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TO: *Sandy*

FAX: *456-2439*

FROM: Deborah von Zinkernagel
Deputy Director for Policy

(This fax contains 4 page(s) + cover)

→ **Main points - DC*

- *45% NEPs are state govt as primary fiscal support*
- *33% report local govt as primary support (with NOT D.C.)*
- *Cost effectiveness (David Holtgrave article)*
- *Excellent referral to treatment & retention in Subst Abuse treatment*
 - *getting the active user*
- *(DC epid. clearly driven by DC in minority population)*

If there are any problems with this transmission, please call Terrie Alvarez at (202) 690-5560

→ *Legal programs offer more health services & better referrals to drug treatment than illegal underground markets*

10/12/98 TUE 12:07 FAX

Syringe Exchange in the United States, 1996: A National Profile

ABSTRACT

Objectives. This paper provides 1996 information on the status of US syringe exchange programs and compares these findings with data from our 1994 survey.

Methods. In November 1996, questionnaires were mailed to 101 syringe exchange programs. Program directors were contacted to conduct telephone interviews based on the mailed questionnaires. Data collected included number of syringes exchanged, syringe exchange program operations, legal status, and services offered.

Results. Eighty-seven programs participated in the survey. A total of 46 (53%) were legal, 20 (23%) were illegal but tolerated, and 21 (24%) were illegal-underground. Since 1994, there has been a 54% increase in the number of cities and a 38% increase in the number of states with syringe exchange programs. Eighty-four programs reported exchanging approximately 14 million syringes, a 75% increase from 1994. Syringe exchange programs also provided a variety of other services and supplies, and legal programs were more likely than illegal ones to provide these services.

Conclusion. Despite continued lack of federal funding, syringe exchange programs expanded in terms of the number of syringes exchanged, the geographic distribution of programs, and the range of services offered. (*Am J Public Health.* 1999; 89:43-46)

Denise Paone, EdD, Jessica Clark, BA, Qidui Shi, PhD, David Purchase, and Don C. Des Jarlais, PhD

The primary goal of syringe exchange programs is to reduce HIV transmission associated with drug injection by providing sterile syringes in exchange for used, potentially contaminated syringes. Data from the Centers for Disease Control and Prevention indicate that approximately one-third (36%) of AIDS cases in the United States are directly or indirectly associated with injecting drug use.¹ Moreover, 50% of new HIV infections are occurring among injection drug users.² Despite these numbers and the data documenting the efficacy of syringe exchange programs, no federal funding is available for syringe exchange.³⁻⁵ Even without federal support, however, syringe exchange programs in the United States continue to expand both in number and in terms of geographic area.

This report summarizes a survey of US syringe exchange programs' activities during 1996 and compares the findings with those from a similar 1994 survey.

Methods

In November 1996, the Beth Israel Medical Center in New York City, in collaboration with the North American Syringe Exchange Network (NASEN), mailed questionnaires to the directors of 101 syringe exchange programs in the United States that were known to NASEN. The survey instrument included a series of open-ended and closed-ended questions. Subsequently, program directors were contacted by Beth Israel Medical Center research staff to conduct structured telephone interviews based on the mailed questionnaires. Directors were given the option to keep their program's data confidential. Affiliation with NASEN provides several advantages: (1) no cost for membership, (2) provision of operating supplies, (3) informal network of support, (4) important

national information, and (5) a yearly national convention that offers scholarships for syringe exchange programs that cannot afford the costs of sending representatives. NASEN maintains strict confidentiality for its members, and we have assumed that the vast majority of syringe exchange programs in the United States are affiliated with NASEN and were therefore included on our mailing list. Although some small programs, or those administered by private individuals, may have gone unnoticed, it is very unlikely that any programs exchanging large numbers of syringes per year would not be known to NASEN.

The survey data we have collected include the number of syringes exchanged during 1996 and information about the syringe exchange programs' operations, legal status, and services offered. A shorter and much more limited analysis of these data was reported in June 1997 in *Morbidity and Mortality Weekly Report (MMWR)*.⁶ We now present a more detailed analysis that includes the associations between program size and services provided, program costs, geographic location, and funding sources.

Programs were categorized according to their legal status. "Legal" programs operated in states that did not have a prescription law (a law requiring a prescription to purchase a hypodermic syringe) or that had an exemption to the state law allowing the program to

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operated in states that had a prescription law but had received a formal vote of support or approval from a local elected body. "Illegal-underground" programs operated in states that had a prescription law and no formal support from local officials.

For programs that operated multiple sites and/or satellite programs, only the parent program was surveyed and provided data for all of its dependent subsidiaries. All programs considered new in 1995 or 1996 were distinct programs, not simply new sites for already established programs.

Programs were also categorized according to their size. Small programs exchanged fewer than 10 000 syringes per year, medium programs exchanged between 10 000 and 55 000 syringes per year, large programs exchanged between 55 001 and 499 999 syringes per year, and extra large programs exchanged 500 000 or more syringes per year.

We examined the data to determine the relation between program size and number of syringes exchanged. Eighty-four programs reported exchanging nearly 14 million syringes (3 programs did not provide data). Of these 84 programs, 73 were open for more than 12 months, 3 were open for between 9 and 12 months, and 8 were open for less than 9 months. Thus, 11 programs were in a start-up phase of operations, which is an atypical period in any organization, and the number of syringes they exchanged in the calendar year may be underestimated.

Programs were questioned about "secondary exchange," which was defined as participants' providing syringes to people who do not attend syringe exchange programs themselves and which includes participants' exchanging used syringes for new ones, giving syringes away, bartering with syringes, and/or selling syringes to other users. For some programs, secondary exchange accounts for a large proportion of the total number of syringes exchanged. Ethnographic data indicate that many people do not go to an exchange because they fear the stigma associated with using a syringe exchange program. Programs were also questioned about funding for "syringe disposal." This question was designed to determine whether the programs had funding specifically designated in their budget for collecting and disposing of syringes according to designated methods for the disposal of biohazardous waste. Finally, programs were questioned about operational difficulties experienced during the past year. Responses included "lack of resources" (insufficient funds for the operation of syringe exchange) and "staff shortages" (not mutually exclusive categories).

TABLE 1—Number of US Syringe Exchange Programs and Syringes Exchanged, by Size of Program, 1996 (n = 84)^a

Size of Program	Programs		Syringes Exchanged	
	No.	(%)	No.	(%)
<10 000	23	(27)	64 737	(<1)
10 000–55 000	27	(32)	910 247	(6)
55 001–499 999	24	(29)	3 658 060	(26)
≥500 000	10	(12 ^b)	9 407 629	(67)
Total	84	(100)	13 940 672	(100)

^aThree programs did not report the number of syringes exchanged.

^bThese 10 programs were located in New York City (2), Seattle, Tacoma, Philadelphia, Chicago, Bridgeport, Oakland, San Francisco, and Los Angeles.

Descriptive statistics (frequencies, mean, standard deviation, median, and range) were generated for all study variables. Bivariate analyses were conducted by using the χ^2 test, Fisher exact test, and student *t* test. Significance was reported at $P < .05$.

Results

Of the 101 programs contacted, 87 participated in this survey, providing an 86% response rate, slightly lower than the 88% response rate in 1994.⁷ Almost all of the programs that did not participate were small and/or underground. Of those that did participate, 51 began operating before 1995, 22 in 1995, and 14 in 1996. These 87 syringe exchange programs reported operating in 71 cities in 28 states and 1 territory; 44 of the programs were located in 4 states (California, 17; Washington, 11; New York, 10; and Connecticut, 6). In 8 cities, at least 2 programs reported operating. In comparison, in 1994, 60 syringe exchange programs reported operating in 46 cities and in 21 states.

The 10 programs in New York represent 3 of the 5 boroughs—Manhattan, Brooklyn, and the Bronx. To date, there are no known syringe exchange programs in either Staten Island or Queens.

Of the 87 programs that participated in this study, 3 did not provide information about the number of syringes exchanged. The remaining 84 reported exchanging approximately 14 million syringes (median: 36 017 syringes per syringe exchange program). In comparison, approximately 8 million syringes were exchanged by 55 programs in 1994 (median: 39 014). Although the overall number of syringes exchanged increased from 1994 to 1996, the median decreased because of an increased number of small programs in 1996.

The 10 most active programs—those that exchanged 500 000 or more syringes—

accounted for approximately 9.4 million (67%) of all syringes exchanged. As in 1994, the San Francisco syringe exchange program reported exchanging the largest number of syringes (approximately 1.3 million) in 1996. In comparison, the 23 small programs—those exchanging fewer than 10 000 syringes—exchanged fewer than 1% of the total number of syringes (Table 1). These small programs exchanged a mean of 2815 syringes in 1996 and operated on a mean annual budget of \$19 643 (median: \$5000) compared with a mean budget of \$245 354 (median: \$255 000) for all programs.

In addition to exchanging syringes, the programs provided other risk reduction supplies and services. All 87 (100%) provided IDUs with information about safer injection techniques and/or use of bleach to disinfect injection equipment. All but 3 (97%) reported referring clients to substance-abuse treatment programs and providing instruction in the use of condoms and dental dams to prevent sexual transmission of HIV and other sexually transmitted diseases, and 70 (80%) reported offering education on sexually transmitted disease prevention. The 5 programs that did not refer participants to drug treatment were illegal-underground programs and may have been limited by budgetary or staffing constraints. Various health services were also offered by many programs (Table 2).

A direct association was found between program size and the provision of services other than syringe exchange. The 10 extra-large programs reported offering, on average, 4.70 services; the 24 large programs offered an average of 3.29 services; the 27 medium programs offered an average of 1.93 services; and the 23 smallest programs reported offering an average of 1.91 services.

In 1996, 46 (53%) syringe exchange programs were legal, 20 (23%) were illegal but tolerated, and 21 (24%) were illegal-underground. Legal status was further examined to assess association with delivery of services (Table 3). Legal programs were

more likely to offer on-site HIV counseling and testing and tuberculosis skin testing than were illegal programs. Operations also differed with regard to legal status. Legal programs were less likely than illegal ones to conduct secondary exchange and more likely to have formal agreements with drug treatment providers. Finally, legal programs were less likely than illegal programs to report lack of resources or staff shortages as problems encountered over the last year.

The primary source of funding reported by 45% of programs was their state government, whereas 33% reported their local government, and 15% reported private foundations. No programs received federal funding for exchange operations, reflecting current federal law restrictions.⁸

Programs reported their annual syringe exchange budget, and the cost per syringe for each program was calculated. Program size was correlated with cost per syringe exchanged, and larger programs showed a lower cost per syringe. The average cost per syringe exchanged for extra-large programs was \$0.25; for large programs, \$0.98; and for medium programs, \$1.43. The mean cost for all 3 categories was \$1.07. This relationship remained stable when programs were stratified by legal status. We did not calculate the cost for the small programs because nearly all of these programs reported being open for less than a year, which is likely to be an atypical period.

Discussion

Several limitations to this study must be noted. Because the definition of "legal" status did not include an account of local drug paraphernalia laws, legal barriers to syringe exchange programs may have been underestimated. Drug paraphernalia laws may affect a program's effectiveness, even in the presence of "waivers" or prescription laws, by making the carrying of syringes by participants an offense liable to prosecution.

Syringe exchange program activity, overall, may have been underestimated, because not all operational programs are known to NASEN and not all NASEN members participated in the survey. However, as discussed in the methods section, it is very unlikely that programs exchanging large numbers of syringes per year would go unknown to NASEN.

In addition, data presented in this report were self-reported by program directors, and our cost constraints precluded making site visits. Finally, although we report on referrals to various health services and to drug treatment, because of confidentiality laws

TABLE 2—On-Site Health Services at US Syringe Exchange Programs, 1996^a

Type of Service	Offering Service	
	No.	(%)
HIV counseling and testing	37	(43)
Primary health care	15	(17)
Tuberculosis skin testing	22	(25)
Sexually transmitted disease	16	(18)

^an = 87.

and funding limitations, very few programs tracked the proportion of clients who did in fact use the services to which they were referred.

Despite a lack of federal funding for the operation of syringe exchange in the United States, the number of syringes exchanged increased by 75% between 1994 and 1996, and the number of cities and states operating syringe exchange programs also increased. More than half the states (29) had at least one syringe exchange program in 1996, located in 71 cities, reflecting a 54% increase in the number of cities. The 36 new programs that began operating since 1994 were geographically dispersed (i.e., 3 opened in the Northwest, 3 in the Southwest, 10 in the Midwest, 7 in the Southeast, and 13 in the Northeast).

Although the data indicate that syringe exchange programs are complex service organizations that provide more than "clean needles," programs that have full legal status share several differing but important operational characteristics. Similar to the results of our 1994 survey, legal programs were more likely to offer certain on-site services and referrals, to have an age minimum for participants, to have formal agreements with drug treatment providers, and to receive funding for syringe disposal. The 3 programs that did not make referrals to drug treatment were illegal-underground. The illegal status of

programs suggests more difficulty in raising funds, resulting in a lack of resources and in staff shortages. More important, illegal status may hinder the ability of programs to exchange enough syringes to significantly affect the injection practices of a community with many injection drug users.

In a recent study, Des Jarlais et al.⁹ compared HIV incidence among injection drug users participating in legal syringe exchange programs in New York City with HIV incidence among nonparticipants (who did not have legal access to sterile syringes). The study found that use of legal syringe exchange programs provides a strong (adjusted odds ratio of 0.3) individual-level protective effect against HIV infection.

