facilitate drug use and attract even more users to their area.

In other areas, some residents and community activists have opposed distribution out of fear that proposed programs may serve to attract more drug users and the accompanying crime and violence to their neighborhoods. The level of opposition in some cases has been dependent on the nature of the proposed program: a storefront location can be very controversial, but street or mobile outreach or distribution from facilities already serving IDUs has been more widely accepted.

Giving the Community a Voice

As with all controversial issues, tensions and opinions run high over needle exchange. Supporters of some local programs have held community forums to present the proposed program and the goals of needle exchange—typically in the form of briefings conducted by program organizers, health department staff, and/or local elected officials or other policymakers (e.g., AIDS task force members). These meetings are seen as opportunities for community members to give their opinions—often relating to the impact the program might have on neighborhood quality of life.

Proponents state that providing the opportunity to ask questions concerning a program's potential impact communicates to residents that program organizers recognize that "community based" outreach does not only affect IDUs but the neighborhood as well.

- Residents of San Francisco's Haight-Ashbury, a needle exchange site for the city's unauthorized program, built resident support prior to start-up through a community forum. Initial concerns by neighborhood residents were expressed during the open forum. In the debate, NAACP and Urban League leaders opposed to the project's start-up were up against the influential editor of the local African American newspaper who supported the unauthorized program.

- Following Connecticut State Legislature approval of a pilot needle exchange program, a subcommittee of the New Haven Board of Alders held a public hearing to educate the community on the importance and nature of the proposed needle exchange program. Of the 50 community members who commented on the program, only two voiced opposition.

Because of its controversial nature, needle exchange attracts media. This serves as another information source for the general public. Both supporters and opponents have utilized the media to communicate their concerns to the public—often on the editorial page.

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State Laws Often Block Programs

In 11 states it is illegal to obtain needles without a prescription; other states have laws against the possession of drug paraphernalia, including syringes. These laws are seen by many as important in the control of illegal drug use. Opponents of needle exchange contend that exempting needle exchange participants from state laws or failing to enforce laws sends conflicting messages that may undermine efforts to reduce drug use.

Supporters of needle exchange have sought amendments to state laws in gaining approval for programs.

- Advocates in Hawaii and Connecticut (both states with laws prohibiting the possession of needles) lobbied their state legislatures to allow the distribution of needles. Supporters sought, and obtained, legislative approval for pilot programs instead of seeking change in existing laws.

- The city of Takoma and Pierce County carried out needle exchange under powers granted to them under the 1988 State AIDS Omnibus Bill, which provides health departments the discretion to use whatever means necessary to combat AIDS.

  Initially, Tacoma and Pierce County authorities withheld funds for needle exchange following the issuance of a legal opinion by the state attorney general finding needle exchange in violation of existing law concerning possession of drug paraphernalia. The state attorney general ruled that the 1988 AIDS Omnibus Bill did not supersede the Drug Paraphernalia Act of 1971. Funding was restored when the Tacoma-Pierce County Health Department sued to regain funding and the Pierce County Superior Court found that the statutory powers of the state and local boards of health allowed health officials to circumvent existing laws in the interest of public health.

Does Needle Exchange Help or Hurt?

Supporters of needle exchange contend that the impact of the "harm reduction" approach extends beyond the drug user who receives clean needles. In educating policymakers and the general public, advocates of needle exchange have emphasized that HIV can spread beyond the drug user to sexual partners or can be transmitted perinatally to unborn children. Sexual partners of IDUs are a difficult population to establish contact with and educate. They may not realize the risk of HIV infection because they are unaware of their partners' drug use. Thus, needle exchange efforts often offer condoms and safer sex counseling in addition to clean needles.

Opponents fear that needle exchange will simply prolong drug use and remove any motivation to quit—possibly resulting in other health problems and/or overdoses. Opponents point out that drug use itself causes many deaths.

Does Needle Exchange Promote Drug Use?

Opponents of needle exchange frequently argue that making needles available will remove a significant barrier to drug use and encourage new users. While this question is still open to debate, data from drug use histories of needle exchange clients, as well as enrollment criteria for some of the programs, indicate that the programs do not encourage new users.

- In New Haven, the majority of clients (roughly 80 percent) have been injecting, on average, for over seven years.

- In Portland, needle exchange clients must be over 18 years old and have visible track marks before they are enrolled in the program. First time drug users cannot obtain needles directly from the program.

Drug Treatment v. Needle Exchange

Many needle exchange opponents contend that drug treatment is the only acceptable public response to drug use. Ideally, treatment on demand should be available to any drug user. It is not. In many communities, waiting lists range from months to years for placement in a drug treatment program. The National Institute on Drug Abuse (NIDA) estimates that approximately 107,000 persons nationally are on waiting lists for treatment programs.

Opponents to needle exchange ask how far public health measures must go to reduce health risk to drug users. Needle exchange supporters contend that providing sterile needles is a necessary public health measure to prevent the spread of disease in the absence of accessible and appropriate treatment. Supporters also contend that many IDUs continue using drugs even if clean needles are unavailable, although some take precautions to protect their health, such as cleaning with bleach.

Does it Work? Measuring Effectiveness

A common argument against needle exchange programs (one frequently applied to other types of HIV prevention programs) is that little evidence exists to demonstrate effectiveness in reducing the spread of HIV among IDUs. Advocates of needle exchange contend that the limitations of evaluation measures prevent definitive research on the efficacy of needle exchange programs. Measuring seroprevalence and behavior change of IDUs within programs and tracking clients over time is difficult due to concerns over confidentiality and anonymity and the transient nature of IDUs.

Most programs do not have the resources to carry out sophisticated program evaluation and instead have adopted process evaluation strategies commonly used by other HIV-related outreach programs. Evaluation measures utilized by existing programs include:

- reporting the number of needles distributed and returned,
- tracking needles to determine if they were distributed to and returned by the same IDU,
- demographic information on the client population,
- number of clients referred to drug treatment and other services,
- the number of condoms and educational materials distributed, and
- conducting tests on any blood residue within the syringes to determine HIV status or whether more than one person used the syringe.

Programs also survey participants on their sexual and needle sharing practices (some paying participants up to $10 to complete surveys). Follow-up surveys are administered to determine if behaviors are being maintained over time.

Opponents contend that since much of the evaluation is process-oriented, it will not determine if behavior change is actually taking place and whether the sharing of needles continues. Opponents also claim that public funds should not be used for programs where there is a lack of significant evidence to prove their effectiveness.

The Funding Question

Except for an amendment to the Ryan White CARE Act prohibiting the use of Ryan White funds on needle exchange programs, all other Congressional restrictions on the funding of needle exchange programs have expired. What remains unclear is whether Congress and the Bush Administration will continue to oppose the use of federal funds for such programs. Some members of Congress have indicated that they may be receptive to federal funding in some form.

Charles Rangel (D-NY), Chair of the House Narcotics Committee and a long-time opponent of federal funding of needle exchange, recently requested, in an October 1991 memorandum, that HHS Secretary Louis Sullivan direct the General Accounting Office to conduct a study on the efficacy of needle exchange programs.

The National Institute of Drug Abuse (NIDA) is also conducting an evaluation to determine the efficacy of needle exchange. Because of the ongoing debate at the federal level, the only funds available to carry out programs have been provided through state, local and private sources. With local public funds becoming scarcer, this source of funding may dry up.

Program planners are also faced with a paradox: policymakers are reluctant to fund programs that cannot definitively prove their effectiveness. Funders may expect proof, while at the same time providing insufficient funds to carry out adequate program evaluation. Organizers in Honolulu purposely avoided the use of public funds to avoid the perception of tax dollars being spent to facilitate drug use on a program in which effectiveness was unproven. ❑

New Haven's city-run needle exchange program—how it was established, how it works—is the subject of the March issue of *AIDS Information Exchange*. Included are sections on program design, the policy debate behind its establishment, coordinating with law enforcement, program planning, evaluation, and an interview with New Haven Mayor John Daniels.

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USCM Field Report:
San Francisco's Needle Exchange

In Spring 1991, Conference of Mayors staff observed outreach work of San Francisco's unauthorized needle exchange program. Following is a report on a weeknight needle exchange conducted in the city's Haight-Ashbury neighborhood.

Business was heavy for this particular two-hour weekday shift of San Francisco's unauthorized needle exchange, held in the city's Haight-Ashbury neighborhood. Halfway through the trading session, workers had to scramble to retrieve another "sharps bin" for collecting used needles when the first one—about the size of a small laundry basket—filled to overflowing.

The program's popularity among addicts is ever-growing, according to outreach workers. Publicity is largely by word-of-mouth. In 1991, roughly 8,000 needles were collected each week through outreach in the city's Haight-Ashbury and Tenderloin neighborhoods.

The outreach effort was simple: five staff and assorted boxes of condoms, bleach and needles lined against the wall of an empty storefront business. The program is run on donations and in-kind help. Customers return used needles for new supplies in a one-for-one exchange. Cost are estimated at $1.50 a week per client, mostly for needles, bleach, and condoms.

It is common for clients to collect and return needles for friends or drug partners. On average, each client returns 8-10 needles per week. On this May evening, a handful of clients exchanged well over 60 needles. One client's haul was 87 used needles, representing the leftovers of five individuals.

The most conspicuous aspect of the exchange isn't the clients but the outreach workers, who almost hug the wall waiting for a steady but uncrowded stream of clients who come to receive clean needles, condoms, bleach, a brochure, and—maybe—an alcohol wipe, which are always in short supply.

While clients place needles in the sharps container, outreach staff ask a few basic questions: how many people are you collecting for? what is their sex? racial/ethnic background? Time is very limited for the intervention: a few seconds or maybe more to exchange needles and a few words about condom use and a brochure. Clients do not like to stick around.

Clients seemed to materialize from mid-block as they approached the exchange. Most walked up; some were dropped off by waiting cars, including BMWs and sports cars.

Most clients are white; almost half are African American. They are diverse: a teenager on a skateboard, a good number of women in their late 20s-early 30s, several older men.

According to outreach staff, teaching addicts to clean needles is an important, but limited, method of discouraging sharing. Needles become dull, clog, and break with use. With fewer needles in circulation, sharing is more likely. Making new and clean needles available through exchange addresses this problem but bleach cleaning doesn't.

Historically, exchange staff commented, police crackdowns on possession of needles have encouraged sharing of needles. Increasing the availability of clean needles through the exchange breaks down the sharing "culture." This seems apparent from observing the needles as they are dropped into the sharps bin. Many have initials and marks for the number of times they have been used, indicating careful monitoring by their users.

Drug use experts agree that needle exchange without treatment will never solve the IV drug abuse problem. However, needle exchange advocates state that their goal—stemming the spread of HIV infection among users—cannot wait until treatment slots are funded.

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Altering Public Policy on Needle Exchange: The Connecticut Experience

Elaine O'Keefe

In the spring of 1990, Connecticut took a giant step forward in its response to the AIDS crisis by enacting legislation authorizing the first legal needle-exchange program (NEP) in the state. The City of New Haven, which was designated as the site for the demonstration project, initiated its NEP in November of that year.

On 31 July 1991 New Haven released a preliminary report that demonstrated the efficacy of its model NEP. Coincidentally, the National Commission on AIDS issued its report, "The Twin Epidemics of Substance Use and HIV," the very same week. The commission's report faulted the federal government, and particularly the drug-policy sector, for its failure to address the inextricable link between the HIV and substance abuse epidemics. Included among its recommendations was a call for the removal of barriers to the legal purchase and possession of drug injection equipment. The report was met with indignation by officials in the drug-policy sphere, and its contents refuted. Yet there is now change in the wind. With consistently positive findings emerging from the handful of legal NEPs operating in the United States, there is more reason than ever before to be optimistic that federal policy can be altered to favor clean-needle access as an essential disease-prevention measure. The latest evidence of the efficacy of needle exchange, produced by New Haven's NEP, has added vigor to the stance of proponents of this measure.

This article presents a historical sketch of the Connecticut movement to remove barriers to clean-needle access in the face of AIDS; discusses the organizing tactics employed to influence public policy on the issue; and describes the confluence of events leading to our success in achieving a radical shift in the position of high-level policy makers.

Elaine O'Keefe is a founding member of the New Haven Mayor's Task Force on AIDS.

Background and History

By the mid-eighties, the concept of needle exchange had taken hold in various European countries. Programs were operating in Amsterdam as early as 1984, in accord with the philosophy of "harm reduction" that prevails in the Netherlands and other parts of the world where drug dependency is viewed as a health rather than as a criminal problem. When the idea and practice were first introduced in the US by AIDS activists and former addicts, opposition quickly mounted, and the issue became entangled in a political and moral thicket. Resistance to needle exchange seemed to come from the pervasive American opinion that drug addiction is a criminal rather than a health and social problem, and the corresponding argument that providing clean injection equipment to addicts is at cross purposes with the goals of the "war on drugs." When New Haven entered the needle-exchange controversy in 1987, one of its greatest challenges was to counter this deeply entrenched view of drug addiction as criminally and morally reprehensible, and make the provision of clean needles to addicts possible as the HIV epidemic grew.

The New Haven Mayor's Task Force

The Preliminary Survey

As background for the reader, it should be noted that Connecticut is among a minority of states that restrict the sale and possession of needles/syringes without prescription. These laws were conceived as a deterrent to illicit drug use, but have clearly failed to achieve this end in Connecticut, as is true in other states having similar statutes. Restrictive laws on needle access have only served to fuel the spread of HIV, while failing dismally to curb substance abuse. Although no existing scientific study demonstrates a correlation between the existence of such laws and the spread of HIV, there is significant evidence that several of the states that have such laws also have inordinately high rates of HIV infection in their populations that inject drugs--states including New York, New Jersey, Connecticut, Rhode Island, and Massachusetts. It is also telling that a recent study in Baltimore revealed that diabetic illicit drug injectors remain HIV free despite their drug addiction, which may be attributed to the fact that their diabetic status affords them

legal access to new injection equipment.

The movement to allow access to clean needles in Connecticut was lead by the New Haven Mayor's Task Force (MTF) on AIDS, which formed in 1986 to galvanize the community to develop effective prevention and care services and to formulate rational policy in response to the epidemic. As the range of problems associated with AIDS worsened in the city's drug injecting population and among women and children, the MTF devised a strategy to curb its deadly course in these populations. As in many urban centers in the Northeast, the problem of AIDS in New Haven is different from the problem in the rest of the nation. While gay and bisexual men constitute about 20 percent of persons reported with AIDS, the majority of cases are, directly or indirectly, connected with injection drug use. By 1987 the dominant mode of HIV transmission in the city was the practice of sharing needles to inject drugs; as a result, spread of the virus to female sex partners of illicit drug injectors rose dramatically. Likewise, the rate of pediatric AIDS cases reported in the city soared, reflecting the incidence of HIV infection among female drug injectors and partners of drug injectors.

In the spring of 1987 the MTF successfully lobbied the city to fund a street outreach program to deliver AIDS information, bleach kits to clean injection equipment, and condoms to injecting drug users (IDUs) and their partners in areas of heavy drug activity. A team of indigenous workers hit the streets in the fall of that year, initiating the first project of its kind in the state. The outreach project, which included an initial survey of active addicts, gave the MTF an opportunity to hear from the source why injection drug users persisted in sharing needles in the face of AIDS. Addicts consistently stated that they shared needles because they feared arrest and criminal prosecution for possession of hypodermic syringes without prescription, and because needles were hard to come by on the street and costly to purchase. These reasons shattered the popular notion that sharing needles is a ritual of the drug culture. Addicts also complained about the barriers they faced when they attempted to enter and succeed in existing drug treatment programs in Connecticut, citing long waiting lists, the absence of supportive services such as child care during the treatment process, and the lack of adequate rehabilitative training necessary to sustain a drug-free existence.

Forming Policy

Based on the results of the outreach survey and ongoing review of research on the efficacy of needle-exchange programs operating in other places, the MTF adopted a multifaceted approach to quell the spread of HIV among IDUs and their sex partners. We were also motivated by the knowledge that the state statutes that blocked addicts' access to sterile equipment were based on an error in reasoning. By 1988 this position evolved into an official MTF policy statement on the dual epidemics of HIV and substance abuse that called for the following actions: (1) The expansion of aggressive, culturally appropriate HIV education and outreach to IDUs and their sex partners; (2) The expansion and diversification of drug treatment services in Connecticut with a decided emphasis on reaching and engaging more people of color; (3) The enhancement of the availability of primary medical care services for drug dependent persons; (4) The repeal of state statutes prohibiting legal access to hypodermic needles/syringes without prescription in Connecticut; and (5) The establishment of legal needle-exchange programs.

Implementation

Having established policy on the clean-needle issue as part of a comprehensive strategy to break the connection between HIV and injection drug use, we devised a plan for putting our policy into action. The MTF used basic principles of community organization, identifying organizations, institutions, and leaders in various communities who would have to be reached and persuaded to support our policies and to identify those who could serve as our "messengers": the individuals most likely to influence the thinking of those whose support we sought to gain.

As we continued our efforts to remove the statutory impediments to clean-needle access, other activists calling themselves the "AIDS Brigade" and "Community AIDS Educators" were already distributing needles on the streets of New Haven in defiance of Connecticut law. We supported the work of these individuals (in the absence of legal alternatives) and invited their participation on the MTF and its committees, though some in the community looked askance at this affiliation.

Although the MTF included representatives of diverse constituencies in the city, it was clear that its support alone would not change policy at the state level. It was also apparent that greater support and understanding of the issue were needed at the local level before the MTF could move forward with a legislative proposal to alter state statutes, ultimately leading to the initiation of legalized needle exchange in the city. This needed education process began with meetings the MTF sponsored for individuals in the criminal justice system, the drug treatment sector, the local police force, and directors of community-based organizations to invite discussion. Simultaneously, local AIDS educators began to weave the notion of clean-needle access into presentations that were routinely conducted for community groups. Rather than confront opponents, the educators marshalled broad-based support through education and open discussion of the concerns expressed by groups and individuals representing various constituencies. A major concern echoed by many was the belief that an officially sanctioned needle exchange would send a mixed message about substance abuse and could deter addicts from entering treatment, or

divert efforts to increase funding for drug treatment. The MTF addressed this concern in two ways. First, we emphasized that needle exchange was part of a strategy to stem both drug use and HIV. We also pointed to the sober reality that the services offered by the existing drug treatment system did not, in any way, meet the ideal of offering drug-treatment-on-demand for all in need. We also drew attention to the fact that some IDUs would not choose to enter treatment even if it were available.

Another often-cited concern was that addicts were innately self-destructive and lacked the will to change behaviors to preserve their lives and the lives of others. While this view of drug-dependent persons is deeply ingrained in our society and not easily altered, the experiences of bleach-distribution programs that operate in New Haven and numerous other places provided an effective counter-argument, as these programs consistently demonstrated that IDUs will change behaviors, given viable options. When we cited the success of bleach programs in altering behaviors, however, we sometimes faced the assertion that, given the existence of these programs, providing needles was not necessary. In fact, this assertion was made repeatedly throughout the debate on clean-needle access in Connecticut and other places, and required a well-reasoned, informed response. Drawing upon the history of other disease epidemics, educators pointed to the fact that effective prevention and control initiatives must use a multitude of approaches to alter risk behaviors; as applied to needle transmission of HIV, it is clear that the realities of addiction make it unlikely that all addicts could or would adopt the bleach method. Further, bleach alone is not 100-percent effective. A program that combined the distribution of bleach, clean-needle exchange, and improved access to treatment would decrease addicts' contracting or passing the virus. (We addressed numerous other arguments during discussions on clean-needle access and HIV prevention; the points above are presented as examples of concerns and views that surface when a group attempts to educate the public on the issue of clean-needle access.)

Our tactic was to call on potential and incumbent political leaders to seize the moral "high ground" on the need to provide clean needles as a humane act.

Lobbying Tactics

With support mounting on the home front, it was time for us to approach state legislators with a proposal. This was first done in the spring of 1989 with testimony presented to the Connecticut State Public Health Committee calling for the removal of legal impediments to clean-needle access. The response of legislators was tepid at best. In closing, the chairman told us not to return with such a proposal, as it would lack adequate support. Yet the door had been opened, and it was apparent that some legislators were interested in pursuing the issue. Undaunted, we went back to the drawing board to devise a strategy for influencing the state legislature to alter policy on needle access as a disease-prevention measure in the coming session, which would open in January 1990.

While the MTF labored to develop its strategy for altering state policy in the year ahead, the City of New Haven was in the middle of a mayoral campaign. It was essential that the MTF have the support of the incoming mayor. So, we organized forums and meetings with each candidate to hear his or her position on various AIDS issues, including clean-needle access. In the process, we shaped the public positions of all the candidates, who emerged from these discussions vowing to support decriminalization of the sale and possession of needles/syringes and/or to support a pilot needle-exchange program. Their positions were subsequently publicized by local media following the campaign trail. This is but one example of the many instances when we took a proactive stance and seized the opportunity to influence the thinking and position of key leaders on the needle issue. Our tactic throughout the process was to beat the opponents to the gate, calling on potential and incumbent political leaders to seize the moral "high ground" on the need to provide clean needles to drug addicted persons as a humane, life-preserving act and as a public health imperative.

The outcome of this particular lobbying effort was most effective. When John Daniels won the mayoral election by a large margin in the fall of 1989, becoming the first African American to hold that office in New Haven, he remained committed to his vow to give needle exchange a fighting chance as part of the city's overall HIV prevention and control effort. Simultaneously, another potential obstacle to needle exchange in New Haven was overcome when Mayor Daniels appointed a very progressive police chief, Nicholas Pastore, who strongly endorsed and supported this concept. Although it was politically untenable for the police chief to be in the forefront of the movement to alter state statutes on needle access, his support was ever present, and followed his enlightened views on the city's drug problem; he has favored humane treatment of drug addicted persons and their voluntary entry to recovery services as an alternative to the typical practice of incarcerating addicts.

In keeping with the same community organization principles previously applied,we formed a diverse coalition composed of African American, Latino/a, and white members to develop and carry out the steps necessary to introduce and pass needle-access legislation in the 1990 session of the General Assembly. Several of its members had been active from the onset in educating and organizing at the local level. The coalition had two objectives to be advanced simultaneously, given the time constraint imposed by the legislative calendar. One objective was to identify the legislators who were willing to sponsor a bill and begin the process of its passage, as well as to craft the language and content of the proposal. The other was to continue to educate groups and individuals about the decriminalization of purchase and possession of injection equipment and legal needle exchange, to expand the support already won by earlier efforts. This meant identifying important individuals and groups at the local level who had yet to be approached, as well as devising a strategy for galvanizing statewide support.

William Dyson, one of New Haven's state representatives, who co-chairs the powerful Appropriations Committee, had been a strong proponent of progressive HIV legislation. Dyson agreed to co-sponsor a bill with Joseph Grabarz, a state representative from Bridgeport, who is a member of the Public Health Committee and who had also been on the cutting edge of HIV policy decisions in Connecticut. Their initial proposal called for both the repeal or modification of state statutes restricting sale and possession of needles/syringes without prescription and funding for the initiation of three NEPs in urban communities plagued by the twin epidemics of HIV and substance abuse. Though the possession statute cites a host of items that fall under the rubric of drug paraphernalia, it was decided to limit the requested alteration of this law to the exclusion of needles/syringes from the list of paraphernalia subject to criminal penalty, as this limitation would likely lessen opposition from other legislators and the criminal justice sector.

It was essential that the proposal be linked to public health: as a health issue and disease-prevention measure promulgated in response to the AIDS crisis in Connecticut. Accordingly, the support of the public-health establishment was of critical importance to the success of the proposal. To win this support, we arranged special presentations for the New Haven Board of Health Commissioners and the Connecticut Association of Directors of Health. The New Haven Board of Health Commissioners was the first to give official endorsement in the form of a resolution. Shortly after, the Connecticut Association of Directors of Health also supported the proposals, as did the Board of the Connecticut Primary Care Association. The Connecticut Latino AIDS Advisory Council and statewide AIDS Action Council had already endorsed needle exchange, and various community-based organizations and the boards of these organizations followed suit, as did prominent members of the medical community.

Dramatic skits were also employed to publicize and bolster support for clean-needle access. On the evening of the State Health Commissioners' annual presentation of AIDS leadership awards held at the state capitol, the audience received an unexpected message from a group of AIDS activists who dramatized the plight of addicts dying for lack of access to clean needles. The skit vividly portrayed the somber consequences of the lack of action to preserve the lives of addicts in the face of AIDS. Although some attendees were angered by the tactic, it had the desired positive effect. The skit was later performed in other settings and received equally powerful response.

Public Health Committee Hearings

As vocal support grew within the public-health community, we organized meetings with leaders of the legislature's Public Health Committee to seek their approval to allow the issue to be heard. This was a critical point: under the rules of that year's session, each bill had to be backed by a committee in order to be introduced. One of the challenges in gaining this approval was the lack of supportive leadership on the part of state health officials, who had been effectively silenced by the incumbent governor, a strong opponent of needle exchange. Nonetheless, the committee voted to hear the issue. After this milestone, the state Department of Health Services stated that evidence of the efficacy of NEPs in stemming HIV transmission was insufficient to warrant such an intervention in Connecticut. Their statement failed to turn the tide, however, as it was increasingly clear that support for clean-needle access was mounting, and that their position contradicted the stance of other influential public-health and scientific organizations, including the American Public Health Association and the National Academy of Science.

In March of 1990 the Public Health Committee held an official hearing that focused specifically on the issue of decriminalization of the sale, purchase, and possession of injection equipment. The reason the hearing was limited to discussion of this issue was legislators' apparent disagreement on decriminalization versus NEPs. The majority seemed to favor decriminalization. In orchestrating testimony for the hearing, we again used the tactic of selecting appropriate messengers. Our supporters within the legislature advised us to ask only prominent individuals within the public-health and medical realms to testify, as members of the committee would view them as experts. An unexpected bonus was the appearance of a representative of the Connecticut Pharmaceutical Association, who spoke in favor of the proposal--with the condition that certain safeguards be established to regulate sale and distribution. Collectively, those who testified were quite effective, as

the committee subsequently introduced a bill. However, when the membership was later polled, it appeared that support for decriminalization was waning; this shift lead to the introduction of a compromise bill that funded one demonstration NEP, exempt from the restrictions on sale and possession of needles/syringes that are part of the state statutes. The compromise was a disappointment: even if the bill made it through subsequent committee votes and both chambers of the legislative body, only a fraction of the IDU population in Connecticut would be granted legal access to clean needles in the year ahead. On the other hand, it meant that an evaluation element could more easily be included.

Results

As the Public Health Committee was debating the issue in preparation for the vote on the bill, New Haven's core lobbying group kept a close watch on the action, communicating frequently with supporters in the legislature. When an active advocate began to waver in his or her support, or when a legislator was opposed to the bill but was open to persuasion, they were lobbied by individuals from their constituency or by a trusted colleague in the legislature. Often these individuals were local health directors or medical professionals, but the internal lobbying and maneuvering of peers was clearly instrumental in swaying many who remained opposed or undecided in the eleventh hour. This process continued as the bill passed the Public Health Committee and then the Appropriations Committee by a wide margin. The lobbying process intensified when the bill hit the floor of the House and of the Senate, aided by the personal efforts of Mayor John Daniels and his legislative staff. In May of 1990 the House passed the NEP bill by a vote of 99 to 36, and the Senate followed suit with the majority voting in favor, 26 to 10, on the last day of the session. With this vote, Connecticut had finally achieved what many considered an impossible and radical shift in public policy on a most controversial issue, despite significant obstacles.

Influencing Factors

Obstacles

In retrospect, the obstacles we faced in advancing needle-access legislation in Connecticut were formidable. Within a five-month period, more than 100 legislators had to be educated on the issues, and dozens of other individuals had to be identified who could influence their votes. The politics of the day also presented many problems. One of these obstacles was the legislators' fear of being seen as "soft on drugs," in light of mounting public outrage about drug abuse. Another obstacle was the great social distance between policy makers and the majority of illicit drug injectors. Third, while it was a political risk for any politician to support the concept of clean-needle access, it was particularly difficult for those representing constituencies who were not yet feeling the impact of AIDS. This group was in fact the majority, as the communities hardest hit in Connecticut are its major urban centers. Though AIDS cases have been reported in 81 percent of Connecticut's 169 towns and cities, the epidemic is most acute in its three large cities, which also bear the distinction of having the highest prevalence of injection drug use. Another challenge facing the passage of this legislation was the opposition of the governor and lack of support from the State Health Department. Even after the bill had passed by a large majority, it was necessary for us to remain vigilant, lobbying the governor's office to ensure that he would sign the bill into law. Another critical moment in the history of Connecticut's struggle to enact NEP legislation was the very public demise of the NEP demonstration program operating in New York City. At the directive of Mayor Dinkens, the program was halted after little more than a year, and there was talk of even prohibiting city funding and support for bleach-distribution programs. As the storm of controversy around needle exchange and bleach distribution in neighboring New York City escalated, however, Connecticut legislators were on the verge of voting in support of clean-needle access in our state.

Media Involvement

While many factors influenced Connecticut's victory in passing NEP legislation, the role of the media was a most important one. Beginning in 1987 when the New Haven MTF first began to advance the cause of clean-needle access in conjunction with activists running underground exchanges, local press followed the story diligently, covering every milestone and controversy. A clear picture emerged of how greatly the perspective of the local media modulated, as new evidence appeared and as faint voices of support began to be heard from other communities. One telling example is provided by two editorials appearing in New Haven's major local paper, *The Register*, in 1988 and 1990. In the first, the editor questioned the impact of needle exchange, and conjectured that such a program would create a mecca for drug abusers in a city already plagued by the drug epidemic. Following the passage of the NEP bill and the publicity that surrounded the latest evidence of the efficacy of NEPs, the same editor wrote from a dramatically different perspective, lauding Connecticut and New Haven leaders for having the strength and political courage to enact a controversial measure in the interest of saving lives.

In June 1990, Governor William O'Neill signed the NEP bill into law, effective 1 July 1990. Then New Haven, being the site chosen for the demonstration program, had to turn to the task of marshalling local public support for the project, while designing an effective program and evaluation plan. Although several members of the Board of Aldermen had been vocal supporters of the bill, others remained skeptical and some were vehemently opposed. A hearing was held by a subcommittee of the Board

of Aldermen to allay concerns about community response to initiating a legal NEP in New Haven, and to invite comments from the public. Over 50 people came to the hearing, and of these only three spoke in opposition. Opponents reiterated the often-cited notion that an NEP would exacerbate the drug problem.

Media coverage of New Haven's public hearing on the NEP was reinforced by reports emerging from the Sixth International Conference on HIV, hailing the latest evidence of the efficacy of this measure in curbing the epidemic. The timing was perfect (though admittedly fortuitous). As New Haven prepared to initiate its NEP, support around the world was becoming audible.

Success of the Program

In the summer of 1990, the New Haven Health Department, the agency authorized to operate the NEP, formed a protocol committee that worked throughout July and August to craft an effective program design and evaluation. Committee members included local and state health officials, AIDS professionals and activists, former addicts, the police chief, drug treatment providers, city officials (including a representative of the mayor's office and Board of Aldermen), street outreach workers who possessed an intimate knowledge of the lifestyle of IDUs, community-based agency representatives, and a professor from Yale University who volunteered to conduct the evaluation *pro bono*. Later, when the protocol was completed and approved by the Connecticut Department of Health Services and the committee disbanded, another group was formed to offer ongoing counsel and support. The NEP Community Advisory committee includes local and state health officials, representatives of agencies and coalitions serving communities of color and drug-dependent people, former IDUs, a member of the former underground NEP, drug treatment providers, and the principal investigator for the project from Yale University.

On 13 November 1990, New Haven opened the doors of the first legal needle exchange in Connecticut, and the sole authorized program of its kind operating in the Northeast. In its first year of operation, over 900 active addicts enrolled in the program, and more than 100 were helped to enter drug treatment. As noted in the preliminary report, produced by the program operators and the Yale University evaluation team, the NEP is already estimated to be reducing the incidence of new HIV infections among participants by 33 percent.

During the first volatile year of operation, NEP staff and its advisory group remained attentive to public concerns about the project. The NEP outreach team produced a special briefing session that included a slide presentation of the program in action. The NEP staff has conducted briefings for numerous groups, including staffs of drug treatment facilities, health and human service agencies, and law enforcement personnel around the city and state.

Conclusion

As the moral and political debate about the issue of clean-needle access drags on, and our federal government fails to take leadership in endorsing this critical public-health measure, the impetus to alter public policy on both decriminalization of sale and possession of needles/syringes and the importance of NEPs will remain with local communities and states. Even in the event that national policy changes in the foreseeable future, experience shows that areas seeking to change restrictive needle laws and advance NEPs will have to do much of the work necessary to create a climate conducive to this intervention. As described in this portrayal of the New Haven and Connecticut experience, our success was clearly no miracle, but rather the result of artful organizing strategy, vigilance, hard work, and compassion. Our message to others who want to influence similar change is this: Don't wait for people in high positions to take action on the needle issue; build a base of support in your own community and put pressure on those in power. Your power will outmatch their inaction. High-level policy change can be achieved from the bottom up.

Acknowledgment

The author wishes to acknowledge Sher Horosko, former Coordinator of the New Haven Mayor's Task Force on AIDS, for her vision, leadership, and unwavering determination in the struggle to move hearts and minds on the issue of clean-needle access in Connecticut.

AIDS REPORTS

News, analysis, surveys and data on HIV/AIDS policy and legislation from the 50 states.

NEEDLE EXCHANGE PROGRAMS: WILL 1994 BE THE YEAR TO END THE LEGISLATIVE TABOO?

After years of discounting needle exchange as too controversial, state and federal policymakers are now giving serious attention to exchange programs as a plausible strategy for stemming the transmission of HIV/AIDS. Two studies published in the January 12, 1994 issue of the *Journal of the American Medical Association (JAMA)* have put even more muscle behind the movement.

The studies, conducted in New York and San Francisco, attempt to deflect criticism leveled at earlier European assessments of needle exchange. The New York researchers concluded that a decline in needle sharing—one of the highest risk factors for transmitting the virus— plus addicts' increasing tendency to sniff rather than inject heroin has helped reduce the number of potentially contaminated syringes, from 51 percent to 7 percent. That finding led to the study's conclusion that providing legal access to sterile needles will reduce risky behaviors—at least among injection drug users in New York City.

San Francisco's data showed that in the spring of 1992, 45 percent of injection drug users said they "usually" obtained needles from the exchange program; 61 percent said they had done so in the past year. Thus the median reported frequency of injection fell from 1.9 to .7 per day and of new injection drug use fell from 3 percent to 1 percent. The researchers' bottom line: the program did not increase San Francisco's drug use in terms either of frequency of needle use or recruitment of new drug users.

Coming on the heels of 1993 reports that generally support needle exchange, including a General Accounting Office study that called such programs "promising," the *JAMA* studies could help advance the cause at the state level. In past legislative sessions, most needle exchange bills died amidst criticism that the effort would condone illegal drug use. The fact that a **Maryland** bill has already become law and that **California** and **New Hampshire** bills have passed their house of origin suggest this may be the year the taboo is broken.

1994 SESSION HIGHLIGHTS

At last count, needle exchange bills were on the table in ten states: **California, Connecticut, Florida, Hawaii, Illinois, Massachusetts, Maryland, New Hampshire, New Jersey** and **Rhode Island**. >>>

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After years of debates about the efficacy of these programs, state legislators appear to be a step closer to implementing these controversial programs.
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In **Connecticut** and **Hawaii**—the two states with existing programs—the aim is to expand services.

Connecticut SB 55, for example, adds to the number and kinds of agencies that can conduct needle exchanges and removes the cap on the number of syringes permitted in each exchange.

Hawaii SB 2731 appropriates $6,000 to the sterile needle exchange and substance abuse referral program on Oahu to identify and accommodate the emerging needs of adolescent injection drug users.

On May 2, **Maryland** became the third state to sanction a needle exchange program legislatively. The bill, SB 402, establishes a one-for-one exchange program to be administered by the Baltimore City Health Department. The program will link participants to drug counseling and treatment services and require them to be educated about risk behaviors such as needle sharing or unsafe sex. It also includes an evaluation component to determine changes in the level of injection drug use and prevalence of HIV infection.

At the signing ceremony, Gov. William Donald Schaefer called the exchange of dirty needles "one of the major ways AIDS is spread in Baltimore City." The three-year pilot, he said, is "something we're going to do to help stop [the spread of AIDS].

Bills On the Move

Two bills have passed their houses of origin in this session:

CALIFORNIA SB 1048

This measure creates a Clean Needle and Syringe Exchange Pilot Project, would authorize pharmacists and physicians to provide hypodermic needles and syringes without a prescription or permit. The bill, which passed the Senate on January 31, will be closely monitored as it makes its way through the Assembly. The reason: Gov. Pete Wilson has twice vetoed similar bills, in 1992 and 1993, based on concerns about their impact on the state's antidrug campaigns.

But the governor's opposition appears not to be set in stone. In last year's veto message, he said he would reconsider his position if he saw compelling information on the benefits of needle exchange. According to Mike Hughes, chief of the state's HIV/AIDS Epidemiology Branch, the latest round of studies may provide the governor with enough information to buttress the argument that needle exchange is an efficacious way to reduce the spread of HIV.

NEW HAMPSHIRE HB 1532

The New Hampshire bill would require the Public Health Services Division to establish, with the help of an advisory committee, a two-year needle exchange pilot in three communities across the state.

Lessons for State Lawmakers: The D.C. Needle Exchange Program

State officials often look to other states for guidance in implementing their own HIV/AIDS policies—and the needle exchange issue is no exception. Baltimore Health Commissioner Peter Beilenson, for example, has said that he and his staff studied other programs—such as in New Haven, **Connecticut** and the **District of Columbia**—to learn how to run their new program.

But while New Haven's program is widely regarded as a good model, the **District's** program is in trouble. Implemented in 1992 by Mayor Sharon Pratt Kelly, the program drew fire from some City Council members who argued it would condone illegal drug use. As a result, Kelly was forced to settle for a scaled-down program that AIDS activists have criticized as too passive to do any good.

A recent review seems to confirm that view: only 58 users have exchanged dirty needles for sterile ones since the program began and only half that number have used the program more than once.

Too Few Sites, Too Many Questions

Program critics trace its ineffectiveness to at least two factors:

1) It is run from a single site in the city's Northeast quadrant, in contrast to other cities that distribute needles throughout neighborhoods hard hit by drugs or that use vans to cover these areas. 2) To exchange needles, addicts must be physically examined, give their names, answer questions about their sexual and drug-using behaviors and then wait to be put on the city's treatment waiting list. By contrast, most programs have no eligibility requirements because users who need the needles most are the most unlikely to seek treatment.

Although the District no longer funds the program (the Council recently trimmed nearly $5 million from the drug treatment budget), it continues to operate on leftover supplies. Moreover, D.C. Council member Linda Cropp, who oversees the city's health program, has indicated she may revisit the subject in hearings this summer.

> Lisa Bowleg

HOUSE BILL 1716 (Note: Introduced but not passed during the 1993 Texas Legislative Session)

Author: Maxey

A BILL TO BE ENTITLED
AN ACT

relating to demonstration needle and syringe exchange and monitoring programs to reduce the incidence of acquired immune deficiency syndrome.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF TEXAS:
SECTION 1. Chapter 85, Health and Safety Code, is amended by adding Subchapter H to read as follows:

SUBCHAPTER H. DEMONSTRATION NEEDLE AND SYRINGE EXCHANGE AND MONITORING PROGRAMS

Sec. 85.161. LEGISLATIVE DECLARATION. The legislature finds that behaviors related to intravenous drug use account for the fastest growing rate of exposure to HIV infection in this state. The legislature declares that it is in the public interest to break the deadly connection between AIDS and intravenous drug use by allowing legal access to clean needles and syringes in a comprehensive effort to slow the spread of AIDS.

Sec. 85.162. DEMONSTRATION NEEDLE AND SYRINGE EXCHANGE AND MONITORING PROGRAMS.

(a) The department, in cooperation with the Texas Commission on Alcohol and Drug Abuse, shall establish a demonstration needle and syringe exchange and monitoring program in one of the five municipalities with the highest incidences of reported AIDS cases as of September 1, 1993. The department is the lead agency in establishing and administering the program.

(b) The department, with the assistance of the Texas Commission on Alcohol and Drug Abuse, shall establish protocols in accordance with Section 85.163(a).

(c) The department and the Texas Commission on Alcohol and Drug Abuse shall evaluate the effectiveness of the program based on the criteria specified by Section 85.163(b).

(d) The department may authorize similar programs in other areas of the state as determined by the commissioner.

Sec. 85.163. REQUIREMENTS OF DEMONSTRATION PROGRAM.

(a) A demonstration program authorized by this subchapter shall:
  (1) be incorporated into existing AIDS prevention and outreach projects in a selected municipality;
  (2) provide for free and anonymous exchange of needles and syringes and provide that program participants receive an equal number of needles and syringes for those returned, not to exceed five syringes and needles for each exchange;
  (3) require all needles and syringes distributed to be marked and checked for return rates;
  (4) offer education on the transmission and prevention of HIV, and may offer referrals or services for other health-related issues such as sexually transmitted diseases, tuberculosis testing, and general health care;
  (5) assist program participants in obtaining drug treatment services; and
  (6) provide sterile materials such as bleach or sterile cotton to promote safe health practices.

(b) A demonstration program shall include an evaluation component to monitor:

(1) return rates of needles and syringes distributed;
(2) behavioral change of program participants, such as needle sharing, incorporation of prevention activities related to reducing the transmission of HIV by blood, and the use of condoms;
(3) program participation rates and the number of participants who are motivated to enter treatment as a result of the program and the status of their treatment; and
(4) the incidence of HIV infection among intravenous drug users to determine if there is a change as a result of the program.

Sec. 85.164. REPORT.

(a) A municipality selected for a demonstration program or the person conducting a program shall submit a report evaluating the effectiveness of the program to the department.
(b) The department shall compile all information received from a demonstration program and shall report to the standing committees of the legislature having jurisdiction over public health.

Sec. 85.165. EFFECT OF OTHER LAW. Sections 481.125 (a) and (b) do not apply to:

(1) a person or organization conducting a needle and syringe exchange and monitoring program authorized by this subchapter; or
(2) a person receiving needles or syringes from a needle and syringe exchange and monitoring program authorized by this subchapter.

Sec. 85.166. DISTRIBUTION OF NEEDLES AND SYRINGES TO PROGRAM.

A person licensed as a wholesale drug distributor under Chapter 431 or a pharmacy licensed under the Texas Pharmacy Act (Article 4542a-1, Vernon's Texas Civil Statutes) may distribute needles and syringes to a needle and syringe exchange and monitoring program authorized by this subchapter.

Sec. 85.167. HANDLING OF NEEDLES AND SYRINGES.

(a) A needle and syringe exchange and monitoring program authorized by this subchapter shall store hypodermic needles and syringes in a manner so as to be available only to authorized personnel and not to be openly available to program clients.
(b) All used disposable needles and used disposable syringes shall be destroyed in a manner that makes those needles and syringes unrecoverable.
(c) Used needles and syringes that have been discarded and are awaiting destruction shall be securely safeguarded until they are discarded.

SECTION 2.
(a) This Act takes effect September 1, 1993.
(b) The Texas Department of Health or its successor shall establish the program required by Subchapter H, Chapter 85, Health and Safety Code, as added by this Act, not later than January 1, 1994.

SECTION 3. The importance of this legislation and the crowded condition of the calendars in both houses create an emergency and an imperative public necessity that the constitutional rule requiring bills to be read on three several days in each house be suspended, and this rule is hereby suspended.

TEXAS CONTROLLED SUBSTANCES ACT
HEALTH AND SAFETY CODE
CHAPTER 481

Section 481.002. Definitions.

(17) *"Drug paraphernalia"* means equipment...used or intended for use in...injecting...into the human body a controlled substance in violation of this chapter. The term includes:

(K) a hypodermic syringe, needle...intended for use in parenterally injecting a controlled substance into the human body...

Section 481.125. Offense: Possession or Delivery of Drug Paraphernalia.

(a) A person commits an offense if the person knowingly or intentionally uses or possesses with intent to use drug paraphernalia...to inject...into the human body a controlled substance in violation of this chapter.

(b) A person commits an offense if the person knowingly or intentionally delivers or possesses with intent to deliver drug paraphernalia knowing that the person who receives or who is intended to receive the drug paraphernalia intends that it be used ...to inject...into the human body a controlled substance in violation of this chapter. (CURRENTLY, NEEDLE EXCHANGE WOULD VIOLATE THIS PROVISION, THEREFORE, LEGISLATION IS NEEDED TO EXEMPT NEEDLE EXCHANGE PROGRAMS FROM THIS PROVISION)

(c) A person commits an offense if the person commits under Subsection (b), is 18 years of age or older, and the person who receives or who is intended to receive the drug paraphernalia is younger than 18 years of age and at least three years younger than the actor.

(d) An offense under Subsection (a) is a Class C misdemeanor, unless it is shown on the trial of a defendant that the defendant has previously been convicted under Subsection (a), in which event the offense is a Class B misdemeanor.