This survey provides important information on the state of syringe exchange in the United States. In addition to providing important public health services, syringe exchange programs clearly serve as centers for the dissemination of education and HIV-prevention supplies. Secondary exchange of syringes was widely reported and appears to be an important mechanism for the distribution of sterile injection equipment to those injection drug users unable to obtain syringes directly from an exchange. Interestingly, illegal programs were more likely to allow secondary exchange, which may be associated with being less regulated, than officially sanctioned programs. Despite the

TABLE 3—Services Offered and Operational Issues, by Legal Status, for US Syringe Exchange Programs, 1996

	Legal ^a		Illegal ^b	
	No.	(%)	No.	(%)
HIV counseling and testing	29	(63)	8	(20 ^{***})
Tuberculosis skin testing	19	(41)	3	(7 ^{***})
Secondary exchange	38	(83)	41	(100 ^{**})
Age minimum	23	(50)	10	(24 [*])
Formal agreements with drug treatment providers	29	(63)	14	(34 [*])
Specific funding for syringe disposal	18	(39)	8	(20 [*])
Lack of resources	19	(41)	29	(71 ^{**})
Staff shortage	17	(37)	29	(71 ^{**})

^an = 46.

^bn = 41.

^{*}P < .05; ^{**}P < .01; ^{***}P < .001.

number, size, and scope. However, the ability to provide large numbers of sterile syringes, as well as referrals and access to services, is clearly associated with legal status. This finding suggests that changes in syringe distribution laws, changes in drug paraphernalia laws, and increased public support and funding for syringe exchange programs would have a significant positive effect on HIV risk behavior. □

Contributors

Dr Paone conceived and developed the idea for the article, wrote the first and subsequent drafts, and discussed the ideas at scientific meetings worldwide. Ms Clark coordinated the project and conducted interviews. Dr Des Jarlais coconceived and codeveloped the idea for the article. Dr Shi managed and analyzed the data and provided statistical expertise. Mr Purchase coordinated various aspects of data col-

lyning Exchange Network. All authors codeveloped and corefined the intellectual content, contributed to early and final drafts, and provided historical, ethical, and editorial expertise as required.

Acknowledgments

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THE SECRETARY OF HEALTH AND HUMAN SERVICES
WASHINGTON, D.C. 20201

The Honorable Nancy Pelosi
House of Representatives
Washington, DC 20515

Dear Ms. Pelosi:

Thank you for your letter of inquiry regarding the state of scientific knowledge of the public health effects of syringe exchange programs. As you know, HIV transmission related to injection drug use remains a serious public health concern, since many new HIV infections result from behaviors associated with injection drug use.

In response to your inquiry, I asked the Assistant Secretary for Health and Surgeon General, Dr. David Satcher, to provide me with an update on the scientific research regarding the effects of syringe exchange programs. I am attaching his response, which includes the Department's updated review of the published scientific literature on the public health effects of syringe exchange programs.

Thank you for your interest and commitment to the issue of slowing the HIV/AIDS epidemic in our country. I look forward to working together with you on this common goal.

Sincerely,

Donna E. Shalala

Enclosure

EVIDENCE-BASED FINDINGS ON THE EFFICACY OF SYRINGE EXCHANGE PROGRAMS: AN ANALYSIS FROM THE ASSISTANT SECRETARY FOR HEALTH AND SURGEON GENERAL OF THE SCIENTIFIC RESEARCH COMPLETED SINCE APRIL 1998

Introduction

The issues of substance abuse addiction and HIV transmission related to injection drug use remain serious public health challenges, and the need to define and implement effective public health interventions remain urgent. The scientific research continues to define the unique role that syringe exchange programs can play in curtailing the expansion of the HIV epidemic in vulnerable communities affected by substance abuse, as part of a well designed and implemented comprehensive HIV prevention strategy.

This paper provides a review of recently published peer-reviewed research on syringe exchange programs completed by senior scientists and public health experts within the Department of Health and Human Services. An overview of the research studies is followed by an annotated bibliography providing the published abstracts, directly quoted, and relevant commentary. In summary, the new studies contribute substantially to the strength of the data showing the following effects of effective syringe exchange programs: a decrease in new HIV seroconversions; an increase in the numbers of injection drug users referred to and retained in substance abuse treatment; and well documented opportunities for multiple prevention services and referral and entry into medical care. The data indicate that the presence of a syringe exchange program does not increase the use of illegal drugs among participants in syringe exchange programs, and in many cases, a decrease in injection frequency has been observed among those attending these programs.

Throughout the literature, the terms syringe exchange programs and needle exchange programs have been used interchangeably in characterizing programs providing sterile injection equipment to injection drug users. This paper will use the term syringe exchange program, except where a published abstract has specified needle exchange program.

Overview

Numerous studies have shown that syringe exchange programs reach and serve the most disenfranchised populations at high risk for HIV infection. In this regard, syringe exchange programs play a unique role in facilitating the engagement of these populations in meaningful prevention interventions and treatment opportunities, when implemented as part of a comprehensive HIV prevention and substance abuse strategy. The scientific evidence accumulated to date provides a basis on which municipalities that are heavily affected by an HIV epidemic driven by injection drug use should consider syringe exchange programs as a tool

for the identification, referral and retention of active users of injection drugs into these services, as part of a comprehensive HIV prevention plan.

Serious discussions about syringe exchange programs must be placed in the context of the HIV epidemic in this country. The urgency to address the consequences of substance abuse is clear, as injection drug use continues to fuel the HIV epidemic in the United States. As many as half of new HIV infections are caused by the sharing of injection equipment contaminated with HIV, either directly due to injection drug use, through unprotected sex with someone who acquired HIV infection through injection drug use, or birth to a mother who acquired HIV infection through these means (CDC, 1999). Women of color and their children continue to be disproportionately affected by HIV/AIDS due to injection drug use. An estimated three out of four AIDS cases among women are due to injection drug use or heterosexual contact with someone infected with HIV through injection drug use, and over 75% of new infections in children result from the consequences of injection drug use in a parent (CDC, 1999). All too often women are unaware of their risk, due to a distant history of drug use in a partner. The ability to halt this devastating epidemic, particularly among minority women and children, requires a three part strategy: (i) preventing substance abuse ; (ii) facilitating entry of those with addictions into substance abuse treatment; and (iii) establishing effective outreach to engage active and former drug users in HIV prevention strategies that will protect them, their partners and families from exposure to HIV, and bring them into substance abuse treatment and medical care. HIV prevention and treatment programs targeting HIV-infected injection drug users and their partners, and similar programs within criminal justice institutions, are also important components in preventing the transmission of HIV.

In the Department's prior reviews of the literature on syringe exchange programs in 1997 and 1998, there was discussion of the methodological issues and constraints present across most published studies in this area. These include self-reported measures and difficulty in establishing proper control groups. However, the Department's senior scientists continue to concur with the conclusion of the Institute of Medicine that the pattern of evidence is sufficiently strong to support scientifically clear conclusions regarding the utility of syringe exchange programs, in communities that choose to adopt them, as part of a comprehensive HIV prevention strategy.

A recent national survey of syringe exchange programs (Paone et al, 1999) found that a growing number of local communities have chosen to implement a syringe exchange program to reach injecting drug users who are not in substance abuse treatment, in order to reduce the transmission of HIV through reduction in drug use behaviors and unsafe injection practices. This survey also documented that, in addition to exchanging sterile syringes for contaminated ones, 97% of syringe exchange programs provide a range of other services including referral to substance abuse treatment, prevention education for sexually transmitted diseases, HIV counseling and testing, tuberculosis screening, and primary health care. These trends also were found in a 1997 national survey (CDC, 1998).

The biological rationale for removing contaminated injection equipment from circulation has been demonstrated in a new study by Abdala et al (1999), confirming empirical observations of previous studies. This study showed that HIV-1 can survive over 4 weeks in a contaminated syringe, remaining infectious to individuals who reuse that syringe over this prolonged period. Riley et al (1998) found that 10.9% of used syringes discarded in needle boxes at community locations tested positive for the HIV antibody, while Robles et al (1998) reported that 27% of contaminated syringes returned to a new needle exchange program were positive for HIV. The longevity of the HIV-1 virus, combined with its prevalence in used equipment in some communities, is basic to the public health rationale for removal of used syringes from the community environment.

Knowledge of the effectiveness of syringe exchange programs in reducing the sharing of injection equipment and reuse of contaminated syringes among injection drug users has recently been reinforced by a number of new studies (Heimer et al, 1998; Robles et al, 1998; Bluthenthal et al, 1998). Conversely, the closing of an established syringe exchange program in Connecticut was associated with an increase in reuse and sharing of contaminated equipment among injection drug users, exposing these individuals and their partners and families to an increased risk of preventable bloodborne diseases (Broadhead et al, 1999).

Recent research studies document the role that effective syringe exchange programs serve as mechanisms to engage very high risk and hard to reach individuals in substance abuse treatment services. Brooner et al (1998) found that half of syringe exchange program clients referred for substance abuse treatment actually entered treatment, with 76% completing the first 13 weeks of treatment. These results were achieved despite the fact that these clients had more severe drug use, more HIV risk behaviors, less employment and greater engagement in illegal activities than clients referred to substance abuse treatment from traditional sources. Hagan et al (In Press) reported reduced frequency of injection drug use among current and former users of a needle exchange program, and entry into methadone treatment programs among former, current and new users of a syringe exchange program. Strathdee et al showed that attendance at a syringe exchange program was positively associated with individuals entering detoxification services independent of other variables, again representing an important bridge that facilitates entry into substance abuse treatment.

Concerns about elevated HIV seroconversion rates linked to the use of syringe exchange programs remain scientifically unfounded, as the data primarily reflect the impact of multiple high-risk factors among individuals who participate in these programs – a population at extremely high risk that is not engaged in appropriate interventions through traditional mechanisms of outreach and treatment referral. Studies of HIV incidence among two study cohorts in Canada, and some recent data on the incidence of hepatitis B and hepatitis C in Seattle, are relevant as these relate to syringe exchange programs. In the Department's internal review of these data in 1998, careful attention was given to the study data on these Canadian cohorts, with the conclusion that syringe exchange programs were not associated with an increase in HIV seroconversions. Subsequent data from the

Montreal cohort (Bruneau et al, 1999) have confirmed this lack of association between HIV seroconversion and attendance at a syringe exchange program, with longer follow-up of the study participants and appropriate availability of sterile injection supplies. Efforts to identify any grounds for a causal relationship continue to show negative results (Schechter et al, 1999), when controlling for risk factors in the statistical model.

Public health scientists have long known about the incidence of hepatitis B (HBV) and hepatitis C (HCV) among injection drug users. These are highly infectious bloodborne diseases that are endemic among some drug-using populations. In Seattle, where there is a high prevalence of hepatitis C among injection drug users (70%-80%), participation in the syringe exchange program did not appear to be protective against new HCV or HBV infection (Hagan et al, 1999). Because of the high background prevalence of HCV in this population, a single exposure to a syringe used by an injection drug user carries a high level of risk that it will be contaminated with HCV. Although syringe exchange programs can greatly reduce the reuse of contaminated syringes, maximal prevention of HCV transmission among this population would require distribution of a sufficient volume of sterile syringes to preclude any reuse of injecting equipment. In contrast to this scenario, since HIV seroprevalence is yet low in this population, the empirical data support the potential of a protective effect for HIV among individuals seeking clean injection equipment at the syringe exchange program.

In summary, injection drug use is a driving force for new HIV infections, disproportionately affecting minority populations. Yet, HIV transmission via injection drug use is preventable. Efforts to halt the HIV epidemic are in part dependent on effective prevention interventions targeted to this population. Prevention will require successfully engaging injection drug users and bringing them into systems of care that offer substance abuse treatment, mental health, medical, and social support services. The availability of medical, social and preventive services alone are often not enough to engage the highest risk populations of active injection drug users, absent effective methods of outreach to this population. The scientific research has shown that well designed and implemented syringe exchange programs have demonstrated efficacy in engaging populations at severe risk for HIV and reducing the further spread of HIV among injection drug users, their sexual partners and children. Furthermore, these programs have not been shown to encourage the use of illegal drugs, and fit well into comprehensive substance abuse treatment strategies.

After reviewing all of the research to date, the senior scientists of the Department and I have unanimously agreed that there is conclusive scientific evidence that syringe exchange programs, as part of a comprehensive HIV prevention strategy, are an effective public health intervention that reduces the transmission of HIV and does not encourage the use of illegal drugs. In many cases, a decrease in injection frequency has been observed among those attending these programs. In addition, when properly structured, syringe exchange programs provide a unique opportunity for communities to reach out to the active drug injecting population and provide for the referral and retention of individuals in local substance abuse treatment and counseling programs and other important health services. The scientific evidence accumulated to date provides a basis on which

municipalities that are heavily affected by an HIV epidemic driven by injection drug use should consider syringe exchange programs as a tool for the identification, referral and retention of active users of injection drugs into these services, as part of a comprehensive HIV prevention plan.

ANNOTATED BIBLIOGRAPHY: SCIENTIFIC RESEARCH ON SYRINGE EXCHANGE PROGRAMS PUBLISHED SINCE APRIL 1998

Needle Exchange in the U.S. - National Surveys

Paone D, Clark J, Shi Q, Purchase D, Des Jarlais DC. Syringe exchange in the United States, 1996: A national profile. Am J Public Health 1999 Jan; 89(1):43-6.

ABSTRACT Objectives: This paper provides 1996 information on the status of US syringe exchange programs and compares these findings with data from our 1994 survey. Methods: In November 1996, questionnaires were mailed to 101 syringe exchange programs. Program directors were contacted to conduct telephone interviews based on the mailed questionnaires. Data collected included number of syringes exchanged, syringe exchange program operations, legal status, and services offered. Results: Eighty-seven programs participated in the survey. A total of 46 (53%) were legal, 20 (23%) were illegal but tolerated, and 21 (24%) were illegal-underground. Since 1994, there has been a 54% increase in the number of cities and a 38% increase in the number of states with syringe exchange programs. Eighty-four programs reported exchanging approximately 14 million syringes, a 75% increase from 1994. Syringe exchange programs also provided a variety of other services and supplies, and legal programs were more likely than illegal ones to provide these services. Conclusion: Despite continued lack of federal funding, syringe exchange programs expanded in terms of the number of syringes exchanged, the geographic distribution of programs, and the range of services offered.