(e) An offense under Subsection (b) is a Class C misdemeanor, unless it is shown on the trial of a defendant that the defendant has previously been convicted under Subsection (b) or (c), in which event the offense is a felony of the third degree.

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III

Divider Title: _____

Lower East Side Harm Reduction Center

"Providing positive choices to our IDU community"

223 st 2nd Street New York, N.Y. 10009 Tel: 477-6863 or 228-7734 Fax: 477-7015

Clean Needle Exchange:
Harm reduction info/education
Safer Sex education/materials
Support services
Outreach
Training & Workshops
Referrals

Recovery Readiness Program:
Counseling
Casemanagement
Outreach
Referrals
Acupuncture
Reflexology
Meditation
Spiritual Healing

The Lower East Side Harm Reduction Center (LESHRC) is concerned primarily with providing harm reduction services to active IDUs, with a special focus on HIV transmission. It was also originally funded by ACT UP/NY and operated illegally from March 1990 to July 24, 1992, when it was legalized. It serves IDUs who live and frequent the Lower East Side of Manhattan, a major "copping area" for illicit drugs and diverted methadone.

The LESHRC provides needle exchange services from a storefront that is open five days a week for 18 exchange hours, enabling participants to leave a sometimes chaotic street scene while they are exchanging their needles. LESHRC also utilizes a "roving" team twice a week that provides exchange services to targeted areas throughout the Lower East Side where IDUs live or congregate. The stationary and roving exchanges operate for a combined total of 24 hours a week. The program provides comprehensive exchange services (including bleach kits and alcohol pads), referrals, risk reduction education, and condoms and dental dams. A volunteer physician provides medical triage services with the roving team once a week. An entitlement specialist, outposted from Betances Health Unit a neighborhood primary care provider, is also on hand during exchange hours to assist individuals in this area. Support groups, volunteer trainings, community meetings, and other support services and administrative activities take place in the storefront during non-exchange hours.

The LESHRC storefront was intended to replace the fixed street-based site. It is strongly felt by LESHRC that by treating individuals with respect and dignity that risk-reduction follows. The storefront is often occupied an hour in advance of exchange times and remains utilized until the last person leaves at night. Having a permanent structure means that LESHRC is better able to bridge its participants into higher threshold services. The storefront is roughly divided into three sections: **1)** The exchange area **2)** The drop-in area **3)** The referral station

The walls of the storefront are used for information bulletin and for the poetry, writings and drawings of volunteers and participants. A large mural of children's art adorns one wall.

1. The exchange area is adjacent to the entrance. Most participants are surprised to discover that the registration is completed in less than a minute. It is LESHRC's intent to keep the program as low threshold as possible to maintain client participation. If it became more convenient to buy syringes on the street than to come to the storefront this would reduce the program effectiveness. Each participant who passes through the exchange designs his or her own bleach-kit by taking as much bleach, water, cookers, cotton or condoms as they need to ensure safe drug usage until the next time the exchange is available to them. By using this means the participant raises their HIV consciousness: a person taking bleach is aware that he/she may be in a situation where syringes have to be re-used or shared; a homeless individual will take extra water knowing that he/she has no other reliable source; or an individual injecting their drugs in a public space such as a shooting gallery or an abandoned building having their own supply of water, cookers and cotton will eliminate the necessity to share 'works'. As the participant receives syringes and takes bleach etc., LESHRC outreach workers intervene with education around HIV/AIDS and drug use so that the individual is empowered to make their own informed choices. The only item which is actually handed over by the outreach workers, aside from syringes, is alcohol pads. This is done partly to raise consciousness around cleaning the injection site which is often overlooked by drug injectors and partly to initiate another contact between participant and program. A reduction in the complications associated with injection such as endocarditis and abscesses in turn reduces the amount of time spent in hospital emergency rooms. This is also an indication that given the means most active drug users will take care of their health. In the exchange area are located the information tables where participants can gather information for self-referrals or can ask for assistance from program volunteers. LESHRC has initiated a safer sex table. An outreach worker staffing the safer sex table counsels and educates individuals using condoms, dental dams, dildos, lubricants, creams and erotic underwear. The table has resulted in a fears being confronted and knowledge gained. LESHRC developed an educational pamphlet for participants regarding the need to use barrier protection.

2. The drop-in area of the storefront provides sofas, armchairs, TV/VCR, coffee and, through City Harvest, often provides food. It is LESHRC's belief that by raising self-esteem high-risk behavior is reduced. At least one LESHRC participant is now living HIV and drug free and the only thing the program supplied was clean needles, a safe space and a mop to clean the floor. By accepting exchange participants for themselves and providing an environment that is free from the oppressing stigmas that drug users find in most social service agencies LESHRC has seen active involvement, by participants, in the well-being of the storefront. The drop-in is

used outside of exchange hours and is particularly crowded on cold days. This area provides a sense of ownership to participants. This is evidenced by any number of activities such as making coffee, cleaning the space, filling bleach bottles, answering telephones, helping with outreach and talking about the program to visiting parties. People gain a sense of responsibility through their service. For some individuals it is their way of showing gratitude to the program and for others it feels like a job and a commitment. In this manner people are provided with the tools to raise confidence and self-esteem. A bleach party to manufacture supplies for the exchange takes place at drop-in hours on Friday afternoons. A meal used as an incentive and also for nutritional reasons is provided. Social interaction occurs as individuals work and results in an informal support network. Movies are shown following the bleach party. After exchange hours on Saturdays the storefront remains open for card and chess games. Many participants have previously used chess and cards as a means of relaxation and socialising whilst incarcerated and in this setting the time can be used for HIV risk reduction education.

3. LESHRC is an active referral source for its participants and provides referral specialists both from within the program and has arranged for workers from neighborhood programs to be out-posted at the storefront. The Exchange Program acts as a bridge to higher threshold services. Similar to other programs, referrals are not always successful the first time around. However because of our high client retention repeat tries are possible and often successful. The very act of having the support of a program worker is often enough for a participant to make a self-referral.

Female participants constitute 25% of drug users in the program. Exchange hours, staffed by women only, have been set aside to provide additional support and to encourage more participants. The Women's hours provide a meal, informal support sessions, an art group, a yoga class and massage therapy. Dental screenings, with provision for an immediate follow-up referral, is provided by NYU dental school.

In 1992, LESHRC was funded through federal Ryan White Title I funds to provide support services, education, direct services, and referrals to needle exchange participants who have a desire to reduce or change their drug-using behaviors but for whom traditional drug treatment modalities have proven unsuccessful. This program is housed in a second storefront around the corner from the needle exchange. It is the first program of its kind in New York. As well as the bleach party and games sessions LESHRC provides a writing workshop, a Bible study group and a womens rap session. A users newsletter called The Point is entirely written and edited and produced by program participants with LESHRC support. The second storefront is is a healing setting. It is used for the acupuncture clinic, for massage therapy, both neck and shoulders and full body, reiki and for reflexology. The acupuncture clinic treats many community residents who are not IDUs which

provides an introduction to Needle Exchange and Harm Reduction to a wider audience. LESHRC has a Spiritualist on staff to provide spiritual guidance and support to members of the Latino community that follow these beliefs.

LESHRC provides additional social outlets for its participants. At Christmas and Thanksgiving traditional meals are served, exchange is extended and participants sing, read poetry and play music. Memorial Day was celebrated by a picnic bar-b-que in a local park. The Bible study group visited the Planetarium to watch the Christmas Star event. A Day of Pampering was provided during Women's hours. Make overs, massage, music, food, a safe-sex workshop and manicures were provided. Over fifty neighborhood women attended.

LESHRC is planning to further expand its exchange hours on the Lower East Side, and establish a satellite exchange at Streetwork Project, an organization serving "street youth," in order to increase its capacity to serve younger injectors. LESHRC is planning to launch a bleach kit program in conjunction with an organization that provides meals to HIV+ individuals.

The Lower East Side Needle Exchange Program is a volunteer program but also uses employees of other AIDS, health care, and drug treatment organizations to conduct the needle exchange and provide ancillary services. The Aids Service Center of Lower Manhattan, Nena Health Center, Betances Health Unit, Lower East Side Family Union, and the American Indian Community House regularly staff the exchange. LESHRC encourages active drug users to volunteer with the program to provide as much Peer motivation for risk reduction as possible. Additionally many of the volunteers have experienced narcotic use. LESHRC remains a long-standing member of the Lower East Side AIDS Strategy Group, a consortium of service providers operating on the Lower East Side, and is active in neighborhood associations, block parties, community boards and other aspects of the social and political life of the area. The support from the larger Lower East Side community has shown that communities devastated by drugs and AIDS are willing to co-operate and utilize life saving programs and that common sense among those affected can prevail over the 'controversial program' hysteria created by politicians, bureaucrats and law enforcement agencies.

Methadone Treatment and Acquired Immunodeficiency Syndrome

James R. Cooper, MD

In light of the recent growth in public financial support for the rapid expansion of drug abuse treatment capacity, the unique effectiveness of methadone hydrochloride treatment in reducing intravenous opioid abuse and the associated sharing of injection equipment is reviewed and discussed, and its potential effect on preventing the spread of acquired immunodeficiency syndrome is examined. In addition to methadone, treatment variables that clinical research suggests are integral to effective treatment are identified. Methadone treatment is one of the most helpful means of reducing the risk of acquired immunodeficiency syndrome available, provided that programs of quality are expanded. The medical profession and universities are urged to take steps to ensure quality efforts in prevention and treatment.

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THE SHARING of injection equipment among intravenous drug users significantly increases the risk of transmission of human immunodeficiency virus (HIV) among the addict population, their sexual partners, and their offspring.[1-4] The number of cases of acquired immunodeficiency syndrome (AIDS) associated with intravenous drug use is significant[6,7] and increasing dramatically in some regions.[8] The disproportionate prevalence of HIV infection among blacks and Hispanics creates an additional public health concern.[9-11] This increased prevalence of HIV infection among intravenous drug users and their sexual partners and newborn children, insufficient treatment capacity, and the growing concern about public health consequences have led to a renewed interest in providing funds for rapid expansion and improved quality of the current drug abuse treatment system. A primary objective of this new treatment-funding initiative is to reduce the sharing of injection equipment among addicts and thus to prevent the further spread of HIV infection by attracting more intravenous drug users to treatment and retaining them in treatment. There is debate, however, as to what methods of service provision are most likely to fulfill the objective.

For editorial comment see p 1681.

Methadone hydrochloride maintenance is one modality of the existing drug abuse treatment system being targeted for expansion. Controversy still exists about the legitimacy of this treatment approach.[12] Some of the antagonism results from personal bias and prejudice regarding the patient population, which is perceived by some to be composed largely of antisocial or weak persons unable to give up their self-destructive behavior. This is a perception sometimes held by patients and staff as well.[13-15] Problems associated with poorly operated programs, such as loitering and drug dealing, just add to the controversy (*Ft Lauderdale News/Sun Sentinel*. June 19, 1983;sect A:1,10,11; *Village Voice*. April 5, 1988:31-38). Such problems account, in part, for local neighborhood resistance to opening new clinics in some areas. Despite these existing attitudes, an objective review of the clinical research data demonstrates that methadone treatment has certain unique characteristics that suggest this treatment would significantly reduce the sharing of injection equipment and prevent the spread of HIV infection.

TREATMENT EVALUATION

Much has been written about methadone maintenance programs in the United States. Exhaustive reviews have consistently demonstrated the safety of methadone, regardless of the duration of treatment, when used as directed under medical supervision.[16-18] Evaluation studies that involve large numbers of narcotic maintenance programs have consistently shown this treatment to be highly effective in reducing intravenous drug use and crime and in enhancing social productivity.[19-22]

To understand the usefulness of methadone maintenance as an adjunct in AIDS public health prevention efforts, it is important to appreciate the unique effectiveness of methadone treatment to retain patients and the effect of this modality on reducing intravenous drug use, provided adequate methadone doses are administered and ancillary services are provided to those with an assessed need. Patient retention is crucial for two reasons. Evaluation studies have consistently demonstrated that the length of time in treatment is an important predictor of both in-treatment and posttreatment success, regardless of treatment modality.[23-25] In-treatment performance, as measured by decreased use of narcotics and other illicit drugs, decreased criminal activity, and increased social productivity, improves in a direct linear relationship to the length of time spent in treatment.[27] Whatever the modality, outcome for patients who receive short-term treatment of fewer than 90 days is relatively poor; indeed, it is not significantly different from patients who receive no treatment.[23,27]

Comparative analysis of outcome data of available treatment modalities for this subpopulation of drug abusers provides an additional dimension in understanding the effectiveness of narcotic maintenance programs. Of the three modalities available for the treatment of opiate addicts, ie, methadone maintenance, residential drug free, and outpatient drug free, the methadone modality consistently demonstrates its ability to retain the greatest proportion of all patients admitted for the longest periods. This is especially true during the initial part of treatment, which is critical to the AIDS public health issue. The only available data from large, prospective studies reveal that within the first 3 months of treatment, 40% to 50% of new patients leave outpatient or residential drug-free treatment, compared with a 14% dropout rate from methadone maintenance.[28] These differential dropout rates early in treatment affect not only individual treatment outcomes but have broader possible ramifications for planning effective AIDS intervention strategies. Because methadone treatment is generally more successful than other approaches in retaining new patients, it is particularly attractive when considering public health methods for reducing intravenous opiate abuse.

In addition to tenure, evaluation studies have revealed several impor-

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tant findings that impact on program retention and in-treatment performance. There is considerable evidence that higher methadone hydrochloride dose levels (50 to 100 mg) improve program retention and reduce illicit opiate use, particularly during the first 6 months of treatment.[23-25] Program tenure and dose level may account for 15% to 25% of the outcome variance.[24] Attempts to determine the extent to which other rehabilitative psychosocial services are useful in effecting meaningful behavioral change have been less definitive. Practical research design and methodological limitations have made the task difficult.[26] More recent and better-designed evaluation studies[26,27] suggest that selected patients who receive methadone and who have a psychiatric comorbidity, eg, an affective disorder, benefit from psychotherapy. No particular method of psychotherapy has proved to be superior. Equally important, these and other studies[28] suggest that for another population, often with less psychopathology, psychotherapy is neither attractive nor more effective than other ancillary services. However, these studies highlight the importance of a thorough diagnostic intake evaluation and the efficacy of matching services to the patient's needs. The amount of variance that other ancillary services contribute to in-treatment performance is not certain; however, there is general agreement among many clinicians and clinical researchers in drug abuse treatment that patient performance is positively affected, not only by methadone, but by the therapeutic milieu provided by various staff and program services and that a range of services are needed.[29] The advent of HIV infection has made the provision of educational and supportive counseling services all the more critical for patients, their sexual partners, and their families.[30]

Research findings that show correlations between specific clinical staff credentials, skills, or qualities such as caring and resourcefulness and therapeutic efficacy are less robust and often confounded by methodological difficulties.[31] Nonetheless, some of these findings are relevant to enhancing the AIDS prevention effort. During the last decade, a small but growing body of literature has emerged that suggests that certain staff characteristics are more important than others in affecting relevant patient-performance measures such as retention in treatment and intravenous drug use. Positive staff attitude and flexible treatment philosophy do affect these measures.[32-34] Furthermore, regardless of educational level and addiction history,[35-38] counselors with specific patient management skills significantly enhance patient retention and reduce intravenous drug use in marked contrast to programs with staff who lack these skills.[39,40]

While the provision of adequate methadone doses and ancillary services by quality staff enhances in-treatment performance, posttreatment data reveal significant relapse rates for many patients, regardless of the treatment modality, and that there are no predictable preadmission patient characteristics or treatment variables.[22,23,34,41-43] Multiple management interventions are to be expected for many; each intervention and subsequent abstinence period has a positive impact on the drug abuser's career.[23,44] These findings illustrate the chronic, relapsing nature of this disorder and have practical implications when developing AIDS prevention strategies.

COMMENT

Thirty years ago, narcotic maintenance treatment was illegal. Today, considerable progress has been made toward enlightening the public about both narcotic addiction and narcotic maintenance treatment. Still, there remain among the public and the medical community those who dismiss the potential biological aspect of addiction and conceptualize this illness as a self-inflicted disease of the will.[27,28] Many believe drug-free treatment is the only valid rehabilitative method. Some still discount the efficacy of narcotic maintenance, despite the significant changes in intravenous drug use during treatment, on grounds that treatment is mere narcotic substitution and that relapse is likely for many following treatment. Such bias and prejudice have led some to question the effectiveness of methadone maintenance,[29] despite the many studies that have consistently demonstrated in-treatment efficacy and the dramatic increase in HIV seroprevalence among intravenous drug users, their sexual partners, and their offspring.

The enormity of the public health problems that result from HIV transmission by intravenous drug users calls for a reassessment of current attitudes and philosophies concerning methadone maintenance. Those who still promote a drug-free life-style as paramount for all addicts or those who believe that the fear of AIDS will motivate addicts to give up drugs will find it difficult to accept any AIDS prevention policy that includes the use of methadone. Increasing public concerns regarding AIDS will probably override these arguments eventually, however (*New York Times*, June 15, 1987;sect A:30).[60] In other countries and international organizations, eg, Australia, Switzerland, the United Kingdom, and the World Health Organization, where such debates have occurred, advocates of national and international strategies aimed foremost at risk-reduction efforts, including methadone maintenance, have prevailed.[61-63]

During the next several years, it is likely that public resources will be made available for the expansion of drug treatment in an attempt to reduce intravenous drug use, as a presidential commission on AIDS has recommended.[64] Federal funding[65] for drug abuse treatment and AIDS prevention has recently been increased substantially, and it is likely that additional state revenues will be forthcoming. Public health demand reduction strategies and policies will be developed rapidly. The most important public health objectives will be to attract intravenous opiate users into treatment early in their addiction careers, stop their intravenous drug use and sharing of injection equipment, and retain them in treatment. Preliminary data[66,67] support the abundant existing evidence that many intravenous opiate users stop injecting drugs when adequate doses of methadone are given and suggest that methadone treatment has a critical role to play in curtailing the spread of AIDS. These objectives are especially important in geographic areas where the HIV seroprevalence among intravenous drug users is low. Preliminary data both in the United States and Europe suggest that HIV seroprevalence is considerably lower among those patients who receive long-term methadone maintenance and who entered treatment before the onset of increasing HIV seroprevalance within the local addict population.[68-71] In contrast to New York City, NY, where enormous personal tragedy and public health costs from AIDS are inevitable, cities where HIV infection is low or nonexistent still have a brief window of opportunity in which to implement prevention efforts. Attracting and retaining those who already test HIV seropositive will also be important, since it is presumed that many such patients in treatment will no longer be infecting others or exposing themselves to possible cofactors through the sharing of injection equipment. Moreover, educational efforts during treatment may positively affect the sexual practices and family planning of those already infected.

It is not enough for public health officials to expand methadone treatment. Treatment variables known to enhance

its efficacy need to be incorporated as well. The success of this aspect of the AIDS prevention effort will depend in large part on the effectiveness of treatment, measured by its ability to attract patients, stop their high-risk behaviors, and effect major changes in their lifestyles. Because opiate addiction is a chronic, relapsing disorder, relapse-prevention strategies[73] will need to be incorporated; many will need to be in treatment indefinitely if these prevention efforts are to be sustained. Methadone doses must be raised to sufficient levels to have maximum effect on intravenous drug use. Many will need at least 50 to 100 mg of methadone hydrochloride daily during the initial phases of treatment, a range well above doses administered in some existing programs. Flexible staff philosophies regarding dose and treatment duration are needed. For many, sustained changes in lifestyle will require the availability of quality ancillary educational or vocational services. Counseling patients, their sexual partners, or their families about HIV risk reduction should be an integral part of every program. The existing prevalence of a psychiatric comorbidity, eg, an affective disorder or alcohol abuse, calls for diagnostic intake evaluations and the matching of services to the patient's needs, as well as the use of psychotherapy and adjunctive pharmacotherapies[73] when indicated. Compassionate counseling staff capable of formulating, monitoring, and modifying relevant treatment plans are required. They must possess good case-management skills and be capable of responding quickly and effectively to early signs or symptoms of relapse with the necessary behavioral or psychotherapeutic interventions. Program directors must be effective leaders who insist on these types of counseling skills and qualities and encourage coordination of ancillary services.

If programs are successful at retaining patients and if the current course of HIV infection is not altered, it is likely that many patients will eventually need additional medical services. Historically, drug treatment programs have often been the only link to existing health care networks for other needed medical services. Not infrequently, addicts have encountered difficulties receiving services at community health centers. While such medical services might be provided through referral to traditional health centers in some regions, the extent to which such an objective can be uniformly and effectively implemented remains to be determined. Moreover, additional outreach research may demonstrate that the provision of ancillary or HIV-related medical services at the treatment program may be both efficient and cost-effective.

During the last 3 years, several research demonstration projects have been implemented to determine whether changes in the traditional services provided throughout the continuum of treatment could be modified to reduce waiting lists, attract additional patients to treatment, and use staff and program space more effectively, without adversely affecting existing patient performance or costs. In one attempt to reduce waiting lists in New York City, an interim clinic was established. This clinic is a low-threshold facility designed to provide no other services except the daily administration of methadone until space becomes available in a traditional treatment clinic that provides comprehensive services. Methadone is provided to opiate-dependent persons; there are no other demands of the patient except for daily attendance. Preliminary results suggest some real utility and potential impact on reducing the spread of HIV infection[47] by significantly reducing the frequency of needle use for injecting heroin alone or in combination with cocaine. Whether such low-threshold programs will also attract previously untreated patients awaits further study and replication.

Several clinical investigations are currently testing whether existing staff and space can be better used. The concept being examined in these investigations is similar in many respects. All are asking whether there is a subpopulation of patients in treatment for years whose behavior suggests they no longer need traditional services other than methadone administration, as well as whether programmatic savings achieved from providing only methadone twice monthly to such patients in an aftercare program can be reallocated to new admissions in need of more rehabilitative services. Six such investigational programs have been operating in New York City for the last 2 years. The extent to which these programs will turn out to be both clinically effective and cost-effective and not contribute to methadone diversion is currently being evaluated.

A recent preliminary report[74] suggests a logical extension of the aftercare concept from the clinic setting to a physician's private office. Some carefully screened patients can successfully receive care in a physician's office rather than in a formal clinic, a concept envisaged by the original architects of this treatment modality.[75] While historically some physicians have treated a few patients in their private offices, what is now being clinically evaluated is the safety and efficacy of administering methadone in a larger selected population of highly responsible and rehabilitated patients. Patients received a 28-day supply of solid-dose medication with no other supportive services except those deemed necessary by the physician. While a similar clinical trial is under way in Baltimore, Md, and the initiation of additional studies has been endorsed,[76] the clinical and administrative safety and efficacy of these innovative methods await further evaluation.[77]

To obtain maximum benefit from treatment efforts, certain obstacles and limitations need to be remedied. Some states or localities with relatively low HIV seroprevalence rates among current intravenous drug users prohibit either methadone maintenance or the expansion of existing program sites. Other states or local governments and programs limit treatment duration or maximum allowable doses below levels proved to be most efficacious for many in reducing their intravenous drug use. Some require several failures at detoxification before admission to maintenance treatment. These barriers to effective treatment may be overcome by making health professionals, the public, and policymakers aware of the real tragedy occurring in several cities already and the danger that similar harm is likely to occur elsewhere if we do not act soon.

There is little documented evidence[60] but considerable anecdotal evidence that suggests an erosion in the quality of clinical and administrative staff in some public programs and a gradual evolution to a two-tiered private and public treatment system. Problems in maintaining high levels of staff competence are not uncommon within institutions that experience fiscal constraints and forced-cutback management.[78,79] Such concerns and experiences are increasingly common in the mental health field today.[80-82] Current data suggest marked differences among methadone programs with regard to the types of medical staff, available physician coverage, and the provision of medical services, regardless of program size.[83] A recent study[84] highlights the significant differences in patient retention and needle-use rates between programs and suggests that poor staff leadership and patient management skills account for these differences. The extent to which these findings are replicated in other programs may justify additional expenditures to improve existing staff quality if this aspect of AIDS prevention is to achieve maximum efficacy.

Our present inability to attract a sub-

stantial number of intravenous drug users to any form of treatment limits the magnitude of the AIDS prevention effort. Some states are implementing various outreach strategies, such as improving accessibility to treatment with mobile methadone-dispensing units. The easy availability of cocaine in some areas, and the fact that some patients are injecting the drug during methadone treatment,[84,85] has greatly complicated the management of HIV risk reduction. While concomitant pharmacological interventions such as desipramine hydrochloride are being investigated [86,87] and appear promising, traditional behavioral interventions remain critical to treatment. Such limitations make no less valid the assertion that expanding methadone programs of quality will significantly improve the current public health AIDS effort; they do serve to keep our expectations realistic and highlight the need for additional outreach and treatment intervention research.

CONCLUSION

The growing prevalence of HIV infection among intravenous drug users and the likelihood of further spreading the infection by sharing injection equipment or engaging in sexual activity requires a reexamination of our attitudes about methadone treatment. The seriousness of the problem requires that priority be given to prevention of HIV infection throughout the uninfected intravenous drug-using population, their sexual partners and children, and the heterosexual community. A successful effort will require improving existing treatment programs as well as expanding treatment.

Methadone treatment is clearly the most promising available treatment. It will make risk-reduction opportunities available to the largest proportion of intravenous narcotic users who want treatment. Maximum risk-reduction effectiveness requires maximum efficacy from methadone programs. Some of the recommended risk-reduction strategies, eg, counseling about HIV infection, safer sex education, and family planning, need to be integral services in methadone programs. If the knowledge already gained from clinical research were implemented now in all programs, AIDS prevention efforts would be significantly enhanced.

Policies predicated on eventual drug-free outcome for all patients limit the potential effectiveness of methadone maintenance as an AIDS prevention effort. State or local laws that prohibit methadone treatment or place arbitrary limits on the duration of treatment can work against the AIDS risk-reduction efforts. These policies need to be reevaluated in light of the AIDS epidemic.

The AIDS prevention efforts among intravenous drug users will benefit significantly from the support and involvement of the medical community. Leadership by state and local medical societies could provide assistance by educating patients as well as the public and policymakers about the special risk to the public health created by untreated intravenous drug users. Developing quality methadone programs would be an important step to reducing risk. The Florida Medical Association has recently endorsed methadone treatment in the fight against AIDS,[88] a bold initiative that will undoubtedly influence public policy. Where existing policies limit such efforts, support for policy changes to allow for more effective treatment is needed. As members of program advisory boards, physicians can insist that drug abuse treatment programs be of high quality. They can also encourage respected local physicians with knowledge and skills in narcotic-addiction treatment to become actively involved in the direct provision of methadone treatment. Such changes would help to improve the current perception of methadone treatment among the public and medical community. The deans of medical universities could assist by supporting the formation of closer alliances with free standing methadone treatment programs, encouraging medical and psychiatric residency rotations through such programs, and providing training opportunities for existing staff to improve their diagnostic and managerial skills.

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Needle Exchange Decreases the Prevalence of HIV-1 Proviral DNA in Returned Syringes in New Haven, Connecticut

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PURPOSE: To report on the deployment of the syringe tracking and testing system in the New Haven needle exchange program, which is the first federally funded evaluation of a needle exchange program conducted in the United States.

PATIENTS AND METHODS: A legal needle exchange for intravenous drug users began in New Haven, Connecticut, in November 1990. All syringes distributed by the program received unique tracking codes. Syringes were tracked and HIV-1 proviral DNA prevalence in returned syringes was assessed using polymerase chain reaction and Southern blotting.

RESULTS: At the outset of the program, the prevalence of HIV-1 proviral DNA in syringes exceeded two thirds. Prevalence decreased rapidly to less than 45% during the first 3 months of the program and remained at this level for the following 10 months. During the periods of decreasing prevalence and subsequent steady state, no changes in the demographics of program participants or in the drug use habits of newly enrolling clients that could account for the decrease in HIV-1 prevalence in needles were detected. In addition, the program referred almost 20% of its clients to drug treatment programs.

CONCLUSION: The needle exchange program in New Haven has decreased the percentage of syringes testing positive for HIV-1 proviral DNA among needle exchange clients while simultaneously serving as an entry point for drug treatment.

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Intravenous drug users (IDUs) are at high risk for human immunodeficiency virus type 1 (HIV-1) infection and acquired immunodeficiency syndrome (AIDS). Just under one third of the AIDS cases in the United States can be associated with intravenous drug use [1]. The major risk factor for the transmission of HIV among IDUs is the sharing of drug injection equipment [2–4]. Intervention attempts to slow the spread of HIV infection among IDUs have included risk counseling, bleach distribution for inactivating the virus in used needles, and needle exchange programs. Legislation was enacted in June 1990 permitting establishment of a demonstration needle exchange program in New Haven, Connecticut [5]. Prior attempts to analyze the effectiveness of needle exchange programs have relied primarily on self-reported behavior [6–10]. Those evaluations that have attempted to determine changes in HIV seroprevalence or decreases in hepatitis B incidence during needle exchange have documented that no major changes in prevalence were found in areas employing needle exchange [11–15]. The New Haven program is not the first legal needle exchange, but it is unique because it has been studied from its inception by analyzing syringes for evidence of use by HIV-1–infected IDUs. In this article, we report on the deployment of the syringe tracking and testing system, which has revealed a decrease in HIV-1 proviral DNA in returned needles. This system reveals the first direct evidence suggesting that the mechanics of needle exchange alone might be sufficient to slow the spread of HIV-1 infection among IDUs.

PATIENTS AND METHODS

The New Haven needle exchange program began in mid-November 1990 [5,16]. Workers from the city's health department operate the program from a van donated by Yale University that travels to five city neighborhoods, 4 days per week. IDUs, who remain anonymous, enroll in the program by selecting fictitious names, are issued an identification card that allows them to make exchanges, and complete a brief demographic questionnaire. The survey includes information about their age, race, sex, the duration of drug use, the frequency of drug injections, and the choice of drug injected. They can exchange used syringes for new 1-mL tuberculin

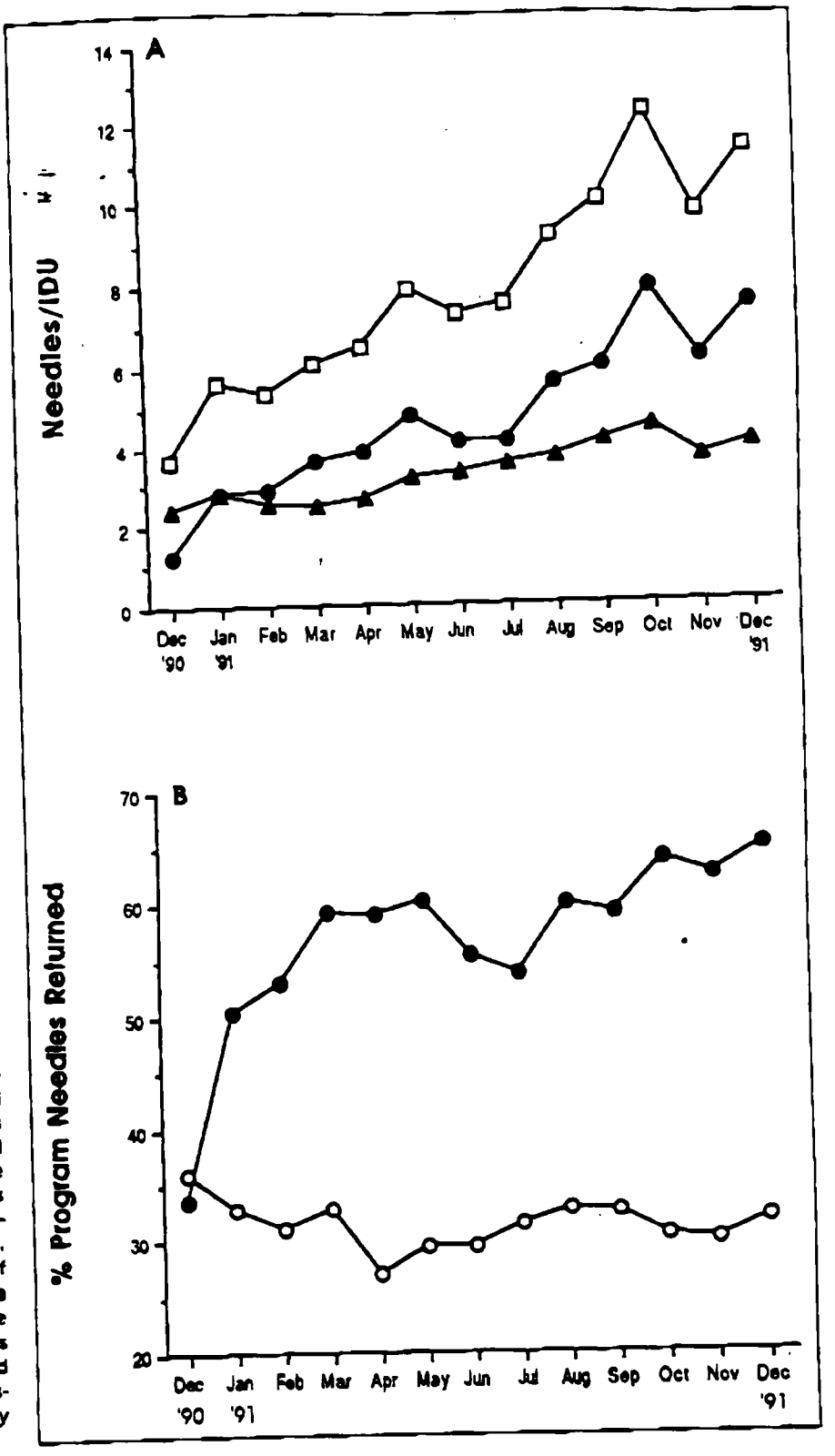

Figure 1. Return of program syringes. **A.** The number of syringes returned per client was determined. The total number of syringes per client per month (□) and the number of program syringes per client per month (•) increased to a greater degree than did the number of nonprogram syringes per client per month (▲). **B.** Returned syringes were recorded and, for each month, the percentage of returns that originated with the program were determined (•). The percentage of discordant returns (○), those given to one client and returned by another, remained essentially constant from January through December 1991.

syringes with attached 28-gauge needles in a one-for-one exchange to a maximum of five per visit. All syringes distributed by the program are sequentially labeled. From November 1990 through the end of December 1991, the needle exchange program distributed 26,789 clean needles to 1,091 clients. The program has typically served 200 to 250 clients per month. In addition to exchanging syringes, the program provides bleach kits, AIDS education information, and condoms. Program staff also assist clients in gaining access to drug treatment programs.

Syringe tracking relies on the collation of the distribution and return records. For each returned program syringe, six pieces of information are

TABLE I

HIV-1 Prevalence in Needles

Source of Needles	No. Tested (n)	No. HIV+ (x)	% HIV+ (p = x/n)	95% CI*
I. Before needle exchange				
Nonprogram "street" needles				
Nov–Dec 1990	160	108	67.5	(60.2, 74.8)
Underground exchange	180	113	62.8	(55.7, 69.8)
Shooting gallery	48	44	91.7	(83.8, 99.5)
II. During needle exchange				
Program needles				
Nov–Dec 1990	274	175	63.9	(58.2, 69.6)
Jan 1991	160	91	56.9	(49.2, 64.5)
Feb–Apr 1991	347	141	40.6	(35.5, 45.8)
May–July 1991	343	139	40.5	(35.3, 45.7)
Aug–Oct 1991	398	166	41.7	(36.9, 46.6)
Nov–Dec 1991	338	164	48.5	(43.2, 53.8)
Nonprogram "street" needles				
Oct–Nov 1991	146	71	48.6	(40.5, 56.7)

HIV = human immunodeficiency virus; CI = confidence intervals.
*The 95% CIs = $p \pm 1.96\,[p(1-p)/n]^{1/2}$. Thus, the prevalence in program needles in November to December 1990 is not significantly different from the prevalence in nonprogram needles collected at the same time, but it is significantly higher than the prevalence in program or nonprogram needles for any interval throughout the period February to December 1991.

known: when, where, and to whom the syringe was given, and when, where, and by whom the syringe was returned. The latter information is also recorded for all returned nonprogram syringes.

A random sample of returned syringes was tested using the polymerase chain reaction (PCR) to identify those needles that retained HIV-1 proviral DNA, evidence of use by someone infected with the virus. We have previously described the nested primer technique employed to detect low copy numbers of HIV-1 proviral DNA [17]. Briefly, DNA was extracted from needles using a nonionic detergent solution and purified by organic extraction and ethanol precipitation. Resuspended DNA was included in 100-μL PCRs containing 40 mM potassium chloride, 10 mM Tris-hydrogen chloride (HCl), pH 8.3, 2.5 mM magnesium chloride, 0.04% (weight/volume [w/v]) gelatin, 0.2 mM of each deoxynucleoside triphosphate, 20 pmol of each of two outer primers (gag816/836 and gag1097/1075), and 2 units of Taq polymerase. The 282-bp (base pair) target sequence was amplified for 15 cycles. Aliquots of 25 μL were removed and added to new tubes containing 75 μL of a solution of 40 mM potassium chloride, 10 mM Tris-HCl, pH 8.3, 2.5 mM magnesium chloride, 0.04% (w/v) gelatin, 0.2 mM of each deoxynucleoside triphosphate, 50 pmol of each of two inner primers (gag856/875 and gag 1046/1027), and 2 units of Taq polymerase. The 191-bp target sequence was amplified for 35 cycles. PCR products were analyzed by gel electrophoresis on 2.5% agarose gels and Southern blotting using a [^{32}P]-labeled oligonucleotide probe (gag928-906).

Data were analyzed using the χ^2 test, linear regression models, and one-way analysis of variance, and 95% confidence intervals were calculated for the prevalence estimates.

RESULTS

During the course of the program, from November 1990 through December 1991, the frequency of exchanges per client increased from less than 4 to more than 10 per month (Figure 1A). As the number of syringes increased, the fraction that were program syringes increased. Syringe tracking data revealed that 57.1% of all distributed program syringes have been returned. The rate of return of program syringes increased rapidly during the first months of the program, and since February 1991, the return rate has increased slowly but significantly (0.71% ± 0.22% per month), reaching 62.5% in December 1991 (Figure 1B). These return rates are within the range of those found in other needle exchange programs in Europe and the U.S. [18,19]. Returned syringes with legible tracking codes were analyzed to differentiate between the concordant syringes given to and returned by the same client and the discordant syringes given to and returned by different clients. Initially, in November and December 1990, discordant syringes constituted 35.9% of the returned program syringes. From January 1991, when the percentage of syringes that were discordant decreased to 32.7% (140 of 428), the monthly percentage has remained constant at 30.9 ± 1.8% (Figure 1B).

The prevalences of HIV-1 proviral DNA prior to the start of the program in syringes from three sources were determined (Table I). Since the program operates as an exchange, all returns at the program's outset were nonprogram 'street' syringes. We tested 160 of the first 675 'street' syringes. The prevalence of HIV-1 was 67.5%. The analysis of the 'street' syringes provides the most reliable estimate of prevalence in circulating needles prior to the start of the program. In addition, needles from a defunct 'shooting gallery' and needles returned to an illegal needle exchange program were collected. Testing of 180 syringes returned to the illegal exchange revealed a prevalence of 62.8%, not significantly different from that found in the 'street' needles (Table I). Of 48 needles from the shooting gallery, where needles are routinely shared, 44 (91.7%) were positive.

We have tested 1,860 randomly selected program syringes returned between November 14, 1990, and December 31, 1991, for the presence of HIV-1 proviral DNA. When the data were analyzed by return date, a pattern of decreasing prevalence was apparent (Figure 2). During the initial 45 days of the program, prevalence in program syringes was 63.9%,

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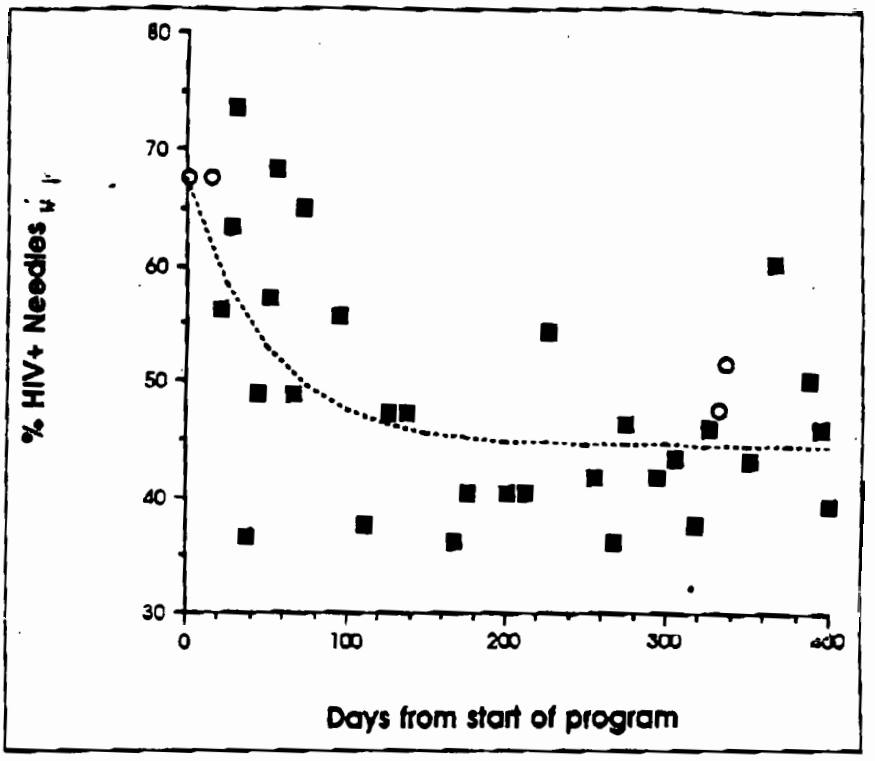

Figure 2. HIV-1 proviral DNA prevalence in syringes during the program. PCR tests to detect HIV-1 proviral DNA were conducted in batches of 36 to 99 on extracts from syringes returned to the needle exchange program. Each batch was selected from those syringes returned within a fortnight, and the percent of those that tested positive were plotted corresponding to the latest date of those in the batch. Testing was performed on batches of nonprogram (○) and program (■) syringes.

decreasing in January 1991 to 56.9% (Table I). In the months thereafter, the prevalence stabilized, approaching a steady state of 42.8% (610 of 1,426), significantly lower than the initial prevalence level as determined by the χ^2 test ($p < 0.0001$). Once the new steady state was achieved, no statistically significant changes in prevalence among program needles were observed during the following 11-month period. The decrease in HIV-1 proviral DNA in program syringes was mirrored by a decrease in the prevalence in 'street' syringes returned by these clients. We tested 146 randomly selected 'street' needles returned by 65 different clients in late 1991, and 48.6% were positive, a prevalence similar to that seen in program needles tested during the same interval (Table I).

Information collected from clients at enrollment was analyzed to see if parameters with demonstrated correlation to HIV-1 infection were changing during the course of the program. These parameters included age, duration of drug use, sex, race, frequency of injection, and injection of cocaine. One-way analyses of variance of enrollment date on age and duration of drug use show that the mean age and duration of injection among newly enrolling clients have not changed (**Figure 3**). The percentage of women has held constant at 20% throughout the study period (**Table II**). Two other factors that have been shown to correlate with the likelihood of HIV-1 infection among IDUs are injection frequency and the injection of cocaine [4,20–22]. These may be linked directly in that cocaine has a shorter half-life than heroin, requiring more frequent injections to maintain its effects [4]. One-way analyses of variance of enrollment date on use of cocaine and injection frequency found no association between later enrollment and either a decreased use of cocaine or a lower frequency of injection. The only demographic factor that has changed significantly during the program is the race of the clients. The percentage of white clients has steadily increased throughout the 13-month period of study (Table II).

Clients have requested drug treatment at a constant rate of nearly 25% throughout this period. However, not all those requesting treatment have been placed. During the first 7½ months of the program, 188 clients (of 721 program participants up to that point) had requested treatment but only 108 (15% of all clients and 57.4% of those requesting) had entered treatment [23]. There were three reasons why clients failed to enter treatment. First, seven clients were incarcerated before they could enter treatment. Second, 19 clients failed to appear at scheduled appointments. The remaining 54 clients failed to enter treatment because of the absence of places in treatment facilities. The percentage of clients entering treatment increased to 18% by year's end.

COMMENTS

If needle exchange is to be successful as an AIDS prevention strategy, it must reduce the prevalence of HIV-1–contaminated needles. Because only a needle previously used by an infected IDU can transmit the disease, there is a straightforward relationship between the prevalence of HIV-1 proviral

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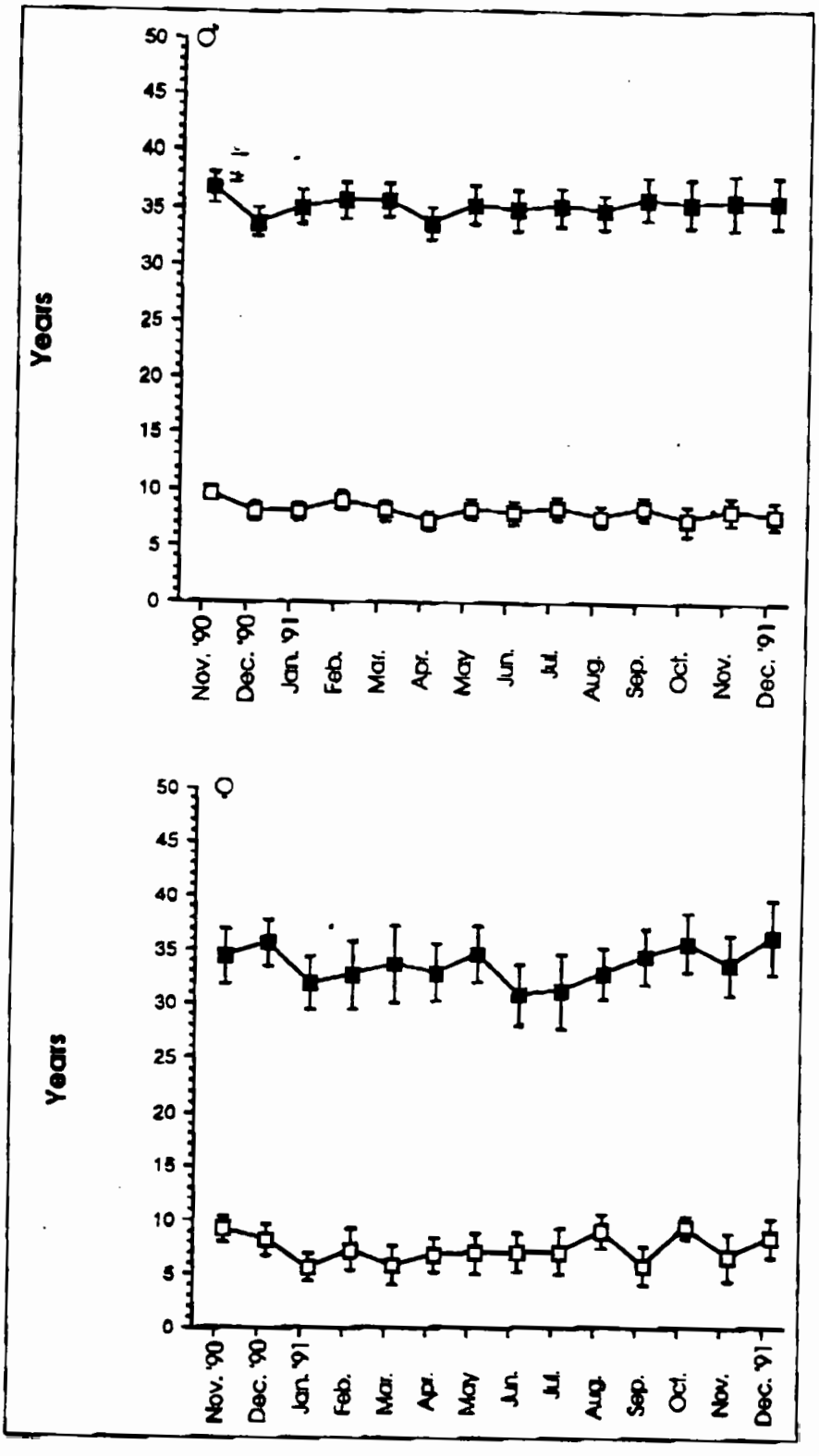

Figure 3. Age and duration of drug injection of clients by month of enrollment into the needle exchange program. Age and duration of drug use by sex and date of enrollment were determined from client surveys. Analysis of the means for clients' age (■) and for years of drug use (□), and their standard errors, demonstrated that the means were statistically unchanged during the period of study.

DNA in returned syringes and the transmission of new infections. The data presented in this report demonstrate a reduction in the prevalence of HIV-1 proviral DNA in the syringes returned by IDUs participating in the needle exchange. The decline occurred rapidly following inception of the program in November 1990. After 4 months, the prevalence had decreased by one third and remained at that level throughout 1991.

Why has the prevalence of HIV-1 proviral DNA in syringes decreased? Can factors other than the operation of the needle exchange program account for the decrease? To answer the second question, we analyzed demographic and behavioral risk factors

for HIV-1 transmission among needle exchange clients. Statistical analyses revealed changes in only one of these factors. Although we observed that the percentage of clients who are white has increased throughout the program, and being white is significantly associated with a lower likelihood of infection [4,20,22], there are two reasons to discount this change as the cause of the observed decline in HIV-1 prevalence in syringes. First, the increase in the enrollment of white clients during the first 120 days of the program (when the syringe HIV-1 prevalence was decreasing by one third) was equal to that seen in the subsequent 270 days (when the prevalence held constant). Second, suppose that needle exchange had no effect, and the prevalence reduction was solely due to this change in demographics. At the start of the program, 83% of the clients were nonwhite, and 67.5% of the syringes were infected. After 7 months, 62% of the clients were nonwhite, and 43% of the syringes were infected. If needle exchange were without effect, then 87.3% of the syringes returned by nonwhites ought to test positive, a plausible result. However, −29.2% of the syringes returned by whites ought to test positive, clearly an impossible result.* Thus, neither the change in the racial composition of program clients nor a change in any other demographic or behavioral risk factor can explain the observed decreased prevalence.

Data from the syringe tracking and testing system may provide an answer to the question of why prevalence has declined. Two independent aspects of the data suggest that the decrease in HIV-1 prevalence in syringes was related to the increased availability of clean syringes provided by the program and not to observable changes in clients' behavior. First, the syringe exchange rate per IDU and the return rate of program syringes both increased (Figure 1), implying a decreased mean circulation time for each syringe [16]. Thus, each syringe is used fewer times, decreasing the likelihood that it will test HIV-1–positive. The tracking data are reinforced by the testing data demonstrating a reduction in prevalence from the preprogram level of 67.5% to a new steady-state level of 42.8%. Among 'street' syringes there was also a decrease in prevalence, evidence that needle exchange programs can alter the prevalence in nonprogram syringes as well. The ability to exchange used syringes for clean ones hastens the return of syringes, regardless of their origin. Second, the percentage of syringes classified as discordant did not change during the program, suggesting that the decrease in prevalence did not result from changes in the sharing of syringes among the IDUs.

TABLE II

Sex and Race of Program Participants

Days Since Program Start	No. of Clients*	% Woman	% White
30	156	19.9	17.3
60	244	21.3	22.5
90	346	20.5	27.5
120	424	20.0	28.5
150	515	19.6	32.0
180	606	20.5	33.0
210	677	20.7	33.1
240	734	20.8	34.1
270	801	21.2	35.2
300	865	20.8	35.7
330	913	20.8	36.8
360	962	21.0	37.9
390	1001	21.0	39.1

*Of the 1,091 clients enrolling in the program, 1,001 provided answers to questions on sex and race.

The argument has been raised that needle exchange programs might encourage initiation of intravenous drug use. The demographic data dispute this. Any correlation between the public's awareness of the program and the creation of new IDUs would have been most evident following July 31, 1991, when the city issued its preliminary report on the needle exchange [23]. This report received extensive press coverage and generated widespread discussion throughout the city. However, as the data in Figure 3 demonstrate, there was, at that time, no increase in the percentage of enrolling clients with very short durations of intravenous drug use. In fact, both the average duration of drug use and the average age have stayed stable over time.

Any study is bound by its limitations; ours include the inability to prove that needles testing positive are infectious, to measure sharing directly, and to show a direct correlation between the decline in syringe prevalence and a decrease in new infections. Although the idea that a syringe containing HIV-1 proviral DNA can transmit HIV-1 is intuitive, the transmission of the virus to an uninfected individual can only occur if the syringe has been used previously by an infected individual, a fact that can be directly ascertained by PCR. Although we have not measured sharing directly, the data described above demonstrate that syringe HIV prevalence decreases as the exchange rate increases, even in the absence of changes in syringe discordance. Although the data do not directly demonstrate decreased incidence, they do support earlier modeling studies suggesting that the needle exchange program has decreased the rate of new infections by one third [23,24].

*If π_w and π_{nw} are the HIV prevalences in needles returned by whites and nonwhites, respectively, then assuming that needle exchange has no effect implies that π_w and π_{nw} satisfy the two equations: $0.17\pi_w + 0.83\pi_{nw} = 0.675$, and $0.38\pi_w + 0.62\pi_{nw} = 0.430$. The solution to these equations is $\pi_w = -0.292$ and $\pi_{nw} = 0.873$, an impossible result since $0 \leq \pi \leq 1$. Therefore, demographics alone cannot explain the observed decrease in prevalence.

We conclude that the syringe tracking and testing system employed to evaluate the New Haven needle exchange program provides evidence that such programs can decrease the level of HIV-1 proviral DNA in syringes returned by IDUs. Needle exchange does not appear to create new drug users while facilitating the entry of existing ones into drug treatment. Therefore, needle exchange programs may be a useful public health strategy for addressing the twin epidemics of intravenous drug use and HIV infection.

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EDITORIAL REVIEW

A circulation theory of needle exchange

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AIDS 1994, 8:567–574

Keywords: Needle exchange, program evaluation, injecting drug users, HIV transmission, policy modeling, polymerase chain reaction, mathematical modeling

Introduction

HIV infection and AIDS are transmitted, amongst other routes, through sharing of drug-injection equipment. Almost one-third of the AIDS cases reported in the United States has been associated directly or indirectly with drug injection [1]. Needle-exchange programs have been established with the aim of slowing the spread of AIDS by enabling drug injectors to trade used for clean needles [2–4]. Such programs have existed for some time in Europe and Australia, where they are widely accepted as preventive. More recently, programs have started in Canada and the United States [5,6]. Aside from the political controversy that accompanies discussion of these programs in the United States [7,8] is the question of effectiveness: do needle-exchange programs reduce HIV transmission among participating drug injectors?

Several published studies suggest that these programs offer considerable protection against HIV infection [9–15]. Many of these studies rely on needle-exchange participants' self-reported changes of risky behavior as a principal data source [16]. However, in an environment in which injectors are repeatedly informed of the health risks associated with needle sharing, it is perhaps not surprising to learn that clients report reductions in needle-sharing rates after exposure to needle exchange. That the potential for social desirability biases in self-reporting exists in no way proves that the behavioral studies are wrong. However, since it is difficult to verify self-reported behavioral changes, there is a role for studies that rely on other data sources. (We recognize that the policy relevance of this argument is less pressing outside the United States.)

Another concern is that, even if behavioral data are reported accurately, it is not clear what role needle-exchange operations play in eliciting behavior changes [17]. To establish the efficacy of needle exchange requires a clear linkage between the distribution and return of needles on the one hand and HIV risk reduction on the other. It is the specific effect of needle exchange on HIV transmission dynamics that should be estimated.

Here, we formulate a circulation theory of needle exchange that highlights the fundamental impact such programs have on the behavior of needles, and present data derived from 20 months of needle-exchange operations in New Haven (Connecticut, USA), which are free from self-reporting concerns. We begin with a discussion of our primary data source, the syringe tracking and testing system. In the following sections, we integrate an intuitive account of the theory with more formal mathematical developments facilitating empirical tests of the theory developed. We also consider competing hypotheses, which, if correct, could explain some of the observed data without ascribing any benefit to

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needle exchange. Our conclusion is that the data support the circulation theory, adding weight to the contention that needle exchange *per se* lowers the rate of HIV transmission among participating drug injectors.

The syringe tracking and testing system

New Haven's legal needle-exchange program began on 13 November 1990, following an act of the Connecticut Legislature, and allows participating clients to exchange, on a one-for-one basis, up to five needles per visit (with the exception of client enrollment when a new client with no needles to exchange receives a single needle). The program operates from a mobile van (for more details relating to program operations, see [17]).

Health department officials vetoed the idea of sequentially testing program participants to determine HIV incidence directly for fear of dissuading broad participation by injectors [18]. Instead, we designed a data collection system for 'interviewing the needles'. This syringe tracking and testing system (STT) works as follows [17]: all participating clients receive unique code names of their own choosing, while all distributed needles are also coded. When needles are distributed, the date, location, needle codes and recipient's client code are recorded; when needles are returned, the corresponding date, location, needle codes and client code are again recorded. Thus, for all needles distributed and returned to the program, it is known who received and returned each needle, when needles were received and returned, and where the exchanges took place. The client code, date, and location for non-program needles returned to the exchange are also recorded (as the program allows clients to exchange any needles). Finally, systematic samples of returned needles are tested for HIV proviral DNA using polymerase chain reaction (PCR) [19]. The sampling procedure accounts for the fact that a purely random sample of returned needles would be heavily biased in favor of those exchanging the most needles in the following manner. Needles are typically exchanged in batches ranging from one to five per batch. We first sample all needles from batches consisting of two needles at most, along with two needles from batches greater than two. We then systematically select every tenth needle from those sampled previously. This increases the chance of sampling needles from clients who exchange less frequently beyond what would be obtained by random sampling.

The STT enables the objective determination of several important quantities, such as needle circulation times, the fraction of distributed needles returned to the program, the number of clients participating in the program, the needle distribution and return rates, the number of client visits, and the fraction of needles testing positive for HIV proviral DNA. Our study utilizes STT data collected from November 1990 to June 1992 inclusive. We confine our report to this period because the Connecticut Legislature legalized the purchase of needles and syringes without a prescription in pharmacies as of 1 July 1992, an event that changed the environment in which the needle exchange was operating.

Needle removal processes

Consider a population of needles circulating among drug injectors in the absence of needle exchange. Each needle faces a variable lifetime following introduction to the population after which the needle is removed from circulation (because of breakage, wear, misplacement, etc.). Let δ represent the removal (or loss) rate per circulating needle per unit time prior to the introduction of a needle-exchange program. The expected lifetime of a needle is then given by $1/\delta$.

Introducing needle exchange affects the existing needle removal process because the program offers a new exit route for circulating needles. Consequently, the length of time needles spend in circulation will fall. Formally, let ρ represent the exchange rate per circulating needle per unit time, while δ continues to represent the removal rate per needle per unit time for all reasons other than needle exchange. The total removal rate increases from δ to $\rho + \delta$. Thus, the expected circulation time is reduced from $1/\delta$ to $1/(\rho + \delta)$. In addition, the probability that any circulating needle will be exchanged equals $\rho/(\rho + \delta)$.

To estimate ρ and δ from STT data, we note that STT enables direct calculation of return probabilities and needle circulation times for returned needles. Defining t_i as the average circulation time per needle distributed by the program in month i (calculated as the mean duration of time between needle distribution and return divided by the mean number of needles distributed per visit to adjust for batch size effects), and r_i as the fraction of needles distributed in month i that ultimately return to the program, we equate

$$t_i = 1/(\rho_i + \delta_i) \text{ and } r_i = \rho_i/(\rho_i + \delta_i) \quad (1)$$

which yield estimates of the needle return and loss rates in month i as

$$\rho_i = r_i/t_i \text{ and } \delta_i = (1 - r_i)/t_i \quad (2)$$

Estimates of the needle exchange and loss rates over the first 20 months of the New Haven needle-exchange program as derived from equations 1 and 2 are presented in Fig. 1. It is clear that the needle-

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exchange rates have increased substantially over time, reflecting an increase in the turnaround of needles in the population due to needle exchange. However, the needle-loss rates have remained stable relative to the exchange rates. The implications of these trends will be discussed shortly, but for now it suffices to note that the operations of the needle exchange have substantially increased the total rate with which circulating needles are removed from the population.

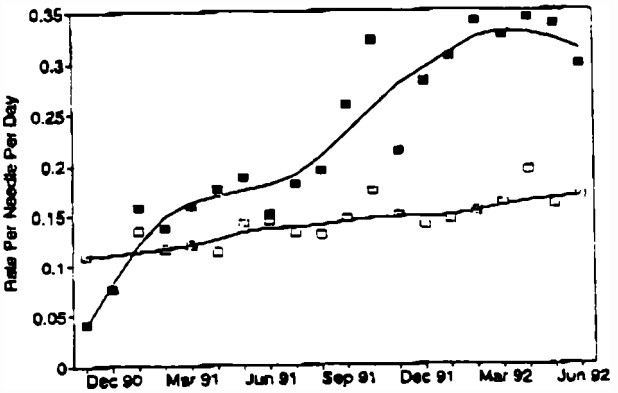

Fig. 1. Needle return and loss rates. The daily return rate per needle ρ (■) and loss rate per needle δ (□) are shown for each month as computed from equation 2 in the text. The lines show statistically smoothed versions of these time series obtained from the '4253H, twice' smoothing algorithm [22].

Conservation of needles in a needle exchange

The New Haven program operates on a one-for-one exchange basis, forcing a simple conservation of needle flow to apply in theory [17]: the total number of needles distributed by the program equals the total number of needles returned to the program. The number of needles distributed and returned in New Haven from November 1990 to June 1992 is shown in Fig. 2. This figure shows that needle flow is approximately conserved, but that there is some 'leakage' in the system (as represented by the thin strip between the curves of Fig. 2). One reason for this is that clients joining the program with no needles to exchange are given a single 'free' needle to initiate exchange activities, although all exchanges beyond the first are meant to be one-for-one. However, some clients do obtain more needles than they return on certain visits, suggesting either counting errors, deception, or a combination of the two.

A more formal view of needle conservation proceeds as follows: let D equal the number of drug injectors participating in the program, N equal the number of needles circulating among program

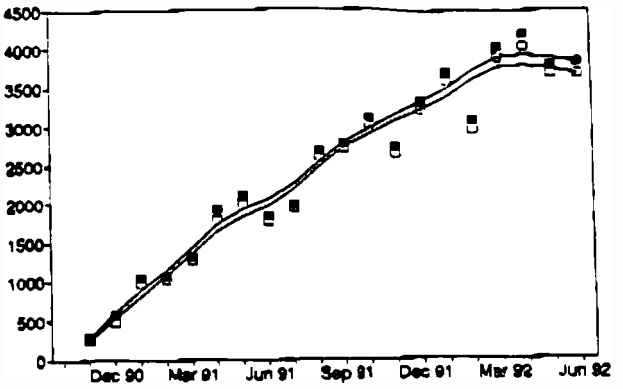

Fig. 2. Monthly needle distribution and return. The total number of needles distributed (■) and returned (□) are shown, along with statistically smoothed values.

clients, and ν represent the needle distribution rate per program client per unit time. Since ρ is the return rate per circulating needle per unit time, the rates with which needles are distributed by and returned to the program will balance if

$$D\nu = N\rho \qquad (3)$$

at any moment in time. While both D and N may vary over time, needle exchange should have little if any effect on the ratio N/D which represents the average number of circulating needles per drug injector in the program population. If $\kappa = N/D$, equation 3 can be expressed as

$$\nu = \kappa\rho \qquad (4)$$

The empirical relationship between the needle distribution rate per client and the needle return rate per needle, along with a least-squares fit of equation [4] are shown in Fig. 3. We estimate that $\hat{\kappa} = 1.32$ circulating needles per program client (SE. 0.03), a quantity of interest in its own right.

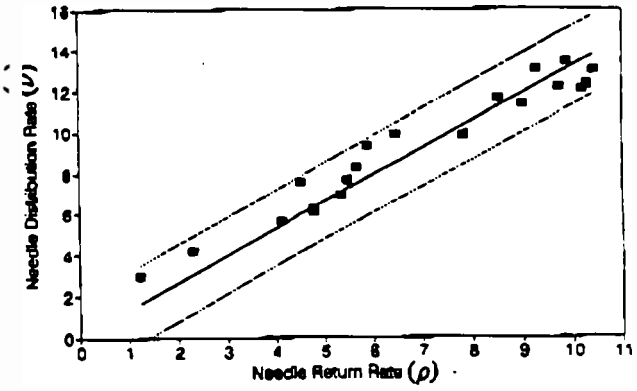

Fig. 3. Conservation of needle flow. Monthly needle distribution rates per client ν are plotted against monthly return rates per needle ρ. The least squares fit of equation 4 is shown with accompanying 95% prediction intervals.

Return probability, program penetration and needle circulation time

Combining needle removal processes with needle conservation allows some interesting insights into the operations of needle exchange. According to equation 1 the probability that a distributed needle is eventually returned to the program is given by $r = \rho/(\rho + \delta)$. As the program is a needle *exchange*, the quantity r also represents the fraction of all circulating needles that are program needles, a measure of program penetration. As discussed earlier, needle exchange also reduces mean needle circulation time from $1/\delta$ to $1/(\rho + \delta)$. Thus, we derive the relative reduction in mean circulation time due to the introduction of needle exchange as

$$\left[1/\delta - 1/(\rho + \delta)\right] / (1/\delta) = \rho/(\rho + \delta) = r \quad (5)$$

Thus, information about the reduction in needle circulation times is encoded in the fraction of distributed needles returned to the program [20]. These results show that the fraction of distributed needles returned to a needle exchange is a valuable statistic for evaluating such programs. The return probability estimates the relative reduction in circulation times and the penetration of program needles into the population, in addition to the fraction of distributed needles that are returned to the program.

Integrating needle behavior with the frequency of client exchanges

In a needle-exchange program, the rate at which needles are exchanged is a function of client participation in the program. Both the number of clients participating in the program each month (by virtue of having made at least one exchange visit), and the total number of visits made by these clients each month are shown in Fig. 4. While the number of program clients leveled, the number of visits made by these clients to the program continued to grow. This suggests that clients visited the program more often as time progressed, which in turn suggests that needle circulation times must have fallen as a result of the increasing needle exchange rate (and recall from Fig. 1 that the needle-exchange rates increased). In addition, as suggested by equation 5, declining circulation times should be accompanied by an increase in the fraction of distributed needles returned to the program, and such an increase in turn would signal an increase in the penetration of program needles in the population of circulating needles.

The impact of the program on needle circulation patterns is summarized in Fig. 5. Based on the 49405 needles distributed from November 1990 through June 1992, there is no question that mean needle circulation times have fallen substantially while needle-exchange probabilities have increased. The near mirror-imaging of these two time trends is in accord with the predictions of our theory according to equations 1 and 5.

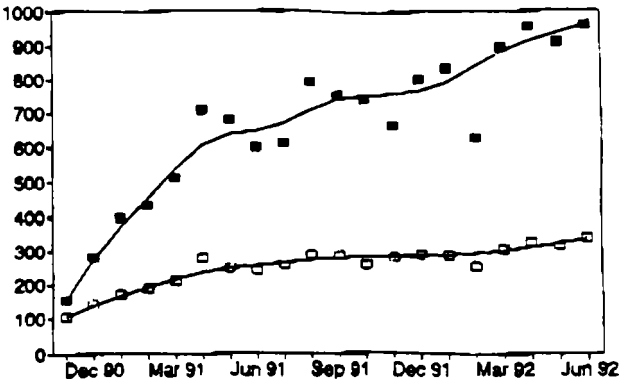

Fig. 4. Client participation and visitation. The total number of client visits (■), and the number of clients visiting the program at least once (□) are shown, along with statistically smoothed values.

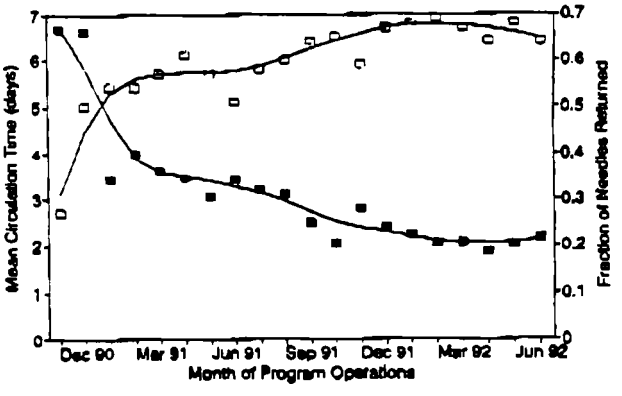

Fig. 5. Circulation time and return probability. Mean needle circulation times in days (■) and the fraction of needles distributed by the program that are ultimately returned (□) are shown, along with statistically smoothed values.

Needle exchange reduces HIV prevalence in circulating needles

Needle exchange clearly reduced needle circulation times; but the question is why this should translate into a reduction in the risk of acquiring HIV infection among needle-sharers. An intuitive answer is that reducing the length of time any needle is available for use reduces the number of opportunities a given needle can be re-used. If fewer people use each needle, then each needle should have a lower probability of becoming infected with HIV. Conse-

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quently, those who continue to share needles will be less likely to encounter an infected needle when sharing.

More formally, let λ denote the rate at which uninfected needles become infected per uninfected needle per unit time, and μ denote the rate that infected needles become uninfected per infected needle per unit time. The main determinants of λ include the prevalence of HIV in the injecting population (which is assumed to remain constant over the relatively short duration of study), and the rate at which infected people inject with and contaminate uninfected needles. The determinants of μ (absent needle exchange) include the fraction of uninfected drug injectors in the population, effective needle cleaning (for example, careful use of bleach), needle decontamination owing to dilution effects when uninfected drug users inject with infected equipment, natural inactivation of the virus contained in residual blood in the needle, or replacement of used needles with new ones from non-program sources. Note that the loss rate δ could contribute to both λ and μ in this model because some lost needles will be replaced by infectious equipment, while others will be replaced by uninfected needles. In the absence of needle exchange, the probability that a circulating needle is infected will reach the steady-state value p_I where

$$p_I = \lambda/(\lambda + \mu) \qquad (6)$$

Given the high frequency of drug injection, this steady-state value will be obtained relatively quickly compared to our monthly observation periods [technically, the 'relaxation time' for this process equals $1/(\lambda + \mu)$, which for our data is estimated to equal approximately 3 days, as reported below].

The operation of the needle exchange offers a new route by which infected needles become uninfected, via the exchange of contaminated used needles for new uninfected ones. Thus, needle exchange augments the rate at which infected needles are decontaminated by the return rate ρ. This in turn reduces the fraction of circulating needles that are infected to

$$p_I^*(\nu) = \lambda/(\lambda + \mu + \rho) = \lambda/(\lambda + \mu + \nu/\kappa) \qquad (7)$$

with the latter equality in equation 7 following from equation 4. Substituting equation 6 into 7 shows that

$$p_I^*(\nu) = a p_I/(a + \nu) \qquad (8)$$

where $a = (\lambda + \mu)\kappa$ and p_I is the fraction of needles infected in the absence of needle exchange as given in equation 6. The model of equation 8 suggests a prevalence-drop law, which states that in a one-for-one needle-exchange program with a needle distribution rate equal to ν needles per client per unit time, relative reduction in the fraction of circulating needles that are infected of roughly $100 \times \nu/(a + \nu)\%$ should be expected.

Of the 49 405 needles distributed by the needle exchange between November 1990 and June 1992, 2813 (5.7%) have been tested for HIV using PCR. Of the 2813 needles tested, 1163 (41.3%) were HIV-positive. In month i, let x_i be the number of needles that tested HIV-positive, y_i the number that tested negative, and ν_i equal the number of needles distributed per program client in month i. Estimates for the quantities a and p_I in equation 8 were then found by maximizing the likelihood function $L(a,p_I)$ given by

$$L(a, p_I) = \prod_{i=1}^{20} p_I^*(\nu_i)^{x_i} \left(1 - p_I^*(\nu_i)\right)^{y_i} \qquad (9)$$

The resulting maximum likelihood estimates are $\hat{a} = 13.25$ (SE, 3.17) and $\hat{p}_I = 0.693$ (SE, 0.065). Note that the relaxation time $1/(\lambda + \mu)$ equals κ/a, which is estimated as 0.0996 months (approximately 3 days).

This model suggests that prior to the operation of the needle exchange, 69.3% of circulating needles were HIV-infected. Of considerable interest is the fact that independently of the data used to fit equation 8, 160 non-program 'street needles' returned to the exchange at the beginning of program operations were tested for HIV. Of these 160 needles, 108 (67.5%) tested positive, well within the noise level of our estimate $\hat{p}_I$.

The measured level of HIV infection in returned needles in each of the 20 months of program operations, estimates from the model of equation 8, and 95% prediction intervals for these estimates are shown in Fig. 6. The model replicates the measured level of infection in most of the months of observations, although there are four clear outliers in January 1991, April 1991, November 1991, and January 1992 that we cannot explain.

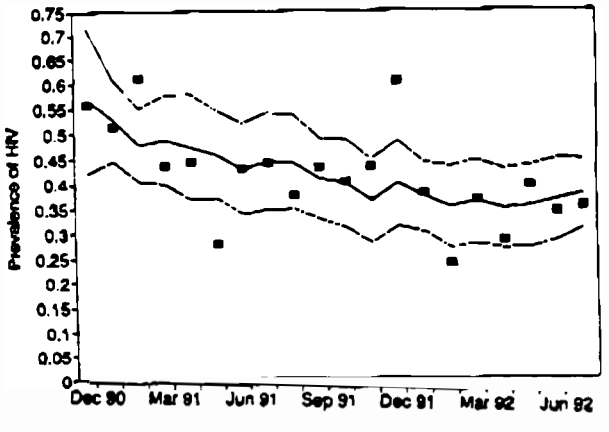

Fig. 6. HIV prevalence in needles. The fraction of needles that test positive for HIV using polymerase chain reaction in each month (■) are shown, along with the predictions of the model of equation 8 and associated 95% prediction intervals as obtained by maximum likelihood.

Implications for HIV incidence reduction

To become infected through needle sharing requires injection using infected needles. It therefore follows that the HIV incidence rate among drug injectors who persist in needle sharing is proportional to the level of infection among circulating needles. However, if HIV incidence is proportional to the prevalence of HIV in needles, then changes in HIV incidence are proportional to changes in the prevalence of HIV infection in circulating needles. Consequently, our analysis suggests that HIV incidence among program clients has been reduced by more than 40% as a result of the needle-exchange program.

Competing hypotheses

We have attempted to construct and test competing hypotheses that would explain the observed HIV prevalence drop in needles without implying any salutory benefits due to the needle exchange [21]. Suppose that there are broadly speaking two types of clients deemed high risk (likely to be infected) and low risk (less likely to be infected). If the types of program clients changed over time such that the mixture of high-risk and low-risk injectors moved from predominantly high risk at the start of the program to predominantly low risk after several months of program operations, one might expect a temporal drop in the level of infection in the needles observed in our data even if needle exchange offered no protective benefits. Such changes in the client population should be detectable from self-reported behavioral data collected from program clients at enrollment. Even if the self-reported data are not intrinsically accurate, there is no reason to expect that clients with truly different levels of risky behavior should provide similar self-reported responses. Thus, changes in the profile of baseline self-reported risky behaviors over time should correspond to changes in the true infection risk of the client base over time. Alternatively, failure to detect such changes in the profile argues against the suggestion that a changing needle-exchange client base could account for the observed HIV prevalence decline in returned needles.

We therefore considered six self-reported behavioral variables for program participants over time. The variables are the duration of injection (in years), the daily frequency of injection, the fraction of time spent injecting in shooting galleries, the fraction of injections that are shared, the fraction of clients injecting cocaine, and the daily frequency of risky injection (defined for each client as the product of daily injection frequency, the fraction of injections that are shared, and the fraction of shared injections that are not cleaned prior to injection). These data were obtained by surveying clients at their first visit to the program. To analyze changes over time, the mean values (and SE of these means) of these six variables were determined for the clients who actually visited the needle exchange in each of the 20 months in our study (Table 1). We restricted the analysis to include only clients who visited at least three times during the 20 months, since these clients contributed the overwhelming majority (95%) of the needles tested. We emphasize that temporal changes in these variables, if they occur, are not indicative of behavioral changes since all data were obtained when clients enrolled. Rather, as argued above, such changes would reflect shifts in the overall client base using the needle exchange.

The results of a one-way analysis of variance for each of the six variables are also reported in Table 1. The hypothesis tested in each case is that the mean of the variable in question has not changed over time. In all six instances, this hypothesis cannot be rejected, suggesting that the client base has not changed. We have conducted more sophisticated analyses testing for simultaneous stability in these measures using multivariate analysis of variance, arriving at similar results [21].

Conclusions

We have formulated a circulation theory of needle exchange that focuses on the behavior of needles rather than the behavior of drug injectors. We have shown how needle exchange increases the turnaround of circulating needles by increasing their removal rate. This increase in turnaround leads to both a reduction in needle circulation times and an increase in the penetration of program needles into the population of all needles. Decreasing needle circulation times lead to a reduction in the fraction of circulating needles infected with HIV because shorter circulation times reduce the opportunities for needles to share people. Assuming that HIV incidence via needle sharing is proportional to the level of infection in circulating needles, the HIV prevalence drop in needles translates into a reduction in the rate of new HIV infections.

Several aspects of this theory were shown to be consistent with observed data, including conservation of needle flow and the HIV prevalence decline in needles. Of interest was the ability of our model in equation 8 to correctly predict the level of infection measured in circulating non-program 'street' needles. The strongest evidence for the circulation theory is summarized in Figs 3, 5 and 6, which present data that are explained simultaneously by circulation theory.

We considered competing hypotheses to explain the drop in the level of infection observed in needles,

Table 1. Self-reported behavioral variables.

Month	Duration of injection	Frequency of injection	Fraction			Risky injection frequency
			Gallery use	Injections shared	Using cocaine	
November 1990	8.649	1.833	0.1373	0.1152	0.8358	0.0335
	(0.334)	(0.167)	(0.0324)	(0.0261)	(0.0456)	(0.0253)
December 1990	8.040	1.824	0.1220	0.725	0.7600	0.0381
	(0.319)	(0.140)	(0.0259)	(0.0131)	(0.0429)	(0.0187)
January 1991	7.435	2.203	0.1247	0.1040	0.7008	0.0459
	(0.306)	(0.129)	(0.0239)	(0.0179)	(0.0408)	(0.0201)
February 1991	7.580	2.171	0.1024	0.0849	0.7755	0.0546
	(0.283)	(0.121)	(0.0209)	(0.0130)	(0.0345)	(0.0221)
March 1991	7.656	2.260	0.0945	0.1397	0.7765	0.0638
	(0.254)	(0.112)	(0.0177)	(0.0178)	(0.0312)	(0.0230)
April 1991	7.419	2.2958	0.0750	0.1187	0.7847	0.0510
	(0.242)	(0.0988)	(0.0141)	(0.0143)	(0.0265)	(0.0173)
May 1991	7.227	2.3158	0.0702	0.1137	0.7526	0.0466
	(0.260)	(0.0993)	(0.0129)	(0.0144)	(0.0311)	(0.0173)
June 1991	7.580	2.2977	0.0759	0.1273	0.7500	0.0352
	(0.241)	(0.0990)	(0.0143)	(0.0161)	(0.0307)	(0.0211)
July 1991	7.439	2.244	0.0642	0.1235	0.7837	0.0370
	(0.243)	(0.102)	(0.0125)	(0.0149)	(0.0286)	(0.0143)
August 1991	7.381	2.2420	0.0694	0.1248	0.7655	0.0476
	(0.231)	(0.0943)	(0.0126)	(0.0150)	(0.0282)	(0.0177)
September 1991	7.201	2.1808	0.0829	0.1367	0.7660	0.0338
	(0.233)	(0.0927)	(0.0146)	(0.0154)	(0.0277)	(0.0124)
October 1991	7.263	2.2490	0.0645	0.1370	0.7634	0.0264
	(0.240)	(0.0953)	(0.0122)	(0.0165)	(0.0285)	(0.0106)
November 1991	7.593	2.2878	0.0777	0.1404	0.7421	0.0623
	(0.230)	(0.0940)	(0.0144)	(0.0167)	(0.0295)	(0.0239)
December 1991	7.451	2.2899	0.0759	0.1378	0.7217	0.0301
	(0.229)	(0.0913)	(0.0132)	(0.0163)	(0.0296)	(0.0126)
January 1992	7.469	2.3458	0.0643	0.1369	0.7447	0.0415
	(0.235)	(0.0936)	(0.0122)	(0.0164)	(0.0285)	(0.0193)
February 1992	7.303	2.3242	0.0717	0.1504	0.7944	0.0384
	(0.243)	(0.0987)	(0.0136)	(0.0178)	(0.0277)	(0.0153)
March 1992	7.586	2.2493	0.0754	0.1251	0.7276	0.0371
	(0.217)	(0.0895)	(0.0123)	(0.0147)	(0.0278)	(0.0120)
April 1992	7.382	2.2968	0.0672	0.1371	0.7154	0.0304
	(0.219)	(0.0860)	(0.0111)	(0.0158)	(0.0277)	(0.0115)
May 1992	7.506	2.2963	0.0655	0.1354	0.7194	0.02643
	(0.226)	(0.0880)	(0.0118)	(0.0159)	(0.0283)	(0.00898)
June 1992	7.363	2.3650	0.0618	0.1154	0.7185	0.0303
	(0.222)	(0.0839)	(0.0102)	(0.0142)	(0.0274)	(0.0104)
F statistic	0.83	1.10	1.46	1.03	0.91	0.46
Degrees of freedom	19, 4052	19, 4039	19, 4037	19, 4018	19, 4043	19, 4015
p	0.667	0.343	0.092	0.425	0.565	0.977

The six variables reported are: duration of drug injection (in years); frequency of injection (daily); fraction of time injecting in shooting galleries; fraction of injections that are shared; fraction of injectors using cocaine; and daily risky injection frequency, defined as the product of daily injection frequency, fraction of injections that are shared, and one minus the fraction of shared injections that are cleaned. The data were obtained by survey from clients during their first visit to the program. For each variable, monthly mean values are reported, while the SE of these means appear in parentheses. Also reported are one-way analysis of variance results testing the hypothesis of no change in these variables over time. For each of the six variables, one cannot reject the null hypothesis.

but self-reported behavioral data do not support the suggestion that changes in the client base over time were responsible for the prevalence drop. Circulation theory remains, to our knowledge, the only theory able to account, in a unified manner, for the data we have observed. More importantly, circulation theory prescribes that the operations of needle exchange caused the trends observed in the data. To refute this claim, an alternative theory capable of explaining the same data while omitting the effect of needle exchange must be advanced and subjected to analysis. In the absence of such an alternative theory, however, we believe that the data support the proposal that needle-exchange programs can reduce HIV transmission risks among program participants.

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RESEARCH REPORT

An interview study of participants in the Tacoma, Washington, syringe exchange

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Abstract

Although European and Australian studies of syringe exchange programs have reported safer injection among participants and no increase in drug use, the generalizability of these findings to the US is uncertain. We report on the operations and potential effectiveness of the longest-operating syringe exchange in the US and compare our results to studies of exchange programs outside the US. The sample of 204 study subjects reported no change in the frequency of injection, from 155 to 152 injections per month, and a decline in the frequency of unsafe injections, from 56 to 30 times per month, while participating in the program. In all studies, participants report reduction in unsafe injections, and no increase in illicit drug use. However, the comparison also suggests that a high proportion of Tacoma exchangers have higher initial rates of drug injection, unsafe injection and homelessness, all of which were associated with unsafe injection while using the exchange. These indicate a need for additional services but that the Tacoma program is no less effective than European and Australian programs.

Introduction

Injecting drug use is the source of approximately one-third of the new cases of AIDS in the US, and injecting drug users have been the most frequent sources of heterosexually and perinatally acquired AIDS in the US and Europe.[1,2] As human immunodeficiency virus (HIV) infection prevention measures, syringe exchange programs have several potential merits: they should increase the proportion of injections in which sterile equipment is used for injecting drugs; they should provide for safe disposal of potentially contaminated injection equipment that might otherwise litter public areas; and they should provide opportunities for individualized education and counseling regarding drug-related, sexual and perinatal transmission of HIV and for referring drug users to treatment programs and other needed medical and social services.

Syringe exchange schemes in Europe and Australia have been shown to reduce participants' injection-related HIV-risk behavior,[4–9] to stabilize HIV seroprevalence rates among users,[6,7,10–12] and to serve as an entre to drug treatment and other social and health services.[13] Adverse effects, such as increased drug use by participants, and increased numbers of new injectors have not been noted.[4,5,7,9,14]

Syringe exchange programs have been imple-

Table 2. *Mean frequency of reported use of various drugs before and during use of the exchange, and mean change*

Drug route	Mean no. uses/month		Mean change	95% Confidence limits for change
	Before exchange	During exchange		
Any drug IV[1]	155	152	− 3	(− 22, 16)
Speedball IV	49	52	+ 3	(− 4, 10)
Heroin alone IV	44	41	− 3	(− 9, 3)
Cocaine alone IV	43	45	+ 2	(− 4, 8)
Amphetamine IV	4	2	− 2	(− 4, 0)
Other drug IV	3	0	− 3	(− 5, − 1)
Any drug subcutaneous	14	13	− 1	(− 7, 5)
Marijuana smoked	13	8	− 5	(− 9, − 1)
Crack or freebase cocaine smoked	8	8	0	(− 3, 3)
Cocaine intranasal	4	2	− 2	(− 4, 0)
Heroin intranasal	2	1	− 1	(− 2, 0)
Non-R_x methadone	0	0	0	(0, 0)

[1] Total injections (any drug IV) may not equal sum of individual drugs IV because data were missing.

increased drug use among exchange users, we compared reported frequency of use of individual drugs by route of administration and total injections per month before and after first use of the exchange (Table 2). Before use, syringe exchange users were injecting about five times per day and maintained this rate while using the exchange. Rates of injection of the most frequently used drugs and use of most drugs by intranasal or other routes did not significantly change after use of the exchange began. Intravenous injection of "other" drugs, usually synthetic narcotics, declined by about 90%, and smoking of marijuana declined by about one third. Re-analysis of the data as given in Tables 2–3 excluding subjects who reported a decline in use of marijuana or injection of "other drugs" did not significantly change the results with regard to injection of opiates, cocaine, speedball or amphetamine, nor the rate of unsafe injections (data not shown; available from the senior author).

As an indicator of whether the exchange was recruiting new persons to start injecting, we examined the injection histories of exchange users, and the age distribution of injecting opiate users entering methadone treatment during the years the exchange operated. Only one of 204 subjects began injecting after the exchange opened, and only 13 (6%) were new injectors (with less than two years' injection history). The median time from first injection to the opening of the exchange in late 1988 was 14 years. During the study period, the proportion of drug injectors entering methadone treatment who were young (less than 25 years of age), and presumably new, injectors remained low—between five and seven percent of all admissions.

Use of the exchange was associated with significant reductions in the number of reported injections that risk HIV exposure and transmission (Table 3.) Risk of exposure to HIV (rate of injection with rented or borrowed syringe previously used by another injector) declined, as did risk of transmitting infection by giving away or loaning one's syringe to another person. Self-reported bleach use by subjects increased while they were using the exchange.

The frequency of unsafe injection (injection with a syringe previously used by another injector) while using the exchange was not significantly associated with gender, race, or most frequently injected drug (Table 4). Homeless drug injectors, who reported their residence as "street" or "shelter", were substantially more likely to inject with used syringes while participating in the program than those with more permanent residence. Those who reported more than four injections per day, or at least one unsafe injection per day before first use of the exchange, had higher frequency of unsafe injection while participating than others who had injected drugs less frequently at baseline. Age was negatively correlated with injections with used equipment while participating ($r = -0.18$, $p = 0.02$), older exchange users having fewer unsafe injections.

From the "source of referral" data collected at entry to the methadone program from August 1988 to December 1989, 503 persons were admitted to methadone treatment, of whom 215 (43%) were referred from the syringe exchange, 37% were self-referred, 8% from other outreach locations, and 13% from other sources.

Table 3. *Mean frequency of reported change in specific injection practices before and during use of the exchange*

Drug route	Mean no. uses/month		Mean change	95% Confidence limits for change
	Before exchange	During exchange		
Injected with rented or borrowed syringe	56	30	− 25	(− 37, − 13)
Rented syringe	25	14	− 11	(− 19, − 3)
Borrowed syringe	31	17	− 14	(− 21, − 7)
Loaned used syringe to another IDU	100	62	− 38	(− 57, − 19)
Loaned to close friend/sex partner	61	37	− 24	(− 36, − 12)
Loaned to casual friend/stranger	39	25	− 14	(− 23, − 5)
Used bleach to disinfect syringe	69	105	+ 36	(10, 62)

All mean differences are statistically different than zero at $p < 0.05$ using paired t-test.

Discussion

Participation in the Tacoma syringe exchange program was associated with a significant decline in injection practices that risk HIV exposure and transmission. Injection of the most commonly used drugs was not affected by the availability of injection equipment. The ideal design for an intervention study would have been a randomized clinical trial. This was not possible for several reasons: we had neither the means nor the desire to prevent some injecting drug users from using the exchange.

Before considering the implications of these findings, some of the possible biases in the study should be noted. Our retrospective sampling method may have systematically missed those exchange users who were imprisoned, died, or became debilitated with AIDS before they were included in the random sample. We could expect this bias to lead to over-representation of less addicted persons, and thus an overestimate of the effect of the exchange on the behavior of addicts using the exchange.