COMMENT Many syringe exchange programs provide a range of preventive health services and health care, directly and through referrals. Of those programs surveyed, 97% provided referral to substance abuse treatment, 80% provided education to reduce risks of STDs, while many others provided HIV counseling and testing, primary health care, and tuberculosis screening in addition to exchanging sterile syringes for contaminated ones. The finding that legal programs are more likely to provide health services may reflect their ability to establish more regular hours and locations and to more formally refer clients to existing health, mental health and substance abuse treatment services. It has recently been estimated (Des Jarlais, 1999) that only 10% of injection drug users have access to needle exchange programs and their associated ancillary services, despite evidence that these programs are effective in reaching populations at very high risk for HIV and in need of substance abuse treatment services.

Centers for Disease Control and Prevention. Update: Syringe Exchange Programs – United States, 1997. Morbidity and Mortality Weekly Report, August 14, 1998, Vol 47 (31); 652-655.

(NO PUBLISHED ABSTRACT)

COMMENT This report provides an updated survey of the number and characteristics of syringe exchange programs (SEPs) in operation in the United States. The findings indicate continued expansion in the number, geographic coverage, and activity of SEPs in the United States. Of 113 SEPS contacted, 100 (89%) participated in the survey. These 100 SEPs reported operating in 80 cities in 30 States, the District of Columbia, and Puerto Rico. In 1997, 96 of the SEPs provided information about the number of syringes and reported exchanging approximately 17.5 million syringes (median; 57,343 syringes per SEP). The 10 largest volume SEPs (i.e. those that exchanged greater than or equal to 500,000 syringes) exchanged approximately 10.3 million (59%) of all syringes exchanged. Most of the 100 SEPs provided other public health and social services: 99% offered instruction to prevent sexual transmission of HIV and other sexually transmitted diseases; 96% provided IDUs with information about safer injection techniques and/or use of bleach to disinfect equipment; and 94% referred clients for substance abuse treatment programs. Health care services offered on site included HIV counseling and testing (64%), tuberculosis skin testing (20%), STD screening (20%), and primary health care (19%). The 100 SEPs operated in various settings, with 69% operating in multiple settings. SEPs reported receiving financial support from various sources including foundations, individuals, and state and local governments.

Risks Associated with Re-use of Syringes: A Laboratory study

Abdala N, Stephens PC, Griffith BP, Heimer R. (1999). Survival of HIV-1 in Syringes. J Acquir Immune Defic Syndr Hum Retrovirol 1999 Jan 1;20(1):73-80

ABSTRACT Summary: We performed a study to determine the duration of survival of HIV-1 in syringes typically used by injectors of illicit drugs (IDUs). We describe the effectiveness of a microculture assay in detecting viable virus in volumes of blood typical of those commonly found inside used syringes. Using this assay and modeling the worse-case situation for syringe sharing, we have recovered viable, proliferating HIV-1 from syringes that have been maintained at room temperature for periods in excess of 4 weeks. The percentage of syringes with viable virus varied with the volume of residual blood and the titer of HIV-1 in the blood. These experiments provide a scientific basis for needle exchange schemes, harm reduction, and other interventions among IDUs that support the nonsharing and removal of used syringes from circulation.

COMMENT Since the early years of the epidemic, researchers have documented that sharing of blood-contaminated equipment carries a substantial risk for transmission of HIV, and hepatitis B and C. These newly reported findings which document the long survival time of HIV-1 in syringes have implications for needle exchange program, in that the study confirms that a substantial

proportion of needles removed from circulation may have viable HIV and could transmit the infection. This data provides a scientific virologic rationale for the role syringe exchange programs play in reducing HIV transmission via used injection equipment, as these programs are organized to provide new, sterile injection equipment and remove from circulation potentially infectious needles and syringes.

Effectiveness of Needle Exchange Programs

Brooner R., Kidorf M, King V, Bielensohn P, Svikis D, Vlahov D. A Drug Abuse Treatment Success among Needle Exchange Participants. Public Health Reports, 113; Supplement 1: pp. 130-139, June 1998.

ABSTRACT Objective: Although lowering incidence rates of human immunodeficiency virus (HIV) transmission is the primary goal of needle exchange programs (NEPs), other desirable outcomes are possible. Referring exchange participants to more comprehensive drug abuse treatment programs has the potential to reduce or eliminate the use of drugs. This possibility was evaluated by comparing the treatment responses of new admissions with an outpatient opioid agonist treatment program in Baltimore, Maryland. Methods: New admissions (1994-1997) to an opioid agonist treatment program were first grouped by referral source (needle exchange, $n=82$, vs. standard referrals, $n=243$) and then compared on admission demographic and clinical variables and response to treatment during the first three months. Outcome measures included retention rates, self-reported drug use and injecting frequencies, self-reported illegal activities for profit, and results from weekly urinalysis testing for opioids and cocaine. Results: Patients from the NEP were significantly older and more likely to be male, African American, and unemployed than standard referral patients. Needle exchange patients also had a greater baseline severity of drug use than patients in the standard referral group. Despite these baseline differences, both groups achieved comparably good short-term treatment outcomes (including reduced drug use and criminal activity for profit); treatment retention was also good, although slightly better in the standard referral group (88% vs. 76%). Conclusion: These data demonstrate the feasibility and merits of creating strong linkages between NEPs and more comprehensive drug abuse treatment clinics.

COMMENT Two significant findings of this study are the ability of a NEP to successfully refer NEP clients to a substance abuse treatment program (51% of referrals were admitted to treatment) and the relatively high treatment retention rates for NEP-referred clients, despite greater severity of baseline drug use among this population compared to clients from standard referral sources. Establishing linkages between syringe/needle exchange programs and substance abuse treatment programs may lead to meaningful reductions in, or the elimination of, drug use among NEP clients in addition to the primary goal of reducing the risk of bloodborne infectious diseases in this population.

Hagan H, McGough JP et al. Reduced Injection Frequency and Increased Entry and Retention in Drug Treatment Associated with Needle Exchange Participation in Seattle Drug Injectors. In Press, Journal of Substance Abuse Treatment

ABSTRACT Objectives: The association between needle exchange, change in drug use frequency and enrollment and retention in methadone drug treatment was studied in a cohort of Seattle injection drug users (IDUs). Methods: Participants included IDUs classified according to whether they had used a needle exchange by study enrollment and during the 12-month follow-up period. The relative risk (RR) and the adjusted RR (ARR) were estimated as measures of the association. Results: IDUs who had formerly been exchange users were more likely than never exchangers to report a substantial ($\geq 75\%$) reduction in injection (ARR=2.85, 95% CL 1.47-5.51, to stop injecting altogether (ARR=3.5, 95% CL 2.1-5.9), and to remain in drug treatment. New users of the exchange were five times more likely to enter drug treatment than never-exchangers. Conclusions: Reduced drug use and increased drug treatment enrollment associated with needle exchange participation may have many public health benefits, including prevention of blood-borne viral transmission.

COMMENT The frequency of drug injection among active IDUs using a needle exchange program decreased during the time of this study. Both current users and new users of the needle exchange program were more likely to enter methadone treatment programs than IDUs who did not use the needle exchange program. Retention in methadone treatment at 12-month follow-up was 68% for former users of the NEP, 60% of current users of the exchange, and 45% of new users of the NEP. These findings support the role NEPs can play as a conduit into sustainable substance abuse treatment among heroin injectors.

Strathdee S, Celentano D et al. Needle Exchange Attendance and Health Care Utilization Promote Entry into Detoxification. In Press, Journal of Urban Health

ABSTRACT This study was undertaken to identify factors associated with entry into detoxification among injection drug users (IDUs), and to assess the role of needle exchange programs (NEPs) as a bridge to treatment. IDUs undergoing semi-annual human immunodeficiency virus (HIV) tests and interviews were prospectively studied between 1994 and 1998, during which time a NEP was introduced in Baltimore. Logistic regression was used to identify independent predictors of entry into detoxification, stratifying by HIV serostatus. Of 1490 IDUs, similar proportions of HIV-infected and uninfected IDUs entered detoxification (25% vs. 23%, respectively). After accounting for recent drug use, hospital admission was associated with four-fold increased odds of entering detoxification for HIV-seronegative subjects. Among HIV-infected subjects, hospital admission, outpatient medical care and having health insurance independently increased the odds of entering detoxification. After accounting for these and other variables, needle exchange attendance also was independently associated with entering detoxification for both HIV-infected (adjusted odds ratio [AOR]=3.2) and uninfected IDUs (AOR=1.4). However, among HIV-infected subjects, the increased odds of detoxification associated with needle exchange diminished significantly over time, concomitant with statewide

reductions in detoxification admissions. These findings indicate that health care providers and NEPs represent an important bridge to drug abuse treatment for HIV-infected and uninfected IDUs. Creating and sustaining these linkages may facilitate entry into drug abuse treatment and serve the important public health goal of increasing the number of drug users in treatment.

COMMENT This study provides a quantitative measure of the association between NEP attendance and subsequent entry into drug abuse treatment in an out-of-treatment population. NEP attendance was independently associated with entry into detoxification programs for both HIV-negative and HIV-infected clients. The researchers noted that the decreased strength of the association over time was likely due to external factors, such as the increased difficulty in obtaining admission for detoxification in Maryland and third party reimbursement barriers that differentially affected HIV-infected IDUs previously eligible for social security benefits. The research supports previous observations that NEPs can be a conduit to drug abuse treatment for very high risk populations.

Heimer R, Khoshnood K, Bigg D, Guydish J, Junge B. Syringe Use and Reuse: Syringe Exchange Programs in Four Cities. Journal of Acquired Immunodeficiency Syndromes and Human Retrovirology. 1998; 18(Suppl 1): S37-S44.

ABSTRACT Summary: We determined the effect of syringe exchange programs (SEPs) on syringe reuse patterns. Five methods were employed to estimate injections per syringe made by exchange clients in four cities. In San Francisco, Chicago, and Baltimore, self-reported data on the number of injections per syringe were obtained. In New Haven, self-reported injection frequencies were combined with syringe tracking data to derive two methods for estimating the mean injections per syringe. The average number of injections per syringe declined by at least half after establishment of SEPs in New Haven, Baltimore, and Chicago, all cities where such an analysis could be made. There were significant increases in the percentages of exchangers reporting once-only use of their syringes in San Francisco, Baltimore and Chicago, all cities where the data were amenable to this form of analysis. Self-report and syringe tracking estimates were in agreement that SEP participation was associated with decreases in syringe reuse by drug injectors. SEP participation was associated with increases in the once-only use of syringes. These findings add to earlier studies supporting the role of SEPs in reducing the transmission of syringe-borne infections such as HIV and hepatitis.

COMMENT This study uses several methods to assess syringe reuse among participants of syringe exchange programs, including syringe tracking data to minimize potential response bias associated with self-reported data. The decreased reuse of contaminated syringes observed over time in these study cohorts is significant in light of the previous study by Abdala et al, irrespective of the absence of a control group of non-SEP clients.

Bluthenthal RN, Kral AH, Erringer EA, and Edlin BR. Use of an Illegal Syringe Exchange and Injection-Related Risk Behaviors among Street-Recruited Injection Drug Users in Oakland, California, 1992-1995. Journal of AIDS and Human Retrovirology, 1998.

ABSTRACT Objective: To determine factors associated with syringe and injection supply sharing among injection drug users (IDUs) in a community with an illegal underground syringe exchange program. **Methods:** From 1992-1995, semi-annual cross-sectional samples of IDUs were recruited in Oakland, CA. To account for multiple observations from the same individual, we used general estimating equations with logit transformations to determine factors associated with sharing syringes and other injection works. **Results:** 1304 IDUs were interviewed; 684 (53%) returned for more than one interview. 2830 interviews were available for analysis. SEP use increased and syringe and supply sharing declined from 1992 to 1995 among study participants. In multivariate analysis, SEP users were less likely to share syringes than non-SEP users (adjusted odds ratio [AOR] = 0.57; 95% confidence interval [CI] = 0.46-0.72). SEP use was not significantly associated with the sharing of injection supplies (AOR = 0.85; 95% CI = 0.68 - 1.07). Syringe sharing and injection supply sharing were significantly less likely to occur among African American and HIV-positive IDUs. **Conclusions:** These data suggest that illegal SEPs can be effective HIV prevention programs. Lower rates of syringe-based risk factors among African American and HIV-positive IDUs are encouraging.

COMMENT The researchers re-examined seven semi-annual waves of interviews from both the baseline and follow-up assessments of IDUs who lived in a community with an illegal SEP. Variables that previous research has suggested would have an impact on syringe sharing, such as substance abuse treatment, marital status, gender, and income were included in the models to control for potential confounding factors, as well as control for the potential effects of temporal trends in use of NEPs and syringe sharing. Substantial declines in syringe sharing were observed over the interview periods among users of the SEP compared to non-SEP users. Use of the SEP increased from 5% in 1992 to 36% in 1995 despite arrests of program volunteers during the study period. The study adds to the literature in that it shows a decrease in syringe reuse is also associated with an illegal SEP, whereas most other reported studies come from legal or community-tolerated SEPs.

Bruneau J, Lachance N et al. Changes in HIV Seroconversion Rates of IDUs Attending Needle Exchange Programs in Montreal: The Saint-Luc Cohort. Canadian Journal of Infectious Diseases, [Supplement] May 1999.

ABSTRACT Objectives: From 1988 to 1995, we observed a positive association between NEP attendance and HIV seroconversion. Since 1995, modifications have been implemented in needle exchange programs (NEPs) in Montreal, including the opening of new distribution sites and the lifting of the syringe quota. The objective is to examine the association between NEPs and HIV seroconversion in the Saint-Luc Cohort after January 1995. **Methods:** Recent injection drug users (IDUs) were recruited by word-of-mouth and through substance abuse treatment agencies.

Information was collected and HIV status was assessed at each visit. The association between factors on demographics, drug and sexual behaviours and HIV seroconversion was assessed using univariate and multivariate Cox proportional hazards regression. All current IDUs participating in the Saint-Luc cohort as of January 1995 were included in the analysis. **Results:** The post-1995 cohort included 981 seronegative subjects, 797 men and 184 women. Mean age was 34.5, and 42% reported NEP attendance in the past 3-6 months. 83% and 34% used cocaine and heroin respectively in the past 3-6 months. 42.3% reported unstable housing. From January 1995 to September 1998, 68 seroconverted for a global incidence of 4.3 per 100 person-years (CI 95%: 3.4-5.5 : 4.2 per 100 person years (CI 95%: 2.8-6.1) among NEP attenders, and 4.4 per 100 person-years (CI 95%: 3.1-5.9) among non-attenders. (HR: 0.97 [0.60 - 1.58]). In a Cox proportional hazards model, factors independently associated with HIV seroconversion were:

<u>Factors</u>	<u>Hazard Ratio</u>	<u>95% CL</u>
Drug Injected (ref: other)		
Cocaine IV (3-6 months)	2.20	0.5-9.9
Heroin IV (3-6 months)	0.33	0.2-0.7
Nb injections last month (ref: 0)		
1-30	2.18	0.9-5.5
30-100	2.22	0.8-6.1
>100	3.81	1.4-10.4
Booting 3-6 months	2.04	1.0-4.1
Inject alone 3-6 months	1.91	0.9-3.9
Sharing with HIV+	2.29	1.3-3.9
Gender (ref: female)	2.70	1.0-7.6

Conclusion: After 1995, no association was found between NEP attendance and HIV seroconversion among current IDUs followed in the Saint-Luc cohort. This situation is different from what was observed from 1988 - 1995, and coincided with modifications of needle exchange programs in Montreal.

COMMENT Remis, Bruneau and Hankins published a related paper titled "Enough Sterile Syringes to Prevent HIV Transmission Among Injection Drug Users in Montreal?", in the Journal of Acquired Immunodeficiency Syndrome and Human Retrovirology; Vol 18, Suppl.I, July 1998. The study compared the estimated number of syringes required by injection drug users in 1994 with the number of syringes distributed through needle exchange programs. Syringes distributed through NEPs addressed less than 5% of the estimated demand for syringes by IDUs in Montreal in 1994. The authors advanced the hypothesis that unless the disparity between unmet need and available syringes was reduced, it is unlikely that sufficient syringes would be available to prevent HIV transmission. The observation in this study that NEP use and HIV seroconversion were not associated since 1995 in the Montreal cohort is coincident with modifications of the NEP program and differs from pre-1995 data.

Robles R, Colon H, Matos T, Finlinson H, Munoz A, Marrero C, Garcial M, Reyes J. Syringe and Needle Exchange as HIV/AIDS Prevention for Injection Drug Users in Puerto Rico. Health Policy, 1998; Vol. 45: 209-220.

ABSTRACT This study evaluated the effectiveness of the first needle exchange program (NEP) established in Puerto Rico. The data for this study were collected during the first months of the NEP from July 1995 to March 1996 in 13 communities of the San Juan metropolitan area. Subjects were the participants of two modalities of the NEP: a mobile team and a community-based drug treatment program. During the 3-week evaluation period, 2401 injection drug users (IDUs) were recruited, resulting in a total of 19,195 exchange contacts and 146,323 syringes exchanged. No significant change in drug injection was observed. However, the program was effective in reducing sharing of syringes and cookers. The study suggests that the NEP did help in reducing needle sharing in Puerto Rico. However, the HIV seropositivity in returned syringes suggests the need to continue aggressive prevention programs to arrest the epidemic among IDUs. However, factors related to the socio-cultural environment as well as cultural norms and traditions need to be considered when planning and expanding NEPs.

COMMENT In this study, 40% of a sample of 1075 syringes returned to the NEP and studied showed a 27% seropositivity rate for HIV. A significant increase in the number of returned syringes was observed over the evaluation period (12.4% rising to 32.5% at 8 months). The importance of decreasing needle circulation time as an HIV prevention intervention is particularly acute in this setting with high rates of HIV seropositivity in contaminated syringes. Entry into substance abuse treatment among study participants increased over time, with 28% of the NEP participants reporting treatment entry by the seventh month after the NEP began. Both short term and long term harm reduction goals among IDUs were advanced by the NEP.

Des Jarlais DC, Perlis T, Friedman SR, Deren S et al. Declining Seroprevalence in a Very Large HIV Epidemic: Injecting Drug Users in New York City, 1991 to 1996. Am J Public Health, 88(12): 1801-1806, 1998.

ABSTRACT Objective: This study assessed recent trends in HIV seroprevalence among injecting drug users in New York City. Methods: We analyzed temporal trends in HIV seroprevalence from 1991 to 1996 in 5 studies of injecting drug users recruited from a detoxification program, a methadone maintenance program, research storefronts in the Lower East Side and Harlem areas, and a citywide network of sexually transmitted disease clinics. A total of 11,334 serum samples were tested. Results: From 1991 through 1996, HIV seroprevalence declined substantially among subjects in all 5 studies: from 53% to 36% in the detoxification program, from 45% to 29% in the methadone program, from 44% to 22% at the Lower East Side storefront, from 48% to 21% at the Harlem storefront, and from 30% to 21% in the STD clinics (all $p < .002$ by chi square tests for trends). Conclusions: The reductions in HIV seroprevalence seen among injecting drug users in New York City from 1991 through 1996 indicate a new phase in this large HIV epidemic. Potential explanatory factors include the loss of HIV seropositive individuals through disability and death and lower rates of risk behavior leading to low HIV incidence.

COMMENT This article is included here as a snapshot of HIV prevalence among IDUs in a major city with the largest AIDS epidemic among IDUs in the world. Risk reduction programs including needle exchange programs, street outreach, and detoxification programs were components of the public health response to the epidemic during the years studied. An overall reduction in HIV seroprevalence among IDUs was found, in the setting of a stable number of IDUs. Declines in HIV transmission-related behavior, such as reusing contaminated injection equipment and lending it to others, were reported from several sites. Many factors might contribute to the decline in HIV seroprevalence. The presence of a broad-based prevention effort focused on IDUs, which has included NEPs, has been associated with lower infection rates among the IDU population.

Hagan H, McGough JP et al. Volunteer Bias in Non-Randomized Evaluations of the Efficacy of Needle Exchange Programs. Journal of Urban Health (Accepted for publication)

ABSTRACT Objective: Nonrandomized comparisons of the incidence of HIV and hepatitis between injection drug users (IDUs) who do and do not attend voluntary needle exchange programs may be subject to bias. To explore possible sources of bias, we examined characteristics associated with voluntarily beginning or ceasing to participate in the Seattle needle exchange. Methods: In a cohort of 2879 IDUs, a standardized questionnaire measured characteristics present at enrollment. We examined the relation of these characteristics to the proportion of IDUs who began to use the program during the ensuing 12-month follow-up period, and to the proportion of current exchangers who dropped out during that period of time. Results: Thirty-two percent of the 494 never-exchangers at baseline attended the program during follow-up: those who reported sharing syringes or who were homeless at enrollment were more likely to become new exchanger users (adjusted risk ratio for becoming an exchange user (ARR) = 1.8 for those who shared syringes, and ARR = 2.2 for those who were homeless). Sixteen percent of 1274 current exchangers stopped using the exchange during follow-up, with daily injectors (ARR = 0.6) and those who reported backloading (ARR = 0.6) being relatively less likely to drop out of the exchange. Conclusions: The analysis suggests that IDUs participating in needle exchange programs at a given point in time may include a particularly high proportion of those injectors whose pattern of drug use puts them at elevated risk of blood-borne viral infections.

COMMENT This study of participants in SEP programs shows that individuals who were homeless and those sharing needles were the most likely to utilize an SEP, and persons who stopped attending the SEP were less likely to be injecting daily or using risky injection techniques. This SEP is attracting and retaining those persons with greatest risk factors for bloodborne disease transmission.

Cost-Effectiveness of Needle Exchange Programs

Holtgrave DR, Pinkerton SD, Jones TS, Lurie P, Vlahov D. (1998). Cost and cost-effectiveness of increasing access to sterile syringes and needles as an HIV prevention intervention in the United States. *J Acquir Immune Defic Syndr Hum Retrovirol* 1998;18 Suppl 1:S133-8.

ABSTRACT Summary: We determined the cost of increasing access of injection drug users (IDUs) to sterile syringes and needles as an HIV prevention intervention in the United States and the cost per HIV infection averted by such a program. We considered a hypothetical cohort of 1 million active IDUs in the United States. Standard methods were used to estimate the cost and cost-effectiveness of policies to increase access to sterile syringes and syringe disposal at various levels of coverage (e.g. a 100% coverage level would ensure access to a sterile syringe for each injection given current levels of illicit drug injection in the United States; a 50% coverage level would ensure access to one half of the required syringes). A mathematical model of HIV transmission was employed to link programmatic coverage levels with estimates of numbers of HIV infections averted. A policy of funding syringe exchange programs, pharmacy sales, and syringe disposal to cover all illicit drug injections would cost just over \$423 million (U.S.) for 1 year. One third of these costs would be paid for as out-of-pocket expenditures by IDUs purchasing syringes in pharmacies. Compared with the status quo, this policy would cost an estimated \$34,278 (U.S.) per HIV infection averted, a figure well under the estimated lifetime costs of medical care for a person with HIV infection. At very high levels of coverage (>88%), the marginal cost-effectiveness of increased program coverage becomes less favorable. Although the total costs of funding large-scale IDU access to sterile syringes and disposal seem high, the economic benefits are substantial. Even at high levels of coverage, such funding would save society money. As part of a comprehensive program of HIV prevention, policies to increase IDUs access to sterile syringes urgently need further consideration by public health decision makers.

COMMENT The estimates provided in this study should be considered in the context of an estimated \$108,469 lifetime medical cost of treating an individual with HIV infection, which is three fold greater than estimates of preventing one HIV infection.

Kahn J. Economic Evaluation of Primary HIV Prevention in Injection Drug Users. In Holtgrave D., edit: Handbook of Economic Evaluation HIV Prevention Programs. Plenum Press, New York: 1998.

NO PUBLISHED ABSTRACT In this paper, the author implemented the Yale Circulation Model using empirical data obtained from 4 NEP programs in 4 Cities to assess the cost-effectiveness of such an HIV prevention intervention. The Yale Circulation Model is a mathematical model used to estimate the change in the number of new HIV infections based on lowering the HIV prevalence in used needles as a result of reducing the circulation time of contaminated syringes. The author applied a simplified Yale Needle Circulation Model to 4 hypothetical needle exchange programs in areas with differing HIV prevalence and incidence rates. The researcher reports that reductions in HIV incidence rates varied across cities from 17% to 70% across the 4 hypothetical settings. Higher reductions were associated with more needles per client-year. Greater efficiency was associated with low cost per needle exchanged. The estimated cost savings per HIV infection averted ranged from \$12,000 to \$98,000. Greater efficiency was associated with low cost per needle exchanged. The author suggests that for a fixed number of needles, the absolute impact is higher when the needles are spread out among a greater number of clients.

COMMENT This study shows that variations in the cost-effectiveness of syringe exchange programs will occur, depending on the type and structure of the program, and the HIV prevalence and incidence in the geographic area to be served.

Risk Associated with Closing a Needle Exchange Program

Broadhead R, Van Hulst Y, and Heckathorn D. (In Press). Termination of an established needle exchange: A study of claims and their impact. Social Problems, 1999; Vol. 46, No. 1: 48-66.

NO PUBLISHED ABSTRACT This study assessed the impact of the Windham CT needle exchange program closure on risk behaviors, and discarded syringes. The project conducted 330 initial and 173 follow-up risk assessment interviews of NEP participants between 1994 and 1997 while the NEP was in operation. Following the closure of the NEP in 1997, researchers conducted 111 interviews at 11 months post closure and 78 interviews 3 months later. In addition, starting 7 months prior to the closure of the NEP and for a period of 1 and ½ years following the NEP closure the research team surveyed public outdoor areas for discarded syringes where high levels of drug use occurred. Findings indicate that while the NEP was in operation, 14% of the sample reported obtaining syringes from unsafe sources compared with 36% following the closure of the NEP. Prior to the closure of the NEP, the mean number of times a syringe was re-used before disposal was 3.52 compared with a high of 8.18 times following the NEP closure. The closure of the NEP was also found to increase self-reported syringe sharing. Sixteen percent of NEP participants reported sharing a syringe within the last 30 days while the NEP was in operation compared with 34% of participants after the NEP closed. Finally, no difference in the number of discarded syringes in public places was detected, suggesting that the closure of the NEP had no effect on the number of discarded syringes in the area.

COMMENT This study documented the experience of IDUs in one community following closure of a NEP. Risk behaviors increased among IDUs when they no longer had access to the services of the needle exchange program, increasing the likelihood of HIV transmission resulting from multiperson reuse of syringes.

Related Article by Same Authors: Broadhead RS, van Hulst Y, Heckathorn, DD. The Impact of a Needle Exchange's Closure. Public Health Reports 1999; 114: 439-447.

Needle Exchange Related Issues

Junge B, Vlahov D, Riley E, Huettner S, Brown M, Beilenson P. Pharmacy access to sterile syringes for injection drug users: attitudes of participants in a syringe exchange program. J Am Pharm Assoc (Wash) 1999 Jan-Feb;39(1):17-22.