The necessity of relying on self-reported data introduces several possible biases in the results, most of which would tend to overestimate the benefits of the exchange. For example, the self-reported decline in marijuana and injection of "other" drugs, such as synthetic narcotics, may reflect the subject's desire to please the researchers or to enhance their images as "good" drug users who were reducing their use. Self-reported increase in the use of bleach to clean injection equipment may have been similarly skewed. To address the question of whether these changes were an indicator of answers biased by social desirability, we repeated the analysis after excluding subjects who reported a decline in the use of either of the two drugs, or an increase in the use of bleach. The results were consistent with those reported for the entire sample, and so it is unlikely that social desirability of responses substantially biased the results. We suspect the declines in marijuana and "other" drugs may be related to reduced supply or increased cost of these drugs during the study period.

The refusal of 28% of potential subjects to be interviewed primarily because of the need to relieve withdrawal symptoms immediately may have introduced a bias in the results towards interviews of subjects who were less seriously addicted, less compulsive, or more inclined to provide socially acceptable answers. However, we observed withdrawal symptoms in many subjects who had been interviewed previously, and so this may represent bad timing rather than a systematic difference between participants and non-participants.

Despite these possible biases, we believe that it is extremely unlikely that the reductions in unsafe injections reported here are artefactual. First, large numbers of injecting drug users are using the syringe exchange program. Of the estimated 3,000 drug injectors in Pierce County, approximately 500 come to the syringe exchange program each week and exchange an average of 8–10 needles and syringes each. While some of this sterile injection equipment is undoubtedly passed on to others, it is implausible that active

A Pilot Syringe Exchange Program in Washington, DC

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ABSTRACT

The Washington, DC, City Council authorized a pilot syringe exchange program to operate for only 60 days at a single drug abuse treatment facility in the District. Only adults on the waiting list for treatment were eligible (n = 467). Of the 33 who enrolled, median duration of drug injection was 18 years. Twenty-seven participants denied needle sharing. Of 209 needles distributed, 69% were returned. Low enrollment might have been due to restrictive entry criteria, inconvenient location, incorrect syringe size, and attitudes of treatment staff. For future efforts to have a public health impact, wider accessibility will be needed. (*Am J Public Health*. 1994;84:303–304)

Introduction

Strategies to prevent parenteral transmission of human immunodeficiency virus (HIV) infection among injection drug users include education, counseling, testing, drug abuse treatment, needle disinfection, and sterile needle exchange.[1,2] Syringe exchange programs, although widespread elsewhere, are sparse in the United States because of official concern that they might undermine the political "War on Drugs" by at least appearing to condone drug use.[3,4] However, faced with the highest incidence of acquired immunodeficiency syndrome (AIDS) in the country and estimating the number of injection drug users in Washington, DC to be 16 000,[5] the District of Columbia's City Council authorized a syringe exchange program in 1992. The council had both proponents and opponents of such an exchange, and program design was achieved only with compromise; the program was authorized to operate for only 60 days, with the impact to be reviewed by the council prior to further action.

The City Council specified the following criteria for inclusion in the program: adult injection drug users residing in the District who had applied for entry into treatment for drug abuse at the city's central intake unit but were placed on a waiting list because treatment slots were full. This report summarizes the results of this pilot program.

Methods

Brochures about eligibility were distributed to treatment programs starting 30 days after the program started. Eligible individuals were referred to a single site (a drug abuse treatment center) in a separate quadrant of the city, where they were required to undergo medical examination to document injection drug use (i.e., track marks), receive counseling for drug abuse and HIV infection, and give informed consent.

Consenting individuals completed a risk interview; were offered confidential HIV testing on a voluntary basis; and were then provided with up to three specially marked syringes, bleach (with instructions and demonstration on use), cotton, alcohol swabs, condoms, and a pamphlet about reducing HIV risks. Participants were encouraged to return daily Monday through Saturday to exchange used for new program syringes. Participants were informed that only the specially marked program syringes could be exchanged and that it was not unlawful to possess these program syringes for the duration of the program.

In addition to tallies of injection drug users who were potentially eligible (i.e., on the waiting list) and those who entered the program, tallies were made for distribution (and return) of equipment. At baseline and at 2-week follow-up, standardized interviews were administered face to face by trained interviewers in private rooms to obtain information on drug use, sex practices, and risk reduction activities. Frequency distributions were generated.

Results

During August and September 1992, 467 drug users were seen at the city's central intake unit, 93 of whom (20%) were referred to the Syringe Exchange program. Of those referrals, 36 (39%) arrived, 33 of whom (92%) were eligible, consented, and enrolled. Among those participants, 31 enrolled in the first month, 2 in the last month.

Demographics and risk histories were limited to the 30 participants on whom interview data were available. The mean age was 38 years old (range 24 to 55 years); 80% were men, 83% were Black

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Harm-Minimisation:
Old Wine in New Bottles?

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New terminology and new jargon often conceal the fact that what is being described is not new. This is the case with 'harm-minimisation'. It is only in the last few years that the general term 'harm-minimisation' has been used, but in fact agencies have been promoting practices which could be described in this way for some considerable time. For example, in Sexually Transmitted Diseases Clinics there has been the promotion of preventative measures against these diseases; and in the alcohol field the promotion of sensible drinking, not drinking and driving, and lower alcohol-content beverages are all examples of 'harm-minimisation'. Hence, what has happened is that the quite long standing practice of harm-minimisation has been given a much clearer conceptualisation. This has been due to the advent of the HIV/AIDS problem among injecting drug users, and this clearer conceptualisation has led to harm-minimisation becoming both more public and far more controversial.

The HIV/AIDS problem has led to a focus on ways of preventing further spread of the virus among injecting drug users. The most publicised way of reducing this spread has been via the provision of clean injecting equipment, but a wide variety of other policies which have a general influence on drug use have been incorporated into both discussion and practice. For example, even the needle/syringe-exchange schemes offer far more than simply a place to change equipment: they do of course provide clean equipment, but they also provide information on AIDS and safer injecting practices, AIDS and safer sexual practices, and they may also provide condoms. Newcombe (1987) provides another example: he has argued for a harm-reduction approach to drug educational initiatives aimed at young people, based on the logic that if it is acknowledged that young people will very often try drugs (either out of curiosity or in response to peer pressure), then it becomes important to give them adequate information about drug use and about less hazardous ways of approaching such use.

Harm minimisation, then, is practised widely. There are, however, two immediate problems with the term harm-minimisation. First, many people take harm-minimisation as implying something about safety. This is not the case. Kozlowski makes the point that "less hazardous means reduced in risk or not as dangerous; it does not automatically mean safe or without risk" (1984: 310). Hence harm-minimisation is about reducing the degree of danger; it is concerned with altering probabilities.

The second problem relates to social attitudes and to the problem of being seen to condone drug use. Social attitudes towards harm-minimisation approaches, such as the provision of clean needles and syringes, vary as much as they do towards drug use itself. The use of drugs other than alcohol and tobacco for purposes other than medical is not considered a viable activity within our society (Kay 1986). Therefore, any approach that does not focus on abstinence is bound to be controversial. For general harm-minimisation approaches to be accepted, it has to be shown both that they have a far-reaching purpose that will benefit society as a whole and that they do not work against the general principles held by society. In the case of clean needles and syringes, the prevention of further spread of HIV among injecting drug users has the far-reaching implication of preventing the further spread of the virus to other members of society; but it has been harder to show that the provision of clean injecting equipment does not go against the principle that illicit drug use is to be discouraged. In fact, many have argued that it may actually give the impression of condoning drug use. The counter-argument is that if one accepts the comments put forward by Kozlowski and Kay (i.e. that the reality is that people will use drugs, because complete prevention of drug use in society today is impossible) then trying to reduce the harm or risks involved in that drug use is of major concern. Again, the issue here is one of probability of risk or damage.

What has become the over-riding factor for the case of clean equipment is that HIV is a very real health threat. It seems clear that society is more willing to accept practical measures adopted to prevent

abstinence. In others, abstinence will not be achievable for the time being and efforts will have to focus on risk-reduction"(p.1)

The Government, faced with the rising health issue of the spread of HIV in the UK, has provided official support and some funding for the establishment of pilot needle/syringe-exchange schemes. Indeed, the summary of the Government's strategy, whilst re-affirming their five-pronged approach, adds a new AIDS-related general health focus to the treatment and rehabilitation front. Their rationale (and that of the ACMD) is that "HIV is a greater threat to public and individual health than drug misuse" (Home Office 1988: 1). And yet this shift has caused the government to simultaneously adopt two sets of policies which are, at best, uneasy bed-fellows. On the one hand they are clearly anti-drugs, with their emphasis on detection, enforcement and abstinence; yet on the other, through necessity, they have endorsed a harm-minimisation, controlled use approach which provides free supplies of needles, and which requires no willingness to change drug-using behaviour before treatment is offered.

Possibly as an attempt to remain faithful to the harder, more confrontative orientation which existed prior to the HIV concerns, the Government has also chosen not to adopt or change policies that would lead to an even greater extension of harm-minimisation approaches in practice. For example, the ACMD report also proposed an increased role for GPs in the area of prescribing, as a measure by which to encourage risk-reducing practices; a recommendation which, as yet, has not been acted upon by the Government.

Recent policy statements, then, indicate a shift towards incorporating a harm-minimisation philosophy into the existing framework of services. However, this is not a shift away from the focus on enforcement nor is it a shift away from encouraging abstinence (ie. reducing supply and demand). The shift towards harm-minimisation can be viewed as a movement towards a multi-levelled approach, with services centring on a consumer-demand model. Alternatively, it can be viewed as a response to the need to be seen to be doing something about AIDS with this sector of the population.

Putting policy into practice: the provision of needle exchange schemes

The primary aim of needle exchange schemes is to encourage injecting drug users to stop sharing injecting equipment (and thereby reduce further spread of HIV) by making clean equipment accessible. While the threat of AIDS has been the rationale for the existence of the schemes and the policies supporting them, there are two other aims within the organisations which offer such schemes:

1. To make contact with members of the drug-using community that may not have come to the agency before and, as a result;
2. To reduce various health risks through providing information on issues like injecting practices, safer sex, diet, and general health care.

Many drug counselling agencies have become the primary outlets for clean equipment and this utilisation of counselling agencies as harm-minimisation outlets has presented a number of problems in the actual work of putting a harm-minimisation philosophy into practice. Examples of some of these problems are concerns about training and support, working methods, service priorities, and responsibility, each of which are discussed below. Yet possibly the most immediate problem faced by agency workers is ambivalence about the task of only providing clean equipment and information without asking many questions at the outset, instead of entering into a counselling relationship.

Ambivalence: For many workers, trained to counsel, the provision of clean equipment 'with no (or few) questions asked' has meant a re-evaluation of their roles and, possibly, their fundamental attitudes and feelings towards drug use, drug users, and the task of 'helping' users. While many workers see harm-minimisation as a general philosophy that covers most of their work, a lot of it has been an underlying concept within the context of counselling. That is, counselling often involves helping an individual to change a behaviour that will reduce or solve the problem being experienced, and this process is, of course, harm-minimisation. Yet the practice of just providing equipment without counselling has meant that workers have had to consciously adopt this philosophy, which has meant that sometimes they will have to simultaneously hold two different approaches to their work. On the one hand, the workers are there to offer an empathetic environment in which individuals can present their problems for counselling; on the other hand, with other users of the service, they have to provide an almost business-like service of exchanging equipment.

Having to incorporate two different policies (and more importantly, two different practices) into the work environment can also lead to an increase in stress felt by all concerned in the agency. The added stress for the workers involves dealing with an increased demand on their time, working in two ways, determining which way is appropriate in a situation as it arises and the related confidence (or lack of it) they feel in doing this, and finally, in dealing with the feelings of ambivalence discussed above which many workers experience.

These problems have implications for the agency's management relating to such areas as training and support, providing the service, and setting priorities.

Training and Support: Workers have been given training seminars/courses on AIDS, safer sex, injecting techniques, dealing with aggression/violence, and any other matters that might arise in providing this service. While some of these might (some would argue should) have been dealt with anyway, the development of needle-exchange schemes has brought the need for them to the forefront, and as specific exchange-related issues as opposed to general ones. Along with the increased training (particularly on matters not solely related to drug use), support for the workers providing this service has been emphasised as an issue. Support has always been emphasised in the drugs service field, but the advent of needle-provision schemes has increased this. The degree of difficulty experienced in taking on two approaches to work varies considerably and therefore the amount of support needed by workers differs.

Providing the Service: One issue on providing the needle exchange service is staffing. In some cases, counsellors may not feel able to use both working approaches and will prefer not to be involved in the provision of clean equipment. Management, in acknowledging and accepting this, have had to make suitable adjustments in staffing to ensure that both areas of work will be offered effectively and efficiently. Another issue is the actual method of providing the equipment - on a strict exchange basis or on a provision basis (i.e. not requiring used equipment to be returned before issuing clean works). Even strict exchange schemes have found that 1:1 exchanges do not always work in practice and the agencies have had to make discretionary decisions on providing clean equipment without equal returns (Monitoring Research Group 1988a, 1988b, Velleman & Rigby 1989).

A third issue is concerned with the users of the service and whether or not they are injecting or not. Some agencies ask to see injecting sites while others ask about injecting practices without requiring visible proof of injecting (unless there is some doubt, particularly when dealing with young users). It has become clear that there has to be flexibility in making decisions about providing services of this nature, as the successful implementation of policies will be influenced by this range of issues.

Setting Priorities: This leads onto the issue of setting priorities. Some agencies have had to decide on which services are to receive priority with relation to staff time, promotion, training, support and funding. Finding a balance between these two different services has been difficult for some agencies and due to the increase in work-load without an increase in support (financial or staff-wise), some agencies have had to decide against providing a needle-exchange scheme, either in the first instance or after an initial trial period (Monitoring Research Group 1988a).

Responsibility: There are three areas of responsibility to consider: client, agency and co-ordination of services. In terms of client responsibility, workers in the drugs field adopt the idea that drug users are/can be responsible individuals and that the ultimate responsibility for reducing potential harm rests with them. Therefore, the client is responsible for making any decisions on changing behaviour. However, drug users may need guidance on how to change their behaviour to reduce the potential harm and this leads to the responsibility of the agency. Agencies have found that they need to be aware of the different types of changes that may be needed (like changing injecting sites, injecting more safely, obtaining a 'script' so injecting can stop, etc.) and to have access to information that will lead to helping the drug user with the immediate problem. If the agency cannot deal with an issue directly, then it requires a network by which it can obtain the necessary information

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IV

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Characteristics of "Prevented" HIV Epidemics among Injecting Drug Users

running head: "Prevented" HIV Epidemics among IDUs

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Summary

HIV has spread extremely rapidly among injecting drug users (IDUs) in many localities throughout the world; in others, however, minimal transmission occurred after HIV was introduced among local IDUs. Multiple studies show that in Glasgow (Scotland), Lund (Sweden), Sydney (Australia), Tacoma (USA), and Toronto (Canada), HIV seroprevalence has remained non-zero but low (< 5%) and stable among IDUs for at least 4 years. These cities were compared on types of drugs injected and AIDS prevention programs (including drug treatment and syringe exchange). Similar risk-behavior questionnaires were administered to IDUs in each city (n = 919 in Glasgow; 112 in Lund, 424 in Sydney, 874 in Tacoma., 582 in Toronto). In all 5 cities, AIDS prevention efforts for IDUs—including outreach that developed trust between IDUs and health care workers, and legal access to sterile injection equipment—were begun when HIV seroprevalence was below 5%. Other HIV prevention efforts (e.g., expanded drug abuse treatment or HIV counseling and testing) varied greatly across cities. High percentages (> 70%) of IDUs reported changing behavior to reduce their risk of AIDS. Very high-risk behavior was rare; e.g., recent shooting gallery use ranged from < 1% to 11%. However, substantial risk behavior continued: from 36% to 58% of IDUs reported recent injection with equipment used by others. A case control analysis showed a very strong association ($p < .001$ by Fisher's exact test) between the three common prevention components and the presence of stable low HIV seroprevalence.

These cities present the strongest evidence to date that it is possible to prevent epidemics of HIV transmission among the very high risk group of injecting drug users.

Keywords: HIV/AIDS/injecting drug users/seroprevalence/risk reduction/prevention programs/behavior change

Introduction

The injection of illicit psychoactive drugs has now been reported from over eighty countries throughout the world, and human immunodeficiency virus (HIV) infection among injecting drug users (IDUs) has been reported in over fifty countries.[1,2] In some areas, the spread of HIV among IDUs due to the multi-person use of drug injection equipment has occurred with extreme rapidity. In New York City, for example, HIV seroprevalence among IDUs increased from under 10% to over 50% in a period of 5 years;[3] in Edinburgh, HIV seroprevalence among IDUs increased from zero to over 40% in one year;[4] in Bangkok, HIV seroprevalence among IDUs increased from 2% to over 40% in two years;[5] and in the state of Manipur, India, HIV seroprevalence increased from zero to approximately 50% in one year.[6] Unfortunately, data on risk behavior have rarely been collected during an actual period of rapid spread of HIV among IDUs, so that these epidemics must typically be reconstructed from retrospectively collected data. Despite this important limitation, however, there are sufficient data[2,7] to indicate that the characteristics of IDU populations in which HIV has spread rapidly include: 1) a lack of awareness of AIDS as a local threat; and 2) large numbers of IDUs utilizing "shooting galleries" (places where IDUs rent injection equipment, use it and return it to the operator of the gallery for rental to the next injector using the gallery) or "dealer's works" (injection equipment kept by a drug dealer and lent to successive drug purchasers). Both shooting galleries and "dealer's works" situations have often arisen because of legal restrictions on the obtaining or possession of injection equipment, and both of these venues for drug injecting increase the likelihood of rapid, efficient mixing within the population at risk.

In sharp contrast, however, there are also areas where HIV was introduced into the local population of IDUs, but where HIV seroprevalence among IDUs has remained low and stable. We report here five case histories of such "prevented" epidemics among IDUs: in Glasgow, Scotland; in Lund, Sweden; in Sydney, Australia; in Tacoma

(Washington), USA; and in Toronto, Canada. We will: 1) present evidence showing stabilization of HIV seroprevalence at low rates among IDUs in these cities; 2) identify common components of their AIDS prevention programs for IDUs; and 3) show a strong statistical association between the presence of these common prevention components and the presence of stable low HIV seroprevalence among IDUs.

Methods

1) HIV prevalence. This paper presents case histories of cities in which HIV has been introduced into a heterosexual IDU community, but where HIV seroprevalence has remained low and stable. Operationally, we defined "introduction of HIV" into a local population as an HIV seroprevalence rate of at least 1%, and "stable low seroprevalence" as a seroprevalence rate of less than 5% with no increasing trend for a period of at least four years. The 5% HIV seroprevalence level was selected because it is well below the 10% level from which rapid, epidemic-scale increases in HIV seroprevalence among IDUs have frequently been observed.[7] Because HIV seroprevalence is often higher among IDUs not in drug abuse treatment, we also required seroprevalence data from at least one non-treatment sample of IDUs.

Several methods were utilized to identify geographic areas with stable low seroprevalence among IDUs. We searched published literature reviews,[1,8,9] the abstracts of the most recent International Conferences on AIDS (Florence 1991, Amsterdam 1992, Berlin 1993), and computerized bibliographical data bases. We also used unpublished seroprevalence studies and personal communications with other researchers in the field. While no search for examples of epidemiological phenomena can be considered exhaustive, this search was relatively extensive and, as far as we could determine, was biased neither towards any geographic region nor towards the presence/absence of any specific type of AIDS prevention programming. The most likely source of bias is that cities conducting sufficient research to permit a determination of stable low seroprevalence might also be more likely to be those which

were sufficiently concerned about HIV infection among IDUs to have implemented at least some type of prevention program.

These search methods were also used to generate "control" cities for a case-control analysis.

Each of the individual seroprevalence studies from each city used in this report had more than 95 subjects. (The 95% confidence intervals for 5% seroprevalence with a sample size of 100 would be plus/minus 4%. All of the studies used in this analysis thus had confidence intervals of plus/minus 4% or less.) Serial cross-sectional seroprevalence data were available from studies conducted in Glasgow,[10—12] in Tacoma,[13] in Toronto,[14] and from multiple studies in Sydney (reviewed by Kaldor et al.[15]).

In Lund and in the surrounding Skane province, there has been extensive voluntary HIV counseling and testing of all identified IDUs, with individually coded reports for all HIV-seropositives (as described in Ljungberg et al.).[16,17] Each positive case is investigated to determine where the person was living when the seroconversion occurred. There is also post-mortem HIV testing for all known IDUs in Skane, and there have been no cases of deceased HIV-positive IDUs who had not been previously reported. (Study methods for HIV testing in each of the five cities are summarized in Table 1. For full details, see references [10—16]).

HIV infection has been reported among IDUs in over fifty countries in the world,[1] and there is no central registry for seroprevalence studies. These five cities were all of the instances that we were able to locate where there is sufficient documentation to establish that these cities do indeed meet our operational definition of stable low seroprevalence—HIV seroprevalence that has reached at least 1%, but has remained less than 5% for at least four years among IDUs recruited from both treatment and non-treatment settings.

2) Risk behavior among IDUs. Persons who had recently (within the previous 2 months) injected illicit drugs were recruited both from drug abuse treatment programs and from at least one non-treatment setting. A high agreement to participate (> 95%) was obtained from the IDUs approached in all five cities. After informed consent was obtained, similar questionnaires covering demographic characteristics, drug use, and AIDS risk behavior were administered by trained interviewers. The questionnaire from the World Health Organization's Multi-Site Study of Drug Injecting and the Risk of HIV Infection was used in Glasgow, Toronto and Sydney, while the European Community Multi-Site Study questionnaire—which was designed in conjunction with the WHO interview schedule to ensure comparability[18]—was used in Lund, and a questionnaire developed for a syringe-exchange evaluation study was used in Tacoma.[19] The only appreciable difference in questionnaire composition was a time frame for risk behaviour of the previous one month in Tacoma, compared to the previous six months in the other cities. The interview data were collected between 1990 and 1992 in the different cities.

3) HIV prevention activities. Local experts (including co-authors of this paper) completed a questionnaire describing the characteristics of the local drug-injection situation and the local AIDS prevention activities for IDUs. All of these local experts have been conducting research on HIV infection among IDUs in their communities over the last five or more years. The questionnaire included: 1) when prevention activities were first initiated, and the extent to which 2) legal access to sterile injection equipment, 3) community outreach, 4) bleach distribution, 5) expansion of drug abuse treatment, and 6) HIV counseling and testing were used as prevention methods.

Results

Introduction of HIV into the IDU population. How HIV was first introduced into a local population of IDUs usually cannot be known with certainty, but there is some evidence as to probable means of virus entry for these five cities. In Glasgow, HIV was probably

introduced by travellers to and from Edinburgh, less than 80 km distant, where HIV seroprevalence among IDUs has been high since the mid-1980s.[4] In Lund, HIV was almost certainly introduced by immigration of HIV-positive IDUs from other parts of Sweden and by travellers to and from nearby Copenhagen, Denmark.[16] In Sydney,[20,21] Tacoma,[13] and Toronto,[22] HIV probably entered through IDUs who were initially infected through male-with-male sex, as these cities have substantially higher HIV seroprevalence rates among IDUs reporting male-with-male sex than among other IDUs.

HIV prevalence among IDUs. Seroprevalence studies in the five cities are presented in Table 1. In the four cities where seroprevalence was studied through serial cross-sectional designs (Glasgow, Sydney, Tacoma and Toronto), the observed rates were all within narrow ranges, with no increasing trend over time in any city. In Lund, where HIV counseling and testing of IDUs is conducted on a continuous basis, the HIV infection level has remained low and stable.

HIV prevention activities. There have been a variety of HIV prevention efforts in each of the five cities. Only brief comparative summaries are provided here. (For more detailed descriptions of the HIV prevention activities in these cities, see [16,23—27]).

The first common characteristic was that prevention efforts were initiated relatively early in these five cities: in Glasgow, both a syringe exchange and a program to sell sterile needles and syringes in pharmacies to IDUs were begun in 1987; in Lund, a syringe-exchange program was begun in 1986; in Sydney, the law requiring prescriptions for the purchase of needles and syringes was repealed, and a program of both over-the-counter sales and syringe exchanges was begun in 1987—indeed, an educational campaign to "Never share needles" was launched by the wife of the Australian prime minister in 1987; in Tacoma, a syringe-exchange program was begun in 1988; and in Toronto, a street outreach/bleach-distribution program for IDUs was begun in 1987, and a syringe-exchange program initiated in 1989. In all of these cities,

the prevention activities were begun before HIV seroprevalence reached 5% among heterosexual IDUs recruited from either treatment or non-treatment settings.

The second common characteristic of the prevention programs in the five cities was that they all involved community outreach to IDUs to disseminate AIDS information and to build trust between health care workers and IDUs. In Glasgow, "drop-in centers" were established for female prostitutes (many of whom were IDUs);[28,29] in Lund, health-care workers went out into the community to recruit participants for the syringe exchange;[30] in Sydney, "drug users' groups" were supported with government funding to advise on AIDS prevention efforts and to operate some of the services;[25] in Tacoma, the syringe-exchange program was initiated in a high-drug-use area by a former drug abuse treatment program staff person who had good relationships with IDUs;[23] and in Toronto, the outreach included an "ambassador" component, in which active drug users were trained to serve as outreach workers to their peers.[27] Moreover, in each of these cities, the information imparted by community outreach workers, and the resulting climates of trust, were further disseminated throughout the oral communication networks of IDUs themselves, thus reaching persons who were not in direct contact with the outreach workers.[23,25,31]

The third common characteristic of the AIDS prevention programs in the five cities was that IDUs had legal access to sterile injection equipment. Syringe exchanges were the primary sources of sterile syringes and other injection equipment in Lund and Tacoma. (Over-the-counter sales are not permitted in Lund, but are permitted in Copenhagen, Denmark, which is a half-hour ferry ride away). In Tacoma, over-the-counter sales are permitted, but many pharmacists do not sell to persons suspected of being IDUs. In Glasgow, where the syringe-exchange program started on a very limited basis, expansion of over-the-counter sales was initially the major HIV prevention activity, although a citywide "user-friendly" syringe-exchange system has since been implemented.[29] Both extensive syringe exchange and over-the-counter

sales were part of prevention efforts in Sydney and Toronto. In each of the five cities, an estimated one-fifth to one-third of the IDUs are regular users of the local syringe exchanges. Moreover, many of these regular participants also exchange injection equipment on behalf of others who do not formally participate in the exchanges.

Large-scale expansion of drug abuse treatment as a method of preventing HIV infection among IDUs was utilized only in Sydney. Expansion of methadone maintenance treatment was begun there in 1985 (when there were only 840 persons in methadone programs in New South Wales), and increased until 5,829 persons (of an estimated 8,000 IDUs) were in methadone treatment in 1991. In the other four cities, there has been modest or no expansion of drug abuse treatment. Drug-free counseling treatment has been expanded somewhat in Glasgow, but there remains a substantial unmet demand for methadone maintenance treatment. Notably, however, the "waiting lists" for entry into drug abuse treatment in Tacoma, where syringe-exchange staff have provided numerous referrals to treatment for IDUs, have increased over this period.[19,23] A similar success with referrals to treatment by syringe-exchange staff appears to have occurred in Lund.[16,17,30] Inpatient detoxification and outpatient drug-free counseling treatment have been readily available in Lund, and a small (50-person) methadone treatment program opened in 1990. An effort to provide centralized referrals to drug abuse treatment was developed in Toronto, and recently there has been a modest expansion of methadone treatment in that city.

The distribution of bleach for disinfecting injection equipment was an HIV prevention strategy used extensively in Sydney, Tacoma and Toronto. In Sydney and Tacoma, bleach distribution was done primarily in conjunction with syringe exchanges, while Toronto had begun conducting a bleach-distribution outreach program prior to initiating its syringe-exchange program.

Extensive HIV counseling and testing as a principal method of AIDS prevention was utilized only in Lund.

The prevention activites for IDUs in these cities did receive substantial coverage in the local mass media. Even though some of the prevention activities—such as syringe exchanges—were controversial, the news coverage was generally favorable.

Of these six different aspects of prevention programming, three (beginning early, community outreach and ready access to sterile injection equipment) were present in all five cities, bleach distribution was present in three cities, while large-scale expansion of drug abuse treatment and extensive HIV counseling/testing were each present in only one city. While the number of cities in this report is modest, it is large enough to assess the likelihood of observing this pattern of prevention activities against a no-association null hypothesis that a particular prevention component is equally likely to be present or absent ($p = 0.5$) in a set of stable low-seroprevalence cities.

Under this null hypothesis, the probability that any one prevention component would be found in all five cities is $(0.5)^5 = .03125$. The probability of any three prevention components occurring in all five cities under the null hypothesis stated above is .00016.* The null hypothesis that the three common prevention components are equally likely to be present or absent in these cities can therefore be rejected.

We also constructed an illustrative case control analysis for testing an association between the presence of stable low seroprevalence and the presence of all three common prevention components. To identify "control" cities, we operationally defined a "lack of stable low seroprevalence" as a seroprevalence rate of 10% or greater for two or more consecutive years or a rate of 20% for one year. Use of this operational definition meant that there would be cities which could not be classified as

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* In each of the five case studies, we examined the presence/absence of six prevention components: 1) beginning early; 2) community outreach; 3) legal access to sterile injection equipment; 4) greatly expanded drug abuse treatment; 5) extensive HIV counseling and testing; and 6) bleach distribution. The probability that one city would have at least three of these prevention components present is based on combinations of 6 objects taken 3, 4, 5 and 6 at a time and = 0.6563. The probability that an additional four cities would then also have the same three prevention components = $(0.5)^{3x4}$. The probability under the null hypothesis of all five cities sharing the three prevention components is the product of these two probabilities, = .00016.

having or not having stable low seroprevalence, but this was considered preferable to the misclassification that would occur if cities with seroprevalence of approximately 5% but limited data were included in the case-control analysis.

Using the same search procedures that were used for identifying stable low-seroprevalence cities, we then attempted to identify cities where all three prevention components were present and yet stable low seroprevalence was not present. We were able to identify no cases where all three components were clearly present and yet stable seroprevalence was clearly absent.

To identify areas that lacked one or more of the hypothesized critical prevention components, and that lacked stable low seroprevalence, we used only a subset of our search techniques, a single review article that contains serial seroprevalence data for a total of 17 cities.[7] This article was chosen because it contained more serial seroprevalence data than any other source we were able to locate, and it is publicly accessible. We are reasonably confident that further searching would only have produced still more cities that lacked one or more of the prevention components and did not have stable low seroprevalence. Table 3 presents the results and statistical significance for this case control analysis.

The purpose of this case control example is not to show a particularly low p value, but to demonstrate the more general point that, with the presently available data and restrictive operational definitions, any such case control analysis will lead to a finding of a statistically significant association. A significant association will always be present unless a moderate number of cities with stable low seroprevalence but without the three components were located, and/or a very large number of cities with the three components but without stable low seroprevalence were located.

AIDS Risk Behavior among IDUs. Table 2 shows selected demographic characteristics, as well as selected drug-use and sexual HIV risk behaviors of the IDU respondents. In all five studies, a large majority of the subjects reported that they had

changed their behavior because of concern about AIDS. Complete elimination of HIV risk behavior did not occur in any of the cities; moderate-to-large percentages of the subjects reported that they had recently injected at least once with needles and syringes previously used by others. Much smaller proportions reported having recently engaged in the particularly high-risk behavior of injecting in "shooting galleries"—places where injection equipment is rented to an IDU, used, returned to the gallery operator, and then rented to other IDUs.

Fully comparable data on detailed specifics of risk behavior were not available from the different questionnaires. In general, however, it appears that much of this continued "needle sharing" was confined to small social networks. For example, in Lund, where a majority of the subjects reported at least one unsafe injection in the six months preceding the interview, only 28% of the total sample reported more than 2 unsafe injections during that time period, and for 52% of persons reporting unsafe injection, it was confined to "sharing" with sexual partners. In Tacoma, 30% of the subjects reported some injecting with needles and syringes used by others, but only 8% reported that half or more of their injections were with used needles and syringes. Moreover, while 9% reported injecting in shooting galleries, only 3% reported that half or more of their injections took place in shooting galleries.

Discussion

The five case histories presented here clearly demonstrate that rapid transmission of HIV is not inevitable among populations of IDUs. This finding in itself has important policy implications. It clearly contradicts the opinion expressed by some public officials that the only way to prevent HIV infection among IDUs is to stop their drug injection.[32]

There are also data indicating low and possibly stable HIV seroprevalence among IDUs in other cities in Australia,[15] in the United Kingdom,[33] and in New Zealand.[34] Preliminary analyses of data from Seattle (Washington), USA, also suggest

that stable low HIV seroprevalence may be occurring among IDUs in that city (J. McGough, personal communication, January 10, 1994). While we were able to locate only five cities that meet our operational definition for "stable low seroprevalence," it appears that stable low seroprevalence is likely to occur in other cities. It is important to note that, to the best of our knowledge, it is also true that all of these other cities had implemented prevention efforts before HIV seroprevalence reached 5%, and that the prevention efforts included either community outreach/development of trust, legal access to sterile injection equipment, or both of these.

While it is important in itself to demonstrate that stable low seroprevalence is possible among populations of IDUs, the critical public-health question concerns the extent to which specific AIDS prevention efforts were responsible for the stable low seroprevalence. Rapid HIV transmission did not occur in any of the five cities, but did the three aforementioned common prevention components actually prevent HIV epidemics among IDUs in these five cities?

For many good reasons, the random assignment clinical trial is the currently preferred method for studying causation in health interventions. For assessing HIV prevention at the community level, however, there are many difficulties in conducting clinical trials with an entire community as the unit of analysis. Such studies would be very expensive and require many years of data collection. Moreover, there are severe ethical problems in denying potentially effective means for preventing HIV infection to "control group" communities. To cite only the most obvious example, it clearly would be unethical to deliberately delay prevention efforts until seroprevalence had passed 5% in order to experimentally test the importance of beginning prevention efforts early.

Most communities would probably object to being randomly assigned to different types of HIV prevention, so that there would be biases in the selection of participating communities. Most importantly, sexual and drug-injection behaviors change for reasons outside of the control of researchers. For this reason, one would have to

expect historical developments to undermine the purity of any community random-assignment research design. The researchers would have to find ways of accomodating the design to historical changes in the research communities, and the final interpretation of the results would need to include consideration of these mid-course design corrections. Research on community-level effects of HIV prevention programming will thus have to include other methods of attributing causality besides randomized clinical trials.

We examined the possibility that the three common prevention components produced stable low seroprevalence in these five cities in terms of plausible causal mechanisms and potential alternative hypotheses.

There are plausible causal mechanisms through which each of the prevention components could contribute to stable low HIV seroprevalence. Community outreach and legal access to sterile injection equipment have been studied in a wide variety of cities (see [8,9,25,26]). The results have consistently shown associations between the two types of interventions and reduced risk behavior among IDUs.

It is also inherently plausible that it is important to begin prevention efforts early, when HIV seroprevalence is below 5%. The likelihood of a new HIV transmission occurring is a function of, among other factors, the number of currently infectious persons in a given community, so that limiting the initial spread of HIV should have long-term positive consequences for reducing further HIV transmission.

Thus, it is clearly plausible that the three common prevention components could have produced stable low HIV seroprevalence in these five cities.

Alternative explanations for stable low seroprevalence would include "confounding" variables whose unmeasured influence was not "controlled for" in the case histories or the illustrative case control analysis. The simplest possible alternative explanation is that the conditions for stable low seroprevalence existed prior to implementation of community outreach and legal access to sterile injection equipment.

Since seroprevalence was below 5% in each of the cities when these two prevention components were implemented, might it not have stayed below 5% even if they had not been implemented? The fact that large majorities of IDU subjects in these five cities report reducing their risk behavior because of concerns about AIDS undermines this hypothesis. Although data are not available regarding risk behavior among IDUs in these cities prior to AIDS risk reduction, there certainly must have been substantially more risk behavior prior to risk reduction by so many IDUs. (For a review of the evidence for the validity of self-reported risk reduction among IDUs, see [35]).

The lack of any examples of cities in which seroprevalence clearly remained under 5% in the absence of AIDS risk reduction among IDUs also undermines the plausibility of this alternative hypothesis. Indeed, studies of HIV seroprevalence patterns from blood samples collected before IDUs were aware of the threat of AIDS almost all show rapid increases in seroprevalence, even in areas such as Italy where there were few legal restrictions on sterile injection equipment.[7]

If stable low seroprevalence is not likely to have occurred in the absence of deliberate AIDS risk reduction among IDUs, there still might also be some other confounding variable. "Something else" might have occurred at the same time as community outreach and legal access programs, and this other factor could conceivably have been the "real" cause of the behavior change leading to stable low seroprevalence in the five cities. For example, IDUs in New York apparently learned about AIDS from the local mass media, and began risk reduction prior to any official prevention programs in that city.[36] In the five cities discussed here, however, there was very little media coverage of AIDS among IDUs as a local issue until stories began to appear about the local prevention programs. In particular, controversial programs like syringe exchange generated local media interest. Thus, the information about IDU-related HIV risk which may have been conveyed to local IDUs through such media

coverage should be seen as an historical by-product of the prevention programs themselves, rather than as an alternative causal factor.

Consideration of plausibility of the three common factors for reducing HIV transmission and the lack of evidence for plausible alternative hypotheses both lead to the conclusion that the three common prevention components produced stable low HIV seroprevalence in these five cities.

Limitations. Acceptance or rejection of this conclusion also requires explicit consideration of the limitations of the study. We would not argue that the data from these five cities show that the three common prevention components are sufficient to produce stable low seroprevalence in other areas. We also would not argue that these case histories or the case control analysis show that the three common prevention components are necessary for achieving stable low seroprevalence in other areas. These prevention components might not be effective in other areas, and other components might be equally effective. Given the current evidence for the effectiveness of these three components in these and other cities, however, we suggest that it would be prudent public-health policy to utilize these components wherever there are populations of IDUs at risk for rapid transmission of HIV.

We believe that the most important limitation of the data presented here is that the case histories do not provide an intellectually satisfactory explanation of how the prevention components actually worked in these cities. These case histories present the prevention activities from the perspective of the health workers who implemented the activities. We have relatively little information about the behavior change processes through which stable low seroprevalence occurred. For example, ethnographic interviews with IDUs in several of these cities suggest that the interactions between health workers and IDUs led to new social norms among IDUs themselves regarding proper injection practices, and that these new norms affected the behavior of numerous IDUs who were not in direct contact with the health workers.

More detailed documentation of such possible behavior-change processes would be necessary in order to fully establish the precise extent and nature of the causal links between official HIV/AIDS prevention components and the achievement of stable low HIV seroprevalence in a target population.

A full understanding of how to prevent HIV epidemics among IDUs will also require much better delineation of the differences in patterns of risk behavior that lead to stable low HIV seroprevalence versus those that lead to rapid HIV transmission. It is clear from the data presented here that stable low seroprevalence can be maintained despite some degree of continuing injection risk behavior ("sharing" of injection equipment) among a high percentage of IDUs in a local area. As noted above, additional data from subjects in some these cities indicated that most of this residual risk behavior occurs within dyads or small friendship groups. Occasional injection risk behavior within small groups thus may pose little or no risk for rapid spread of HIV among IDUs.

Risky injections within identifiable social settings (such as in shooting galleries or with dealer's works) that provide rapid and efficient mixing within an IDU population may be the critical factor. It has been suggested that persons who are newly infected with HIV are particularly infectious in the period prior to their developing an antibody response.[37] This phase of heightened infectiousness among some IDUs would serve to amplify the effect of rapid and efficient mixing situations in causing a local IDU population to move rapidly from low to high HIV seroprevalence .

Given the low probability that community-level random assignment clinical trials will ever be used for evaluating HIV prevention strategies, we will have to rely upon analyses of non-experimental statistical associations, plausible causal mechanisms and potential alternative hypotheses when assessing causation in community-level trends in HIV infection. The greatest difficulty in conducting such analyses would appear to be the inadequacy of currently available theories for linking specific

prevention programs to individual and social change processes, and to patterns of risk behavior associated with different rates of HIV transmission within populations.

In summary, the data presented here show:

1. The existence of stable low HIV seroprevalence among populations of injecting drug users;

2. That low seroprevalence can be maintained despite at least occasional risky injections among a high percentage of IDUs in the population; and

3. That stable low seroprevalence was associated with a distinct pattern of AIDS prevention programming: A) prevention efforts were begun when seroprevalence was below 5% (among both treatment and non-treatment samples of IDUs); B) community outreach and development of trust between IDUs and health workers; and C) ready legal access to sterile injection equipment.

The data presented here would appear to be the strongest evidence to date that it is possible to prevent epidemics of HIV transmission in the very high-risk group of IDUs. Whether the three common prevention components identified here are necessary or sufficient to avert rapid transmission of HIV among IDUs in other areas remains to be determined. A full conceptual explanation of stable low seroprevalence will require additional understanding of the causal processes leading from prevention programming to safer injection behavior, and a better understanding of the specific risk-behavior patterns that lead from low to high HIV seroprevalence among populations of IDUs.

Despite the need for additional information and better theory, the potential consequences of permitting rapid transmission of HIV among injecting drug users are such that responsible public-health policy would seem to require, at the very least, utilizing these prevention components wherever possible.

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Table 1. Stable Low HIV Seroprevalence among Injecting Drug Users in Five Cities*

City	Estimated IDUs	Studies	Subjects tested	Sites	Years	Seroprevalence
Glasgow	8,500	7	2,300	hospital, outreach	1986 - 92	3%, 5%, 4%, 1%, 2%, 1%, 1%
Lund (Skane)	500 city (3,000 province)	continuous	>90% at least once >80% more than once	syringe exchange, drug treatment	1986 - 92	<2% cumulative
Sydney	7,800	7	2,700	drug treatment, STD clinics, outreach	1984 - 91	after excluding IDUs reporting male-with-male sex: 4%, 5%, 0.5%, 1%, 1%, 3%, 2%, 4%
Tacoma	3,000	6	900	drug treatment, syringe exchange, outreach	1988 - 92	0.4%, 3%, 3%, 4%, 3%, 4%
Toronto	8,000	7	1,300	drug treatment, outreach, syringe exchange	1988 - 92	after excluding IDUs reporting male-with-male sex: 0%, 2%, 3.1%, 3.3%, 0.8%, 2.8%, 2.2%

Comments: Number of IDUs in community estimated by: capture/recapture in Glasgow; multiple methods in Lund and Sydney; synthetic area analysis in Tacoma. Number of study subjects estimated by adding subjects from individual studies, reducing by one-third for possible multiple participation, and rounding to the nearest 100. Seroprevalence results presented in order of first year of data collection in different studies in each city, except that there are data from 2 concurrent 1992 studies in Tacoma, and Sydney results are from studies conducted in the following periods: 1984-88; 85-89; 85; 86-88; 86-88; 87; 87-91; 89-90. In Glasgow, testing from 1986-89 was done on a voluntary, named basis, and thus persons suspecting they were HIV-positive may have been more likely to volunteer; Glasgow data from 1990-92 were collected as part of anonymous studies, and may thus be less susceptible to volunteer bias. In Lund, there have been approximately 50 cases of HIV-seropositive IDUs who have moved into the province, and there have been 8 local seroconversions. In Sydney, seroprevalence was notably higher among IDUs also reporting male-with-male-sex, varying from 13% to 44% across different studies (see review by Kaldor et al.[15]). For seroprevalence estimates in this table, IDUs reporting male-with-male-sex were excluded in Sydney and Toronto, but were included in the other cities.

* For editors/reviewers: See also the 3-page Appendix for more information on cross-sectional surveys in Glasgow, Sydney, Tacoma and Toronto.

Table 2. Selected Demographic Characteristics and AIDS Risk Behaviours of IDUs in Five Cities

	GLASGOW n = 919	LUND n = 112	SYDNEY n = 424	TACOMA n = 874	TORONTO n = 582
Drugs Commonly Injected	Heroin Buprenorphine	Amphetamine Heroin	Heroin Amphetamine	Heroin Cocaine	Heroin Cocaine
Male	73%	71%	78%	70%	86%
Mean Age in years	25	30	27	37	28.3
Any Injection with Previously Used Needles or Syringes*	36%	58%	41%	30%	46%
Any Shooting Gallery Use*	3%	3%	1%	9%	9%
Any unsafe sex with Casual Partners*	22%	35%	13%	53%	21%
% Reporting Changing Behavior because of AIDS	84%	82%	84%	73%	87%

* Risk behavior in the 6 months prior to interview for Glasgow, Lund, Sydney and Toronto; for the 1 month prior to interview in Tacoma.

Table 3. Case-Control Analysis of Prevention Components and Stable Low HIV Seroprevalence in Twenty-Two Cities

		Stable Low Seroprevalence present	absent
Prevention Components	present	5	0
	absent	0	17

$p < .001$ by Fisher's exact test

HIV "prevention components" are here considered "present" if (a) prevention efforts began to be implemented when seroprevalence was <5% among samples of local in-treatment and out-of-treatment IDUs, and if the prevention strategy as locally implemented included both (b) community outreach/development of trust and (c) legal access to sterile injection equipment. Otherwise, "prevention components" considered "absent".