ABSTRACT Objective: To examine attitudes of participants of a van-based syringe exchange program (SEP) toward the hypothetical prospect of pharmacy-based syringe access. Design: One-time, cross-sectional survey. Setting: Baltimore, Maryland. Participants: 206 injection drug users who participate in the Baltimore SEP. Interventions: Face-to-face interviews. Main Outcome Measures: Location preferred for obtaining syringes, drug and syringe use, past experience with pharmacies, and willingness to pay. Results: The sample was 67% men, 95% African American, and 95% unemployed; mean age was 39.8 years. A total of 19% of respondents had bought syringes at a pharmacy during the prior six months. Some 37% reported having been turned down when asking for syringes at a pharmacy, most commonly due to lack of identification to prove diabetic status (50%). If legal restrictions were lifted, 92% of respondents would obtain syringes from pharmacies, and would be willing to pay a mean price of \$0.80 (median = \$1.00) per syringe. Women were more likely than men to report the intention to switch from van-based SEP to pharmacy (57% versus 38%, $p = 0.045$). Conclusion: If current legal restrictions were lifted, pharmacies would be a viable syringe source appealing particularly to women, suggesting gender-specific access issues that should be addressed. The per syringe price that study participants would be willing to pay exceeds typical retail prices, suggesting that pharmacists could charge enough per syringe to recoup operational costs.

COMMENT This study reflects a willingness and effort to obtain sterile injection equipment at pharmacies by a substantial percentage of IDUs currently using a van-based syringe exchange program. It highlights the impact of legal restrictions on syringe availability through pharmacies for the IDU population. The study notes that pharmacies provide an alternative controlled distribution mechanism of sterile injection equipment and are widely available in most communities.

Paone D, Cooper H, Alperen J et al. HIV Risk Behaviors of Current Sex Workers Attending Syringe Exchange: The Experiences of Women in five US Cities. AIDS CARE 1999; 11 (3): 269-280.

ABSTRACT Existing research indicates that sex workers who inject drugs are vulnerable to HIV infection through both risky sexual and drug use practices. This study is the first attempt to learn whether this increased risk persists among current sex workers who participate in syringe exchange programmes (SEPs). With data from interviews with randomly selected participants in five US cities, we compared the demographic characteristics, sexual risk behaviours, drug use practices, emotional and physical health, and SEP utilization patterns of currently active female sex workers who attend SEPs with female SEP participants who do not engage in sex work. Data indicate that women enrolled in SEPs who were currently trading sex typically reported greater HIV risk than women non-sex workers. Current sex workers reported higher levels of risk for every drug risk variable examined in bivariate analysis. They were more likely than other women to inject with a syringe previously used by someone else, to inject daily and to attend shooting galleries; they were less likely to use a condom with their primary partners and to report higher levels of psychological distress than their counterparts. The relationship between sex work status and risky injection practices persisted when potential confounders were controlled for in multivariate analysis. SEPs

can serve a pivotal role in providing sex workers with services and referrals which would help them reduce risk behaviours.

COMMENT This study documents that women who attend SEPs and engage in sex work typically report greater HIV risk than women non-sex workers attending SEPs, reinforcing the importance of this variable. In this study, current sex workers engaged in heavier drug use than other women; reported using a greater variety of injection and non-injection drugs; injected substantially more frequently than both sexually active and non-sexually active women, with sex workers injecting on average 124 times a month while other women injected approximately 82 times a month ($p < 0.0005$); were more likely to inject daily and smoke crack daily than their counterparts; and were more likely to be at risk of bloodborne infection through risky injection practices such as renting, buying or borrowing used syringes for injection and visiting a shooting gallery more often than other women.

Riley E, Beilenson P, Vlahov D, Smith L, Koenig M et al. Operation Red Box: a pilot project of needle and syringe drop boxes for injection drug users in East Baltimore. J Acquir Immune Defic Syndr Hum Retrovirol 1998;18 Suppl 1:S120-5.

ABSTRACT Summary: We assessed the acceptability and the use of a community-based needle and syringe disposal project designed to serve injection drug users. In June 1996, three surplus U.S. mail collection boxes were painted red and used as syringe and needle drop boxes in locations with high drug use in East Baltimore. Acceptance of the drop boxes was measured by focus groups of residents, drug users, and police, held before and after project implementation. Use was measured by weekly counts of needles recovered from the red boxes. A sample of all deposited needles was randomly chosen for needle washing and subsequent HIV antibody testing. Community impact was measured by systematic surveys of needles discarded on public sidewalks, in areas with and areas without drop boxes. Before implementation, members of focus groups expressed concerns that drop boxes could convey mixed messages to youth (e.g. seeming to condone drug use), might result in increased loitering, and could further community stigmatization. After project implementation, all focus groups expressed support of project expansion. In the first 10 months, 2971 needles were collected. Of 156 needles tested, 10.9% were positive for HIV antibody. Needle counts on the street showed no significant change in red box areas compared with control areas. In this pilot project, red boxes were accepted by the community and drug users. Police officers also used the boxes to dispose of confiscated needles. Although limited in the number of drop boxes and follow-up time, this pilot project shows promise as a community-based method of safe needle disposal.

COMMENT This paper addresses the important issue of safe disposal of used injection equipment. While the study design is not directly linked with a syringe exchange program, the issues of access to, and safe disposal of, used syringes are important to consider as components of an overall public health and safety effort. The drop boxes were placed in high drug use areas of Baltimore, which has existing NEPs. The 11% HIV antibody positivity rate in discarded syringes

highlights the role that safe disposal mechanisms can play in reducing the circulation time of infected needles, regardless of the presence or absence of a syringe exchange program.

Needle Exchange and Hepatitis B and C Viruses

Hagan H, McGough JP, Thiede H, Weiss N, Hopkins S, Russell A. (1999). Syringe exchange and risk of infection with hepatitis B and C viruses. *American Journal of Epidemiology*, 149, 203-213.

ABSTRACT The authors utilized a cohort study among Seattle injection drug users (IDUs) to assess whether participation in a syringe exchange program was associated with incidence of hepatitis B virus (HBV) and hepatitis C virus (HCV) infection. Susceptible IDU subjects (187 seronegative for antibody to HCV, and 460 seronegative for core antibody to HBV) were identified in drug treatment, corrections, and social service agencies from June 1994 to January 1996, and followed for seroconversion one year later. The subjects included in the analysis were Seattle-King county (Washington State) area IDUs enrolled in a larger multipurpose cohort study, the Risk Activity Variables, Epidemiology, and Network Study (RAVEN Study). There were 39 HCV infections (20.9/100/year) and 46 HBV infections (10.0/100/year). There was no apparent protective effect of syringe exchange against HBV (former exchange users, relative risk (RR) = 0.68, 95% confidence interval (CI) 0.2-2.5; sporadic exchange users, RR = 2.4, 95% CI 0.9-6.5; regular users, RR = 1.81, 95% CI 0.7-4.8; vs. RR = 1.0 for nonusers of the exchange; adjusted for daily drug injection). Neither did the exchange protect against HCV infection (sporadic users, RR = 2.6, 95% CI 0.8-8.5; regular users, RR = 1.3, 95% CI 0.8-2.2; vs. RR = 1.0 for nonusers; adjusted for recent onset of injection and syringe sharing prior to enrollment). While it is possible that uncontrolled confounding or other bias obscured a true beneficial impact of exchange use, these data suggest that no such benefit occurred during the period of the study.

COMMENT: Seattle is an area with a high HCV prevalence (70%-80%) and low HIV prevalence (5%) among the IDU population. The probability that an IDU was an HCV carrier was greater than 70%; and given the efficiency of HCV transmission, any syringe sharing or sharing of other injection equipment (e.g., cooker, rinse water, cotton) increases the risk for HCV infection. During the period in which HBV/HCV was studied in this cohort, the incidence of HIV infection was quite low, with only 4 seroconversions (0.2%) among 1651 study participants. A high incidence of viral hepatitis can occur in the presence of low HIV incidence, presumably related to higher prevalence of HCV/HBV carriers as well as the greater infectiousness and higher per-contact risk of acquiring HBV than HIV.

Needle Exchange Programs in Vancouver: An Update on Needle Exchange Programs and HIV Incidence

Schechter M, Strathdee S, Cornelisse PGA et al. Do needle exchange programs increase the spread of HIV among injection drug users: An investigation of the Vancouver outbreak. AIDS 1999 Apr 16;13(6):F45-51.

ABSTRACT Objective: An association between needle exchange attendance and higher HIV prevalence rates among injecting drug users (IDU) in Vancouver has been interpreted by some to suggest that needle exchange programmes (NEP) may exacerbate HIV spread. We investigated this observed association to determine whether needle exchange was causally associated with the spread of HIV. Design and Method: Prospective cohort study of 694 IDU recruited in the downtown eastside of Vancouver. Subjects were HIV-negative at the time of recruitment and had injected illicit drugs within the previous month. Results: Of 694 subjects, the 15-month cumulative HIV incidence was significantly elevated in frequent NEP attendees (11.8+ 1.7 versus 6.2 + 1.5%; log-rank $P = 0.012$). Frequent attendees (one or more visits per week) were younger and were more likely to report: unstable housing and hotel living, the downtown eastside as their primary injecting site, frequent cocaine injection, sex trade involvement, injecting in 'shooting galleries', and incarceration within the previous 6 months. The Cox regression model predicted 48 seroconversions among frequent attendees; 47 were observed. Although significant proportions of subjects reported obtaining needles, swabs, water and bleach from the NEP, only five (0.7%) reported meeting new friends or people there. When asked where subjects had met their new sharing partners, only one out of 498 respondents cited the needle exchange. Paired analysis of risk variables at baseline and the first follow-up visit did not reveal any increase in risk behaviours among frequent attendees, regardless of whether they had initiated drug injection after establishment of the NEP. Conclusions: We found no evidence that this NEP is causally associated with HIV transmission. The observed association should not be cited as evidence that NEPs may promote the spread of HIV. By attracting higher risk users, NEPs may furnish a valuable opportunity to provide additional preventive/support services to these difficult-to-reach individuals.

COMMENT This report from the Vancouver Injection Drug User Study documents the severity of drug use, high risk behaviors and lifestyle characteristics of frequent attenders of the Vancouver needle exchange program compared with infrequent attenders of the program. There was no evidence that the NEP promoted new needle sharing network formation, and no evidence of increased risk behaviors related to injection practices. Significant variables distinguishing the frequent attenders from infrequent attenders (at $p < 0.001$ level) included unstable housing, living in a hotel, injecting in shooting galleries, frequency of heroin and cocaine use, incarceration in the past 6 months, involvement in the sex trade, and other sources of illegal income. The impact of these differences must be noted, and two statistical models were used to assess the impact of these higher risk characteristics on expected new HIV seroconversions. A multivariate Cox regression model containing these variables yielded a good fit with the actual observation of new seroconversions in both frequent attenders (48 predicted, 47 observed) and among infrequent

attenders (18 seroconversions predicted, 17 observed). A second analysis was conducted using a logistic regression model, with predicted seroconversion rates of 45 among frequent attenders and 19 among infrequent attenders - fairly close to the 47 observed in frequent attenders and 17 observed in infrequent attenders, respectively. This suggests that these risk factors themselves are more predictive of HIV seroconversion than patterns of SEP attendance. A more comprehensive approach to addressing the needs of the IDU may be required, in addition to the availability of sterile injection equipment, to achieve effective HIV prevention in this highest risk population.

SUMMARY POINTS From Updated Syringe Exchange Literature

- ▶ Laboratory studies show prolonged viability of HIV in used needles (> 4 weeks), providing strong biologic rationale for removal of used drug injection equipment from circulation.
- ▶ Syringe exchange programs (SEPs) consistently attract persons with highest risk profiles for HIV infection and severe drug use, and are successful in referring SEP clients into detoxification and substance abuse treatment programs.
- ▶ SEP-referred clients have similar rates of retention in substance abuse treatment as individuals from standard referral sources, despite more severe baseline drug use and high-risk lifestyles.
- ▶ Clients participating in SEPs have decreased reuse of contaminated syringes and reduced sharing of injection equipment
- ▶ The data indicate that the presence of a syringe exchange program does not increase the use of illegal drugs among participants, and in many cases, a decrease in injection frequency has been observed among those attending these programs.
- ▶ Provision of sterile injection equipment through SEPs and pharmacy access is cost-effective; one HIV infection can be prevented for one third the cost of medical care for an infected person.
- ▶ The scientific evidence accumulated to date provides a basis on which municipalities that are heavily affected by an HIV epidemic driven by injection drug use should consider syringe exchange programs as a tool for the identification, referral and retention of active users of injection drugs into these services, as part of a comprehensive HIV prevention plan.

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EVIDENCE-BASED FINDINGS ON THE EFFICACY OF SYRINGE EXCHANGE PROGRAMS: AN ANALYSIS FROM THE ASSISTANT SECRETARY FOR HEALTH AND SURGEON GENERAL OF THE SCIENTIFIC RESEARCH COMPLETED SINCE APRIL 1998

Introduction

The issues of substance abuse addiction and HIV transmission related to injection drug use remain serious public health challenges, and the need to define and implement effective public health interventions remain urgent. The scientific research continues to define the unique role that syringe exchange programs can play in curtailing the expansion of the HIV epidemic in vulnerable communities affected by substance abuse, as part of a well designed and implemented comprehensive HIV prevention strategy.

This paper provides a review of recently published peer-reviewed research on syringe exchange programs completed by senior scientists and public health experts within the Department of Health and Human Services. An overview of the research studies is followed by an annotated bibliography providing the published abstracts, directly quoted, and relevant commentary. In summary, the new studies contribute substantially to the strength of the data showing the following effects of effective syringe exchange programs: a decrease in new HIV seroconversions; an increase in the numbers of injection drug users referred to and retained in substance abuse treatment; and well documented opportunities for multiple prevention services and referral and entry into medical care. The data indicate that the presence of a syringe exchange program does not increase the use of illegal drugs among participants in syringe exchange programs, and in many cases, a decrease in injection frequency has been observed among those attending these programs.

Throughout the literature, the terms syringe exchange programs and needle exchange programs have been used interchangeably in characterizing programs providing sterile injection equipment to injection drug users. This paper will use the term syringe exchange program, except where a published abstract has specified needle exchange program.

Overview

Numerous studies have shown that syringe exchange programs reach and serve the most disenfranchised populations at high risk for HIV infection. In this regard, syringe exchange programs play a unique role in facilitating the engagement of these populations in meaningful prevention interventions and treatment opportunities, when implemented as part of a comprehensive HIV prevention and substance abuse strategy. The scientific evidence accumulated to date provides a basis on which municipalities that are heavily affected by an HIV epidemic driven by injection drug use should consider syringe exchange programs as a tool

for the identification, referral and retention of active users of injection drugs into these services, as part of a comprehensive HIV prevention plan.

Serious discussions about syringe exchange programs must be placed in the context of the HIV epidemic in this country. The urgency to address the consequences of substance abuse is clear, as injection drug use continues to fuel the HIV epidemic in the United States. As many as half of new HIV infections are caused by the sharing of injection equipment contaminated with HIV, either directly due to injection drug use, through unprotected sex with someone who acquired HIV infection through injection drug use, or birth to a mother who acquired HIV infection through these means (CDC, 1999). Women of color and their children continue to be disproportionately affected by HIV/AIDS due to injection drug use. An estimated three out of four AIDS cases among women are due to injection drug use or heterosexual contact with someone infected with HIV through injection drug use, and over 75% of new infections in children result from the consequences of injection drug use in a parent (CDC, 1999). All too often women are unaware of their risk, due to a distant history of drug use in a partner. The ability to halt this devastating epidemic, particularly among minority women and children, requires a three part strategy: (i) preventing substance abuse ; (ii) facilitating entry of those with addictions into substance abuse treatment; and (iii) establishing effective outreach to engage active and former drug users in HIV prevention strategies that will protect them, their partners and families from exposure to HIV, and bring them into substance abuse treatment and medical care. HIV prevention and treatment programs targeting HIV-infected injection drug users and their partners, and similar programs within criminal justice institutions, are also important components in preventing the transmission of HIV.

In the Department's prior reviews of the literature on syringe exchange programs in 1997 and 1998, there was discussion of the methodological issues and constraints present across most published studies in this area. These include self-reported measures and difficulty in establishing proper control groups. However, the Department's senior scientists continue to concur with the conclusion of the Institute of Medicine that the pattern of evidence is sufficiently strong to support scientifically clear conclusions regarding the utility of syringe exchange programs, in communities that choose to adopt them, as part of a comprehensive HIV prevention strategy.

A recent national survey of syringe exchange programs (Paone et al, 1999) found that a growing number of local communities have chosen to implement a syringe exchange program to reach injecting drug users who are not in substance abuse treatment, in order to reduce the transmission of HIV through reduction in drug use behaviors and unsafe injection practices. This survey also documented that, in addition to exchanging sterile syringes for contaminated ones, 97% of syringe exchange programs provide a range of other services including referral to substance abuse treatment, prevention education for sexually transmitted diseases, HIV counseling and testing, tuberculosis screening, and primary health care. These trends also were found in a 1997 national survey (CDC, 1998).

The biological rationale for removing contaminated injection equipment from circulation has been demonstrated in a new study by Abdala et al (1999), confirming empirical observations of previous studies. This study showed that HIV-1 can survive over 4 weeks in a contaminated syringe, remaining infectious to individuals who reuse that syringe over this prolonged period. Riley et al (1998) found that 10.9% of used syringes discarded in needle boxes at community locations tested positive for the HIV antibody, while Robles et al (1998) reported that 27% of contaminated syringes returned to a new needle exchange program were positive for HIV. The longevity of the HIV-1 virus, combined with its prevalence in used equipment in some communities, is basic to the public health rationale for removal of used syringes from the community environment.

Knowledge of the effectiveness of syringe exchange programs in reducing the sharing of injection equipment and reuse of contaminated syringes among injection drug users has recently been reinforced by a number of new studies (Heimer et al, 1998; Robles et al, 1998; Bluthenthal et al, 1998). Conversely, the closing of an established syringe exchange program in Connecticut was associated with an increase in reuse and sharing of contaminated equipment among injection drug users, exposing these individuals and their partners and families to an increased risk of preventable bloodborne diseases (Broadhead et al, 1999).

Recent research studies document the role that effective syringe exchange programs serve as mechanisms to engage very high risk and hard to reach individuals in substance abuse treatment services. Brooner et al (1998) found that half of syringe exchange program clients referred for substance abuse treatment actually entered treatment, with 76% completing the first 13 weeks of treatment. These results were achieved despite the fact that these clients had more severe drug use, more HIV risk behaviors, less employment and greater engagement in illegal activities than clients referred to substance abuse treatment from traditional sources. Hagan et al (In Press) reported reduced frequency of injection drug use among current and former users of a needle exchange program, and entry into methadone treatment programs among former, current and new users of a syringe exchange program. Strathdee et al showed that attendance at a syringe exchange program was positively associated with individuals entering detoxification services independent of other variables, again representing an important bridge that facilitates entry into substance abuse treatment.

Concerns about elevated HIV seroconversion rates linked to the use of syringe exchange programs remain scientifically unfounded, as the data primarily reflect the impact of multiple high-risk factors among individuals who participate in these programs – a population at extremely high risk that is not engaged in appropriate interventions through traditional mechanisms of outreach and treatment referral. Studies of HIV incidence among two study cohorts in Canada, and some recent data on the incidence of hepatitis B and hepatitis C in Seattle, are relevant as these relate to syringe exchange programs. In the Department's internal review of these data in 1998, careful attention was given to the study data on these Canadian cohorts, with the conclusion that syringe exchange programs were not associated with an increase in HIV seroconversions. Subsequent data from the

Montreal cohort (Bruneau et al, 1999) have confirmed this lack of association between HIV seroconversion and attendance at a syringe exchange program, with longer follow-up of the study participants and appropriate availability of sterile injection supplies. Efforts to identify any grounds for a causal relationship continue to show negative results (Schechter et al, 1999), when controlling for risk factors in the statistical model.

Public health scientists have long known about the incidence of hepatitis B (HBV) and hepatitis C (HCV) among injection drug users. These are highly infectious bloodborne diseases that are endemic among some drug-using populations. In Seattle, where there is a high prevalence of hepatitis C among injection drug users (70%-80%), participation in the syringe exchange program did not appear to be protective against new HCV or HBV infection (Hagan et al, 1999). Because of the high background prevalence of HCV in this population, a single exposure to a syringe used by an injection drug user carries a high level of risk that it will be contaminated with HCV. Although syringe exchange programs can greatly reduce the reuse of contaminated syringes, maximal prevention of HCV transmission among this population would require distribution of a sufficient volume of sterile syringes to preclude any reuse of injecting equipment. In contrast to this scenario, since HIV seroprevalence is yet low in this population, the empirical data support the potential of a protective effect for HIV among individuals seeking clean injection equipment at the syringe exchange program.

In summary, injection drug use is a driving force for new HIV infections, disproportionately affecting minority populations. Yet, HIV transmission via injection drug use is preventable. Efforts to halt the HIV epidemic are in part dependent on effective prevention interventions targeted to this population. Prevention will require successfully engaging injection drug users and bringing them into systems of care that offer substance abuse treatment, mental health, medical, and social support services. The availability of medical, social and preventive services alone are often not enough to engage the highest risk populations of active injection drug users, absent effective methods of outreach to this population. The scientific research has shown that well designed and implemented syringe exchange programs have demonstrated efficacy in engaging populations at severe risk for HIV and reducing the further spread of HIV among injection drug users, their sexual partners and children. Furthermore, these programs have not been shown to encourage the use of illegal drugs, and fit well into comprehensive substance abuse treatment strategies.

After reviewing all of the research to date, the senior scientists of the Department and I have unanimously agreed that there is conclusive scientific evidence that syringe exchange programs, as part of a comprehensive HIV prevention strategy, are an effective public health intervention that reduces the transmission of HIV and does not encourage the use of illegal drugs. In many cases, a decrease in injection frequency has been observed among those attending these programs. In addition, when properly structured, syringe exchange programs provide a unique opportunity for communities to reach out to the active drug injecting population and provide for the referral and retention of individuals in local substance abuse treatment and counseling programs and other important health services. The scientific evidence accumulated to date provides a basis on which

municipalities that are heavily affected by an HIV epidemic driven by injection drug use should consider syringe exchange programs as a tool for the identification, referral and retention of active users of injection drugs into these services, as part of a comprehensive HIV prevention plan.

ANNOTATED BIBLIOGRAPHY: SCIENTIFIC RESEARCH ON SYRINGE EXCHANGE PROGRAMS PUBLISHED SINCE APRIL 1998

Needle Exchange in the U.S. - National Surveys

Paone D, Clark J, Shi Q, Purchase D, Des Jarlais DC. Syringe exchange in the United States, 1996: A national profile. Am J Public Health 1999 Jan; 89(1):43-6.

ABSTRACT Objectives: This paper provides 1996 information on the status of US syringe exchange programs and compares these findings with data from our 1994 survey. Methods: In November 1996, questionnaires were mailed to 101 syringe exchange programs. Program directors were contacted to conduct telephone interviews based on the mailed questionnaires. Data collected included number of syringes exchanged, syringe exchange program operations, legal status, and services offered. Results: Eighty-seven programs participated in the survey. A total of 46 (53%) were legal, 20 (23%) were illegal but tolerated, and 21 (24%) were illegal-underground. Since 1994, there has been a 54% increase in the number of cities and a 38% increase in the number of states with syringe exchange programs. Eighty-four programs reported exchanging approximately 14 million syringes, a 75% increase from 1994. Syringe exchange programs also provided a variety of other services and supplies, and legal programs were more likely than illegal ones to provide these services. Conclusion: Despite continued lack of federal funding, syringe exchange programs expanded in terms of the number of syringes exchanged, the geographic distribution of programs, and the range of services offered.

COMMENT Many syringe exchange programs provide a range of preventive health services and health care, directly and through referrals. Of those programs surveyed, 97% provided referral to substance abuse treatment, 80% provided education to reduce risks of STDs, while many others provided HIV counseling and testing, primary health care, and tuberculosis screening in addition to exchanging sterile syringes for contaminated ones. The finding that legal programs are more likely to provide health services may reflect their ability to establish more regular hours and locations and to more formally refer clients to existing health, mental health and substance abuse treatment services. It has recently been estimated (Des Jarlais, 1999) that only 10% of injection drug users have access to needle exchange programs and their associated ancillary services, despite evidence that these programs are effective in reaching populations at very high risk for HIV and in need of substance abuse treatment services.

Centers for Disease Control and Prevention. Update: Syringe Exchange Programs – United States, 1997. Morbidity and Mortality Weekly Report, August 14, 1998, Vol 47 (31); 652-655.

(NO PUBLISHED ABSTRACT)

COMMENT This report provides an updated survey of the number and characteristics of syringe exchange programs (SEPs) in operation in the United States. The findings indicate continued expansion in the number, geographic coverage, and activity of SEPs in the United States. Of 113 SEPS contacted, 100 (89%) participated in the survey. These 100 SEPs reported operating in 80 cities in 30 States, the District of Columbia, and Puerto Rico. In 1997, 96 of the SEPs provided information about the number of syringes and reported exchanging approximately 17.5 million syringes (median; 57,343 syringes per SEP). The 10 largest volume SEPs (i.e. those that exchanged greater than or equal to 500,000 syringes) exchanged approximately 10.3 million (59%) of all syringes exchanged. Most of the 100 SEPs provided other public health and social services: 99% offered instruction to prevent sexual transmission of HIV and other sexually transmitted diseases; 96% provided IDUs with information about safer injection techniques and/or use of bleach to disinfect equipment; and 94% referred clients for substance abuse treatment programs. Health care services offered on site included HIV counseling and testing (64%), tuberculosis skin testing (20%), STD screening (20%), and primary health care (19%). The 100 SEPs operated in various settings, with 69% operating in multiple settings. SEPs reported receiving financial support from various sources including foundations, individuals, and state and local governments.

Risks Associated with Re-use of Syringes: A Laboratory study

Abdala N, Stephens PC, Griffith BP, Heimer R. (1999). Survival of HIV-1 in Syringes. J Acquir Immune Defic Syndr Hum Retrovirol 1999 Jan 1;20(1):73-80

ABSTRACT Summary: We performed a study to determine the duration of survival of HIV-1 in syringes typically used by injectors of illicit drugs (IDUs). We describe the effectiveness of a microculture assay in detecting viable virus in volumes of blood typical of those commonly found inside used syringes. Using this assay and modeling the worse-case situation for syringe sharing, we have recovered viable, proliferating HIV-1 from syringes that have been maintained at room temperature for periods in excess of 4 weeks. The percentage of syringes with viable virus varied with the volume of residual blood and the titer of HIV-1 in the blood. These experiments provide a scientific basis for needle exchange schemes, harm reduction, and other interventions among IDUs that support the nonsharing and removal of used syringes from circulation.

COMMENT Since the early years of the epidemic, researchers have documented that sharing of blood-contaminated equipment carries a substantial risk for transmission of HIV, and hepatitis B and C. These newly reported findings which document the long survival time of HIV-1 in syringes have implications for needle exchange program, in that the study confirms that a substantial

proportion of needles removed from circulation may have viable HIV and could transmit the infection. This data provides a scientific virologic rationale for the role syringe exchange programs play in reducing HIV transmission via used injection equipment, as these programs are organized to provide new, sterile injection equipment and remove from circulation potentially infectious needles and syringes.