Stable low seroprevalence considered "present" only in localities where seroprevalence among IDUs remained between >1% and <5% over a four-year period, with no increasing trend among data from both in-treatment and out-of-treatment samples of IDUs. Stable low seroprevalence considered "absent" if a locality experienced two consecutive years with seroprevalence among IDUs at 10% or greater, or else one year with seroprevalence at 20% or greater.

This restrictive operational definition means that there could be many cities that could not be classified as clearly having or clearly lacking stable low seroprevalence. However, this seemed appropriate, given the difficulties in distinguishing "stable low" from "low but increasing" seroprevalence.

Both "prevention components" and "stable low seroprevalence" were present in 5 localities—Glasgow, Lund, Sydney, Tacoma and Toronto—while both were absent in 17 localities—New York, Sardinia, San Francisco, Rio de Janiero, Bangkok, Bologna, Milan, Padua, Rome, Geneva, Berlin, Hamburg, Vienna, Edinburgh, Bilbao, Manipur, and Detroit.[7]

Appendix:
HIV Cross-Sectional Seroprevalence Studies

1. Glasgow

Years of data collection	Recruitment sites	Sample size	Seroprevalence
1986*	hospital	357	3%
1987*	hospital	726	5%
1988*	hospital	457	4%
1989*	hospital	520	1%
1990**	drug treatment, outreach	457	2%
1991**	drug treatment, outreach	513	1%
1992**	drug treatment, outreach	485	1%

* These data were collected from a clinical testing site on a voluntary, named basis. Thus, persons suspecting they were HIV-positive may have been more likely to be tested.

** These data were collected as part of anonymous research studies where volunteer bias was less likely.

Appendix:
HIV Cross-Sectional Seroprevalence Studies

2. Sydney

Years of data collection	Recruitment sites	Sample size	Seroprevalence
1984-88	STD clinic	96	4%
1985-89	HIV/AIDS clinic	735	5%
1985	drug treatment	210	0.5%
1986-88	drug treatment	548	1%
1986-88	drug treatment	767	1%
1987	drug treatment	97	3%
1987-91	primary health care	811	2%
1989-90	drug treatment, outreach	696	4%

IDUs who also reported male-with-male sex as a risk factor were excluded from this table. Fuller data are presented in Kaldor et al.[15]

Appendix:
HIV Cross-Sectional Seroprevalence Studies

3. Tacoma

Years of data collection	Recruitment sites	Sample size	Seroprevalence
1988	drug treatment	243	0.4%
1989	drug treatment	282	3%
1990	drug treatment	204	3%
1991	drug treatment	187	4%
1992	drug treatment	161	3%
1992	syringe exchange, outreach	190	4%

Drug treatment site data were collected as part of the Centers for Disease Control's nationwide blinded seroprevalence studies. Syringe-exchange and outreach site data were from voluntary participation in a research study.

Appendix:
HIV Cross-Sectional Seroprevalence Studies

4. Toronto

Years of data collection	Recruitment sites	Sample size	Seroprevalence
1988	drug treatment	177	0%
1989	drug treatment	202	2%
1989-90	outreach,* needle exchange	582	3.1%**
1991-92	outreach, needle exchange	342	3.3%**
1991-92	drug treatment	137	0.8%**
1992-93	outreach, needle exchange	342	2.8%**
1992-93	drug treatment	145	2.2%**

* "Outreach" here includes community social-service agencies and community health centres which could be identified separately.

** Excluding seropositive IDUs who also reported male-with-male-sex.

Needle-use practices among intravenous drug users in an area where needle purchase is legal

Donald A. Calsyn, Andrew J. Saxon, George Freeman* and Stephen Whittaker†

Needle-use practices of intravenous drug users (IVDUs) were examined in a region (Seattle, King County, Washington State, USA) where needle purchase is legal. IVDUs in treatment (n = 313) were administered extensive structured interviews concerning drug and injection equipment-use practices. Of the 80.2% reporting intravenous drug use in the previous year, 78.3% reported sharing needles. Of the 47.7% reporting intravenous use in the previous 30 days, only 40.5% shared needles, with 59.3% sharing with only one other person. Most needle-sharing partners were very well known (63%) or well known (17%) to the subjects. The most frequent method for obtaining needles was 'buying in a drug store', ranked first by 65% of the sample. Subjects whose primary source was 'buying in a drug store' shared equipment less frequently during drug-use events in the previous year (mean: 16.2%) than those with other primary sources (mean: 28.5%). Compared with findings from other regions where needle purchase and possession are illegal without a prescription, fewer subjects in the current investigation shared needles, and those who did shared with a smaller number of people. The apparent association between legalized injection equipment and reduced sharing of equipment among IVDUs should be further examined in longitudinal studies of needle-sharing before and after legalization is instituted.

AIDS 1991, 5:187–193

Keywords: Intravenous drug users, needle sharing, injection equipment.

Introduction

While the majority of the more than 100 000 cases of AIDS so far reported in the USA continues to occur among homosexual men [1], available evidence indicates a proportional decreasing incidence of HIV infection in this group at the same time that HIV incidence among intravenous drug users (IVDUs), their sexual partners, and their progeny appears to be rising [2]. One of the ongoing puzzles of the AIDS epidemic in IVDUs surrounds the uneven geographic distribution of HIV infection in the USA among this population, with an epicenter in New York City, gradually decreasing prevalence rates extending up and down the eastern seaboard from the epicenter, and apparently only small loci of infection in other major urban areas of the country [3]. Since HIV spreads between IVDUs primarily through sharing of injection equipment [4], regional differences in drug-injecting or equipment-sharing practices could plausibly explain some of the geographic variability of HIV prevalence in IVDUs.

For several reasons, Seattle (King County, Washington State) afforded an interesting setting in which to explore this notion. First, HIV has clearly established itself in this community. By December 1989, 1163 adult AIDS cases had been reported in the county, with 82% in homosexual men and 10% in homosexual men who are also IVDUs [5]. Estimates of HIV infection rates among homosexual men range from 25 to 35%, and have remained stable since 1985 with some evidence of slight decline in 1987 [5,6]. However, as of April 1990, AIDS cases in individuals with intravenous drug use as a sole risk factor comprised only 3% of the total, and HIV prevalence in this group is estimated at 2–3% based on seroprevalence studies conducted independently by the King County Department of Public Health of new admissions to drug-treatment programs [7]. This finding contrasts with New

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York and San Francisco where HIV infection and AIDS cases among IVDUs increased greatly 2–4 years after infection in the gay male community [8,9]. Finally, Washington State statutes predating the AIDS epidemic permit legal purchase of injection equipment from drug stores (pharmacies). Although a prescription is not required, pharmacists may refuse to sell injection equipment if they are not satisfied that the equipment will be used legitimately. Possession of injection equipment is illegal under drug paraphernalia laws; however, there is an unstated tolerance policy such that individuals are not arrested for possession of injection equipment. If such individuals are stopped by the police, the injection equipment is frequently confiscated or damaged. Thus possession of equipment leaves one subject to mild harassment but not arrest.

This study examines needle-sharing practices of in-treatment IVDUs in an area with legalized injection equipment and low HIV seroprevalence rates in order to investigate the hypothesis that availability of legal injection equipment is associated with reduced needle-sharing among IVDUs (and lessened HIV transmission).

Subjects and methods

Subjects

Three hundred and thirteen IVDUs receiving or seeking treatment served as subjects. Subjects were recruited from Evergreen Treatment Services (ETS), Seattle, a non-profit community-based methadone maintenance program (n = 146, 46.6%), and the Addiction Treatment Center (ATC) of the Veterans Affairs Medical Center, Seattle (n = 167, 53.4%). The ATC offers methadone maintenance, an intensive drug-free outpatient program, naltrexone therapy, and an inpatient program. Waiting lists for treatment during the study period were approximately 2 weeks at ETS and 2–8 weeks at the ATC. These two sites were chosen in order to sample a wide variety of IVDUs in treatment. Most of the women (95.5%) were recruited from ETS, and most of the primary stimulant abusers (95.2%) from the ATC. The ATC subjects were slightly older [mean: 39.3, standard deviation (s.d.) = 7.1 versus mean: 37.5, s.d. = 7.5, t = 2.1, $P < 0.05$] and more likely to be employed (33.7 versus 19.4%, $\chi^2 = 4.4$, $P < 0.05$) than ETS clients. There were no significant differences on variables of race, marital status, time of treatment, or number of different residences in the previous 5 years. Subjects volunteered to participate in an AIDS Prevention Project and informed written consent was obtained; 45% of the eligible clients in the ATC and 35% of the eligible clients at ETS volunteered to participate. To ascertain the representativeness of the sample in terms of participation in high-risk HIV transmission behaviors, counsellors in each program completed a 'Counsellor Rating of High-Risk Behaviors' form on all of their current clients at a point 6 months after the project had started. Counsellors did not know which of their clients were enrolled in the study. Counsellors estimated clients' frequency of intravenous drug use, needle-sharing practices, needle-cleaning practices and number of sexual partners for the previous year. 'Counsellor Ratings' were completed on 274 ETS clients and 103 ATC clients of whom 39.9% had volunteered to participate in the research. There were no significant differences between project volunteers and non-volunteers on any of the high-risk HIV-transmission measures identified above. Sample demographics are reported in Table 1. Another measure of sample representativeness was obtained by comparing the participants on the variables of race, gender and age to total clinic demographics for these variables. Comparisons were made separately for each site. The only significant difference found was that white ETS clients were slightly under-represented among the study participants (70.5 versus 80%, $z = 2.37$, $P < 0.05$). Subjects were enrolled in the project between January 1988 and January 1989. Street outreach efforts in Seattle were just beginning during this period, and the needle exchange had not yet been started.

Table 1. Sample demographics (n = 313).

	Mean	s.d.
Age	38.5	7.3
Education	12.8	2.2
Number of residences in last 5 years	4.6	4.3
	f	%
Sex		
Male	225	71.9
Female	88	28.1
Race		
White	215	73.4
Black	76	24.3
Hispanic	10	3.2
Other	12	3.8
Primary drug of abuse		
Opiates	230	73.4
Cocaine	36	11.5
Other	47	15.1
Marital status		
Never married	82	26.2
Married	65	28.4
Divorced/separated/widowed	166	53.0
Employment status		
Employed	89	28.4
Not employed	224	71.6
Recruitment source		
Methadone maintenance	229	73.1
Drug-free outpatient	27	8.6
Inpatient	57	18.3
Months in current treatment		
<7 months	163	52.1
7–24 months	72	23.0
>24 months	78	24.9

Procedures

Subjects were assessed via a structured interview in the following areas: demographics, knowledge of AIDS, at-

titudes about AIDS, drug use, needle-use practices, and sexual behaviors. As part of the project, subjects were offered optional HIV-antibody testing [by enzyme-linked immunoabsorbent assay (ELISA) with Western blot confirmation of positives]. Before the start of the study HIV-antibody testing was not available through the treatment programs. Clients wishing to be tested had to make two or more trips to a county health department alternative test site a few miles from the treatment programs. Questions for the interview were adopted from instruments utilized by Ginzberg *et al.* [10], Diclemente *et al.* [11], Friedland *et al.* [12], T.R. Reed (personal communication, 1987), and J.A. Newmeyer and J.K. Watters (personal communication, 1987). In order to encourage accurate reporting of drug-use practices, research interviewers remained totally independent of the clinical staff who did not have access to any research data. Addicts' self-reports of such activities are generally considered reliable when no consequences are attached [13,14]. This report focuses on the needle-use and -obtainment practices of the sample. Questions used in the analyses reported below are listed in Table 2. The data analysis was designed to identify drug- and needle-use practice patterns for the sample and examine differential needle-sharing patterns as a function of where needles are obtained and where drug use occurs.

To facilitate data analysis, the sample was first divided into two groups for both the previous 1-year and the previous 30-day time frames: (1) non-users of intravenous drugs, and (2) users of intravenous drugs. This distinction permitted the elimination of non-users of intravenous drugs in a given time period from examination of needle-sharing patterns for that period, since they would not have had the opportunity or necessity to share needles during that specific interval. This maneuver was necessary with this study population since many subjects had been stable in treatment for long periods at study entry. The groups who did use intravenous drugs during each time span were then further subdivided into two additional groups: (1) needle-sharers and (2) non-sharers. Descriptive statistics are reported. Subjects using intravenous drugs were also divided into groups based on the way they obtained needles. Those who ranked 'buy in a drug store' first (n = 116) were compared with those ranking 'on the street', 'borrow', 'from a friend', or 'from a dealer' first (n = 63). Subjects using intravenous drugs were also divided into those using drugs in their own home more than 50% of the time (n = 193) and those who used in their own home less than 50% of the time (n = 69). These groups were compared on number of needle-sharing partners and percentage of drug-use events in which injection equipment is shared using the Mann–Whitney U-test.

Results

The percentages of the sample using intravenous drugs and sharing needles in the previous year are presented in Fig. 1. Figure 1 also displays the number of different people with whom IVDUs had shared in the previous year. Intravenous drug use was reported in the previous year by 263 subjects (84% of the total sample). Of those using intravenous drugs in the previous year, 206 (78%) reported sharing drug-injection equipment at least once. Of these, 62 (30.1%) had shared with only one other person who was well known to them, usually a sexual or frequent drug-using partner. Only 21 (7% of the total sample) had shared with more than 10 people in the previous year. Figure 2 contains similar information for the previous 30 days. Intravenous drug use was reported by 143 (46% of the total sample). Only 59 (19% of the total sample) had shared injection equipment in the previous 30 days, which represents 40.5% of those using intravenous drugs during that period. Among subjects who had shared in the previous 30 days, only 24 (41%) had shared with more than one person. Figure 3 reports on the familiarity of needle-sharing partners in the previous year. Most (63%) were very well known to the subjects, with very few partners (6%) not being known at all.

Each IVDU ranked the three most frequent methods of obtaining needles during the previous year. The question was open-ended. Figure 4 presents the percentage of subjects who ranked various methods first. 'Buying in a drug store' was ranked first the most often by a large margin. Subjects who ranked 'buying in a drug store' first shared equipment less frequently during drug-use events in the previous year [mean: 16.2%, mean rank (MR) 82.4, median 5.0%] and shared with fewer people (mean: 4.7, MR: 106.6, median: 2.0) than did subjects ranking 'borrowed', 'from a friend', 'from a dealer', or 'on the street' first (mean: 30.6%, MR: 105.6, median: 14.0%, $U = 2734.5$, $P < 0.01$; mean: 6.8, MR: 125.2, median: 3.0, $U = 4528.5$, $P < 0.05$).

Each subject also estimated the percentage of time he or she used intravenous drugs in various places during the previous year. Figure 5 depicts the mean percentages for the sample. Overwhelmingly, drug use occurred most typically for these subjects in their own homes. The subjects used intravenous drugs in public places on average only 20.4% of the time. Subjects who used intravenous drugs in their own homes more than 50% of the time had shared with fewer people over the previous year (mean: 2.6, MR: 116.0, median: 1.0) than subjects who used drugs in their own homes less than 50% of the time (mean: 8.4, MR: 155.5, median: 3.0, $U = 5722.8$, $P < 0.01$).

To ensure that trends noted above did not derive solely from having a significant subsample of subjects who had received treatment for a substantial time, the analyses were repeated using only subjects who had been in treatment 6 months or less (n = 163). Most (n = 157, 96.3%) had used intravenous drugs in the previous year. Of those using drugs, 132 (84.1%) had shared needles during the previous year. Of those sharing, 31 (23.5%) had shared with only one other person, and 18 (11.5%) had shared with more than 10 people. Sharers reported knowing very well 58.5% of the people with whom they had shared injection equipment. 'Buying in a drug store' was ranked

Table 2. Drug-use practice questions in the initial assessment interview.

Item No.	Question
C5	I am going to read a list of substances* which are often abused. For each one tell me the number of days you used in the past 30 days.
	Alcohol — Alcohol to intoxication
	Heroin IV — Other opiates IV
	Heroin/other opiates non-IV — Illicit methadone
	Barbiturate — Other sedatives/hypnotics
	Cocaine IV — Smoking cocaine
	Intranasal cocaine — Amphetamines IV
	Amphetamines non-IV — Cannabis
	Hallucinogens — Inhalants
	Ritalin IV — Other IV
	Speedball (if cocaine and heroin both mentioned)
C9a	Overall, how many different people you have shared an outfit (works, rig) with over the past year?
C9b	How many in the past 30 days?
C10	If you shared an outfit in the past year how many people did you know
	Very well
	Not very well
	Not at all
C19	In the past year what percentage of the time did you get a new needle in a sterile wrapper?
C20	In the past year what percentage of the time did you reuse a needle that you knew only you had used?
	Percentage of sharing per drug use event = 100 − (C19 + C20)†.
C22	In the past year how did you obtain the needles that you used? Rank the three most common methods.
C23	We want to know about the different places where you have used drugs.
	For each place listed on this card estimate the percentage of time in the past year you used drugs there:
	Your own place
	A friend's place
	Shooting gallery
	A dealer's residence
	Car
	Public restrooms
	Other places (please describe)

IV, intravenous. Subjects reporting no use of IV drugs in the past year were coded as 'non-applicable' for questions C22 and C23, thus forming the 'IV use' and 'no IV use' groups for the prior year. *Street names for drugs were used when asking the question to facilitate understanding. †Interviewers were trained to ensure that the answers to C19 and C20 reflected this relationship.

as the most frequent method of obtaining needles by 89 (65.0%). Mean percentage frequency of using drugs in subjects' own homes was 55.0% and injecting in public places 26.2%. Subjects ranking 'buying in a drug store' first had shared injection equipment for a smaller percentage of drug-use events (mean: 15.2%, MR: 49.2, median: 5.0%) than those ranking 'from the street', 'borrowed', 'from a friend' or 'from a dealer' first as the most frequent method of obtaining needles (mean: 34.5%, MR: 70.3, median: 10.0%, U = 934.0, $P < 0.001$). Subjects injecting drugs most of the time in their own residences had shared needles with fewer people (mean: 3.2, MR: 68.4, median: 2.0) than those using drugs in their own residences less than 50% of the time (mean: 9.6, MR: 90.6, median: 3.0, U = 2202, $P < 0.01$). Although those in treatment 6 months or less engaged in more high-risk HIV-transmission behaviors than the sample as a whole, the trends in the data regarding needle sharing, needle obtainment and places of drug use are very similar, and thus cannot be attributed to the inclusion of a significant

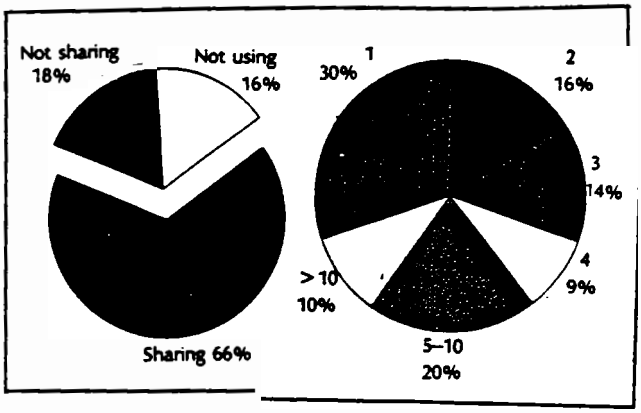

Fig. 1. Left: intravenous drug use and per cent sharing needles for the whole sample for the previous year. Right: number of needle-sharing partners of those sharing needles in the previous year.

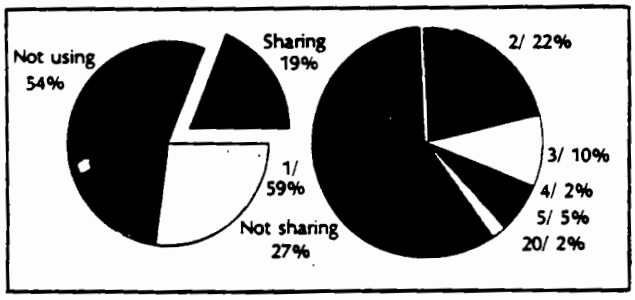

Fig. 2. Left: intravenous drug use and percentage sharing needles for the whole sample for the previous 30 days. Right: number of needle-sharing partners of those sharing needles in the previous 30 days.

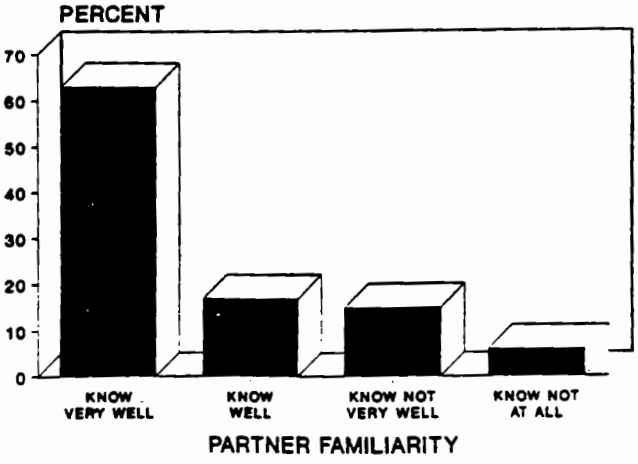

Fig. 3. Familiarity of needle-sharing partners for those sharing needles during the previous year.

subsample of subjects who had been in treatment a long time.

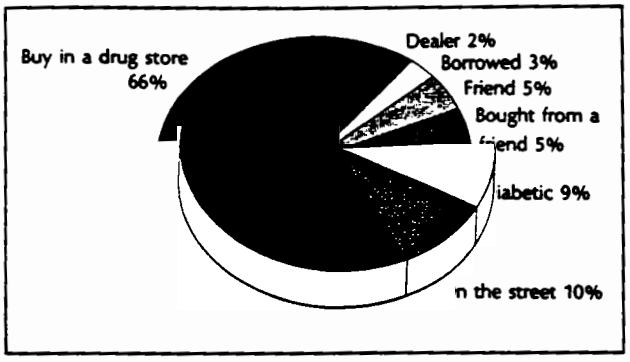

Fig. 4. Most frequent methods of obtaining needles for those using intravenous drugs during the previous year.

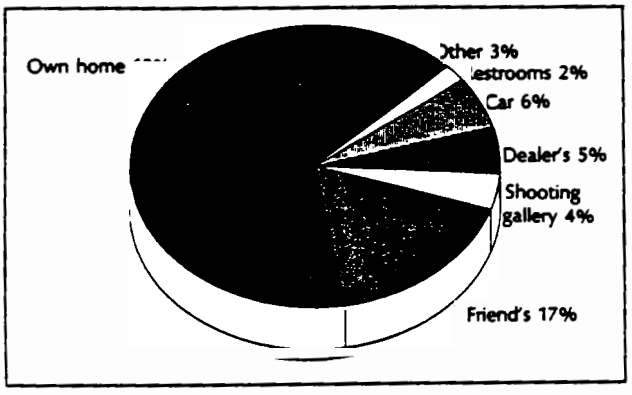

Fig. 5. Most frequent places in which intravenous drug use occurred during the previous year.

Of 250 subjects tested, only three (1.2%) were HIV-positive. Those agreeing to testing were slightly older (mean: 38.9, s.d. = 7.4) than those not agreeing to testing (mean: 36.5, s.d. = 6.5, $t = 2.4$, $P < 0.05$). Those having and not having the antibody test performed did not differ on any of the following demographic variables: race, marital status, employment status, recruitment source, and number of different residences in the previous 5 years. Disturbingly, those not agreeing to testing reported more needle-sharing partners in the previous year (mean: 7.6, MR: 155.1, median: 3.0) and a greater percentage of sharing events when using intravenous drugs (mean: 28.1%, MR: 113.9, median: 15.0%) than those agreeing to testing (mean: 4.1, MR: 125.1, median: 2.0, $U = 4447.5$, $P < 0.01$; mean 19.9%, MR: 93.9, median: 5.0%, $U = 2706.0$, $P < 0.05$). The seroprevalence rate of 1.2% therefore might be a slight underestimate; however, it is difficult to imagine that the rate would be higher than the 3% reported independently by other investigators surveying new drug treatment admissions in Seattle [7]. Because of the very small number of HIV-positive subjects, no analysis of demographic or behavioral differences between HIV-positive and HIV-negative subjects was performed.

Discussion

The most striking finding of the current investigation is a partial confirmation of our hypothesis: subjects who prefer to obtain sterile injection equipment from drug stores appear less likely to share this equipment. Further support for our hypothesis demands comparison of the needle-use practices reported here to findings described in the literature for other regions of the country, hardly a straightforward task. Samples on which data were collected often differ on demographics, treatment status and recruitment techniques. Questions asked concerning needle-use practices vary in terms of time periods assessed, specific practices covered, and method of obtaining the data. With these limitations in mind, we contrasted our findings with others in the literature. The research most similar to that presented here was conducted by Chaisson *et al.* [15] in San Francisco. They conducted structured interviews with 633 IVDUs in methadone-maintenance treatment programs during 1986–1987. Of those using intravenous drugs in the previous year, 98% had shared needles compared with the 78% we found; 19% had shared needles with more than 10 people compared with 8% in our sample. Schoenbaum *et al.* [16] conducted structured interviews regarding high-risk HIV-transmission behaviors with 452 patients attending methadone-maintenance treatment in the Bronx, New York. The interviews addressed drug-use histories covering 2-year periods from 1978 to 1986. Ninety-seven per cent of the patients admitted to sharing injection equipment. Those sharing equipment were asked to estimate percentage of time they shared with close friends or relatives versus strangers or acquaintances; 49% reported sharing only with close friends or relatives, while 37% reported sharing with strangers or acquaintances over 25% of the time. This compares with the present study, in which only 21% of the individuals shared with were identified as not being well known or very well known to the subject. Marmor *et al.* [17] conducted structured interviews with 308 IVDUs being provided either inpatient detoxification or outpatient methadone maintenance in two hospital-based programs in New York City. They found 'use of shooting galleries' and 'number of drug injections' to be the best predictors of HIV status. They report that 40% of their sample had not used shooting galleries in the previous 2 years and 15% of the sample had used them more than 33% of the time. When data for the current sample are calculated in a similar fashion, 76.3% report no use of shooting galleries in the previous year and only 3.1% used them more than 33% of the time. In a less comparable sample, Hopkins [18] conducted semistructured interviews with 178 'on-the-street' IVDUs in New York City in 1987. He found that 53% usually or always shared needles with an average number of 10–25 people; 61% thought that most IVDUs got their needles from the street or shooting galleries. This compares with 65.6% of our sample who report buying in a drug store as the primary method of obtaining needles.

In general, the disparities between our findings and those in other locales indicate that, indeed, needle sharing

among IVDUs occurs less frequently in Seattle. This trend is maintained even when data only from subjects in our sample in treatment 6 months or less are compared with findings from other regions. This conclusion applies especially to IVDUs who purchase sterile injection equipment in drug stores, but also to those who do not, perhaps because drug-store purchasers may obtain and disseminate more sterile equipment than they require for personal use. In fact, the portrait of Seattle drug-use patterns that emerges from our investigation — in which most drug users obtain their drugs and injection equipment and then go home to use them alone or with a close friend or sexual partner only — differs markedly from others described previously [19]. Based on our data alone, neither the low rates of needle sharing nor the low HIV prevalence among IVDUs in the area can be attributed conclusively to the legal status of injection equipment. However, it offers a highly plausible explanation for these phenomena. Work done in New York City demonstrated that IVDUs who share equipment with only a select group of friends have less relative risk of HIV infection than those who share with casual acquaintances or strangers and lends additional support to this explanation [16]. Further support is provided by Nelson *et al.* [20] who reported a lower HIV infection rate among diabetic IVDUs compared with non-diabetic IVDUs in Baltimore where the diabetics had ready legal access to needles and the non-diabetics did not. Similarly Donoghoe *et al.* [21] reported a reduction in needle sharing among IVDUs obtaining needles legally from syringe exchanges in England and Scotland compared with IVDUs not frequenting the exchange schemes. Stimson [22], in a literature review of the effectiveness of syringe exchange programs, indicated reduction in high-risk drug-injection behaviors by clients frequenting exchange programs in The Netherlands, the UK, Sweden and Australia. Some of these programs included pharmacies in the syringe distribution. Stimson also cites suggestive evidence from Austria that making syringes readily available in pharmacies without restrictions in mid-1985 contributed to decreased incidence of HIV infection.

A different potential explanation for the low rates of needle sharing and low HIV seroprevalence in our study may relate to the protective effect of treatment on our subjects. Accruing evidence shows that methadone-maintenance treatment is associated with lower HIV infection rates [23], but the National Institute on Drug Abuse (NIDA) estimates that only 15% of IVDUs nationwide are in treatment at any one time [24]. Several lines of reasoning, however, argue against our subjects' in-treatment status as a dominant explanation for our findings. First, many of the studies previously cited [15–17], in which subjects exhibited greater risk behavior and greater HIV seroprevalence than did our subjects, also examined in-treatment samples. Second, as described above, our subsample newly admitted to treatment in the previous 6 months did not differ markedly from our entire sample. Finally, information obtained by Kleyn [25] from 102 out-of-treatment Seattle IVDUs interviewed by street outreach workers in 1988 indicated that 87.3% had shared injection equipment in the previous 6 months, and 18.6% had shared with more than 10 people. The majority (56.9%) reported injecting drugs in their own residence two-thirds to all of the time. Unfortunately, needle obtainment practices were not queried. The behavior of this out-of-treatment sample in Seattle appears to occupy a midpoint between the lower risk of our in-treatment group and in-treatment populations surveyed in higher seroprevalence locales [15–17]. Thus treatment status remains an insufficient explanation for the needle-use behaviors described in our setting.

Perhaps, instead, generally easier accessibility to methadone treatment in Seattle, as denoted by relatively short waiting lists compared with other areas, accounts for our findings. Estimates of the total number of IVDUs in the Seattle area hover at 10 000–12 000, but these figures represent extrapolations based on numbers in treatment (A.F. Wrede, Seattle–King County Department of Public Health, personal communication, 1990), making it hard to compare the percentage of IVDUs in treatment here with that in other locations. However, in March 1990 our research group created new publicly funded treatment slots opened at the rate of five per week to a total of 180 as part of a NIDA-funded demonstration grant examining various aspects of treatment effectiveness. Only people not currently in treatment were eligible for these slots. Within a week a 2-month waiting list developed. As of 1 October 1990 the waiting list was 4 weeks long. These data suggest that demand for publicly funded treatment outstrips supply in Seattle as elsewhere in the country, leaving better availability of methadone treatment a less-than-convincing explanation for our observations.

An alternative explanation for the findings of lower needle sharing and lower HIV seroprevalence in Seattle may be that media attention to AIDS had already produced a change in the Seattle drug-use scene before our survey. However, the time period surveyed predates street outreach efforts, bleach-and-teach campaigns and the needle exchange.

In conclusion, the legal status of injection equipment remains a salient explanation for the low HIV seroprevalence. Certainly, these issues mandate further thorough (and prompt) research, but this preliminary investigation offers some data for communities which are considering legalization of injection equipment as a viable mechanism for AIDS prevention.

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AIDS and Legal Access to Sterile Drug Injection Equipment

By DON C. DES JARLAIS and SAMUEL R. FRIEDMAN

ABSTRACT: Legal access to sterile injection equipment has been a primary strategy for preventing the acquired immune deficiency syndrome (AIDS) among persons who inject illicit drugs in almost all developed countries. This strategy has remained highly controversial in the United States, with only a small number of localities adopting it. This article reviews different techniques of providing legal access—over-the-counter sales and syringe exchanges—research design issues relevant to evaluating legal-access programs, and the findings from the large number of studies conducted to date. The findings are consistent in showing no increase in illicit drug use related to legal access and decreases in AIDS risk behavior related to legal-access programs. The design of legal-access programs for maximal impact and the ultimate effect of the decreases in AIDS risk behavior on transmission of the human immunodeficiency virus (HIV) remain to be determined.

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THE sharing of equipment while injecting illicit drugs is becoming an increasingly important part of the epidemic of the human immunodeficiency virus (HIV) and the acquired immune deficiency syndrome (AIDS) throughout the world. In the United States, almost one-third of the recently diagnosed cases of AIDS were related to the sharing of drug injection equipment, including cases among injecting drug users (IDUs) themselves, as well as among their heterosexual partners and their children.[1] In Europe, the sharing of drug injection equipment has become the single most common mode of transmission among recent cases.[2] HIV infection among IDUs has also emerged as a major public-health problem in Asia—Thailand, Myanmar, and northern India—and in South America, specifically in Argentina and Brazil.[3]

In almost all countries where HIV infection among IDUs has emerged as a potential problem, the primary public-health approach to preventing further transmission of the virus among IDUs has been providing legal access to sterile injection equipment. The rationale for this strategy is relatively simple: since it is the sharing of drug injection equipment that actually transmits HIV, reducing multiperson use of the equipment can reduce the transmission of the virus. This approach separates the specific issue of AIDS prevention from the related issue of generally reducing or eliminating injection of illicit drugs, a much more difficult problem.

In this article, we will first describe the different types of legal-access programs and the opposition to these programs. Since all of the research conducted to date on legal-access programs has been criticized on methodological grounds, we first outline what would be needed to conduct a randomized clinical trial of legal-access programs. Such trials are the standard method for demonstrating the potential effectiveness of a public-health intervention, but in this case such a trial would require an extremely expensive, time-consuming, and logistically difficult research study in order to evaluate the effectiveness of legal-access programs. The main section of the article is a review of the existing studies of legal-access programs. The final section of the article discusses the findings that emerge from the existing research and possible reasons why these findings have rarely been incorporated into public policy in the United States.

TYPES OF LEGAL ACCESS

Two major approaches to providing legal access to sterile injection equipment have emerged as AIDS prevention strategies: over-the-counter sales at standard prices, which tend to be very low, and syringe-exchange programs. Both are most effective in

1. *HIV/AIDS Surveillance, Year-End Edition: U.S. AIDS Cases Reported through December 1990* (Atlanta, GA: Centers for Disease Control, 1991).

2. WHO-EC Collaborating Center on AIDS, *AIDS Surveillance in Europe: Quarterly Report No. 27* (Geneva: World Health Organization, 1990).

3. For a recent review of the epidemiology of AIDS and HIV among drug injectors, see Samuel R. Friedman and Don C. Des Jarlais, "HIV among Drug Injectors: The Epidemic and the Response," *AIDS Care*, 3(3):237-48 (1991).

the absence of "narcotics paraphernalia" laws that criminalize the possession of equipment for the injection of illicit drugs.

Over-the-counter sales and syringe-exchange programs both provide legal access to sterile injection equipment, but there are corresponding advantages and disadvantages to each as AIDS prevention strategies. Over-the-counter sales utilize the existing network of pharmacies (and in some instances grocery stores) within a geographic area, so that there are minimal start-up costs to implementing this strategy. Pharmacies also tend to be widely dispersed throughout most communities and to be open for relatively long hours, so that coverage—an essential practical aspect of the legal availability of sterile injection equipment—will be relatively thorough. Pharmacies in urban areas tend to be more anonymous than syringe exchanges, so that IDUs can obtain the injection equipment with less chance that they will become identified as illicit drug users. In small towns, on the other hand, syringe exchange by outreach workers —that is, not at a fixed site—may be necessary to protect the confidentiality of the IDUs.

In contrast to the simple over-the-counter sale of injection equipment, syringe-exchange programs do not charge for injection equipment but rather trade new sterile injection equipment for used equipment. Syringe exchanges are usually staffed by persons whose primary responsibility is to provide the exchange service (and related other services) and thus have moderate staffing and location expenses. Syringe exchanges are typically located in high-drug-use neighborhoods and normally try to be open during the hours when IDUs are likely to be in need of injection equipment. The primary advantages of syringe exchanges over simple over-the-counter sales are that the IDUs will interact with the staff on the exchange and that the exchange will be able to properly dispose of the potentially HIV-contaminated used injection equipment. The interaction with staff facilitates (1) AIDS education, including counseling about heterosexual and perinatal transmission of HIV; (2) distribution of condoms and equipment in addition to syringes needed for sterile injection—cotton, an alcohol swab, and a cooker; and (3) distribution of bleach for disinfecting injection equipment if not enough is available. The interaction with staff may also permit some on-site health care services, such as tuberculosis testing, and referral to other needed medical and social services, particularly to drug abuse treatment.

While over-the-counter sales and syringe exchanges should be thought of as two different methods of providing legal access to drug injection equipment, some programs are hybrids of these two methods. The syringe exchanges in Amsterdam, for example, will sell, at low cost, sterile needles and syringes to IDUs who come to the exchange without used equipment to trade in. Some of the syringe exchanges in Australia and New Zealand sell sterile injection equipment to IDUs but will give a discount if the IDU trades in used injection equipment. Most countries that provide legal access to drug in-

jection equipment utilize both over-the-counter sales and syringe exchanges. Over-the-counter sales are typically done on a nationwide basis, so that all IDUs in the country will have some legal access to injection equipment, and syringe exchanges typically concentrate on the high-drug-use areas of the major cities, where the large numbers of IDUs can justify the costs of the extra services, and the need for safe disposal of potentially contaminated injection equipment is likely to be greater.

OPPOSITION TO LEGAL ACCESS

Although legal access to sterile injection equipment has been adopted as a national AIDS prevention strategy in almost all other countries with problems of HIV infection among IDUs, the policy of providing free needles to drug users has been quite controversial in the United States. The National Academy of Sciences has repeatedly recommended large-scale research on "safer injection" programs,[4] including legal access to sterile injection equipment, and the United States National Commission on AIDS recently recommended removing the legal restrictions on access to drug injection equipment.[5] U.S. opponents of legal access to drug injection equipment have argued that the programs would not work to reduce HIV transmission, would "encourage" or "condone" illicit drug use, would "send the wrong message" and would "undermine our war on drugs."[6] Opponents have accused those who advocated even limited syringe-exchange programs of "genocide."[7]

It is important to note that the opposition to legal access to drug injection equipment should not be seen as a traditional liberal-conservative difference of opinion. Opposition to legal access comes both from extreme conservatives, such as Senator Jesse Helms of North Carolina, and from traditional liberals, such as Congressman Charles Rangel of New York. In Western Europe, the greatest restrictions on legal access to drug injection equipment are in Sweden, where the government is controlled by the Social Democratic

4. Institute of Medicine and National Academy of Sciences, *Confronting AIDS: Directions for Public Health, Health Care, and Research* (Washington, DC: National Academy Press, 1986); idem, *Confronting AIDS: Update 1988* (Washington, DC: National Academy Press, 1988); Heather G. Miller, Charles F. Turner, and Lincoln E. Moses, eds., *AIDS: The Second Decade* (Washington, DC: National Academy Press, 1990); Charles F. Turner, Heather G. Miller, and Lincoln E. Moses, eds., *AIDS: Sexual Behavior and Intravenous Drug Use* (Washington, DC: National Academy Press, 1989).

5. National Commission on AIDS, *Report: The Twin Epidemics of Substance Use and HIV* (Washington, DC: Government Printing Office, 1991), pp. 10-11.

6. Herbert D. Kleber, "Exchanges Increase Risk," *USA Today*, 22 Aug. 1991; Mitchell S. Rosenthal, "Giving Away Needles Won't Stop AIDS," *New York Times*, 17 Aug. 1991.

7. See these histories of the New York City Health Department syringe-exchange program: Stephen C. Joseph and Don C. Des Jarlais, "Needle and Syringe Exchange as a Method of AIDS Epidemic Control," *AIDS Updates*, 2(5):1-8 (Sept.-Oct. 1989); Warwick Anderson, "The New York Needle Trial: The Politics of Public Health in the Age of AIDS," *American Journal of Public Health*, in press.

Party, while in the United Kingdom, the Conservative Party under Margaret Thatcher implemented a nationwide program of syringe exchanges in addition to the over-the-counter sales that were permitted prior to the AIDS epidemic.

In the United States, opposition to legal access to drug injection equipment has gone beyond scientific and media debates and has been incorporated into law. The U.S. laws requiring prescriptions for the sale of injection equipment and the laws criminalizing the mere possession of paraphernalia for the injection of illicit drugs are all state laws and all were enacted before the AIDS epidemic. At the federal level, however, an amendment to the 1989 appropriations bill for the Department of Health and Human Services forbade any federal support for syringe-exchange programs unless the secretary of health and human services certified that such programs were both safe and effective.[8] The actual policy of the federal government to date has been not only not to fund any research on syringe exchanges.[9] The federal government has thus placed itself in something of a catch-22 position regarding support of syringe-exchange programs. It cannot support syringe exchanges until there is sufficient evidence that these programs are safe and effective, but as long as it refuses to fund research in the area, it is unlikely that there will be enough data to make a rigorous scientific determination of safety and efficacy.

A CLINICAL TRIAL RESEARCH DESIGN FOR EVALUATING LEGAL ACCESS TO DRUG INJECTION EQUIPMENT

Designing a rigorous evaluation of the effectiveness of legal access to drug injection equipment as a method of reducing transmission of HIV is not a very difficult task. Both the National Academy of Sciences and the Department of Health and Human Services have considered what would be involved in such a study. First, it is clear that a classic double-blind clinical trial—in which neither the researcher nor the subjects are aware of who is receiving the true experimental treatment and who is receiving a placebo control—would be neither practical nor ethical in this case. The psychological influences resulting from changes in legal

8. The amendment was adopted in response to an amendment sponsored by Senator Jesse Helms that would have banned federal support for both syringe-exchange programs and bleach-distribution programs unless the President certified them to be safe and effective. The substitute amendment thus provided for continued federal support of bleach-distribution programs while providing an opportunity for the Senate to vote "against drug abuse." For a more detailed discussion of this issue, see Don C. Des Jarlais and William Bailey, "Almost Banning Bleach" (Paper delivered at the conference of the American Psychological Association, Boston, Aug. 1990).

9. In the absence of any federal support for research on the topic, the American Foundation for AIDS Research (AmFAR) has become the leading source of funding for research on syringe exchanges in the United States. AmFAR supports research on the syringe-exchange programs in Portland, OR; Tacoma, WA; and San Francisco, CA.

access to injection equipment may themselves be an important part of successful AIDS prevention programs for IDUs. Likewise, the enthusiasm and commitment of many workers in syringe-exchange programs may have important effects toward increasing a generalized concern about health for the IDUs. Moreover, knowledge that government officials are willing to change laws and implement new programs to protect the health of IDUs may also lead the IDUs to overcome mistrust of public officials and hence become more willing to utilize other services such as drug abuse treatment programs.

The true starting point for a scientifically rigorous evaluation would be to use communities—not individual IDUs—as the unit of analysis. Self-selection effects and possible "herd immunity" effects would make it very difficult to evaluate legal access to injection equipment by comparing seroconversions among IDUs within a single community. Moreover, the fact that AIDS risk reduction among IDUs appears to be a social process—involving peer modeling and new social norms rather than simple individual decisions[10]—also argues for using communities as the unit of analysis.

A clinical trial evaluation of legal access to injection equipment would probably require 30 to 60 communities in the experimental-treatment conditions—syringe exchange only, over-the-counter sales only, or both—and would probably also require 20 to 30 communities in a control condition, that is, with no legal access to injection equipment. Great care would need to be taken to ensure proper implementation of the experimental and control conditions. The experimental conditions would probably also require repeal or suspension of narcotics paraphernalia laws. The legal-access condition communities would have to ensure that pharmacists would be willing to sell equipment to IDUs and that syringe exchanges would be conveniently located for IDUs. The control communities would need some active enforcement of laws that prohibited distribution of injection equipment to illicit drug users and criminalized the possession of such equipment. The actual extent of the enforcement of these laws would have to be carefully assessed.[11]

In addition, a real clinical trial would, of course, include random assignment of experimental and control conditions to the participating communities.

Actual transmission of HIV among IDUs would be the primary outcome measure in such a study. HIV seroconversion rates can vary greatly within the same community over

10. Samuel R. Friedman and Don C. Des Jarlais, "AIDS and Self-Organization among Intravenous Drug Users," *International Journal of the Addictions*, 22(3):201-19 (1987); Samuel R. Friedman et al., "Social Intervention against AIDS among Injecting Drug Users," *British Journal of Addictions*, in press.

11. There are some difficulties in enforcing these laws, as law enforcement officials may not give them high priority compared to other criminal offenses, and trials of underground syringe-exchange staff in Massachusetts, New York, and California all failed to produce convictions. On the other hand, an active police presence outside a legal fixed-site syringe exchange may serve to discourage drug users from using the program.

short time periods,[12] so that it would be necessary to monitor these communities for relatively long time periods, at least five years and perhaps much longer. Both prospective cohort studies—those that follow the same individuals over time—and serial cross-sectional studies—those that assess different individuals at regular intervals—would probably be needed to follow HIV transmission in the communities under study. Cohort studies generally provide the most accurate counting of HIV seroconversions, but participation in a cohort study may in itself have a strong influence on HIV risk behaviors, so that such studies would not be sufficient by themselves. Because of the concern of opponents that legal access to injection equipment might encourage illicit drug injection, the study would also have to monitor the rates of injection among persons who were already injecting at the start of the study and the rates of initiation of new persons into illicit drug injecting.