Effectiveness of Needle Exchange Programs

Brooner R., Kidorf M., King V., Bielensohn P., Svikis D., Vlahov D. A Drug Abuse Treatment Success among Needle Exchange Participants. Public Health Reports, 113; Supplement 1: pp. 130-139, June 1998.

ABSTRACT Objective: Although lowering incidence rates of human immunodeficiency virus (HIV) transmission is the primary goal of needle exchange programs (NEPs), other desirable outcomes are possible. Referring exchange participants to more comprehensive drug abuse treatment programs has the potential to reduce or eliminate the use of drugs. This possibility was evaluated by comparing the treatment responses of new admissions with an outpatient opioid agonist treatment program in Baltimore, Maryland. Methods: New admissions (1994-1997) to an opioid agonist treatment program were first grouped by referral source (needle exchange, $n=82$, vs. standard referrals, $n=243$) and then compared on admission demographic and clinical variables and response to treatment during the first three months. Outcome measures included retention rates, self-reported drug use and injecting frequencies, self-reported illegal activities for profit, and results from weekly urinalysis testing for opioids and cocaine. Results: Patients from the NEP were significantly older and more likely to be male, African American, and unemployed than standard referral patients. Needle exchange patients also had a greater baseline severity of drug use than patients in the standard referral group. Despite these baseline differences, both groups achieved comparably good short-term treatment outcomes (including reduced drug use and criminal activity for profit); treatment retention was also good, although slightly better in the standard referral group (88% vs. 76%). Conclusion: These data demonstrate the feasibility and merits of creating strong linkages between NEPs and more comprehensive drug abuse treatment clinics.

COMMENT Two significant findings of this study are the ability of a NEP to successfully refer NEP clients to a substance abuse treatment program (51% of referrals were admitted to treatment) and the relatively high treatment retention rates for NEP-referred clients, despite greater severity of baseline drug use among this population compared to clients from standard referral sources. Establishing linkages between syringe/needle exchange programs and substance abuse treatment programs may lead to meaningful reductions in, or the elimination of, drug use among NEP clients in addition to the primary goal of reducing the risk of bloodborne infectious diseases in this population.

Hagan H, McGough JP et al. Reduced Injection Frequency and Increased Entry and Retention in Drug Treatment Associated with Needle Exchange Participation in Seattle Drug Injectors. In Press, Journal of Substance Abuse Treatment

ABSTRACT Objectives: The association between needle exchange, change in drug use frequency and enrollment and retention in methadone drug treatment was studied in a cohort of Seattle injection drug users (IDUs). Methods: Participants included IDUs classified according to whether they had used a needle exchange by study enrollment and during the 12-month follow-up period. The relative risk (RR) and the adjusted RR (ARR) were estimated as measures of the association. Results: IDUs who had formerly been exchange users were more likely than never exchangers to report a substantial ($\geq 75\%$) reduction in injection (ARR=2.85, 95% CL 1.47-5.51, to stop injecting altogether (ARR=3.5, 95% CL 2.1-5.9), and to remain in drug treatment. New users of the exchange were five times more likely to enter drug treatment than never-exchangers. Conclusions: Reduced drug use and increased drug treatment enrollment associated with needle exchange participation may have many public health benefits, including prevention of blood-borne viral transmission.

COMMENT The frequency of drug injection among active IDUs using a needle exchange program decreased during the time of this study. Both current users and new users of the needle exchange program were more likely to enter methadone treatment programs than IDUs who did not use the needle exchange program. Retention in methadone treatment at 12-month follow-up was 68% for former users of the NEP, 60% of current users of the exchange, and 45% of new users of the NEP. These findings support the role NEPs can play as a conduit into sustainable substance abuse treatment among heroin injectors.

Strathdee S, Celentano D et al. Needle Exchange Attendance and Health Care Utilization Promote Entry into Detoxification. In Press, Journal of Urban Health

ABSTRACT This study was undertaken to identify factors associated with entry into detoxification among injection drug users (IDUs), and to assess the role of needle exchange programs (NEPs) as a bridge to treatment. IDUs undergoing semi-annual human immunodeficiency virus (HIV) tests and interviews were prospectively studied between 1994 and 1998, during which time a NEP was introduced in Baltimore. Logistic regression was used to identify independent predictors of entry into detoxification, stratifying by HIV serostatus. Of 1490 IDUs, similar proportions of HIV-infected and uninfected IDUs entered detoxification (25% vs. 23%, respectively). After accounting for recent drug use, hospital admission was associated with four-fold increased odds of entering detoxification for HIV-seronegative subjects. Among HIV-infected subjects, hospital admission, outpatient medical care and having health insurance independently increased the odds of entering detoxification. After accounting for these and other variables, needle exchange attendance also was independently associated with entering detoxification for both HIV-infected (adjusted odds ratio [AOR]=3.2) and uninfected IDUs (AOR=1.4). However, among HIV-infected subjects, the increased odds of detoxification associated with needle exchange diminished significantly over time, concomitant with statewide

reductions in detoxification admissions. These findings indicate that health care providers and NEPs represent an important bridge to drug abuse treatment for HIV-infected and uninfected IDUs. Creating and sustaining these linkages may facilitate entry into drug abuse treatment and serve the important public health goal of increasing the number of drug users in treatment.

COMMENT This study provides a quantitative measure of the association between NEP attendance and subsequent entry into drug abuse treatment in an out-of-treatment population. NEP attendance was independently associated with entry into detoxification programs for both HIV-negative and HIV-infected clients. The researchers noted that the decreased strength of the association over time was likely due to external factors, such as the increased difficulty in obtaining admission for detoxification in Maryland and third party reimbursement barriers that differentially affected HIV-infected IDUs previously eligible for social security benefits. The research supports previous observations that NEPs can be a conduit to drug abuse treatment for very high risk populations.

Heimer R, Khoshnood K, Bigg D, Guydish J, Junge B. Syringe Use and Reuse: Syringe Exchange Programs in Four Cities. Journal of Acquired Immunodeficiency Syndromes and Human Retrovirology. 1998; 18(Suppl 1): S37-S44.

ABSTRACT Summary: We determined the effect of syringe exchange programs (SEPs) on syringe reuse patterns. Five methods were employed to estimate injections per syringe made by exchange clients in four cities. In San Francisco, Chicago, and Baltimore, self-reported data on the number of injections per syringe were obtained. In New Haven, self-reported injection frequencies were combined with syringe tracking data to derive two methods for estimating the mean injections per syringe. The average number of injections per syringe declined by at least half after establishment of SEPs in New Haven, Baltimore, and Chicago, all cities where such an analysis could be made. There were significant increases in the percentages of exchangers reporting once-only use of their syringes in San Francisco, Baltimore and Chicago, all cities where the data were amenable to this form of analysis. Self-report and syringe tracking estimates were in agreement that SEP participation was associated with decreases in syringe reuse by drug injectors. SEP participation was associated with increases in the once-only use of syringes. These findings add to earlier studies supporting the role of SEPs in reducing the transmission of syringe-borne infections such as HIV and hepatitis.

COMMENT This study uses several methods to assess syringe reuse among participants of syringe exchange programs, including syringe tracking data to minimize potential response bias associated with self-reported data. The decreased reuse of contaminated syringes observed over time in these study cohorts is significant in light of the previous study by Abdala et al, irrespective of the absence of a control group of non-SEP clients.

Bluthenthal RN, Kral AH, Erringer EA, and Edlin BR. Use of an Illegal Syringe Exchange and Injection-Related Risk Behaviors among Street-Recruited Injection Drug Users in Oakland, California, 1992-1995. Journal of AIDS and Human Retrovirology, 1998.

ABSTRACT Objective: To determine factors associated with syringe and injection supply sharing among injection drug users (IDUs) in a community with an illegal underground syringe exchange program. **Methods:** From 1992-1995, semi-annual cross-sectional samples of IDUs were recruited in Oakland, CA. To account for multiple observations from the same individual, we used general estimating equations with logit transformations to determine factors associated with sharing syringes and other injection works. **Results:** 1304 IDUs were interviewed; 684 (53%) returned for more than one interview. 2830 interviews were available for analysis. SEP use increased and syringe and supply sharing declined from 1992 to 1995 among study participants. In multivariate analysis, SEP users were less likely to share syringes than non-SEP users (adjusted odds ratio [AOR] = 0.57; 95% confidence interval [CI] = 0.46-0.72). SEP use was not significantly associated with the sharing of injection supplies (AOR = 0.85; 95% CI = 0.68 - 1.07). Syringe sharing and injection supply sharing were significantly less likely to occur among African American and HIV-positive IDUs. **Conclusions:** These data suggest that illegal SEPs can be effective HIV prevention programs. Lower rates of syringe-based risk factors among African American and HIV-positive IDUs are encouraging.

COMMENT The researchers re-examined seven semi-annual waves of interviews from both the baseline and follow-up assessments of IDUs who lived in a community with an illegal SEP. Variables that previous research has suggested would have an impact on syringe sharing, such as substance abuse treatment, marital status, gender, and income were included in the models to control for potential confounding factors, as well as control for the potential effects of temporal trends in use of NEPs and syringe sharing. Substantial declines in syringe sharing were observed over the interview periods among users of the SEP compared to non-SEP users. Use of the SEP increased from 5% in 1992 to 36% in 1995 despite arrests of program volunteers during the study period. The study adds to the literature in that it shows a decrease in syringe reuse is also associated with an illegal SEP, whereas most other reported studies come from legal or community-tolerated SEPs.

Bruneau J, Lachance N et al. Changes in HIV Seroconversion Rates of IDUs Attending Needle Exchange Programs in Montreal: The Saint-Luc Cohort. Canadian Journal of Infectious Diseases, [Supplement] May 1999.

ABSTRACT Objectives: From 1988 to 1995, we observed a positive association between NEP attendance and HIV seroconversion. Since 1995, modifications have been implemented in needle exchange programs (NEPs) in Montreal, including the opening of new distribution sites and the lifting of the syringe quota. The objective is to examine the association between NEPs and HIV seroconversion in the Saint-Luc Cohort after January 1995. **Methods:** Recent injection drug users (IDUs) were recruited by word-of-mouth and through substance abuse treatment agencies.

Information was collected and HIV status was assessed at each visit. The association between factors on demographics, drug and sexual behaviours and HIV seroconversion was assessed using univariate and multivariate Cox proportional hazards regression. All current IDUs participating in the Saint-Luc cohort as of January 1995 were included in the analysis. **Results:** The post-1995 cohort included 981 seronegative subjects, 797 men and 184 women. Mean age was 34.5, and 42% reported NEP attendance in the past 3-6 months. 83% and 34% used cocaine and heroin respectively in the past 3-6 months. 42.3% reported unstable housing. From January 1995 to September 1998, 68 seroconverted for a global incidence of 4.3 per 100 person-years (CI 95%: 3.4-5.5 : 4.2 per 100 person years (CI 95%: 2.8-6.1) among NEP attenders, and 4.4 per 100 person-years (CI 95%: 3.1-5.9) among non-attenders. (HR: 0.97 [0.60 - 1.58]). In a Cox proportional hazards model, factors independently associated with HIV seroconversion were:

<u>Factors</u>	<u>Hazard Ratio</u>	<u>95% CI</u>
Drug Injected (ref: other)		
Cocaine IV (3-6 months)	2.20	0.5-9.9
Heroin IV (3-6 months)	0.33	0.2-0.7
Nb injections last month (ref: 0)		
1-30	2.18	0.9-5.5
30-100	2.22	0.8-6.1
>100	3.81	1.4-10.4
Booting 3-6 months	2.04	1.0-4.1
Inject alone 3-6 months	1.91	0.9-3.9
Sharing with HIV+	2.29	1.3-3.9
Gender (ref: female)	2.70	1.0-7.6

Conclusion: After 1995, no association was found between NEP attendance and HIV seroconversion among current IDUs followed in the Saint-Luc cohort. This situation is different from what was observed from 1988 - 1995, and coincided with modifications of needle exchange programs in Montreal.

COMMENT Remis, Bruneau and Hankins published a related paper titled "Enough Sterile Syringes to Prevent HIV Transmission Among Injection Drug Users in Montreal?", in the Journal of Acquired Immunodeficiency Syndrome and Human Retrovirology; Vol 18, Suppl. I, July 1998. The study compared the estimated number of syringes required by injection drug users in 1994 with the number of syringes distributed through needle exchange programs. Syringes distributed through NEPs addressed less than 5% of the estimated demand for syringes by IDUs in Montreal in 1994. The authors advanced the hypothesis that unless the disparity between unmet need and available syringes was reduced, it is unlikely that sufficient syringes would be available to prevent HIV transmission. The observation in this study that NEP use and HIV seroconversion were not associated since 1995 in the Montreal cohort is coincident with modifications of the NEP program and differs from pre-1995 data.

Robles R, Colon H, Matos T, Finlinson H, Munoz A, Marrero C, Garcial M, Reyes J. Syringe and Needle Exchange as HIV/AIDS Prevention for Injection Drug Users in Puerto Rico. Health Policy, 1998; Vol. 45: 209-220.

ABSTRACT This study evaluated the effectiveness of the first needle exchange program (NEP) established in Puerto Rico. The data for this study were collected during the first months of the NEP from July 1995 to March 1996 in 13 communities of the San Juan metropolitan area. Subjects were the participants of two modalities of the NEP: a mobile team and a community-based drug treatment program. During the 3-week evaluation period, 2401 injection drug users (IDUs) were recruited, resulting in a total of 19,195 exchange contacts and 146,323 syringes exchanged. No significant change in drug injection was observed. However, the program was effective in reducing sharing of syringes and cookers. The study suggests that the NEP did help in reducing needle sharing in Puerto Rico. However, the HIV seropositivity in returned syringes suggests the need to continue aggressive prevention programs to arrest the epidemic among IDUs. However, factors related to the socio-cultural environment as well as cultural norms and traditions need to be considered when planning and expanding NEPs.