Assuring confidentiality for the research subjects would be a critical issue in such a large study. Many of the studies that will be discussed later found it necessary to forgo collecting any identifying information from the subjects in order to obtain participation of active drug injectors in the research. Lack of identifying information, however, makes it very difficult to follow subjects over time, so that a cohort study may not be able to collect enough outcome data for drawing conclusions.

From this brief description, it should be clear that even if the U.S. federal government should change its present policy and decide to support research in this area, it is very unlikely that a clinical trial research study will ever be conducted. Such a study would be quite expensive, costing in the tens of millions of dollars. The study would also be logistically complicated, with difficulties in equating subject-recruitment methods and in measuring or estimating numbers of new injectors. The study would also be extremely difficult from a political perspective. The controversial nature of legal-access programs in the United States tends to polarize community leaders around the topic, so that it is unlikely that a large number of communities could be found that would be willing to accept random assignment to either the experimental or the control conditions.[13]

It is even less likely that a clinical trial of legal access would be conducted outside of the United States. As will be discussed later in this article, the experience with legal access has typically led other countries to expand and attempt to improve their legal-access programs, rather than expend resources attempting to provide a scientifically definitive measurement of effectiveness. The evidence to date from other countries has led some researchers to conclude that legal access to injection equipment should be considered the present standard of

12. Friedman and Des Jarlais, "HIV among Drug Injectors"; Don C. Des Jarlais and Samuel R. Friedman, "HIV Infection among Persons Who Inject Illicit Drugs: Problems and Prospects," *Journal of the Acquired Immune Deficiency Syndromes*, 1(3):267-73 (1988).

13. Don C. Des Jarlais and Bruce Stephenson, "History, Ethics and Politics in AIDS Prevention Research," *American Journal of Public Health*, in press.

care and that it would be unethical to conduct research in which IDUs were denied legal access simply to comply with a research design.[14]

Given the low probability of a full-scale clinical trial of legal access, most research on this topic is likely to continue to rely upon the case-study approach. For legal-access programs in the United States, these are likely to be simple pre-post comparison case studies, where the frequencies of different AIDS risk behaviors and other measures are compared. Studies in Europe, Australia, and Asia are likely to be time-extended case studies, where factors associated with the utilization of legal access over extended time periods are central questions.

The rest of this article will review the research that has been conducted on legal access to drug injection equipment, using a modified case-history format. Length restrictions prohibit full descriptions of all of the studies, and for some studies only highlights of the research will be reviewed. The studies will be presented in approximate chronological order. Since there has been extensive international communication among researchers and practitioners in the area of preventing HIV infection among IDUs, with many of the studies building on previous work, reviewing the studies in chronological order provides some sense of how the field has developed over time.

NEW YORK

The earliest studies of HIV—then called either lymphadenopathy-associated virus (LAV) or human T-cell leukemia/lymphoma virus III (HTLV-III)—infection among IDUs were conducted in New York City and New Jersey.[15] These studies showed an unexpectedly high rate of exposure—approximately 50 percent—in both New York City and northern New Jersey. Studies of the reasons why IDUs had been sharing injection equipment indicated that sharing was firmly integrated in the drug injection subculture and that there were multiple reasons why equipment was shared. Major reasons included the limited availability of injection equipment and fear of arrest if caught by the police while carrying injection equipment.[16] The early New York studies also showed that the majority of IDUs in the city were already changing their behavior to reduce their risks of developing

14. Anderson, "New York Needle Trial."

15. Thomas J. Spira et al., "Prevalence of Antibody to Lymphadenopathy-Associated Virus among Drug-Detoxification Patients in New York" (letter), *New England Journal of Medicine*, 311(7):467-68 (Aug. 1984); Henry W. Cohen et al., "Behavioral Risk Factors for HTLV-III/LAV Seropositivity among Intravenous Drug Abusers" (Paper delivered at the First International Conference on AIDS, Atlanta, GA, Apr. 1985); Stanley H. Weiss et al., "Risk for HTLV-III Exposure and AIDS among Parenteral Drug Abusers in New Jersey" (Paper delivered at the First International Conference on AIDS, Atlanta, GA, Apr. 1985).

16. Don C. Des Jarlais, Samuel R. Friedman, and Donald Strug, "AIDS and Needle Sharing within the Intravenous Drug Use Subculture," in *The Social Dimensions of AIDS: Methods and Theory*, ed. D. Feldman and T. Johnson (New York: Praeger, 1986), pp. 111-25; Peter A. Selwyn et al., "Knowledge about AIDS and High-Risk Behavior among Intravenous Drug Abusers in New York City," *AIDS*, 1(4):247-54 (Dec. 1987).

AIDS.[17] In particular, IDUs in New York had increased their use of sterile injection equipment obtained on the illicit market.[18] (We should explain in passing that, just as drugs are sold in an illicit market, so, too, are needles and syringes. This injection equipment is usually diverted or stolen from legitimate medical sources. Moreover, the low cost of needles and syringes and the large market for standard medical uses of injection equipment make it virtually impossible for law enforcement efforts ever to shut off the supply of illicitly obtained injection equipment.) In summary, the New York City situation served both as a negative example of large-scale spread of HIV prior to prevention efforts and as a positive example of drug users' willingness to utilize sterile injection equipment as an AIDS prevention method.

AMSTERDAM

Legal access to sterile injection equipment and a formal syringe-exchange program actually existed in Amsterdam even before any concern about AIDS among IDUs. There had been no laws criminalizing the possession of injection equipment or requiring prescriptions for the sale of injection equipment. The absence of a prescription requirement, however, did not mean that individual pharmacists were obligated to sell injection equipment to persons suspected of injecting illicit drugs. Indeed, in 1984, a pharmacy in central Amsterdam that had been a major source of injection equipment changed its policy and would no longer sell to those believed to be illicit IDUs. The MDHG, an organization of current IDUs, former IDUs, and concerned professionals, then proposed a syringe exchange in order to reduce the transmission of hepatitis B among IDUs in the city. This exchange was then initiated on a modest scale, with 25,000 syringes exchanged beginning in the fall of 1984 and 100,000 exchanged in 1985.

During 1985, when the HIV antibody test became available, testing was conducted on historically collected serum samples from IDUs in Amsterdam, and it became clear that HIV was already well established among IDUs in the city. A massive expansion of the syringe exchange was then undertaken, with 300,000 syringes exchanged in 1986, 500,000 in 1987, 600,000 in 1988, and up to the current level of approximately 700,000 per year for an estimated 3000 IDUs in the city.

Research was also undertaken to monitor the further spread of HIV in Amsterdam, including determination of risk factors associated with HIV exposure among IDUs. The studies have shown an increase in the reported use of the syringe exchange commensurate with the official expansion, yet without an increase in drug injection among persons already injecting[19] or an increase in the

17. Friedman and Des Jarlais, "AIDS and Self-Organization"; Selwyn et al., "Knowledge about AIDS."

18. Don C. Des Jarlais, Samuel R. Friedman, and William Hopkins, "Risk Reduction for the Acquired Immunodeficiency Syndrome among Intravenous Drug Users," *Annals of Internal Medicine*, 103(5):755-59 (Nov. 1985).

19. Johanna A. R. van den Hoek, Harry H.J.A. van Haastrecht, and Roel A. Coutinho,

overall number of persons injecting drugs in the city.[20] The mean age of IDUs in the city has increased moderately since the initial expansion of the syringe-exchange program, again indicating the absence of any influx of new IDUs. Although not reduced to zero, there have been substantial declines in both the hepatitis B incidence rates (from 48 per 10,000 in 1984 to 8.6 per 10,000 in 1989) and the HIV seroconversion rates (from 10.7 per 100 person-years in 1986 to 5.5 per 100 person-years in 1989) among IDUs in Amsterdam, along with a stabilization of the HIV seroprevalence rate.[21]

In Amsterdam there is a large-scale drug abuse treatment system, offering both drug-free and methadone maintenance treatment, intensive AIDS education efforts for IDUs, as well as both over-the-counter sales of injection equipment and the large-scale syringe exchange.[22] It is therefore difficult to attribute the reduction in HIV and hepatitis B seroconversions to any single specific component of the AIDS prevention program for IDUs in the city. The most recent study of HIV seroconverters in Amsterdam does not show a protective effect from using the syringe exchange as compared to obtaining sterile injection equipment from other sources—primarily from pharmacies.[23] The one positive benefit that can be most directly associated with the large-scale expansion of the syringe exchange is the reduction in the number of discarded needles and syringes found in public areas of the city.[24]

Other Dutch cities have also implemented syringe-exchange programs; providing syringe exchanges is essentially a national policy for preventing HIV transmission among IDUs in the country. Studies from Rotterdam indicate that the sharing of injection equipment has greatly declined, with an episode of sharing now considered as the exception to the new social rule among injectors, which now disapproves of sharing.[25]

"Risk Reduction among Intravenous Drug Users in Amsterdam under the Influence of AIDS," *American Journal of Public Health*, 79:1355-57 (1989).

20. Ernst C. Buning, "The Role of the Needle Exchange Project in Preventing HIV Infection among Drug Users in Amsterdam" (Paper delivered at the "What Works Conference: An International Perspective on Drug Abuse Treatment and Prevention Research," New York, Oct. 1989).

21. Harry J. A. van Haastrecht et al., "The Course of the HIV Epidemic among Intravenous Drug Users in Amsterdam, the Netherlands," *American Journal of Public Health*, 81(1):59-62 (Jan. 1991).

22. Ernst C. Buning et al., "Preventing AIDS in Drug Addicts in Amsterdam" (letter), *Lancet*, ii:1435 (June 1986).

23. Erik J. C. van Ameijden, Johanna A. R. van den Hoek, and Roel A. Coutinho, "Risk Factors for HIV Seroconversion in Injecting Drug Users in Amsterdam, the Netherlands" (Paper delivered at the Seventh International Conference on AIDS, Florence, Italy, June 1991).

24. Ernst C. Buning, G.H.A. van Brussel, and G. W. van Santen, "Amsterdam's Drug Policy and Its Implications for Controlling Needle Sharing," in *Needle Sharing among Intravenous Drug Abusers: National and International Drug Perspectives*, National Institute on Drug Abuse, Research Monograph Series no. 80, ed. R. J. Battjes and R. W. Pickens (Rockville, MD: National Institute on Drug Abuse, 1988), pp. 59-74.

25. Jean-Paul C. Grund, Charles D. Kaplan, and Nico F. P. Adriaans, "Needle Sharing in the Netherlands: An Ethnographic Analysis," *American Journal of Public Health*, in press.

EDINBURGH

Edinburgh experienced one of the most rapid spreads of HIV among IDUs of any city in the world. Historically collected sera indicate that HIV exposure among IDUs in the city reached approximately 50 percent within two years after the introduction of the virus into the city.[26] Yet injection equipment could be purchased without a prescription before the introduction of the virus into the community, and there were no laws criminalizing the possession of the equipment. At about the same time that the virus entered Edinburgh, however, the police persuaded the local pharmacists not to sell equipment to IDUs. Moreover, this very rapid spread of HIV in Edinburgh did occur in the absence of any AIDS awareness among the IDUs in the city. Such rapid spread prior to AIDS awareness had also occurred in New York—where, as noted earlier in this article, there were also severe restrictions on legal access to injection equipment—but also in several locations in Italy,[27] where there were relatively few restrictions on legal access to injection equipment. Despite the numerous possible complex relationships between awareness of AIDS, legal restrictions, and practical restrictions on access to injection equipment in the spread of HIV among IDUs, the Edinburgh experience served as a powerful example against legal restrictions in policy debates over the next several years.

Over-the-counter sales and limited syringe exchange have since been implemented in Edinburgh, along with outreach to IDUs in the city. The HIV seroprevalence rate among IDUs in the city has also stabilized.[28]

UNITED KINGDOM

The United Kingdom did not have legal restrictions on injection equipment, although, as noted previously, there were some practical restrictions. Some local syringe-exchange programs—notably, the program in Liverpool—were started soon after AIDS among IDUs became a concern in 1985-86. In April 1987, a national syringe-exchange program was started that included a national evaluation. This evaluation focused on operational issues as well as on measuring outcome variables such as the sharing of injection equipment. There was wide variation in many of the operational characteristics of the exchanges, which was related to their ability to attract clients.[29] Exchanges

26. J. R. Robertson et al., "Epidemic of AIDS-Related Virus (HTLV-III/LAV) Infection among Intravenous Drug Abusers," *British Medical Journal*, 292:527-29 (Feb. 1986).

27. Fausto Titti et al., "Human Immunodeficiency Virus (HIV) Seropositivity in Intravenous (IV) Drug Abusers in Three Cities of Italy: Possible Natural History of HIV Infection in IV Drug Addicts in Italy," *Journal of Medical Virology*, 23:241-48 (1987); F. Bortolotti et al., "The Changing Epidemiology of Acute Type B Hepatitis: Results of an 11-Year Prospective Study in Padua (Northern Italy)," *Infection*, 17(6):364-68 (1989); Anita de Rossi et al., "Trends of HTLV-I and HIV Infections in Drug Addicts" (letter), *European Journal of Cancer and Clinical Oncology*, 24(2):279-80 (1988).

28. J. F. Peutherer et al., "HTLV-III Infection in Intravenous Drug Abusers in Edinburgh" (Paper delivered at the Second International Conference on AIDS, Paris, June 1986).

29. Gerry V. Stimson et al., *Injecting Equipment Exchange Schemes: Final Report*

that were able to attract clients were user friendly. They had locations and hours that were convenient for the IDUs. The staff were knowledgeable about the drug scene and took a nonjudgmental attitude toward the clients. The staff were ready to refer clients to drug abuse treatment (and to other potentially needed medical and social services) but did not attempt to persuade clients that it was necessary for them to enter drug abuse treatment.[30] There was a minimum of bureaucratic hurdles for entering the program, and clients were recruited into the evaluation typically only after trust had been established. The user-friendly programs permitted large numbers of syringes to be exchanged at a single time, with some clients exchanging a hundred or more syringes at one time. These clients were clearly exchanging for groups of friends and were in effect serving as satellite exchange agents. This was particularly common in small-city or rural areas where travel to the exchange was often a problem.

The satellite exchange agent phenomenon can become a real problem if an exchange program does not anticipate it. One recent study from northern England found that, at an exchange which limited the number of syringes that could be exchanged at any one time to five, frequent users of the exchange actually passed used injection equipment to others at a higher rate than did persons who did not use the exchange frequently.[31] This occurred because the frequent users of the exchange had become known in the local drug-user community as persons who usually had injection equipment. Other drug injectors who needed equipment during hours when the exchange was not open would then seek out the frequent users and socially pressure them to provide equipment, even if it had been already used. It should be stressed that this is the only study to date that has shown a higher rate of a transmission-related behavior among frequent users of an exchange compared to infrequent users or nonusers of the exchange.

Nevertheless, the problems of frequent exchangers' serving as satellite exchange agents—and thus needing to exchange large numbers of syringes at one time—and of drug injectors' needing equipment at hours when the exchanges or the pharmacies are not open, appear to be universal for legal-access programs. The simplest solution is to supply enough syringes at one time for some users to act as satellite exchange agents. Another partial solution is for syringe-exchange programs to distribute bleach also, so that it will be possible for the drug injectors to disinfect the injection equipment if two or more persons are going to use it. Most exchanges in the United States already distribute bleach kits, and European exchanges

(London: Monitoring Research Group, Goldsmith's College, 1988).

30. One exchange program, operated by a drug abuse treatment program, did attempt to use the exchange primarily as a means of recruiting clients, and eventually it closed because it was not able to attract enough clients.

31. Hilary Klee et al., "The Sharing of Injection Equipment among Drug Users Attending Prescribing Clinics and Those Using Needle-Exchanges," *British Journal of Addiction*, 86:217-23 (1991).

are increasingly doing so. Another partial solution currently being considered is the use of vending machines that would provide syringes when special tokens were inserted. These tokens would be distributed by outreach workers or syringe-exchange staff in order to provide some opportunities for face-to-face contact and counseling about AIDS.

In any event, the results of the national syringe-exchange evaluation indicated that retention of clients was a considerable problem, with less than 10 percent returning for multiple visits to the syringe exchange. Part of the reason many clients did not continuously use the exchange is that sterile injection equipment was also available from pharmacies. The IDUs who used the syringe exchanges reduced significantly but did not eliminate their sharing of injection equipment. There was substantial variation across individuals, with a very small number who even increased their sharing after starting to use the exchange.

The research included a comparison group of IDUs who were not utilizing the exchange programs. These nonusers were generally younger, had shorter injection histories, and were less likely to already have started AIDS risk reduction. These comparisons are important to the ultimate findings in several ways. They provide strong evidence that syringe exchanges were not recruiting new persons into drug injection. The finding that persons coming to syringe exchanges tended to be established rather than new IDUs has since been replicated in all other studies of syringe exchanges. While these findings clearly refute the argument that syringe exchanges would recruit new, inexperienced persons into drug injecting, they also raise the problem of by what other means health authorities will be able to reach new injectors, hopefully before they are exposed to HIV. Finally, the differences suggest that there were no readily available comparison groups for assessing syringe-exchange programs.

HIV seroconversion studies have recently been conducted in relation to the syringe exchanges in Liverpool and London. No HIV seroconversions have been noted among IDUs using the exchange in Liverpool[32] and few if any have been seen among IDUs using a London exchange.[33] To be precise, two seroconverters were observed during this study, but the timing of the seroconversion was such that the actual HIV infections of these two may well have occurred before the subjects started to participate in the exchange. There has also been a recent report of an apparent increase in HIV seroprevalence among IDUs in London.[34] Whether this apparent increase is an artifact of changed sampling procedures, of

32. Russell Newcombe, "The Liverpool Syringe Exchange Scheme for Drug Injectors: Initial Evidence of Effectiveness in HIV Infection" (Paper delivered at the First International Conference on the Global Impact of AIDS, London, Mar. 1988).

33. Graham J. Hart et al., "Evaluation of Needle Exchange in Central London: Behaviour Change and Anti-HIV Status over One Year," *AIDS*, 3(5):261-65 (May 1989).

34. Adam N. Crosier et al., "Prevalence of HIV Infection among Injecting Drug Users in London" (Paper delivered at the Seventh International Conference on AIDS, Florence, Italy, June 1991).

HIV-seropositive IDUs migrating to London, or of an actual increase in HIV transmission among IDUs in the city has not yet been determined.

SWEDEN

Sweden may be second only to New York City in the complexity of its policies and practices regarding legal access to injection equipment. Prior to AIDS, Sweden did have a law requiring prescriptions for dispensing injection equipment. This law has not been changed. Nevertheless, a group of physicians in southern Sweden, in the cities of Malmö and Lund, began a syringe exchange in 1986, including collecting data on participants in the syringe exchange. HIV-antibody counseling and testing is widely used throughout Sweden as an AIDS prevention technique, and participants in the exchange were encouraged to be regularly tested every three months. This testing then provided important data for assessing the effectiveness of the exchange.[35]

The Swedish National Welfare Board conducted an evaluation of the exchange and recommended that the exchange be expanded into a national system. The Swedish parliament, however, rejected this recommendation and permitted continuation of the exchange only in southern Sweden. The research on the exchange users has continued. Almost a thousand IDUs have used the syringe exchange, with 182 classified as "regular" users. To date there have been no known HIV seroconversions among the users of the syringe exchange. While this series of studies does not have a control group, it is noteworthy that HIV seroprevalence among IDUs in other parts of Sweden is substantially higher than among IDUs in southern Sweden.[36]

SYDNEY

Prior to the AIDS epidemic, over-the-counter sales of injection equipment were permitted in Australia and there were no narcotics paraphernalia laws there. In response to concerns about AIDS, syringe-exchange programs were also established. Initially, these were limited to discounts on the purchase of new injection equipment when drug users returned used equipment. Intravenous drug users' own organizations were also established in Australia, with government support. These organizations have implemented outreach exchange programs, with mobile units traveling through high-drug-use areas to exchange injection equipment at no cost to the drug users.

Two studies were conducted that addressed the potential efficacy and lack of harm of the syringe exchanges in Sydney. In the first study, blood in syringes returned to an exchange was tested for the antibody to HIV. The percentage of syringes containing anti-HIV antibodies remained stable over time, indicating that HIV was

35. Bengt Ljungberg et al., "HIV Prevention among Injecting Drug Users: Three Years of Experience from a Syringe Exchange Program in Sweden," *Journal of the Acquired Immune Deficiency Syndromes*, 4(9):890-95 (Sept. 1991).

36. Kerstin I. Kall and Robert G. Olin, "HIV Status and Changes in Risk Behavior among Intravenous Drug Users in Stockholm 1987-88," *AIDS*, 4(2):153-57 (Feb. 1990).

not greatly increasing among the users of the exchange.[37] In the second study, since the syringe exchange was coincidentally located only a block from a methadone maintenance program, urinalysis results from the methadone patients were examined for the time periods before and during the operation of the syringe-exchange program. The urinalysis results showed no evidence of an increase in illicit drug use, despite the proximity of the syringe exchange. These two studies were innovative in their use of biological measures rather than self-reported behavior, and the results were fully consistent with self-reported data from the European studies of syringe exchanges.

PARIS

Prior to the AIDS epidemic, France had a national law requiring prescriptions for the sale of injection equipment. The earliest HIV studies among IDUs showed high seroprevalence among IDUs in southern France and in Paris. As a result of the concern about AIDS among IDUs, the prescription law was repealed, and a national training program was established to train pharmacists in how to sell injection equipment, and to provide limited HIV counseling and education to IDUs. The French program thus recognized the importance of the cooperation and attitudes of pharmacists in actually supplying sterile injection equipment to IDUs.

The effectiveness of these measures was assessed in two studies. Espinoza and colleagues interviewed IDUs entering prison in Paris. They found that the use of sterile injection equipment increased substantially after the repeal of the prescription requirement and the training of pharmacists.[38] Ingold and Ingold interviewed IDUs recruited from treatment programs and from street settings in Paris, in two suburbs of Paris, and in three other French cities. They also found that the change in the prescription requirement had an "obvious" effect on reducing the sharing of injection equipment among French IDUs.[39] Neither study, however, reported a complete elimination of sharing of injection equipment, and both called for additional measures to prevent AIDS among IDUs.

INNSBRUCK

Austria did not have a prescription requirement law prior to the AIDS epidemic, but informal discretionary practices among pharmacists served to limit the actual availability of sterile injection equipment. In Innsbruck, for example, pharmacists normally

37. Jael S. Wolk et al., "HIV Seroprevalence in Syringes of Intravenous Drug Users Using Syringe Exchanges in Sydney, Australia, 1987" (Paper delivered at the Fourth International Conference on AIDS, Stockholm, Sweden, June 1988); idem, "Syringe HIV Seroprevalence and Behavioral and Demographic Characteristics of Intravenous Drug Users in Sydney, Australia, 1987," *AIDS*, 2(5):373-77 (1988).

38. Pierre Espinoza et al., "Has the Open Sale of Syringes Modified the Syringe Exchanging Habits of Drug Addicts?" (Paper delivered at the Fourth International Conference on AIDS, Stockholm, Sweden, June 1988).

39. F. R. Ingold and S. Ingold, "The Effects of the Liberalization of Syringe Sales on the Behaviour of Intravenous Drug Users in France," *Bulletin on Narcotics*, 41(1-2):67-81 (1989).

would sell injection equipment only in lots of 100 needles and syringes. As a result of concern about AIDS, public health officials in Innsbruck prevailed upon the local pharmacists and convinced them to sell injection equipment to illicit drug users in single units. HIV seroprevalence among IDUs in Innsbruck subsequently stabilized at approximately 30 percent.[40] While it is not possible to draw a simple cause-and-effect inference from the increased availability of injection equipment and the stabilization of HIV seroprevalence in Innsbruck, it should be noted that in other areas where HIV seroprevalence had reached 30 percent among IDUs, seroprevalence then continued to rapidly rise to between 40 and 50 percent: for example, New York,[41] Edinburgh,[42] Milan,[43] and Bari, Italy.[44] The other notable instance of a leveling off of rapid rises after reaching 30 percent is Amsterdam, which had also greatly increased the legal availability of injection equipment prior to the stabilization of HIV seroprevalence among IDUs.

40. Dietmar Fuchs et al., "Anti-HIV-1 Antibodies, Anti-HTLV-1 Antibodies and Neopterin Levels in Parenteral Drug Addicts in the Austrian Tyrol," *Journal of the Acquired Immune Deficiency Syndromes*, 1(1):65-66 (1988).

41. Don C. Des Jarlais et al., "HIV-1 Infection among Intravenous Drug Users in Manhattan, New York City, from 1977 through 1987," *Journal of the American Medical Association*, 17 Feb. 1989, pp. 1008-12.

42. Buning et al., "Preventing AIDS in Drug Addicts."

43. Titti et al., "Human Immunodeficiency Virus Seropositivity."

44. G. Angarano et al., "Rapid Spread of HTLV-III Infection among Drug Addicts in Italy," *Lancet*, ii:1302 (1985).

NEW YORK REDUX

The situation in New York City with regard to legal availability of drug injection equipment has probably been the most complicated of any city in the world. As noted before, the early studies from New York showed both the possibility of rapid transmission of HIV among IDUs and the willingness of IDUs to reduce their AIDS risk by increasing their use of sterile equipment, which was obtained through an expanding illicit market for such equipment. New York has both a narcotics paraphernalia law and a prescription requirement. The prescription requirement law does, however, permit the state health commissioner to make exceptions in certain cases. Discussions of providing legal access to injection equipment in New York began in 1984, became public in late 1985,[45] and finally led to a pilot program research study that opened on 7 November 1988. The discussions of a possible syringe-exchange program were often quite heated,[46] and the program that finally opened was quite limited. It was permitted to operate out of only a single site, one not in a neighborhood with a high rate of injecting drug use but quite near the police headquarters, and it was prevented from having the proposed research comparison group. The program had complicated admission procedures

45. Don C. Des Jarlais and William Hopkins, " 'Free' Needles for Intravenous Drug Users at Risk for AIDS: Current Developments in New York City," *New England Journal of Medicine*, 5 Dec. 1985, p. 1476.

46. Joseph and Des Jarlais, "Needle and Syringe Exchange"; Anderson, "New York Needle Trial."

and mandatory services such as tuberculosis testing. Admission to the program was limited to persons already waiting for open positions in drug abuse treatment programs. Of the persons admitted to the program, 39 percent were successfully placed into treatment programs, often before they had had significant use of the exchange. This pilot program was then closed after the election of a new mayor in November 1989.[47] This official New York program nonetheless illustrated both the importance of a user-friendly service in terms of attracting drug users, and the ability of syringe-exchange programs to place drug users into treatment programs.[48]

AIDS activists, including ACT UP and the AIDS Brigade, have been operating modest-scale syringe-exchange programs since the closing of the city Health Department program. Ten of these activists arranged to have themselves arrested in the hope that a court trial would compel the new city administration to reconsider its opposition to syringe exchange. The judge accepted a defense of public-health necessity and returned a not-guilty verdict. Subsequent reports from the syringe exchange in New Haven, Connecticut, and the recommendation of the National Commission on AIDS in support of syringe exchanges have led the current city government to announce that it is reconsidering its position on syringe exchange, and fully authorized exchanges are expected to open in late 1991 or early 1992.[49]

Throughout this whole period of the debates and modest-scale exchange operations in New York City—from 1984 to the present—HIV seroprevalence has remained stable among IDUs in the city, with a low to moderate rate of new HIV infections.[50] This reduced rate of new infections is probably best attributed to large-scale AIDS risk reduction among IDUs,[51] facilitated by a large-scale expansion of the illicit market for sterile injection equipment.[52]

TACOMA

The first syringe exchange in North America was started by David Purchase in Tacoma, Washington, in 1988. Acting as a concerned citizen, he first discussed the project with local health and law enforcement officials to obtain prior assurance that they would not interfere. He then started doing syringe exchange in a high-drug-use area, donating his own time and using private donations for the purchase of the needed equip-

47. Anderson, "New York Needle Trial."

48. *The Pilot Needle Exchange Study in New York City: A Bridge to Treatment: A Report on the First Ten Months of Operation* (New York: New York City Department of Health, Dec. 1989).

49. Des Jarlais and Stephenson, "History, Ethics and Politics."

50. Des Jarlais et al., "HIV-1 Infection among Intravenous Drug Users"; idem, "Risk Reduction and Stabilization of HIV Seroprevalence among Drug Injectors in New York City and Bangkok, Thailand" (Paper delivered at the Seventh International Conference on AIDS, Florence, Italy, June 1991).

51. Friedman and Des Jarlais, "AIDS and Self-Organization"; Friedman et al., "Social Intervention against AIDS."

52. Des Jarlais, Friedman, and Hopkins, "Risk Reduction."

ment. Several months later, the Tacoma/Pierce County Health Department assumed official responsibility for the exchange. In addition to providing syringe exchange, the operation also provides general information about AIDS, distributes condoms and bleach, makes referrals to drug abuse treatment and other services—indeed, the Tacoma exchange has become the single largest referral source for drug abuse treatment in the county—and provides on-site screening for tuberculosis.

Evaluation of the Tacoma syringe-exchange program has been conducted since 1989. IDUs using the exchange typically have long histories of drug injection, with a mean of 15 years since first injection; fewer than 4 percent began injecting within the previous two years. Pre-post comparisons of AIDS risk behavior among syringe-exchange users show reductions of 76 percent in using potentially contaminated equipment—borrowing or renting previously used injection equipment—and of 63 percent in passing on equipment after injecting, a means of potential transmission. These pre-post comparisons also showed no changes in the rates of drug use among users of the exchange. Comparison with IDUs who do not use the syringe-exchange program showed higher frequencies of injection among the exchange users, but lower rates of AIDS risk behaviors.

At one point, the state attorney general in Washington attempted to close the syringe-exchange program, and a civil suit was required to resolve the dispute. As part of the suit, the Sanitation Department filed an affidavit certifying that the number of used needles and syringes discarded in the city had decreased since the opening of the syringe exchange. There are similar reports of decreases in the discarding of potentially contaminated injection equipment since the large-scale expansion of the exchange in Amsterdam[53] and since the opening of the exchange in Portland, Oregon.[54]

Monitoring of HIV and hepatitis B infection rates has been included as part of the evaluation of the Tacoma syringe exchange.[55] The HIV seroprevalence rate among IDUs in Tacoma not using the exchange (7 percent) is higher than among the users of the exchange (2 percent). HIV seroprevalence among IDUs in Tacoma overall has remained stable since the opening of the exchange, while hepatitis B among IDUs has actually declined since the opening of the exchange.[56]

SAN FRANCISCO

In terms of AIDS prevention among IDUs, San Francisco is probably best known for the development of bleach distribution for disinfecting

53. Van Ameijden, van den Hoek, and Coutinho, "Risk Factors for HIV Seroconversion."

54. K. Oliver, personal communication, Aug. 1991.

55. Holly Hagan et al., "Lower HIV Seroprevalence, Declining HBV Incidence and Safer Injection in Relation to the Tacoma Syringe Exchange" (Paper delivered at the Seventh International Conference on AIDS, Florence, Italy, June 1991).

56. Holly Hagan et al., "The Incidence of HBV Infection and Syringe Exchange Programs" (letter), *Journal of the American Medical Association*, in press.

used injection equipment.[57] The use of bleach for disinfecting injection equipment has been widely accepted by IDUs in San Francisco.[58] Bleach distribution has also been adopted by many of the cities in the National Institute on Drug Abuse's National AIDS Demonstration Research projects and has been increasingly incorporated within syringe-exchange programs. San Francisco is also the location of Prevention Point, a privately run syringe-exchange program, the largest in North America, which has been in operation since 1988.

Yet the exact legal status of the syringe exchange in San Francisco remains unclear. California does have a prescription requirement for dispensing syringes that the program clearly has not been following. In fact, the program was started with the expectation that the operators would be arrested and that the resulting trial would force the city and state governments to address the issue of a syringe-exchange program. Arrests were made, but charges were not pressed, and there was no trial. In any event, the exchange has continued, relying upon private donations of time and money for supplies. The mayor of San Francisco publicly praised Prevention Point in his address to the Sixth International AIDS Conference in San Francisco,[59] but no government financial or staff support has so far been provided, because of the apparent technical illegality of the operation. An arrest for distributing sterile injection equipment was made in nearby Redwood City, California, that resulted in an 11-to-1 hung jury for acquittal. In fact, the jury foreman in that case was sufficiently convinced of the benefits of syringe exchange that, after the trial, he became a volunteer worker for the exchange.

An evaluation of the San Francisco syringe exchange based on self-reported risk behavior has been conducted. The results showed that frequent use of the syringe exchange was strongly associated with a lower probability of having shared injection equipment in the month prior to the study interview. The study found an odds ratio of 2.8 for recent sharing of injection equipment when nonusers or infrequent users of the exchange were compared to frequent users of the exchange, that is, to persons who had used the exchange 25 times or more.[60] Data on the age at first injection among persons using the syringe exchange shows that exceedingly few of the exchangers are new injectors, so that there is no evidence for the exchange's attracting new persons

57. John A. Newmeyer et al., "Preventing AIDS Contagion among Intravenous Drug Users," *Medical Anthropology*, 10(2-3):167-75 (1987).

58. Richard E. Chaisson et al., "HIV, Bleach and Needle Sharing" (letter), *Lancet*, 1:1430 (1987); John K. Watters, D. M. Iura, and K. W. Iura, *AIDS Prevention and Education Service to Intravenous Drug Users through the Midcity Consortium to Combat AIDS: Administrative Report of the First Six Months* (San Francisco, CA: Midcity Consortium, 1986), p. 9.

59. Art Agnos, Mayor of San Francisco, opening-ceremony address to the Sixth International Conference on AIDS, San Francisco, CA, 1990.

60. John K. Watters et al., "Epidemiology and Prevention of HIV in Intravenous Drug Users in San Francisco, 1986-1989" (Paper delivered at the Sixth International Conference on AIDS, San Francisco, CA, June 1990).

into drug injection. Since the implementation of the bleach distribution and syringe-exchange programs in San Francisco, HIV seroprevalence has stabilized among IDUs.[61]

NEW HAVEN

In the spring of 1990, the state of Connecticut passed legislation permitting syringe exchanges. The legislation also required evaluation of the exchanges. An exchange program was implemented in the city of New Haven. As in other exchanges, the IDUs who utilized the exchange typically had long histories of injecting drugs; there was no evidence that new injectors were recruited as a result of the existence of the exchange.[62] The exchange program also became a major source of referral for encouraging IDUs to enter drug abuse treatment programs, although the shortage in overall treatment program capacity in the city has reduced the total numbers of persons who have actually entered treatment.

In addition to the questionnaire and referral data, the evaluation study utilized polymerase chain reaction (PCR) testing of HIV residues in the syringes that were returned to the exchange, PCR being an extremely sensitive method for detecting HIV in blood. Syringes distributed in the exchange program were marked; hence it was possible to determine whether a particular syringe was being returned by the same person to whom the syringe had originally been given. Thus PCR testing was done with a means of ascertaining which returned syringes were unlikely to have been shared (those that had been given to and returned by the same person) and which were likely to have been shared (those given to one person but returned by a different person). The proportion of probably unshared to probably shared syringes remained relatively constant throughout the operation of the exchange. The PCR HIV seroprevalence remained constant in the unlikely-to-have-been-shared syringes, while the PCR HIV seroprevalence in the likely-to-have-been-shared syringes declined substantially over time, indicating less frequent sharing of each of those syringes. Using a mathematical model of HIV transmission, the evaluators then estimated that HIV transmission among IDUs in the city had been reduced by one-third.

The PCR results showing decreasing HIV contamination in the likely-to-have-been-shared syringes can be taken as clear evidence that these syringes were being shared less over time. The projection to an actual reduction in new HIV infections, however, must be considered at best an estimate that needs to be tested further against estimates derived from other mathematical models of the spread of HIV among IDUs. The use of mathematical models in evaluation research is still a developing field that may yet have great poten-

61. John K. Watters et al., "Update on Changes in HIV-1 Seroprevalence and Risk Behavior among Intravenous Drug Users in San Francisco" (Paper delivered at the annual meeting of the American Public Health Association, Boston, MA, Nov. 1988).

62. Elaine O'Keefe, Edward Kaplan, and Kaveh Khoshnood, *Preliminary Report: City of New Haven Needle Exchange Program* (New Haven, CT: New Haven Health Department, 1991).

tial. If such models can be empirically validated, they would greatly reduce the time and expense needed in order to draw sound inferences about the effectiveness of different AIDS prevention programs.

BALTIMORE

Recruitment of a very large number of IDUs into an HIV seroprevalence study permitted researchers in Baltimore to examine the relationship between having diabetes and exposure to HIV.[63] For all the other medical conditions that have been studied in relationship to HIV exposure among IDUs, there were either no differences between HIV-positive and HIV-negative IDUs, or else injectors who were HIV-positive were also more likely to have had the other medical condition. These otherwise consistent findings may be the result of life-style or behavioral differences that are associated with HIV risk behavior,[64] or they may have occurred because HIV infection may precipitate the development of a wide variety of other infections among IDUs.[65] The Baltimore study also found that, in general, the HIV seropositives were more likely to have had a wide variety of other diseases, with the notable exception that HIV-seronegative IDUs were more likely to have had diabetes. Having had diabetes would, of course, lead to having long-standing access to prescriptions for large amounts of sterile drug injection equipment.

Baltimore is also noteworthy as an example of a place where the mayor of the city has been publicly supportive of syringe-exchange programs, but no program has been implemented because of political opposition. Since the mayor announced support for a syringe-exchange program, new HIV infections among IDUs have continued at moderate levels, indicating a need for more effective prevention programs.[66]

DISCUSSION

These case-history studies certainly illustrate the complexity of the issues surrounding AIDS among IDUs and legal access to drug injection equipment. The studies were conducted in the contexts of different pre-AIDS legal restrictions, different stages in HIV epidemics, and different national and local political cultures with respect to illicit drug use as a social problem. These studies also often used different research designs and different outcome measures. Despite all these differences, there appear to be at least four conclusions that can be drawn from this body of research.

63. Konrad E. Nelson et al., "Diabetes Is Protective against HIV Infections in IV Drug Users" (Paper delivered at the Sixth International Conference on AIDS, San Francisco, CA, June 1990).

64. Samuel R. Friedman, Paula H. Kleinman, and Don C. Des Jarlais, "History, Biography, and HIV Infection among Drug Injectors: A Methodological Caution" (letter), *American Journal of Public Health*, in press.

65. Rand L. Stoneburner et al., "A Larger Spectrum of Severe HIV-Related Disease in Intravenous Drug Users in New York City," *Science*, 11 Nov. 1988, pp. 916-19.

66. Konrad E. Nelson et al., "HIV-1 Seroconversions in a Cohort of Intravenous Drug Users" (Paper delivered at the Seventh International Conference on AIDS, Florence, Italy, June 1991).

First, there is an imperfect correlation between laws governing access to sterile injection equipment and actual use of sterile injection equipment by IDUs. Indeed, without any change in the laws, actual access to sterile injection equipment may increase through an illicit market in response to AIDS-related demand. This occurred in New York City, and it probably has been the most important early factor in reducing HIV transmission among IDUs in that city. Conversely, the absence of legal restrictions on drug injection equipment does not by itself mean that IDUs will actually have sterile injection equipment at the times when they are about to inject drugs.

Second, programs to increase the legal use of sterile injection equipment by IDUs appear to have almost universally achieved their desired effect of reducing AIDS risk behavior. Such programs may or may not have required changes in laws. They have required training and AIDS competence for the persons who sell or provide the injection equipment and AIDS education for the IDUs. The variety of outcome measures used in studies of these programs does not permit precise determination of an average effect size for these programs, but the consistency of the reported results in reducing AIDS risk behavior is quite striking. Admittedly, many of the studies were conducted by persons operating programs, and almost all were conducted with at least the cooperation of program staff, raising the issue of possible bias in the findings. Nevertheless, the findings did not vary significantly by whether the study was conducted by program staff or by an outside evaluator, nor by whether outcome was measured by self-report alone or also with HIV or hepatitis B data.

The findings are also very consistent in showing that the AIDS risk reduction associated with these programs has not yet attained complete risk elimination. This is true partly because these programs are not utilized by all IDUs in the community and, even among persons who could be considered regular clients, there is a residual level of risk behavior and some variation involving relapses over time. The reasons for such limitations on the effectiveness of programs are an important subject for future research. Some of the limitations are likely to be related to operational issues of the specific programs, and others may be related to fundamental aspects of illicit drug injection, such as the strong craving to use drugs that occurs during withdrawal or psychological denial of AIDS risk in sharing injection equipment within very close personal relationships.

The experience of these programs also suggests a great need to more effectively link them with other forms of AIDS prevention, including treatment programs for drug abuse and programs to prevent sexual transmission of HIV. Legal access to injection equipment will clearly be of limited effectiveness where it is the only strategy used for preventing AIDS among IDUs. Indeed, one of the major strengths of the legal-access programs has been the opportunities

these programs present for recruiting IDUs to other AIDS, health, and social services.

The outcome research has been so consistent on legal-access programs that the relevant question no longer is, Can these programs work? but rather, How can they be made to work better, and how can they best be integrated with other programs?

The research findings are also remarkably consistent in showing that the programs do not lead to increased illicit drug use either by persons who are already injecting drugs or by inducing new persons to start injecting drugs. This can most readily be seen in the longitudinal studies of clients of the programs, the numbers of clients who have been referred to drug abuse treatment, and the relatively long histories of drug injection prior to entering the programs. The absence of any increased illicit drug use raises two important questions for future research. First, how can or should legal-access programs and AIDS prevention programs reach persons who are starting to inject illicit drugs? The socially preferred prevention goal would, of course, be to prevent them from starting to inject or get them to stop injecting. Yet preventing transmission of HIV among those who nonetheless continue to inject would also be an important public-health goal, toward which the current studies of legal access provide little guidance.

The absence of harmful effects associated with legal-access programs also raises the question of how political opposition to these programs is maintained in the absence of supporting data. Obviously, scientific data are very rarely the only factor in public-health policy. Still, AIDS must plainly be considered a very important public-health problem in the United States, as well as in many countries throughout the world. Hence continued effective opposition to legal-access programs, in the absence of empirical support for the arguments based on the hypothesized harmful effects, is in itself a subject worthy of investigation. Examining the bases of such opposition to legal-access programs is beyond the scope of the present article, and to our knowledge, little relevant data have been collected. Nevertheless, we would suggest that the following interrelated factors may be relevant: (1) the highly stigmatized nature of illicit drug use; (2) the potential for synergistic stigmatization among illicit drug use, AIDS, and minority-group membership; and (3) the mutual lack of trust and empathy between illicit IDUs and most public officials. We would also note that the drug abuse problem in the United States and elsewhere is quite complicated and not amenable to fast or inexpensive solution. Difficulties in quickly reducing the drug abuse problem may create increased political utility for actions that symbolically express social disapproval of illicit drug use, such as criminalizing the possession of drug paraphernalia, even if these actions do not lead to any demonstrable benefit in reducing illicit drug use, and may incur the unintended but enormous cost of increased HIV transmission among illicit drug users, as well as from IDUs to their sexual partners and newborn children.

The public-health importance of AIDS among IDUs, their sexual partners, and their children, however, creates great pressure for finding effective prevention strategies. Based on the international evidence to date, programs that provide legal access to sterile injection equipment would appear to be one important—although not sufficient—component of an effective overall prevention strategy.

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RESEARCH REPORT

The effect of a needle and syringe exchange on a methadone maintenance unit

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Abstract

In November 1986, a pilot needle and syringe exchange was established in Sydney adjacent to a methadone maintenance unit. A retrospective study was carried out to determine the effect of increasing the availability of sterile needles and syringes on the treatment outcome of the methadone maintenance unit. In this study, an increase in availability of sterile needles and syringes was not found to be associated with an increase in the presence of illicit injectable drugs in the urine specimens of clients of the methadone programme compared to a control methadone unit where there was no known change in needle and syringe availability. This study suggests that an increase in the availability of sterile needles and syringes does not appear to lead to an increase in the frequency of intravenous drug use. The possibility of drug and alcohol treatment centres acting as needle and syringe exchange or distribution outlets therefore requires consideration.

Introduction

Following the recognition of the spread of the Human Immunodeficiency Virus (HIV) among intravenous drug users (IVDUs), a variety of measures have been implemented to prevent further transmission. One of the strategies adopted in Western Europe and Australia has been to increase the availability of sterile needles and syringes to discourage sharing of injection equipment. Following the institution of needle and syringe exchange schemes (NSE) a subsequent decrease in behaviours associated with risk of HIV infection has been documented in a number of studies[1–6] although causality has been difficult to determine. However, it is often difficult and expensive to establish new venues for NSE. Drug treatment agencies are possible venues for NSE as they are already in contact with large numbers of IVDUs. Staff of drug and alcohol treatment units often subscribe to a treatment philosophy emphasizing the promotion of abstinence as the principal goal of treatment. The simultaneous provision of sterile injection equipment is generally regarded as irreconcilable with this philosophy.

Methadone maintenance treatment began in New York city in 1964[7] and was introduced in Australia in 1970.[8] Despite a voluminous literature generally supporting the beneficial effects of methadone maintenance treatment on a range of outcome measures including drug consumption, retention in treatment, criminal behaviour and employment[9–12] it remains a controversial topic.[13,14] Recently, en-

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couraging data have emerged indicating that methadone maintenance has an important role to play in the reduction of HIV risk-taking behaviours.[9,15-17] Methadone maintenance programmes are currently regarded by most IVDUs in Australia as the preferred form of drug treatment as evidenced by the demand for places on programmes.

In November 1986, a pilot NSE was established in a Sydney inner city alcohol and drug agency adjacent to a methadone maintenance unit (MMU1). Treatment staff were concerned that the increased availability of sterile needles and syringes in close proximity to a therapeutic drug treatment programme could possibly result in a deterioration in the effectiveness of the treatment programme. Accordingly this retrospective study was carried out using the frequency of urine specimens contaminated with illicit drugs before and after the introduction of the NSE, as an objective indicator of treatment outcome for both the methadone programme as a whole and individual clients. The data for this study are from a time period when the prevalence of HIV infection in Sydney IVDUs was still low.[18]

Methods

All clients of MMU1 were identified who had been in treatment 12 weeks before (period 1) and up to 12 weeks after (period 2) the introduction of the NSE. These results were compared with those of a Sydney suburban MMU (MMU2) where there had been no known change in the availability of sterile needles and syringes.

There were 108 clients eligible for study at each centre, and data on age, sex and length of time on the programme were obtained.

Both MMUs routinely collected random urine specimens for monitoring the progress of clients. These specimens were analysed at the NSW State Health Department's reference laboratory. Thin-layer chromatography (TLC) was used to detect presence of morphine (as a marker of heroin), amphetamines, barbiturates and cocaine. Positive results were confirmed by two-dimentional TCL and gas-liquid chromatography.[19]

The MMUs were opened in the mid-1980s within 13 months of each other. The control suburban MMU (MMU2), was located approximately 25km from the experimental inner city MMU (MMU1). Both MMUs had a similar policy regarding random urine testing of clients and both had similar criteria for admission and discharge. However, MMU1 tested clients with a demonstrated history of treatment compliance less frequently than MMU2. Treatment philosophy was similar for both MMUs and involved the provision of practical assistance for client re-integration into the community.

Methadone was administered orally to clients of both MMUs on a daily basis. The mean dose of methadone in NSW clinics at the time of this study was approximately 60 mg per day with a small proportion of clients receiving over 100 mg per day and a slightly larger proportion—who were being withdrawn from treatment—receiving less than 20 mg per day. Although the methadone dosages given to clients of the two MMUs in this study were not compared, it is unlikely that they would have deviated significantly from the general pattern of dosage described above.

It was assumed for the purpose of this study that subjects administered all drugs by injection. This is because Sydney IVDUs rarely administered heroin by other methods, and anecodatal reports suggested that amphetamines, barbiturates and cocaine were also mostly injected.

Urine test results and demographic data were sorted and computer coded for statistical analysis with SAS software.[20]

For each client, the number of positive tests was expressed as a percentage of their total number of tests in each time period. Within each centre, a paired t-test was used to assess whether a change in the percentage of positive tests for all 108 clients in period 2 compared to period 1 was significant. The changes for the two centres were then compared using an unpaired t-test. Analyses were undertaken separately for the presence of morphine only and all injectable drugs.

The proportions of clients in both MMUs who had only morphine-negative tests during period 1 but one or more morphine-positive tests during period 2 were also compared to detect possible adverse effects of the NSE on individuals who had achieved abstinence from heroin during period 1.

A regression analysis was carried out to determine whether the percentage of mean positive tests was affected by the client's age, sex or duration on treatment.

Results

Table 1 shows the characteristics of the clients of the two MMUs, MMU1 clients were older ($p<0.05$) and had been on the methadone pro-

Table 1. *Age, sex and length of time on programme of MMU clients*

	N	Mean age in years (SD)		Age range (years)	Proportion of males (%)	Median time on programme (days)
MMU1	108	31	(5)	21–45	56	455
MMU2	108	28	(4)	18–37	62	273

Table 2. *Mean percentages of positive tests for MMU1 and MMU2*

	Mean percentage of tests positive for morphine			Mean percentage of tests positive for all injectable drugs*		
	period 1 (%)	period 2 − period 1 (%)	(SE)	period 1 (%)	period 2 − period 1 (%)	(SE)
MMU1	13.1	8.3‡	(2.0)	16.2	7.1‡	(2.1)
MMU2	6.4	3.8†	(1.6)	10.5	4.0†	(1.8)

*Morphine, amphetamines, barbiturates and cocaine.
†$p<0.05$; ‡$p<0.001$ for comparison of period 1 with period 2 within each centre.
The changes in period 2 compared to period 1 were not significantly different between MMU1 and MMU2 for morphine or all injectable drugs.

gramme longer ($p<0.05$) than the clients of MMU2. There were more males at MMU2 than MMU1 though this difference did not reach significance.

Overall, the average number of urine tests per client per week was approximately 0.9 for both MMUs. At MMU1 the average rate decreased from 1.0 test per week in period 1 to 0.8 tests per week in period 2. This decrease was more marked for clients who did not have any positive results during period 1 (0.91–0.65 tests per week) as compared with those who did (1.0–0.85 tests per week). By contrast, the frequency of testing at MMU2 was constant across both time periods and groups.

Clients had a greater mean percentage of positive results for morphine during period 2 than period 1 at both MMU1 ($p<0.01$) and MMU2 ($p<0.05$) (Table 2). Similarly, clients had a greater mean percentage of positive tests for all drugs (morphine, amphetamines, barbiturates and cocaine) during period 2 compared with period 1 at both MMU1 ($p<0.01$) and MMU2 ($p<0.05$) (Table 2).

However, there was no significant difference in the increase in mean percentage of positive tests between the two MMUs comparing period 2 with period 1 for morphine ($P=0.07$) or all drugs ($P=0.27$).

Change in percentage of mean positive results was not related to age, sex or duration on the programme at either unit, as assessed by regression analysis.

Figure 1 illustrates patterns of morphine use in the two MMUs on a weekly basis and shows, for each week, the proportion of clients tested who had at least one positive test for morphine. There appears to have been a gradual increase in the use of heroin by clients of both MMUs starting during period 1.

Of the 59 MMU1 clients who had no urine specimens contaminated with morphine during period 1, 15 (25%) had tests positive for morphine during period 2. Similarly, of the 73 MMU2 clients who had no urine specimens contaminated with morphine during period 1, 25 (34%) had tests positive for morphine during period 2. The difference between these proportions was not statistically significant (Table 3).

Discussion

One of the major strategies to prevent further spread of HIV among IVDUs has been to increase the availability of sterile needles and syringes to reduce the likelihood of injection equipment being

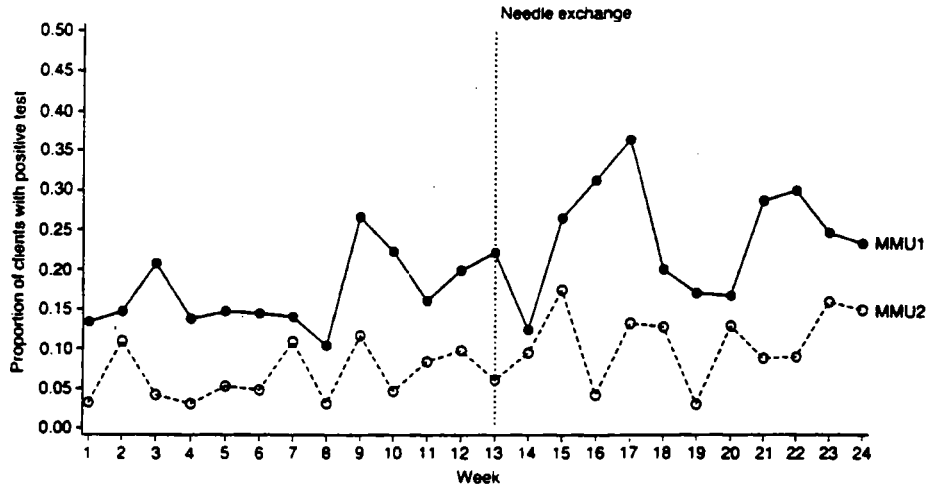

Figure 1. *Proportion of clients tested each week with at least one positive test result (morphine).*

Table 3. *Results during period 2 for clients with morphine-negative tests during period 1*

	MMU1	MMU2	Total
All negative period 2	44	48	92
At least one positive period 2	15	25	40
Total	59	73	132

$\chi^2_1 = 1.2$; $p = 0.27$.

shared. This strategy was endorsed unanimously at the Australian Health Ministers' Conference in February 1987[21] and by a World Health Organisation sponsored body of experts in January 1988.[22] However, implementation has been difficult partly because of logistic obstacles. Drug and alcohol treatment centres are potentially suitable venues for distribution of sterile injection equipment as they are in contact with large numbers of IDVUs who are seeking or in treatment. A number of studies indicate that IVDUs in treatment continue to inject illicit drugs or relapse while on treatment.[23-26] Thus drug users in treatment are still vulnerable to HIV infection. Drug users in treatment can also serve as a source of safe injecting information and sterile equipment to others not in contact with treatment agencies. However, provision of sterile injection equipment at or near drug treatment centres has been generally opposed by treatment staff in Australia, as it has been seen to condone illicit drug use and undermine the therapeutic success of treatment programmes.

In this study, urine analysis test results were used as an objective measure of treatment outcome as this measure is accepted as a valid method of assessing treatment outcome.[27,28] The method used by the laboratory servicing the two MMUs in this study (TLC) has been experimentally shown to underestimate the prevalence of illicit drug use due to its comparatively low sensitivity.[29,30] However this may be offset by the fact that both MMUs employed random-interval schedules which can improve illicit drug detection by 50% when compared to fixed-interval schedules.[31] In any case, deficiencies in the sensitivity of TLC would have been uniform for both MMUs and could not have been responsible for differences between the two units.

The control MMU (MMU2) was specifically selected because of its overall similarity to MMU1 (see Methods). Although the clients of the two MMUs differed in their age and length of time on the programme these differences are not thought to have biased the analyses performed, as regression analysis showed no relationship between client characteristics and change in percentage of mean positive results.

In this study, an increase in availability of sterile needles and syringes adjacent to a drug treatment unit was not associated with a detectable increase in the use of heroin or other potentially injectable

drugs by the clients of that treatment programme. This result was also true for clients who had been abstinent from heroin for the 12 weeks prior to the introduction of the NSE. The increase in illicit drug use by clients at both MMUs (see Fig. 1) is likely to have been due to a general increase in the supply of heroin at that time and unrelated to the establishment of the NSE. The increase in use of illicit drugs by MMU2 clients during period 2 indicates that illicit drugs were just as accessible for them as for MMU1 clients. It may be argued that the increase in illicit drug use is related to differences in prescribed methadone dosages. However, methadone dosage policy was fairly uniform in the NSW public sector clinics at the time of this study (see Methods) and thus differences in prescribed methadone doses are unlikely to have been responsible for changes in illicit drug use over time or between MMUs.

The frequency of testing of MMU1 clients during the time of the study varied according to client compliance with the aims of the programme. This may have resulted in a larger number of positive tests at MMU1 during period 2 since clients with a poor treatment record at MMU1 would have been over represented in this sample. Despite this potential bias, no statistically significant difference was observed between the increase in the mean percentage of positive tests at the two MMUs.

The absence of a detectable difference between the two MMUs in this study may have been due to the possibility that sterile injection equipment was readily available to the clients of MMU2. However, at the time of data collection, there were no NSEs in the vicinity of MMU2, and there was no known difference in the distribution of pharmacies selling injection equipment in the vicinity of MMU2 and other areas of Sydney.

This study was only able to measure the frequency of illicit drug use by clients on the methadone maintenance programme, and did not investigate other behavioural, social and legal outcome variables. However reduction of illicit drug use is generally considered to be a major objective of methadone maintenance treatment. Although the presence of the NSE did not appear to lead to increased illicit drug use by the methadone clients, the possible deleterious effect of the NSE on staff morale was not measured as this was a retrospective study. While staff morale is known to be an important factor in treatment outcome,[9] the objectives of drug treatment need to be considered primarily in terms of immediate benefits to clients.

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THE ALIVE STUDY: A LONGITUDINAL STUDY OF HIV-1 INFECTION IN INTRAVENOUS DRUG USERS: DESCRIPTION OF METHODS

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To identify risk factors for infection with the human immunodeficiency virus (HIV) and for progression to the acquired immunodeficiency syndrome (AIDS) among intravenous drug users, we established a cohort in Baltimore Maryland in 1988-1989. Intravenous drug users were recruited by extensive community outreach to undergo interview and confidential HIV testing in a special study site. During 13 months of recruitment, 2,921 intravenous drug users were enrolled of whome 24 percent were HIV seropositive; 90 percent returned to receive test results. Methodological issues for enhancing recruitment and retention of drug users are discussed.

Introduction

By 1985, the acquired immunodeficiency syndrome (AIDS) had been recognized as an epidemic of major public health importance and the

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primary etiologic agent, human immunodeficiency virus, type 1 (HIV-l), had been identified. At that time, major studies had started to characterize the natural history of HIV-l infection among homosexual/bisexual men (Kaslow et al. 1987; Winkelstein et al. 1987; Schenchter et al. 1985) who accounted for about 75% of the cases of AIDS (Centers for Disease Control 1986). However, the scientific and public health importance of intravenous drug users (IVDUs) in the AIDS epidemic was not widely appreciated. A limited number of seroprevalence studies and descriptive analyses of IVDUs with AIDS or AIDS-related conditions had been done (Friedland et al. 1985; Spire, Des Jarlais and Marmor 1984), but characterization of the impact and natural history of HIV-l infection among IVDUs was limited. Soon thereafter, it became clear that IVDUs could represent a major source of transmission of HIV-l infection to heterosexuals and children (Chamberland and Dondero 1987; Rogers 1987). Because of differences in lifestyles between IVDUs and homosexual/bisexual men, it was recognized that studies among samples of IVDUs were needed to clarify the factors that might be important in parenteral, heterosexual, and perinatal transmission of HIV-l infection. Preliminary analyses also indicated differences between these two major risk groups in the clinical features of AIDS and in the median length of survival following a diagnosis of AIDS (Rothenberg et al. 1987; Marmor et al. 1984; Des Jarlais et al. 1984). Given these findings, descriptions and comparisons of the differences in the natural history of HIV-l infection between IVDUs and homosexual men could help clarify immunopathologic factors responsible for progression of HIV-l infection to AIDS. To date, such comparisons have been sparse (Zolla-Pazner et al. 1987).

Thus, the ALIVE (AIDS Link to Intravenous Experiences) study was begun with the following objectives: to identify risk factors for both HIV-l infection and for AIDS given HIV-l infection among IVDUs, to compare data on IVDUs with data from a large natural history study of HIV-l infection among homosexual men being conducted at the same institution (Kaslow et al. 1987), and to build a repository of biological specimens and data on IVDUs to permit future testing of hypotheses in this population. The aim of this paper is to report the overall plan of the study, including design issues and data collection operations. The paper also describes selected characteristics of the 2,921 participants of the ALIVE study.

Protocol for the ALIVE Study: Methods

The study protocol was specified in relation to three stages: baseline screening, return for test results, and a regular semi-annual follow-up. The objective of baseline screening was to identify at least 640 intravenous drug users (IVDUs) with antibody to HIV-l who would consent to enrollment in a prevalent cohort for a longitudinal study of infection. The objective of follow-up

was to monitor progression of HIV-1 infection to clinical disease in order to address the clinical question that given an IVDU is infected, what is the residual AIDS-free time and what are its determinants. During the thirteen-month screening stage, extensive efforts were made to attract adults who had used drugs by injection at any time during the previous ten years. This interval (1977-88) was considered to be the period when this population of IVDUs might have been exposed to HIV-1. When participants initially were seen at the study clinic, interviewers administered a clinical-epidemiological interview and a phlebotomist collected sera for assay of antibody to HIV-1. Participants were scheduled to return three to four weeks later to learn the results of the HIV-1 serologic test and to receive counseling. All seropositive individuals and an unselected sample of seronegative participants then were offered enrollment in a periodic, at six-month intervals, follow-up study which included clinical and epidemiologic interviews, a physical examination, and blood collection for laboratory studies. The term "unselected sample" is used for the seronegatives in follow-up because the strategy for recruitment was not based upon any a priori clinical, behavioral or laboratory criteria. Originally, the aim was to obtain a systematic sample of seronegatives based upon recruiting the next available seronegative after every fifth seropositive recruited into follow-up; however, on certain days, enrollment of seropositives alone taxed clinical resources so that recruitment of seronegatives had to be postponed to subsequent days when resources were adequate. Therefore, we consider the term "unselected" to be an appropriate descriptor for the sample of seronegatives achieved. Both the seropositive and seronegative participants in follow-up are to return at six-month intervals for the duration of the project (four years).

Recruitment and Enrollment

The recruitment efforts began with a series of meetings with directors and staff of agencies that served intravenous drug users. These agencies included Baltimore area drug abuse treatment programs, the Maryland Division of Parole and Probation, the Baltimore City Health Department's sexually transmitted disease clinics, hospital emergency rooms, and homeless shelters in the Baltimore area. During the meetings, the study was described, and agency personnel were asked to distribute printed brochures which described the study. To extend recruitment beyond these agencies, outreach efforts were developed in collaboration with the Street Outreach AIDS Prevention (SOAP) Unit of the Health Education Resource Organization (HERO), a community AIDS education group in Maryland. The SOAP unit includes ten recovered and recovering addicts who provide AIDS education to the inner city community through contacts on the street. These workers distributed brochures and answered questions about the ALIVE study. Study staff also distributed brochures at local public housing projects and other public places

known to be frequented by IVDUs. Finally, we anticipated that early participants in the study would encourage their friends and contacts to enroll in the ALIVE study. Mass publicity campaigns were not planned because we feared that such efforts might mobilize adverse public attention toward the study, undermining recruitment efforts and jeopardizing the study.

To assist with recruitment and retention, an advisory board composed of persons familiar with the IVDU community was established. The board was selected by inviting directors of four large, geographically dispersed drug abuse treatment programs in Baltimore and the director of a local AIDS street outreach program to assemble a group of eight to twelve individuals who were willing to serve in an unpaid advisory capacity to the investigative team; the majority were to have had a history of injecting drugs. The board was to include both genders, racial/ethnic diversity, and a variety of backgrounds (e.g., not limited to those on methadone maintenance or fully employed, to include those with HIV-1 infection, etc.). At initial meetings, the board established procedures about meeting attendance, removal and replacement of members, and the capacity of the board. An early function of the board was to screen applicants for participant contact positions in the study so as to advise the investigators on the perceived sensitivity of applicants to the study population.

The board also reviewed and advised investigators on a variety of recruitment strategies. To facilitate recruitment and retention, a participant compensation plan was developed which included free testing and pre-test/post-test counseling for HIV-1. As part of the initial consent, participants agreed to not only the baseline procedures but also the responsibility for returning to learn test results; those who might choose not to learn test results were informed prior to initial procedures that they should not enroll. The board reviewed the plan to compensate participants $10 for completion of the initial screening visit and again for returning three to four weeks later to learn the results of their test. Although the issue of remuneration of impoverished participants for visits could be considered ethically problematic, the plan was considered acceptable because all participants were informed prior to enrollment that consent was contingent upon acceptance of responsibility for returning to learn test results, that an established local precedent existed for financial compensation to this population for participation in research, and more important, that investigators were committed to offering additional services, referrals and follow-up within the same clinic to facilitate continuity of care. Compensation for each completed six-month follow-up visit, which included a focused physical exam and enumeration of T-cell subsets, was $35. The services offered to participants included screening and referral of participants for HIV-related conditions, sexually transmitted diseases, other significant medical conditions, prenatal care, and treatment for drug abuse.

The board also served as advocates for the participants in several ways. For example the board elicited information about difficulties experienced by clinic staff in referral of participants into treatment for drug abuse. Such issues as availability, eligibility and waiting lists were discussed by the board and presented directly to the city's Commissioner of Health. As participants' advocates, the board provided an additional layer of review for several proposed supplementary studies initiated by outside investigators; the board reviewed and commented on proposals from the perspectives of relevancy, interest to and likelihood of acceptability to the population.

Finally, the board also served to increase effective communication between participants and investigators, since they were generally known and trusted throughout the local IVDU community. Participants were provided phone numbers of several board members to facilitate communication and resolution of perceived problems. From a critical perspective, punctuality, regular attendance and maintenance of an agenda have not been consistent for the board. The board has undergone turnover due to some members clinical deterioration related to HIV-l, incarceration, personality conflicts between members and flagging interest. Despite these problems, the board as a group have taken their role of advisors to investigators and advocates for participants seriously, by being vocal on issues presented to or raised by the board. Over time, the board has been consistent in maintenance of commitments to strict confidentiality for participants and to continuity of services to this population.

Participants were informed that interview and test data would be held in strict confidence and no information on any individual would be released without that individual's written permission. A certificate of confidentiality was obtained from the Department of Health and Human Services To further promote a sense of confidentiality within the single clinic site, an unselected sample of 160 seronegatives, identified from the baseline visit were enrolled into the follow-up component of the study along with the seropositive participants in order to prevent identification of seropositives solely because they had been enrolled in the follow-up clinic. The seronegatives in follow-up also served information goals of the study because their biological specimens were designed to be used as laboratory controls. For example, description of the rate of decline for T-helper lymphocytes in HIV-l seropositives is complicated by variability in laboratory techniques over time; this variability can be partially offset by anchoring enumerations to period-matched specimens of seronegatives and calculating a "deficit score" (Muñoz et al. 1988).

Although we recognized the value of enrolling more than 120 seronegatives into follow-up at the time the study was designed, a pragmatic approach was taken in limiting seronegative enrollment. Because the crude estimate for annual seroconversion would produce an insufficient number of the study endpoint (i.e., AIDS) in the four-year time frame of data collection, and that statistical procedures had not yet been developed in 1985 to estimate onset of

infection for a prevalent cohort based upon a sample of seroconverters, emphasis was placed upon devoting limited resources to establishing a prevalent cohort. Since then, multiple imputation procedures have been developed (Muñoz et al. 1989). Now, all seronegatives not enrolled in follow-up are requested to return for serological rescreening at six-month intervals, and seroconverters are enrolled into the follow-up component of the study. These seroconverters will provide the basis for analysis of risk factors for incident infection, a description of the early natural history of HIV-1 infection, and the data needed to input onset of infection in the prevalent cohort.

Description of the Clinic

With the objective of providing an atmosphere of trust and rapport, the study clinic was located on the ground floor of a Baltimore City Health Department (BCHD) building. Although a hospital-based clinic might have been more convenient for coordinating the logistical operations of the study, IVDUs tend to perceive hospitals as hostile environments (Hansen et al. 1985). The BCHD building selected is situated in the central area of the city surrounded by public housing projects, and is known to have a long history of community service and utilization by potential participants in this study. Therefore, this site was considered convenient to many potential participants. A major university hospital within walking distance is able to provide emergency and referral medical services.

The physical characteristics of the clinic within the BCHD building were designed to promote an atmosphere of trust and rapport. The clinic is physically separate from the rest of the building with a separate entrance. The clinic is newly renovated, spacious, and dedicated solely to this study population. Walls of the interview and examination rooms are insulated to promote privacy of conversation. In the waiting room, television viewing and coffee were provided.

Baseline Screening.

During the screening phase of the study, potential subjects entered the clinic and were registered only by first name and first initial of last name. A study interviewer introduced herself and escorted the potential participant to an attractively decorated, private interview room for a brief subject selection interview. The interviewer did not know the subject's name, and no identifying information was recorded on the interview form. The interview session began with an effort to engage the potential subject in the interview task and to promote trust and rapport followed by a series of standardized questions on personal, health and family characteristics, all intended to aid development of trust and rapport. A question on history of intravenous drug use since 1977 was nested within a short set of questions on illegal and socially disapproved behaviors. The entire series of questions on background characteristics was

asked without regard to the subject's status as an intravenous drug user in order to permit study of these characteristics among persons choosing not to participate in the study. At the close of this interview, the interviewer told the subject whether he or she qualified for enrollment, but did not disclose the basis for inclusion (i.e., being age 18 + and reporting intravenous drug use within the past ten years). Ineligible subjects were thanked for their help, and were escorted to the waiting room; these individuals remained anonymous. All other subjects were told of their eligibility; the interviewer read the disclosure statement for the study, and sought informed consent.

The informed consent procedure included pre-test counseling about the HIV-1 antibody assay. The test technique, interpretation and implications were discussed and explored with each individual prior to completing the informed consent procedure. To minimize the possibility that information on risk reduction might alter self-reports about drug use and sexual activity, counseling specifically about prevention of HIV-1 infection followed the baseline interviews, but prior to participants leaving the clinic.

Consenting subjects were requested to provide personal identifying information from which contact could be established for the follow-up. All forms up to this point were given to a receptionist who assigned the participant a unique study number to be used on all subsequent forms and specimens. The forms with personal identifiers were stored in locked files in a separate building from the other data. In the event that participants forget their study numbers, reverse identifier cards have been generated whereby a study number can be re-established on the basis of birthdate, sex, race, mother's maiden name, and the last four digits of the social security number.

During the rest of the baseline visit, a phlebotomist drew 10 cc. of blood. After venipuncture, participants returned to the interviewer who administered the baseline interview, a standardized interview schedule developed through three cycles of pretesting and revision. All elements of the baseline interview (Table 1) were administered by interviewers; no parts were self-administered. These interviewers had extensive previous experience with health and behavior interviewing. All received a minimum of two days of additional training on the specific interview schedule, followed by supervision and quality control checks. The majority of interviews have been completed in less than 35 minutes; few exceeded one hour. The baseline interview elicited data on lifetime medical history, a ten-year pattern of drug use by injection, types of drugs used, sharing of needles and other injection practices. Upon completion of the baseline interview, a standardized AIDS knowledge questionnaire and an assessment of socially desirable responding have been administered. Answers to the AIDS knowledge questionnaire were reviewed with each participant, serving as a focus for individualized education and counseling about HIV-1 infection. Participants were offered a small package containing bleach and condoms with instructions for their use, and the opportunity for referral to treatment for drug

Table 1
Data Collection on ALIVE Study Participants at Entry in 1988, Baltimore, Maryland

Demographics Questionnaire

Age	Homelessness
Race, ethnicity	Arrest and Incarceration
Education	Marital status
Occupation	Number of children
Income	Public assistance

Identifing Information

Baseline Ouestionnaire

Selected past medical history
- Immune disorders
- Sexually transmitted diseases
- Complications of intravenous drug use

Current medical history
- AIDS related symptoms

Transfusion (recipient and donator)

Intravenous Drug Use
- During six months prior to last use
- During three months after first use
- Year by year summary 1977 - 1988

Sexual Practices
- During previous ten years
- During previous two years

Scale of Socially Desireable Responses

AIDS Knowledge and Attitude Questionnaire
(modified from the National Center for Health Statistics)

Venipuncture: 10 cc. blood, used for serological assays and repository storage.

abuse, if desired. Finally, participants were paid and given appointments to return in three to four weeks to obtain test results.

The Test Results Visit and Subsequent Follow-up Visits

During the interval between baseline screening and the test results visit, serum specimens were assayed for antibody to HIV-1 using standardized techniques: ELISA (Genetic Systems, Seattle, Washington) and Western blot (Biotech-DuPont, Rockville, Maryland). Repeatedly reactive ELISA specimens were assayed by Western blot. A positive Western blot was defined as a band at p24 or p31 and either gp41 or gp110. No bands or a single p15 or p17 was defined as negative, otherwise any bands other than those meeting the criteria for positive were considered equivocal.

At the results visit, all those who were seropositive, all those with equivocal results, and an unselected sample of 160 seronegatives were recruited for the longitudinal phase of the study beginning with a brief face-to-face interview. This interview assessed health, drug use, sexual practices and psychological status during the prior six months. This standardized panel interview schedule was designed to be used during the test results visit and also at subsequent visits every six months in order to assess changes in these characteristics. After completion of this interview, trained staff explained individual results of the HIV-1 antibody test to the subject and provided personal counseling. Informing and counseling subjects about their test results followed the interview because the reverse was considered more likely to affect the quality of responses. Consent for subsequent follow-up components of the study was obtained after disclosure of test results, with the option to defer continuation to a later date. Seronegatives not selected for follow-up enrollment were counseled about their test results and scheduled to return for serologic rescreening in six months.

Consenting participants in the follow-up component of the study underwent venipuncture and a standardized physical exam conducted by a physician or physician's assistant. The exam was designed to identify stigmata of drug use, clinical features of AIDS or AIDS-related complex, and selected sexually transmitted diseases. Participants were paid and scheduled to return at six-month intervals to repeat their interview, physical examination and venipuncture.

At each visit in the follow-up component of the study, blood was processed for complete blood count and differential, for enumeration of total (CD3+), helper (CD4+) and suppressor (CD8+) T-lymphocytes (Hoffman et al. 1980), for storage of peripheral blood mononuclear cells, serum and plasma. T-lymphocyte enumerations were performed by flow cytometry. At the screening and at each follow-up visit, blood specimens are obtained from each subject, processed and aliquots were stored frozen in order to permit retrieval for hypothesis testing at a later date.

Data Analysis

For the data presented here, frequency distributions of study variables were generated by HIV-1 antibody status at baseline. Odds ratio, chi-square and Fishers exact statistics were used to guide interpretation (Fleiss 1981).

Results

Of the 3,375 individuals who registered for screening at the study clinic, 378 (11.2%) did not qualify (age 17 or no intravenous drug use reported in the previous ten years). Of the 2,997 remaining, 12 were registered as non-IVDU sex partners of participants, 4 subsequently admitted to have never been an IVDU, 2 had the outcome variable (AIDS) at baseline, 18 had equivocal Western blots, and 40 were subsequently identified as having registered at least twice under different names; these 76 (2.5%) were excluded from baseline analyses. Of the 2,921 eligible and consenting participants, stigmata of IV drug

Table 2
Source of Recruitment Reported by ALIVE Study Participants, Baltimore, Maryland, February 1988 – March 1989

Serostatus	Seronegative		Seropositive	
Source	N	%	N	%
Word-of-mouth	1938	87.4	564	80.2
Drug Treatment Program	128	5.8	35	5.0
HERO Street Outreach	77	3.5	45	6.4
Parole and Probation	38	1.7	15	2.1
STD Clinics	32	1.4	35	5.0
HIV Clinics	2	0.1	8	1.1
Emergency Rooms	2	0.1	1	0.2
Total	2218	100.0	703	100.0

use were present on 94% of those recorded by the phlebotomist, using only inspection of upper extremities. Although a variety of agencies had been enlisted as sources of recruitment for the study, 85.7% of the participants reported that they had first learned of the study by word-of-mouth from a friend

or another participant (Table 2); disproportionate referral of seropositives. from STD and HIV clinics was intentional. Only 5% of participants were current clients in drug abuse treatment; however, 51.5% reported at least one episode of at least twenty-eight days in a drug treatment program at some time during the prior ten years.

The youngest participant was 18 years old; the oldest 68 years, with a median of 34 years of age. As Table 3 shows, the sample was predominantly black and of low socioeconomic status as measured by legal income, education and current employment status. A substantial proportion reported histories of arrest, incarceration, and 36% reported a history of homelessness at some point during the previous ten years. Dividing the samples in half by enrollment dates, comparison of demographic characteristics were all not significant (data not shown). HIV-1 seropositivity was confirmed in 703 (24.1%) of the 2,921 participants. As shown in Table 3, seropositivity was strongly ($p > .005$) associated with age 25-44, black race, current unemployment and a history of treatment for drug abuse; a positive association ($p > .05$) was observed by current unemployment, and a history of arrest and incarceration. Marginal associations ($p < .10$) were noted for education 9th grade and legal income $5,000. However, gender (not accounting for sexual preference) and history of homelessness was unassociated ($p > .10$) with HIV-1 seroprevalence.

In terms of injection history, the median duration was 12 years (range:1-50 years), and 2,616 (89.6%) subjects claimed their most recent injection was during the same year as the baseline visit, (subsequently referred to as "current users") with 2,252 (77.1%) reporting their most recent injection within one month prior to initial enrollment. As Table 4 shows, a substantial proportion reported for the six months prior to last use, an injection frequency of more than once a week (with 39.5% injecting at least daily), and more than one needle sharing partner; 922 (31.6%) reported using needles that were borrowed, rented, or purchased in a shooting gallery during the six months prior to last use. By sexual activity 245 (10.4%) of the males self-reported homosexual activity within the previous 10 years. For the sample as a whole, 148 (5.1%) reported one or no sex partner during the previous ten years and 436 (14.9%) reported more than 45 partners, the median was 10. Receptive anal intercourse was reported by 157 (5.4%).

Discussion

These preliminary results from the ALIVE study build from a foundation of earlier work on longitudinal studies of drug users and investigations of HIV-1 infection among intravenous drug users (IVDUs), but represent just a beginning set toward achievement of the study objectives. The results address several concerns about feasibility of studies in this population, namely, whether IVDUs would enroll in large numbers for a longitudinal study based in a clinic that was detached from any drug abuse treatment facility, criminal justice agency or

Table 3
HIV-1 Serostatus by Demographic Characteristics ALIVE Study, Baltimore, Maryland, February 1988 – March 1989

Characteristic		N	% HIV-1 positive	p-value
Age in Years				
	18-24	216	18.1	0.002
	25-34	1392	25.7	
	35-44	1098	24.9	
	45+	215	15.8	
Race:	Black	2585	26.1	<0.001
	Non-black	326	8.3	
Gender:	Male	2368	23.7	0.274
	Female	553	25.9	
Legal Income:	<$5,000	2099	25.0	0.073
	≥$5,000	780	21.8	
Education:				
	1-8	238	18.1	0.080
	9-12	1379	25.5	
	>12 grade	1303	23.6	
Current Employment:	Yes	666	20.6	0.016
	No	2254	25.1	
Homeless:				
	Ever	1057	23.8	0.384
	Never	1864	24.2	
Arrested:	Yes	2203	25.1	0.040
	No	712	21.2	
Prison:	Yes	1927	25.3	0.035
	No	993	21.8	
Treatment:	Yes	1506	26.6	0.001
	No	1413	21.4	

Table 4
HIV-I Serostatus by Selected Drug Use and Sexual Activities During the Six Months Prior to Last Injection ALIVE Study, Baltimore Maryland, February 1988 – March 1989

Variables	N	Proportion %
Frequency of Injection		
≥ 1x/day	1153	39.4
> 1x/wk. – < 1x/day	1006	34.5
> 1x/mo. – < 1x/wk	457	15.6
≤ 1x/mo.	305	10.5
Number of Different Needle-Sharing Partners		
>1	1367	46.9
1	637	21.8
0	879	30.1
Attendance at Shooting Galleries		
Yes	922	31.6
No	1993	68.4
Type of Drug Injected		
Heroin alone	236	8.1
Cocaine alone	497	17.0
Heroin & cocaine only	1903	65.1
Other (combinations)	285	9.8
Gender**		
Male-Heterosexual	2112	72.5
Male-Homo-Bisexual	245	8.4
Female	553	19.1
Receptive - anal intercourse (last 10 yrs)		
Yes	157	5.4
No	2764	94.6

* 7 participants refused to answer
** 11 missing (all males)

acute care hospital; whether it would be feasible to obtain data on report sensitive behaviors, and whether subjects would return for potentially disturbing test results and six-month repeat visits. To achieve the sample obtained, a wide variety of techniques were used. Because the recruitment goal was ambitious and the time frame for enrollment was limited, the efficacy of individual recruitment techniques was not evaluated. Given that the study population was predominantly impoverished and from the inner city, financial compensation and convenient location were probably important determinants for recruitment. However, the role of the advisory board, hiring staff sensitive to the needs of the population, assuring strict confidentiality, designing the clinic environment and study instruments to establish trust and rapport, providing an ongoing monitor of health status with expedited referrals for additional care, all cannot be easily dismissed. The combination of techniques is likely to have contributed to improved recruitment, reporting of sensitive behaviors and return visits. Relative efficacy for select techniques requires further investigation.

Although the observed seropositivity values are comparable to those from other recent local surveys (Vlahov et al. 1989; Polk et al. 1986), the large sample size of IVDUs used to generate these data does not necessarily mean that the data are generalizable to other populations of IVDUs. Multiple reports of IVDUs suggest considerable variation between metropolitan areas for drug use practices, HIV-1 seroprevalence and transmission (Marmor et al. 1987; Chaisson et al. 1987; Lange et al. 1988; Lieb et al. 1987). Even within a single metropolitan area, considerable variation has been reported (Drucker and Vermund 1987). In Baltimore, the ALIVE cohort may be biased because of a volunteer effect; participants may have volunteered because they considered themselves at high risk for infection. Although the cash incentive may mitigate the effect of a volunteer bias, it may have resulted in selection for lower socioeconomic status. Because high-risk behaviors among IVDUs, such as needle sharing, have been associated with economic factors (Magura et al. 1989), selection for lower socioeconomic status is not an unreasonable strategy. Nevertheless, the extent to which these data reflect characteristics of the IVDU population is unknown. The issue of representativeness and generalizability is common to studies of IVDUs because no population frame exists. Instead, investigators access IVDUs through drug abuse treatment centers (Marmor et al. 1987; Chaisson et al. 1987; Schoenbaum et al. 1986; Selwyn et al. 1987), criminal justice agencies (Vlahov et al. 1989), and ethnographic "street outreach" techniques (Watters and Biernacki 1989); however, each of these approaches may be subject to selection bias. Given these limitations, emphasis should be placed upon any consistency of findings across studies, and observed differences should provide the basis for additional hypothesis formulation. Because most published reports of longitudinal studies of HIV-1 infection among IVDUs have been based upon samples obtained in drug abuse treatment

centers (Selwyn et al. 1987; Des Jarlais 1987), a strength of the ALIVE cohort lies in the ability to provide similar types of information from a population of predominantly active users outside the treatment and criminal justice settings.

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Public Health Briefs

Evaluating Needle Exchange: Do Distributed Needles Come Back?

Joseph Guydish, PhD, MPH, George Clark, Delia Garcia, Moher Downing, Patricia Case, and James L. Sorensen, PhD

ABSTRACT

We employed capture-recapture methods as a strategy for evaluating needle exchange. Needles distributed by the exchange at two time periods were marked with color coded bands indicating the date and site of distribution. Half of the marked needles (2,068/4,239) returned within two weeks of distribution, and 61 percent (2,593/4,239) returned during the study period. The rate of return for stationary exchange sites (63 percent) was greater than that for roving/mobile sites (51 percent; $\chi^2 = 28.6$, $p < .001$). Of all needles returned, 87 percent (2,248/2,593) returned to the site of original distribution. (*Am J Public Health* 1991;81:617-619)

Introduction

Needle exchange programs can potentially slow the spread of the human immunodeficiency virus (HIV) among injection drug users (IDUs), their sexual partners, and their children. Needle exchange is controversial, however, in that it contradicts traditional drug treatment philosophy and removes at least one barrier to drug use. Reports from programs abroad suggest that needle exchange does not increase drug use or needle use, or encourage individuals to begin using needles.[1-5] Whether these programs slow the spread of HIV remains unanswered. United States needle exchange programs now operate in several urban areas,[6-8] and there is a pressing need for evaluation. Strategies that do not rely on self-report can assist efforts to determine program effects.

One question is whether distributed needles return to the exchange. In the ideal program 100 percent of needles distributed would be returned in a short time, implying consistent use of new needles and a low likelihood of needle sharing in the exchange population. We employed capture-recapture methods to determine what proportion of distributed needles return to the exchange, how quickly needles return, and whether distributed needles travel between exchange sites.

The San Francisco exchange program (Prevention Point) trades needles on a 1:1 basis during regular hours on one night each week, and any patron may exchange up to 10 needles. There are two "roving" teams which travel on foot over a prescribed route, and two stationary teams. Together these sites exchanged an average of 2,806 needles per week during the study period.

Methods

Needles were identified for study purposes ("captured") with colored bands painted onto the barrel of each syringe. The color indicated both the site and date of distribution. Marked needles were distributed on two occasions. At Time 1, all needles distributed at Stationary Site A ($n = 1,200$) and Roving Site A ($n = 204$) were marked. At Time 2, nine weeks after the first distribution, marked needles were distributed at Stationary Site A ($n = 1,300$), Stationary Site B ($n = 1,137$), Roving Site A ($n = 249$), and Roving Site B ($n = 149$). These needles, marked with four colors different from those used at Time 1, comprised 95 percent (2,835/2,978) of all needles distributed at Time 2. After each distribution, all needles returned to any exchange site were inspected for a nine-week period, and banded needles (those "recaptured") were recorded.

This method is observational and unobtrusive. Exchange patrons were not interviewed, and no attempt was made to determine whether the original recipient of marked needles was also the person who returned them. Only needles collected by the exchange program were monitored, so no data are available concerning marked needles that did not return to the program. Prevention Point had distributed marked needles in conjunction

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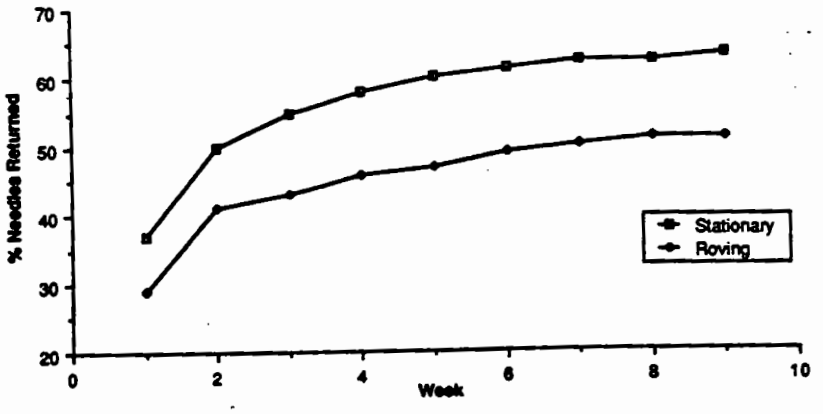
TABLE 1—Rate of Return for Banded Needles, Collapsed across Time of Distribution and Site

Week of Return	Needles Returned N = 4,239* (%)
1	1500 (35.4**)
2	568 (13.4)
3	195 (4.6)
4	129 (3.0)
5	83 (2.0)
6	37 (0.9)
7	30 (0.7)
8	34 (0.8)
9	17 (0.4)
Totals	2593 (61.2)

*Total number of banded needles distributed.
**Percentages rounded to one decimal place.



Proportion returned for Stationary Sites is 62.8% (2284/3637), and for Roving Sites, 51.3% (309/602). $X^2 = 28.6$, $p < .001$

FIGURE 1—Cumulative Rate of Return by Type of Exchange Site, Collapsed across Time Periods

with a previous study,[6] so that many exchange patrons were accustomed to receiving marked needles. In the present study, patrons who asked about the markings were told that we wanted to learn how long distributed needles remained on the street.

Results

Results are presented for Time 1 and Time 2 combined, since the proportion of needles returned (60 percent and 62 percent, respectively) and the general pattern of return were the same. The rate of return was inversely related to time since distribution, with the greatest return occurring in the first five weeks (Table 1).

For the stationary site evaluated at both time periods, there was no difference in rate of return across time (63 percent vs 62.9 percent). For the roving site, the rate of return was greater at Time 2 than at Time 1 (58.2 percent vs 43.1 percent; $\chi^2 = 10.2$, $p < .01$). At Time 2 there were no differences in rate of return for the two stationary sites (62.9 percent vs 62.4 percent), or the two roving sites (58.2 percent vs 51 percent). To evaluate differences in return rate by type of site, we collapsed data across time for stationary and roving sites (Figure 1).

Last, we evaluated how often needles returned to the site where they were distributed. Of the banded needles returned, 87 percent (2,248/2,593) were returned to the site of original distribution. For stationary exchanges the proportion of needles returning to the home site ranged from 88 percent to 94 percent. The proportion returning home to Roving Site A was lower (74 percent). Unexpectedly, only 12 percent (9/76) of returning Roving Site B needles came back to the home site, and 82 percent returned to Stationary Site B located in the same neighborhood.

Discussion

For both Time 1 and Time 2, nearly 50 percent of distributed needles returned within two weeks. This finding suggests some stability in the exchange population, and that many patrons use the exchange repeatedly. The difference observed for rate of return between stationary and roving sites suggests that these models, in San Francisco, may serve different IDU populations. Roving teams were designed to reach homeless IDUs who are more transient and whose needles are frequently lost or stolen. To the degree that roving teams reach this population, a lower rate of return would be expected. The finding that needles distributed by Roving Site B frequently returned to Stationary Site B indicates that these sites serve an overlapping population.

The application of nonself-report methods is vital in adequately evaluating the effects of US needle exchange programs. While such methods cannot replace self-report strategies, they can provide independent verification of self-report data. The capture-recapture method indicates the stability of the exchange population, the frequency with which patrons use the exchange service, and the degree to which different exchange sites serve unique populations. □

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Evaluating Needle-Exchange Programs via Syringe Tracking and Testing (STT)

Edward H. Kaplan

Human immunodeficiency virus (HIV) infection and AIDS have spread rapidly among intravenous-drug users (IVDUs) worldwide.[1] Needle sharing among drug users has been identified as the main reason for this rapid spread.[2] That a single contaminated needle can infect many susceptible users is one reason HIV has spread faster among IVDUs than other risk groups.[3]

AIDS-intervention programs targeting IVDUs have included HIV testing and counseling, street outreach education, bleach distribution, and needle-exchange programs. Needle-exchange programs operate under the theory that the provision of clean needles in exchange for used ones will reduce needle sharing among IVDUs, and slow HIV transmission as a result. Such programs have been implemented in many European cities, and in Canada and the United States as well.

Recently, researchers have started to evaluate the efficacy of needle-exchange programs.[4] To do so, they have conducted intensive surveys of needle-exchange clients to ascertain baseline behaviors, such as the level of needle sharing, in addition to changes in such behaviors. Though such studies have produced important findings, sole reliance on self-reported data hinders evaluators in three ways. First, it is not possible to verify independently key behavioral quantities, such as the level of needle sharing. Second, intensive data gathering among program clients is necessarily intrusive, requiring drug users to complete often lengthy questionnaires. Third, it is very difficult to extrapolate self-reported behavioral modification to changes in the spread of HIV, yet reducing HIV incidence is the primary goal of needle exchange. A definitive link between the operations of a needle-exchange program and the course of the AIDS epidemic among IVDUs in a given locale has yet to be established relying on traditional evaluation approaches.

Another difficulty with conventional evaluation designs is that they cannot determine rapidly whether a needle-exchange program is succeeding. Even if program clients are tested for HIV infection as part of a program evaluation, short-term changes in the incidence of infection can only be detected via difficult repeat testing. It is crucial to determine quickly whether or not an AIDS intervention program such as needle-exchange is effective. Failure to evaluate quickly can both delay the acceptance of effective programs (hindering their implementation elsewhere) and prolong the functioning of ineffective programs (preventing better resource allocation among other AIDS-intervention efforts).

This article offers a new approach to evaluating needle-exchange programs that employs the needles themselves as primary data. Via syringe tracking and testing (STT) it is possible to obtain rapid and relatively unobtrusive estimates of needle sharing, needle-return rates and circulation times, and changes in the rate of HIV infection among needles distributed by the program. Such an STT system has been implemented as part of the evaluation of New Haven's legal needle-exchange program; together with limited client surveys, preliminary data from this STT have provided useful insights following only seven and one-half months of program operations. In this article, all aspects of syringe tracking and testing are detailed and illustrated using data from New Haven. As the reader will see, the idea is that whenever possible, one should *let the needles do the talking!*

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An Overview of STT

Syringe tracking and testing is a new data collection device developed as part of the evaluation of New Haven's legal needle-exchange program. The underlying philosophy of STT is that it is possible to infer the properties of an epidemic among injecting drug users via the study of their used needles. By way of analogy, the spread of HIV infection among drug users via shared injection equipment is similar to the spread of malaria via mosquitoes; the study of circulating needles is akin to the study of circulating mosquitoes. Thus, STT allows inference about the spread of HIV (or other infections) by establishing a mechanism that lets the needles do the talking.

As its name suggests, syringe tracking and testing consists of two components. *Tracking* is achieved by distributing syringes with traceable codes. Thus, it becomes possible to associate a number of variables with individual syringes, such as identifiers for the person who initially received the syringe, the person who returned the

syringe, the date and location of syringe distribution, and the date and location of syringe return. *Testing* refers to determining in some reliable fashion whether a given needle has been infected. Antibody tests have been used toward this end.[5] However, unlike humans, needles will not provide large quantities of blood. For this reason, it is critical to employ a testing procedure that is sufficiently sensitive to detect infectious agents from minute samples. Elsewhere, it has been shown that polymerase chain reaction (or PCR) provides the requisite sensitivity to reliably test needles for the presence of HIV proviral DNA.[6] The uses of STT data are many. From STT data, it is possible to estimate a number of variables fundamental to the evaluation of needle-exchange programs. These include (but are not limited to) the prevalence of needle sharing among drug users, the return rate of distributed needles, the circulation time of needles, and the fraction of needles infected with HIV.

Finally, as stated earlier, it is critical to provide timely information regarding the performance of AIDS-intervention programs. Successful needle-exchange programs will quickly alter the characteristics of syringes circulating among injecting drug users. Needle circulation times will fall rapidly from preprogram levels (owing to frequent exchange), reducing the number of sharing opportunities per needle; as a consequence, the level of infection among needles will decrease. The STT system is uniquely suited to detect such short-term changes, providing decision makers with the ability to determine quickly whether a program is having the desired effect. Traditional evaluation measures, particularly those based solely on self-reported data, simply cannot provide such timely information.

NEEDLE EXCHANGE PROGRAM PARTICIPANT
NEW HAVEN HEALTH DEPARTMENT

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Figure 1. New Haven Needle Exchange Identification Card

Hypothetical Needle Tracking Log

DATE: 8/21/91 LOCATION: HILL

SYRINGE #:	PROGRAM CODE NAME
12437	STREETCAT
12438	STREETCAT
12439	JAZZ (NEW CLIENT)
12440	ATTICA
12441	ATTICA
12442	BLUE THUNDER
12443	BLUE THUNDER
12444	BLUE THUNDER
12445	BLUE THUNDER
12446	TIRED
12447	TIRED
12448	DOWNTOWN
12449	DOWN TOWN
12450	DOWN TOWN

When Returned

1. Take cannister with returns
2. Write code name, date & location on cannister
3. Goes to Yale

Figure 2. Hypothetical Needle-Tracking Log

Implementing STT in New Haven

The New Haven STT operates as follows: all syringes dispensed by the program are coded with sequential tracking numbers. These numbers are written directly on program syringes with a marking pen, and then wrapped with clear tape to prevent erasure. This simple method has preserved over 85 percent of the tracking codes issued by the program. Outreach workers maintain a tracking log when operating the needle exchange. This log records the date and the location of the mobile van

Table 1
Volume of Needle Exchange by Neighborhood
(11/13/90-6/30/91)

Neighborhood	Needles Distributed	Program Needles Returned	Street Needles Returned	% of Program Needles Returned
Hill	5,830	3,004	2,449	51.5
Dixwell	1,440	570	829	39.6
Fairhaven	1,849	1,154	535	62.4
Dwight	677	319	274	47.1
Newhallville	298	167	124	56.0
AIDS Field Office	86	42	20	48.8
Other	0	7	5	—
TOTAL	10,180	5,263	4,236	51.7

(from which the needle exchange is conducted) in a heading at the top of the page. The entries in the log are indexed with the same sequential tracking numbers that have been written on the syringes to be dispensed.

Each client in the New Haven program selects a unique fictitious name at program intake and receives an identification card from the program with this name, as shown in Figure 1. When a client receives needles from the program, the outreach worker records the client's program name in the tracking log next to the sequence numbers of the syringes dispensed. Thus, for every syringe distributed, the date and location of syringe distribution are known, as well as the program name of the client who received these syringes. A hypothetical tracking log is shown in Figure 2.

Clients return needles to the program by placing them in a canister provided by the outreach worker. After determining the number of needles returned (the New Haven program offers one-for-one exchange to a maximum of five needles per visit), the outreach worker affixes a label to the canister. This label records the date, location of the program van, and the program name of the returning client. As the New Haven program accepts both program and nonprogram needles for exchange, information regarding where, when, and by whom a needle was returned is obtained for both program and nonprogram needles.

At the end of each working day, the tracking logs and labeled canisters (containing returned needles) are delivered to a laboratory. There, laboratory staff carefully "decode" the returned needles by recording the tracking codes of all program needles returned along with the information on the canister labels. For each legible program needle returned to the program, it is possible to assemble the following information via the tracking codes: the distribution date, location, and program name of the syringe recipient; and the return date, location, and program name of the syringe returner. For illegible program needles and needles originating from the street, the return date and location and the program name of the returning client are also known. This information is entered into a computerized data base indexed by the syringe tracking codes.

In addition to syringe tracking, needles returned to the program are sampled, and those selected are tested for HIV using PCR. PCR was selected for its ability to detect HIV proviral DNA in very small quantities of blood, such as the amount found inside a returned needle. The details of the PCR protocols developed for use in evaluating the New Haven program have been described elsewhere.[7] For those needles tested via PCR, the results (recorded as positive or negative) are added to the tracking data base described above, completing the syringe tracking and testing system.

From the inception of New Haven's needle exchange on 13 November 1990 through the end of June 1991, over 10,000 needles have been tracked, while nearly 800 needles have been tested for HIV via PCR. These data enable numerous inferences to be drawn regarding the operation and impact of the needle exchange.

STT Evaluation Measures

Needle Distribution and Exchange

An immediate application of STT data is the determination of the volume of needle distribution and return. Table 1 reports this information for the New Haven needle exchange over the first seven and one-half months of the program.[8] Note that the tracking system permits the classification of needle-exchange activity by neighborhood. From 13 November 1990 through 30 June 1991, the program distributed 10,180 needles. Over half of these were distributed in the Hill district, while the Dixwell and Fairhaven neighborhoods each accounted for about one-sixth of the distributed needles. Of the 10,180 needles distributed, 5,263 were returned to the program by the end of June, implying a raw return rate of 51.7 percent. The implications of the return rate will be noted below; for now, it should be realized that this is actually lower than the true return rate, for needles distributed prior to 30 June will continue to be returned. There is some variability in the return rate by neighborhood; only 40 percent of distributed needles in the Dixwell area have been returned to the program, while about 60 percent have been returned from the Fairhaven and Newhallville districts.

A common criticism of needle-exchange programs is that they flood neighborhoods with needles, increasing the risk of needlestick injuries and increasing the chance that, unbeknown to program officials, persons might begin experimenting with needles. This criticism fails to distinguish between raw needle *distribution*, which does increase the number of circulating needles, and needle *exchange*, which does not. It is

clearly evident from Table 1 that in addition to the 5,263 program needles returned, 4,236 street needles were also delivered to the program. Thus, the gap between the number of needles distributed and the number returned is small. In addition, the STT did not record over one hundred needles retrieved by an outreach worker from a local shooting gallery, nor were a few batches of street needles that were returned by a single client entered into the STT. Thus, the gap between the number of needles distributed and the number removed from the streets is even smaller than reported. Regarding STT needles, the legislation enabling the New Haven program states that new clients with no syringes to exchange may receive a single needle at intake; following this, all exchange activity must be one-for-one to a maximum of five. Thus, the maximum difference between the number of outbound and inbound needles equals the cumulative number of clients who have joined the program. As of June 1991, 720 injecting drug users had enrolled in the program. As this number exceeds the observed gap of 681 between the number of outbound and inbound needles(10,180 needles distributed minus 5263 program needles returned minus 4,236 street needles returned), the program is operating consistently with the law.

Return Rates and Needle Circulation Times

The overall average return rate of 51.7 percent contains more information than is immediately obvious. As the program accepts any needles for exchange (whether they are program needles or not), clients have absolutely no incentive to return program needles as opposed to street needles. Therefore, it is reasonable to assume that returned needles were selected at random from the needles that clients have at their disposal. Also, because the program operates as a one-for-one exchange, the fraction of returned needles that are program needles roughly equals the fraction of distributed needles that are, in fact, returned. These arguments imply that among program clients, program needles account for roughly 52 percent of all needles in circulation. This is remarkable, considering that prior to 13 November 1990, there were no program needles in circulation.

This demonstrated penetration of program needles into the population of all needles suggests that the circulation time of needles has been reduced, for needle exchange greatly increases the turnaround of needles in circulation (as opposed to the number of needles). This intuitive idea may be formalized as follows: suppose that prior to the advent of needle exchange, active needles were removed from circulation with rate R per needle per day, and thus the average length of time a needle remained in circulation was equal to $1/R$ days. The implementation of needle exchange increases this removal rate from R per needle per day to $R+E$ per needle per day, where E is the per needle exchange rate per day. Thus, following the implementation of needle exchange, the needle circulation time would fall from $1/R$ days on average to $1/(R+E)$ days on average. Note that the percentage reduction in mean circulation time due to needle exchange is given by $[1/R - 1/(R+E)]/[1/R] = E/(R+E)$. The ratio of E (the per needle exchange rate per day) to $R+E$ (the total per needle removal rate per day) is nothing other than the return rate discussed above. Thus, in a true one-for-one needle exchange program, the return rate is also an estimate of the percentage reduction in needle circulation times.

Recall that from the STT, the dates of both distribution and return are known for legible program needles delivered to the program. From these data, one may estimate the average needle circulation time; for the New Haven data, the mean circulation time is roughly seven days (the median circulation time is four days). As argued above, the needle exchange has been responsible for roughly a 52 percent drop in the mean needle circulation time, implying that prior to the program, needles remained in circulation for roughly two weeks. This estimated drop in the mean needle circulation time reduces the average number of shared injections per circulating syringe by a factor of two.

Survey respondents know that the "right" answer is not to share, so many persons might respond in this manner without regard to their true level of needle sharing.

Estimation of Needle-Sharing Levels

Needle sharing is known to facilitate the spread of HIV, and thus it is important to determine the level of needle sharing in populations of IVDUs. The extent of this behavior has been measured via self-reporting; injecting drug users are asked how often they share, and their answers to such questions are taken as estimates of sharing behavior. Cynics would claim that in an environment such as a needle-exchange program, where drug users are repeatedly counseled not to share their injection equipment, one should expect low levels of self-reported sharing from interview bias effects alone. Survey respondents know that the "right" answer is not to share, so many persons might respond in this manner without regard to their true level of needle sharing.

Participants in the New Haven program are asked how often they share their equipment. Perhaps not surprisingly, 60 percent of men and 62 percent of women claim they *never* share, while

Table 2
Syringe Testing Results

Needle Source	Sample Size	% HIV Positive
Shooting Gallery	48	91.7
Street	160	67.5
Needle Exchange	579	50.3

the average sharing levels reported are 11 percent of the time among men and 14 percent of the time among women. These are low sharing levels, but it is not clear that they are correct.

The STT system enables the following definitions: a syringe is "STT shared" if the client who returned the syringe is *not* the same client who received it. Alternatively, a syringe is "STT dedicated" if it was distributed to and returned by the same client. Of course, the fact that different clients received and returned the same syringe does not prove that the needle in question was shared. Similarly, there is no proof that an STT-dedicated syringe was not shared. However, it stands to reason that STT-shared syringes are much more likely to have been shared than STT-dedicated syringes.

Clients in the New Haven program report sharing roughly 12 percent of the time (men outnumber women by about a four-to-one ratio). However, of all legible needles returned to the program, 32 percent were STT shared. This is almost triple the self-reported sharing level, suggesting that needle sharing is more prevalent than client surveys admit. Which sharing measure ought one believe? If there is validity to the STT sharing definition, then one would expect the fraction of STT-shared needles that test positive for HIV infection to exceed the fraction of STT-dedicated needles testing positive. This is indeed the case, as will be shown below.

Testing Results: The Impact of Needle Exchange

The tracking component of the STT suggests a drop in needle circulation times from preprogram levels. The testing of returned needles, however, provides hard data regarding the effectiveness of needle exchange. If the needle exchange is operating effectively, then there should be a sharp drop from the level of infection among needles prior to needle exchange to the level of infection among program needles.

Table 2 provides preliminary evidence. First, several needles were retrieved from a local shooting gallery; shooting galleries are locations where drug users inject with rented equipment that is often shared, and regular shooting gallery attendance is a known high-risk factor for acquiring HIV infection.[9] Of forty-eight needles tested for the presence of HIV proviral DNA via PCR, forty-four tested positive, a prevalence of 92 percent. This, of course, cannot be construed as the typical risk faced by an IVDU in New Haven prior to needle exchange. However, it shows dramatically the disastrous consequences of needle sharing taken to an extreme.

Recall that the needle exchange accepts any needles, and that just under half of all needles delivered to the program were street needles (see Table 1). Because there is no incentive for program clients to return program needles as opposed to street needles, it may be assumed that needles delivered to the program are a random sample of all needles that clients have at their disposal. In turn, this suggests that the level of HIV infection among street needles at the start of the needle exchange is representative of the level of infection among needles typically used by drug users prior to the start of the program. Of 160 street needles tested, 108 produced positive results, for a prevalence of 67.5 percent. This is lower than the shooting gallery results ($z = 3.31$; p-value $= 4.7 \times 10^{-4}$), but still very high, demonstrating the risk faced by drug injectors in New Haven prior to needle exchange.

Thus far, a total of 579 needles distributed by the program have been tested for the presence of HIV proviral DNA, and 291 of these have tested positive, for a prevalence of 50.3 percent among program needles. This is significantly lower than the level of infection among street needles ($z = 3.86$; p-value $= 5.7 \times 10^{-5}$) and indicates the short-term impact of the needle exchange. Simply comparing the prevalence among street and program needles suggests a 25 percent drop in the risk of infection to drug users participating in the program, for the incidence of new infections is directly proportional to the prevalence of infection among needles in circulation.[10] To become infected, an uninfected user must inject with a shared needle that is infected and has *not* been disinfected (via bleach, for example), and the infection must be transmitted from the contaminated needle to the drug user. In the absence of behavioral changes, injecting, sharing, and bleaching levels will stay the same. Also, the probability of acquiring infection from a single injection with a contaminated syringe will not change. Thus, the drop in needle prevalence translates directly to a drop in the rate with which new infections are acquired.

Of the 579 program needles tested, the syringe tracking numbers were destroyed on eighty-two. Of these illegible needles, fifty-four tested HIV positive for a prevalence of 65.9 percent. A plausible explanation for this high prevalence is that these needles were repeatedly shared, leading to both a high level of infection and destruction of the tracking codes, though this remains a matter of conjecture.

Table 3 presents an analysis of the HIV prevalence among program needles by tracking them over time. If the STT sharing definitions are valid, one would not expect to see changes in HIV prevalence among dedicated needles over time, but one would expect to see a drop in the prevalence among shared needles. In addition, the fraction of

Table 3
HIV Prevalence Among Legible Program Needles Over Time

Distribution Period	STT Shared Needles		STT Dedicated Needles	
11/13/90-12/20/90	63%	(N=70)	45%	(N=110)
12/21/90-01/15/91	51%	(N=82)	46%	(N=163)
01/16/91-03/15/91	26%	(N=23)	41%	(N= 49)

shared needles infected should exceed the fraction of dedicated needles infected. As expected, the prevalence of HIV infection fell significantly among those needles tracked as shared ($x^2=9.5$; df=2; p-value=0.0087), while the prevalence of infection remained unchanged among dedicated needles over time ($x^2=0.42$; df=2; p-value=0.81). This demonstrates both the impact of the needle exchange, as well as the validity of the STT sharing definitions. Though highly significant, these results are preliminary, and perhaps problematic in at least one respect: one would not expect the level of infection among shared needles to fall below the level of infection in dedicated needles, for if the exchange was as effective as possible and sharing was eliminated, *all* needles would be dedicated. The last set of tests reported are based on small sample sizes, and thus additional testing is necessary to validate the encouraging trends seen in these data.

Conclusion

This article has outlined a new approach to the evaluation of needle-exchange programs. The ability to link the mechanics of needle exchange directly to the level of infection in circulating needles provides a powerful set of tools for both observing and explaining the impact of needle exchange on the spread of HIV infection among IVDUs.

The circulation theory espoused in this article can be quantified formally,[11] enabling the construction of mathematical models that reflect the operations of a needle exchange. Companion papers[12] have shown how STT data taken in conjunction with minimal information from client surveys (such as self-reported injection frequencies and needle-cleansing levels) can provide estimates of HIV prevalence among IVDUs in the program, the incidence rate of new HIV infections, and the percentage reduction in HIV incidence owing to the operation of needle exchange. These models also produce estimates for other quantities of interest, such as the probability of HIV infection per injection with a contaminated needle, and the ratio of circulating syringes to drug users in the program. While such models are important extensions of the STT, the methods and arguments of this article should be sufficient to detect whether a needle-exchange program is working effectively.

Finally, the reader should be aware that there are other aspects of needle-exchange programs that are important to document in any comprehensive evaluation; existing studies from around the world have provided very useful information regarding the demographics of clients served, entry into drug treatment, and the stability of the size of the IVDU population both before and during needle-exchange programs.[13] Researchers should continue to assemble such information. For example, in New Haven the demographics of clients entering the needle exchange have remained remarkably stable over time; there have been no radical changes in the age of clients (with a mean of thirty-four years), or the length of time over which clients have been injecting drugs (with a mean of seven years).[14] These findings dispute the argument that needle-exchange programs create a new generation of drug users. STT, therefore, should not be viewed as a replacement for existing evaluation approaches. However, STT methods do provide powerful tools that, if used carefully, can only improve the scientific evaluation of needle-exchange programs.

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IEWPOINT:

New Jersey Needs a Needle Exchange Program

By Lisa Berlin

Although New Haven, Connecticut found that its Needle Exchange Program reduced the rate of new HIV infection by 33%, New Jersey has not yet implemented a Needle Exchange Program based on fears that such programs condone drug use and take money away from treatment programs.

The purpose of Needle Exchange Programs is not to condone injection drug use, or to decriminalize it, but to decrease the spread of HIV among people who use intravenous drugs and their partners. Needle Exchange Programs are part of the treatment process. They offer access to drug treatment programs for people who may not have been able to seek it otherwise.

New Jersey has the highest percentage of AIDS cases among women, along with the highest percentage related to IV drug use. Of the women with HIV/AIDS in New Jersey, three quarters were exposed to HIV through sharing contaminated needles or from sex with an HIV-positive injection drug user.

Needle Exchange Programs require that a "dirty needle" be exchanged for a clean, sterile needle. Therefore, needles are properly disposed of, kept off the street, and out of curious children's hands. Intravenous drug users are brought to a trusted location, and taught how to clean needles with bleach kits. People are referred to medical and rehabilitation services. Needle Exchange Programs discourage needle sharing and encourage safer sex through the distribution of condoms, dental dams and information.

A Needle Exchange Program that meets these criteria would help women. The legalization of hypodermic needle possession, sale, and distribution would allow women to come freely to a Needle Exchange Program without the fear of arrest and loss of their children to the state. It would curtail the exorbitant underground price for needles which encourages sharing.

Such programs also include drug treatment on demand. This strategy could combat the six-month waiting period to get into treatment programs, and the criminalization of women who are sent to correctional facilities and often refused treatment when programs are full. The majority of drug treatment programs are not designed for women since most do not provide child and obstetric care or accept pregnant or women with HIV.

In order to combat the spread of HIV through a Needle Exchange Program, New Jersey must respond to the fact that it has the highest rate of women with AIDS by creating drug programs that are sensitive to the concerns of women.

We welcome your input! Letters and submissions to *NJWAN News* are due by the 15th of every month. We do not print names unless authorized to do so.

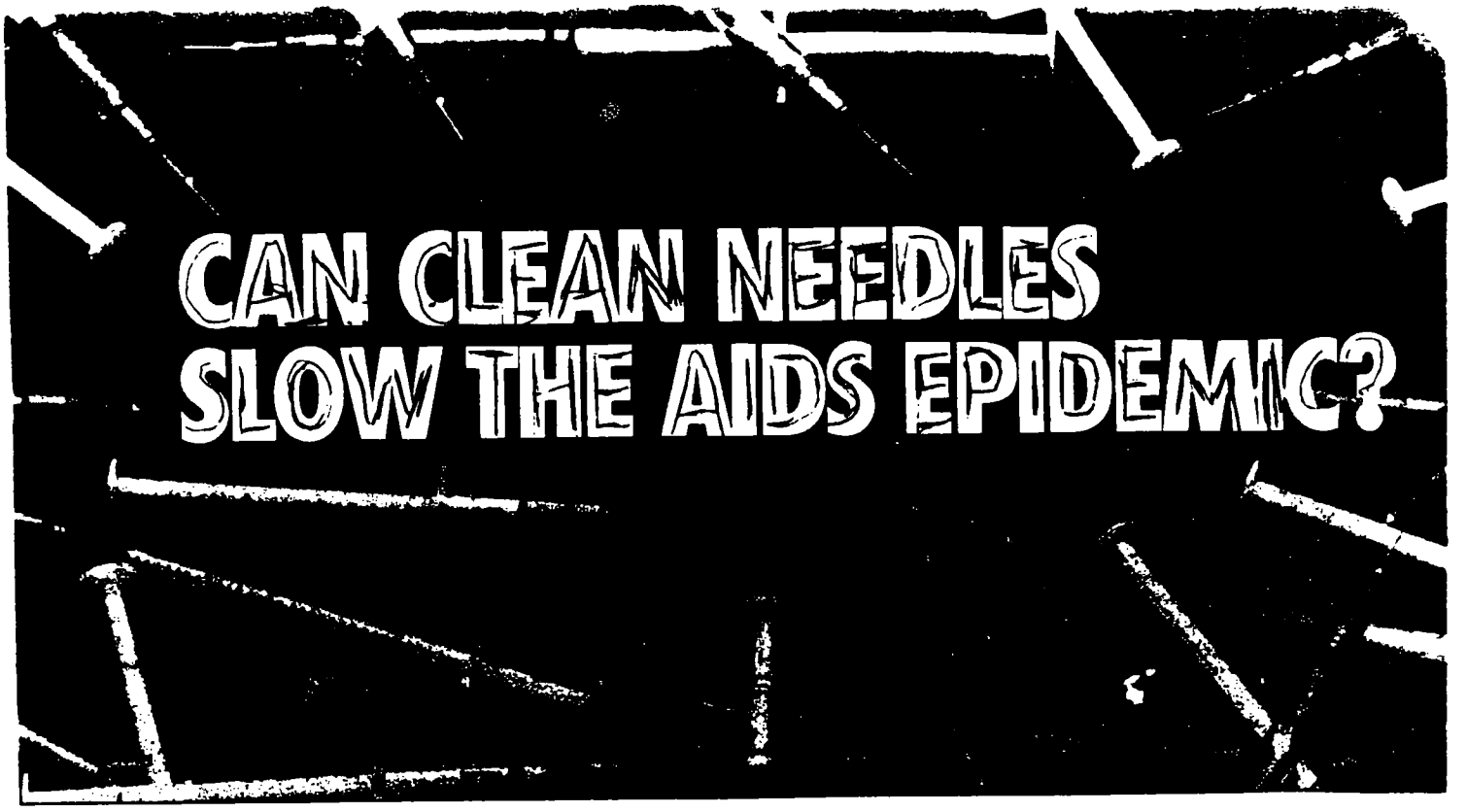
Participants Wanted for Study of Rural HIV+ Women

Little attention is being paid nationally to rural AIDS, and there is even less attention on rural/non-metropolitan *women* in this regard. This study will give voice to these women and bring their stories forward. The study is intended to help women and health workers in rural/non-metropolitan areas find better ways to cope with HIV disease.

Linda Hendrixson, Health Educator, President of the Sussex County AIDS Task Force, and a doctoral candidate in the Health Education Department at New York University, invites HIV-positive women who live *outside* major cities to participate in a study of how HIV has affected their lives. Women in New Jersey, Pennsylvania and New York State are invited.

The project will involve two private, confidential interviews with the identity of the participants kept absolutely secret. Participants will be paid for their time.

For further information, write to Linda Hendrixson, P.O. Box 634, Branchville, NJ, 07826 or call (201) 948-3249. If she is not at home, you may leave your first name, only, if you wish, and a secure phone number on the answering machine.



CAN CLEAN NEEDLES SLOW THE AIDS EPIDEMIC?

The message was "just say no." The AIDS virus paid no attention. From New Haven comes a more effective message.

Early in the AIDS epidemic, even before the virus that causes it was identified, it was clear the mysterious disease was spreading rapidly among drug users. Soon it was also appearing in their sexual partners and their children. AIDS is now among the 10 most common causes of death in American children under five. In New York State, it is the second leading cause of death in black children under five, and the leading cause of death in Hispanic children of that age. Just east of upper Manhattan, in the South Bronx, almost 5 percent of all children under 13 years old—an estimated 4000 in number—are infected with the AIDS virus.

Moreover, the number of children affected is rising rapidly. New cases of pediatric AIDS in 1992 rose 13.4 percent over 1991, some 13 times the rate of increase among drug injectors themselves. Among women of childbearing age infected sexually (primarily by addicts), the rate is rising even faster. In 1992, 2442 women were diagnosed with AIDS contracted sexually, a 17 percent jump over 1991 and the highest increase for any group. For the first time, the annual number of such cases surpassed that of women who inject drugs. Overall, the number of drug-related AIDS victims among those who have never injected drugs now exceeds 15,000.

An escalating epidemic

Human immunodeficiency virus, or HIV, the agent that causes AIDS, is transmitted by sexual intercourse, by injection or transfusion of HIV-tainted blood or blood products, and from an infected mother to her fetus or newborn. One-third of the 339,000 AIDS cases reported to the U.S. Centers for Disease Control and Prevention (the CDC) by late 1993 have been associated directly or indirectly with injecting heroin, cocaine, or both. Some 60 percent of all those affected have died—a greater number of fatalities than the nation experienced in Vietnam.

In striking contrast to health-care workers, who have rarely been infected with HIV in thousands of needle-stick exposures to it, drug injectors have rapidly acquired the infection. Laws restricting possession of injection equipment, under penalty of imprisonment, encourage the sharing of needles and syringes. And frequent injections—often three to four times a day among heroin users and even more among cocaine users—raise the risk of encountering contaminated equipment.

Intravenous drug use has become the most important factor in the spread of AIDS in the U.S. Although the majority of AIDS cases to date has occurred among homosexual and bisexual men, the percentage of drug-related cases has been increasing while that for homosexual and bisexual men has declined in each of the last three years.

Surging epidemics among drug injectors are not the norm among Western nations. Several European countries and Australia have blunted the spread of AIDS far more successfully than the United States has. Where the U.S. has relied primarily on punishment and advertising campaigns of the "just say no" variety to combat drug use, most Western nations have stressed more direct forms of disease prevention.

To mitigate harm

Even before the threat of AIDS was apparent, the Netherlands sought to prevent transmission of hepatitis B, a common blood-borne infection, by allowing addicts to exchange used needles and syringes for new, sterile ones. As the risk of AIDS grew, cities such as Amsterdam expanded their needle-exchange programs. The government's harm-reduction measures also included regular medical examinations for addicts, distribution of methadone and condoms, and referral to hospitals.

Such efforts appear to be working. In a study published in the American Journal of Public Health in 1991, researchers at the Municipal Health Service in Amsterdam reported that HIV infection rates in a group of 6[illegible] drug injectors had remained stable

over four consecutive years. Overall, the study reported, 75 cases of AIDS had occurred among heterosexual drug addicts in the Netherlands from the start of the epidemic to the end of 1989. That represents a disease incidence rate of about 1 percent. In the U.S., the comparable incidence rate over the same period among heterosexual drug users was 2.4 percent, or 24,212 cases. Since the end of 1989, moreover, the number of drug-related AIDS cases in the U.S. has more than tripled.

In contrast to U.S. practice, Dutch officials have traditionally been less punitive toward users, preferring to emphasize a public-health approach to the problem. Yet countries less tolerant of drug use than the Netherlands, including Australia, the United Kingdom, Germany, Sweden, and others have introduced needle-exchange programs and a broad range of services geared to reduce HIV transmission.

In Edinburgh, Scotland, for example, officials decided to let physicians prescribe, free and on demand, oral versions of nearly any drug used by addicts. Those receiving the drugs had to avoid using needles and agree to regular drug and medical counseling. The object was to reduce risky drug-taking behavior first and then seek to overcome drug dependency.

The initial program site opened in 1988 at Royal Edinburgh Hospital. In a news dispatch from Edinburgh last year, correspondent William E. Schmidt of The New York Times reported that the program "has not only reduced the number of addicts injecting drugs from thousands to only a few hundred, but has also effectively halted the spread of HIV via contaminated needles." After peaking in the mid-1980s at an average of 120 new infections a year, the number steadily declined to just 8 in 1992. In addition, Schmidt reported, heroin use and local crime rates had declined as well.

The reported rate of AIDS cases in Britain is 2 per 100,000 people—among the lowest in Europe and well below the U.S. rate of 18.5 per 100,000 in 1992. According to World Health Organization officials in Geneva, the low incidence in part reflects ambitious and early government programs to intervene, including provision of clean injection equipment to addicts.

Indeed, almost all Western nations make sterile injection equipment legally accessible to drug injectors. Sweden is the only Western European country that restricts pharmacy sales of syringes, but it sanctions needle-exchange programs. Several countries, including Germany, Norway, and the Netherlands, also allow syringes to be dispensed in vending machines, particularly in areas frequented by drug users. Even Canada and Australia, which historically have taken punitive approaches to illicit drug use, provide funding for needle exchange and permit pharmacy sales to users.

Against the tide

Unlike its counterparts abroad, the U.S. has striven to keep clean injection equipment out of the hands of addicts. Layers of Federal and state law block access to such equipment or make its possession a crime, often forcing drug injectors to share whatever is available, whether it's clean or contaminated.

Ten states—including several with the greatest number of drug addicts, such as California, Illinois, New Jersey, and New York—require a medical prescription for purchasing injection equipment. In those states, addicts commonly buy such equipment from drug dealers. Some sellers purchase their supplies out of state; others acquire needles stolen from hospitals or doctors' offices, scavenge them from hospital trash bins, or secure them through forged prescriptions or from diabetics. According to drug researchers in New York City, many sellers will resell used and unsterilized needles as new ones.

Addicts who manage to secure sterile injection equipment then confront another set of laws. Forty-six states and the District of Columbia have statutes based on the Federal Model Drug Paraphernalia Act of 1979, which shows states how to strengthen laws that prohibit addicts from possessing injection equipment. Fear of arrest for simply possessing a needle or syringe is one of the chief reasons addicts share equipment.

In 1979, the threat of AIDS had not yet surfaced. By the mid-1980s, though, the soaring rate of infection among drug injectors was becoming apparent. Yet, instead of urging states to relax their laws on drug paraphernalia, the Federal Government acted to tighten them further. In October 1986, it enacted the Mail Order Drug Paraphernalia Control Act, which prohibits the sale or transport of drug paraphernalia through the mails or "by other interstate conveyance." The title of the Act suggests a focus on mail-order businesses, but the law's actual wording supports a much broader reach. Specifically, if state or local governments were to permit gaps in their drug-paraphernalia laws, the Act provides a basis for Federal agencies to intervene.

As the AIDS epidemic intensified, the Government took further steps to block access to sterile injection equipment. Under three different Presidents, Congress passed eight separate bills with provisions that bar or inhibit Federal funding for needle-exchange.

The wrong message

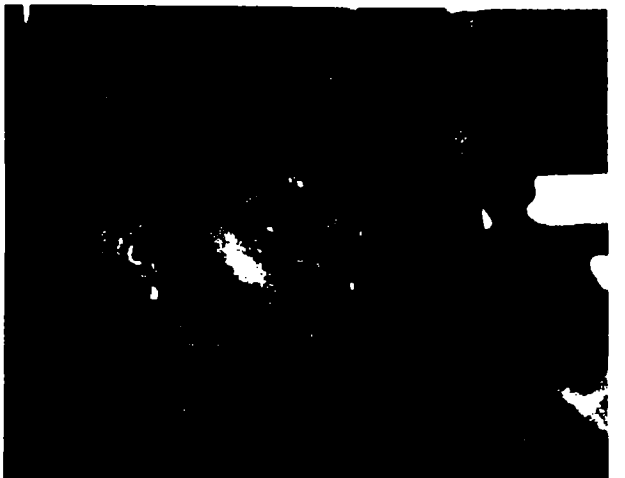
Distributing needles "undercuts the credibility of society's message that drug use is illegal and morally wrong," declared Robert Martinez, director of the Office of National Drug Control Policy under President Bush. "In response to the AIDS epidemic, there are those who are ready to sound a retreat in the war on drugs by distributing clean needles to intravenous drug users," said Martinez in his agency's July 1992 Bulletin. "I believe this would be a serious mistake. We must not lose sight of the fact that illegal drugs still pose a serious threat to our nation. Nor can we allow our concern for AIDS to undermine our determination to win the war on drugs."

Like Martinez, a number of prominent black legislators have expressed strenuous opposition to needle-exchange programs. Fearing that access to injection equipment will only fuel the cycle of addiction, crime, and violence decimating their communities, they have frequently joined conservatives to block Federal financing for such projects.

Representative Charles B. Rangel, Democrat of New York, for example, used his leverage when chair of the House Select Committee on Narcotics to bar funding of needle-exchange programs. Instead, he urged Federal support for drug-treatment programs with a broad range of services.

Last fall, scientists at the University of California's Berkeley and San Francisco campuses completed a major study of needle-exchange for the CDC, including interviews with numerous supporters and opponents of the programs in 13 cities. They found that African-Americans, like other Americans, differ widely in their views on needle-exchange.

In contrast to Representative Rangel, for example, black legislators



In response to the AIDS epidemic, there are those who are willing to sound a retreat in the war on drugs by distributing clean needles to intravenous drug users. We must not lose sight of the fact that illegal drugs still pose a serious threat to our nation. Nor can we allow our concern for AIDS to undermine our determination to win the war on drugs. —Robert Martinez, [illegible] Director of National Drug Control Policy, under President Bush.

Photo by Ricky Rogers, Black Star

in California have proposed bills to legalize and fund needle-exchange programs in the state. Black mayors in Baltimore, New Haven, Conn., New York City, and Washington, D.C., have also backed such programs in their cities. Surveys of Harlem families in 1989 and 1990 found 54 percent of all respondents in favor of providing clean syringes to drug injectors.

"The most consistent and often most vocal community opposition . . . has emanated from the more established African-American community and church officials," the University of California scientists reported. Despite the severe impact of AIDS in African-American communities (about 47 percent of all drug-related cases), black ministers in particular have fought vehemently against needle-exchange. Many view it as a policy that condones drug use and merely perpetuates addiction among blacks —a trifling substitute for the drug-treatment services their communities desperately need.

Federal funding for drug treatment, of course, has been a stepchild for years. In three out of every four cities that offer treatment, waiting lists of up to six months are typical, the U.S. Food and Drug Administration has reported. Nationwide, there are generally more than 100,000 drug users on waiting lists at any given time.

Just say no, or else

Even as cocaine use soared in the 1980s along with AIDS, the Government's primary response was the Reagan Administration's "Just Say No" campaign. As some drug experts point out, that amounts to a policy of doing nothing. Taking drugs is viewed as a criminal act, and AIDS is part of the package criminals can expect for injecting them. At the same time, the Reagan Administration chose to just say no itself to any increase in funds for treatment, actually cutting outlays back from $332-million in 1980 to $234-million by 1986. Funding has increased significantly since then, but it still falls far short of addressing the need.

Eventually, activist groups such as the National AIDS Brigade and ACT-UP began distributing needles to addicts as explicit acts of civil disobedience. The largest needle-exchange program in the nation, for example, Prevention Point in San Francisco, was launched by a roving team of volunteers defiantly pushing a baby carriage filled with sterile injection equipment through the city.

Initially, most such programs were small, "underground" projects, lacking legal sanction but tolerated by local authorities troubled by the spread of the epidemic. Legally organized programs first appeared in Tacoma, Wash.. in 1988, and in Portland, Ore., and Seattle in 1989.

Not until recently, however, have any good-sized, officially sanctioned programs been established in inner-city locales where both drug addiction and AIDS are rife. But that situation is changing, in part because of the impact of a needle-exchange project operating in New Haven, Conn.

A community responds

Like officials in Edinburgh, community leaders in New Haven realized in the mid-1980s that the city had a significant drug-related epidemic. More than 60 percent of its reported AIDS cases could be traced to drug injection, particularly in poor and minority areas of the city. In 1986, a mayoral committee representing diverse constituencies was formed to foster community cooperation in forging a rational response to the AIDS threat.

State legislators were ultimately persuaded to fund a pilot needle-exchange program exempt from drug-paraphernalia laws. Enacted in May 1990, the bill also mandated that the program be evaluated. The state health department chose professor Edward H. Kaplan of Yale University's schools of management and of medicine to conduct an independent appraisal.

Evaluating needle-exchange programs has long proved formidable partly because of the chance that self-reported accounts of drug use could be unreliable. Addicts dependent on a program might conceivably report what they think interviewers want to hear; such self-reports are hard to verify in a scientific way. Thus, even though a variety of studies, both here and abroad, have shown favorable results for needle exchange, opponents of the programs have commonly attacked the reliability of the findings.

Accordingly, Kaplan devised an evaluation method that departed entirely from previous studies. Instead of interviewing participants, the program would "interview" the needles. They would be tracked by special codes assigned to the syringes themselves and to the participants who picked them up and returned them. Random samples of the returned needles would then be tested for traces of HIV contamination.

The evaluation relied on mathematical modeling techniques to estimate HIV infection rates. The approach was similar to one used to study the spread of malaria, which spreads from humans to mosquitoes and back to humans. In this instance, contaminated injection equipment replaced the mosquito. Overall, the method avoided any dependence on self-reports by addicts or changes in their behavior. It was the behavior of the *needles* that mattered.

Listening to the needles

As the project progressed, random testing of the needles for traces of HIV showed a significant decline in contamination rates. Of 579 program needles tested by March 1991, 50.3 percent were positive for HIV, down from 67.5 percent for a baseline sample of 160 street needles serving as a comparison. Eventually, the contamination rate in program needles fell to 40.5 percent.

On the basis of the contamination rates, the circulation time of the needles, and other data, the mathematical model estimated that the program reduced HIV transmission rates by 33 percent among those who participated.

Two major studies conducted for

the Government—one by the General Accounting Office, the investigative arm of Congress, and one by the University of California for the CDC—have scrutinized the New Haven evaluation in detail. Both found it to be scientifically valid.

"Overall, it is a remarkably efficient and sound method for estimating [needle-exchange] effects," the University of California study stated. Both studies also concluded that the 33 percent drop in HIV transmission rates was an underestimate, because of the intentionally conservative criteria incorporated in the mathematical model. (Those who left the program to enter drug treatment, for example, were simply recorded as dropouts.)

The model indicated a drop in new HIV infections from six per year to four per year for every 100 drug injectors in the program. On that basis, Kaplan estimated that 20 infections had been prevented over the first two years of the program. The current Federal estimate of the cost of treating a person with HIV, from the time of infection until death, is approximately $119,000. In its first two years of operation, the New Haven needle-exchange program cost only about $150,000 annually while saving at least $2-million for the health-care system.

Just east of upper Manhattan almost 5 percent of all children under 13 years old—an estimated 4000 in number—are infected with the AIDS virus. Overall the number of drug-related AIDS victims among those who have never injected drugs now exceeds 15 000

Beyond HIV

Other results of the program, however, may ultimately prove as important as the savings in lives and money. For one thing, there was no evidence of any increase in injecting drug use in New Haven as a result of the program. Secondly, one of every six addicts who joined the program subsequently entered drug treatment. Moreover, the racial and ethnic makeup of those who did was far different from the primary white clientele at many treatment centers. Among those who left the program to seek treatment, 41 percent were black, 25 percent were Hispanic, and 34 percent were white. By comparison, those already in treatment at the time in New Haven were 63 percent white, 27 percent black, and only 9 percent Hispanic.

Advocates of needle exchange often contend that it reaches people who are ordinarily wary of official government programs, including drug treatment. The New Haven experience appears to bear that out. The implication is that a well-run needle-exchange program can serve an outreach function, attracting addicts who distrust the establishment system and usually shun it. Thus, needle exchange needn't be an alternative to drug treatment; it can be a bridge to it.

As a result of the New Haven findings, Connecticut has enacted legislation expanding the needle exchange to Bridgeport and Hartford. And in July 1992, the state decriminalized the possession of injection equipment. Drug users may now buy up to 10 syringes at a time without a prescription and carry such equipment on their person without being subject to arrest. Last fall, the state of Maine rescinded its prescription law as well.

The University of California study—the most comprehensive to date on needle exchange—recommended repeal of all such prescription laws as well as all drug-paraphernalia laws "as they apply to syringes." It also urged the Government to repeal the ban on Federal funds for needle-exchange and expand access to treatment.

The war on drugs is arguably no nearer solution today than when President Nixon first declared it in 1971. While there are no easy answers, a civilized nation must curtail the mounting number of AIDS casualties from friendly fire.

"Federal funding is critical," says drug expert Dr. Don C. Des Jarlais, who is directing an evaluation of New York City's needle-exchange programs. "Most state governments are in worse shape than the Federal Government. Without Federal funds, we are really going to be limited in what we can accomplish in this epidemic." ■

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