COMMENT In this study, 40% of a sample of 1075 syringes returned to the NEP and studied showed a 27% seropositivity rate for HIV. A significant increase in the number of returned syringes was observed over the evaluation period (12.4% rising to 32.5% at 8 months). The importance of decreasing needle circulation time as an HIV prevention intervention is particularly acute in this setting with high rates of HIV seropositivity in contaminated syringes. Entry into substance abuse treatment among study participants increased over time, with 28% of the NEP participants reporting treatment entry by the seventh month after the NEP began. Both short term and long term harm reduction goals among IDUs were advanced by the NEP.

Des Jarlais DC, Perlis T, Friedman SR, Deren S et al. Declining Seroprevalence in a Very Large HIV Epidemic: Injecting Drug Users in New York City, 1991 to 1996. Am J Public Health, 88(12): 1801-1806, 1998.

ABSTRACT Objective: This study assessed recent trends in HIV seroprevalence among injecting drug users in New York City. Methods: We analyzed temporal trends in HIV seroprevalence from 1991 to 1996 in 5 studies of injecting drug users recruited from a detoxification program, a methadone maintenance program, research storefronts in the Lower East Side and Harlem areas, and a citywide network of sexually transmitted disease clinics. A total of 11,334 serum samples were tested. Results: From 1991 through 1996, HIV seroprevalence declined substantially among subjects in all 5 studies: from 53% to 36% in the detoxification program, from 45% to 29% in the methadone program, from 44% to 22% at the Lower East Side storefront, from 48% to 21% at the Harlem storefront, and from 30% to 21% in the STD clinics (all $p < .002$ by chi square tests for trends). Conclusions: The reductions in HIV seroprevalence seen among injecting drug users in New York City from 1991 through 1996 indicate a new phase in this large HIV epidemic. Potential explanatory factors include the loss of HIV seropositive individuals through disability and death and lower rates of risk behavior leading to low HIV incidence.

COMMENT This article is included here as a snapshot of HIV prevalence among IDUs in a major city with the largest AIDS epidemic among IDUs in the world. Risk reduction programs including needle exchange programs, street outreach, and detoxification programs were components of the public health response to the epidemic during the years studied. An overall reduction in HIV seroprevalence among IDUs was found, in the setting of a stable number of IDUs. Declines in HIV transmission-related behavior, such as reusing contaminated injection equipment and lending it to others, were reported from several sites. Many factors might contribute to the decline in HIV seroprevalence. The presence of a broad-based prevention effort focused on IDUs, which has included NEPs, has been associated with lower infection rates among the IDU population.

Hagan H, McGough JP et al. Volunteer Bias in Non-Randomized Evaluations of the Efficacy of Needle Exchange Programs. Journal of Urban Health (Accepted for publication)

ABSTRACT Objective: Nonrandomized comparisons of the incidence of HIV and hepatitis between injection drug users (IDUs) who do and do not attend voluntary needle exchange programs may be subject to bias. To explore possible sources of bias, we examined characteristics associated with voluntarily beginning or ceasing to participate in the Seattle needle exchange. Methods: In a cohort of 2879 IDUs, a standardized questionnaire measured characteristics present at enrollment. We examined the relation of these characteristics to the proportion of IDUs who began to use the program during the ensuing 12-month follow-up period, and to the proportion of current exchangers who dropped out during that period of time. Results: Thirty-two percent of the 494 never-exchangers at baseline attended the program during follow-up: those who reported sharing syringes or who were homeless at enrollment were more likely to become new exchanger users (adjusted risk ratio for becoming an exchange user (ARR) = 1.8 for those who shared syringes, and ARR = 2.2 for those who were homeless). Sixteen percent of 1274 current exchangers stopped using the exchange during follow-up, with daily injectors (ARR = 0.6) and those who reported backloading (ARR = 0.6) being relatively less likely to drop out of the exchange. Conclusions: The analysis suggests that IDUs participating in needle exchange programs at a given point in time may include a particularly high proportion of those injectors whose pattern of drug use puts them at elevated risk of blood-borne viral infections.

COMMENT This study of participants in SEP programs shows that individuals who were homeless and those sharing needles were the most likely to utilize an SEP, and persons who stopped attending the SEP were less likely to be injecting daily or using risky injection techniques. This SEP is attracting and retaining those persons with greatest risk factors for bloodborne disease transmission.

Cost-Effectiveness of Needle Exchange Programs

Holtgrave DR, Pinkerton SD, Jones TS, Lurie P, Vlahov D. (1998). Cost and cost-effectiveness of increasing access to sterile syringes and needles as an HIV prevention intervention in the United States. *J Acquir Immune Defic Syndr Hum Retrovirol* 1998;18 Suppl 1:S133-8.

ABSTRACT Summary. We determined the cost of increasing access of injection drug users (IDUs) to sterile syringes and needles as an HIV prevention intervention in the United States and the cost per HIV infection averted by such a program. We considered a hypothetical cohort of 1 million active IDUs in the United States. Standard methods were used to estimate the cost and cost-effectiveness of policies to increase access to sterile syringes and syringe disposal at various levels of coverage (e.g. a 100% coverage level would ensure access to a sterile syringe for each injection given current levels of illicit drug injection in the United States; a 50% coverage level would ensure access to one half of the required syringes). A mathematical model of HIV transmission was employed to link programmatic coverage levels with estimates of numbers of HIV infections averted. A policy of funding syringe exchange programs, pharmacy sales, and syringe disposal to cover all illicit drug injections would cost just over \$423 million (U.S.) for 1 year. One third of these costs would be paid for as out-of-pocket expenditures by IDUs purchasing syringes in pharmacies. Compared with the status quo, this policy would cost an estimated \$34,278 (U.S.) per HIV infection averted, a figure well under the estimated lifetime costs of medical care for a person with HIV infection. At very high levels of coverage (>88%), the marginal cost-effectiveness of increased program coverage becomes less favorable. Although the total costs of funding large-scale IDU access to sterile syringes and disposal seem high, the economic benefits are substantial. Even at high levels of coverage, such funding would save society money. As part of a comprehensive program of HIV prevention, policies to increase IDUs access to sterile syringes urgently need further consideration by public health decision makers.

COMMENT The estimates provided in this study should be considered in the context of an estimated \$108,469 lifetime medical cost of treating an individual with HIV infection, which is three fold greater than estimates of preventing one HIV infection.

Kahn J. Economic Evaluation of Primary HIV Prevention in Injection Drug Users. In Holtgrave D., edit: *Handbook of Economic Evaluation HIV Prevention Programs*. Plenum Press, New York: 1998.

NO PUBLISHED ABSTRACT In this paper, the author implemented the Yale Circulation Model using empirical data obtained from 4 NEP programs in 4 Cities to assess the cost-effectiveness of such an HIV prevention intervention. The Yale Circulation Model is a mathematical model used to estimate the change in the number of new HIV infections based on lowering the HIV prevalence in used needles as a result of reducing the circulation time of contaminated syringes. The author applied a simplified Yale Needle Circulation Model to 4 hypothetical needle exchange programs in areas with differing HIV prevalence and incidence rates. The researcher reports that reductions in HIV incidence rates varied across cities from 17% to 70% across the 4 hypothetical settings. Higher reductions were associated with more needles per client-year. Greater efficiency was associated with low cost per needle exchanged. The estimated cost savings per HIV infection averted ranged from \$12,000 to \$98,000. Greater efficiency was associated with low cost per needle exchanged. The author suggests that for a fixed number of needles, the absolute impact is higher when the needles are spread out among a greater number of clients.

COMMENT This study shows that variations in the cost-effectiveness of syringe exchange programs will occur, depending on the type and structure of the program, and the HIV prevalence and incidence in the geographic area to be served.

Risk Associated with Closing a Needle Exchange Program

Broadhead R, Van Hulst Y, and Heckathorn D. (In Press). Termination of an established needle exchange: A study of claims and their impact. Social Problems, 1999; Vol. 46, No. 1: 48-66.

NO PUBLISHED ABSTRACT This study assessed the impact of the Windham CT needle exchange program closure on risk behaviors, and discarded syringes. The project conducted 330 initial and 173 follow-up risk assessment interviews of NEP participants between 1994 and 1997 while the NEP was in operation. Following the closure of the NEP in 1997, researchers conducted 111 interviews at 11 months post closure and 78 interviews 3 months later. In addition, starting 7 months prior to the closure of the NEP and for a period of 1 and ½ years following the NEP closure the research team surveyed public outdoor areas for discarded syringes where high levels of drug use occurred. Findings indicate that while the NEP was in operation, 14% of the sample reported obtaining syringes from unsafe sources compared with 36% following the closure of the NEP. Prior to the closure of the NEP, the mean number of times a syringe was re-used before disposal was 3.52 compared with a high of 8.18 times following the NEP closure. The closure of the NEP was also found to increase self-reported syringe sharing. Sixteen percent of NEP participants reported sharing a syringe within the last 30 days while the NEP was in operation compared with 34% of participants after the NEP closed. Finally, no difference in the number of discarded syringes in public places was detected, suggesting that the closure of the NEP had no effect on the number of discarded syringes in the area.

COMMENT This study documented the experience of IDUs in one community following closure of a NEP. Risk behaviors increased among IDUs when they no longer had access to the services of the needle exchange program, increasing the likelihood of HIV transmission resulting from multiperson reuse of syringes.

Related Article by Same Authors: Broadhead RS, van Hulst Y, Heckathorn, DD. The Impact of a Needle Exchange's Closure. Public Health Reports 1999; 114: 439-447.

Needle Exchange Related Issues

Junge B, Vlahov D, Riley E, Huettner S, Brown M, Beilenson P. Pharmacy access to sterile syringes for injection drug users: attitudes of participants in a syringe exchange program. J Am Pharm Assoc (Wash) 1999 Jan-Feb;39(1):17-22.

ABSTRACT Objective: To examine attitudes of participants of a van-based syringe exchange program (SEP) toward the hypothetical prospect of pharmacy-based syringe access. Design: One-time, cross-sectional survey. Setting: Baltimore, Maryland. Participants: 206 injection drug users who participate in the Baltimore SEP. Interventions: Face-to-face interviews. Main Outcome Measures: Location preferred for obtaining syringes, drug and syringe use, past experience with pharmacies, and willingness to pay. Results: The sample was 67% men, 95% African American, and 95% unemployed; mean age was 39.8 years. A total of 19% of respondents had bought syringes at a pharmacy during the prior six months. Some 37% reported having been turned down when asking for syringes at a pharmacy, most commonly due to lack of identification to prove diabetic status (50%). If legal restrictions were lifted, 92% of respondents would obtain syringes from pharmacies, and would be willing to pay a mean price of \$0.80 (median = \$1.00) per syringe. Women were more likely than men to report the intention to switch from van-based SEP to pharmacy (57% versus 38%, $p = 0.045$). Conclusion: If current legal restrictions were lifted, pharmacies would be a viable syringe source appealing particularly to women, suggesting gender-specific access issues that should be addressed. The per syringe price that study participants would be willing to pay exceeds typical retail prices, suggesting that pharmacists could charge enough per syringe to recoup operational costs.

COMMENT This study reflects a willingness and effort to obtain sterile injection equipment at pharmacies by a substantial percentage of IDUs currently using a van-based syringe exchange program. It highlights the impact of legal restrictions on syringe availability through pharmacies for the IDU population. The study notes that pharmacies provide an alternative controlled distribution mechanism of sterile injection equipment and are widely available in most communities.

Paone D, Cooper H, Alperen J et al. HIV Risk Behaviors of Current Sex Workers Attending Syringe Exchange: The Experiences of Women in five US Cities. AIDS CARE 1999; 11 (3): 269-280.

ABSTRACT Existing research indicates that sex workers who inject drugs are vulnerable to HIV infection through both risky sexual and drug use practices. This study is the first attempt to learn whether this increased risk persists among current sex workers who participate in syringe exchange programmes (SEPs). With data from interviews with randomly selected participants in five US cities, we compared the demographic characteristics, sexual risk behaviours, drug use practices, emotional and physical health, and SEP utilization patterns of currently active female sex workers who attend SEPs with female SEP participants who do not engage in sex work. Data indicate that women enrolled in SEPs who were currently trading sex typically reported greater HIV risk than women non-sex workers. Current sex workers reported higher levels of risk for every drug risk variable examined in bivariate analysis. They were more likely than other women to inject with a syringe previously used by someone else, to inject daily and to attend shooting galleries; they were less likely to use a condom with their primary partners and to report higher levels of psychological distress than their counterparts. The relationship between sex work status and risky injection practices persisted when potential confounders were controlled for in multivariate analysis. SEPs

can serve a pivotal role in providing sex workers with services and referrals which would help them reduce risk behaviours.

COMMENT This study documents that women who attend SEPs and engage in sex work typically report greater HIV risk than women non-sex workers attending SEPs, reinforcing the importance of this variable. In this study, current sex workers engaged in heavier drug use than other women; reported using a greater variety of injection and non-injection drugs; injected substantially more frequently than both sexually active and non-sexually active women, with sex workers injecting on average 124 times a month while other women injected approximately 82 times a month ($p < 0.0005$); were more likely to inject daily and smoke crack daily than their counterparts; and were more likely to be at risk of bloodborne infection through risky injection practices such as renting, buying or borrowing used syringes for injection and visiting a shooting gallery more often than other women.

Riley E, Beilenson P, Vlahov D, Smith L, Koenig M et al. Operation Red Box: a pilot project of needle and syringe drop boxes for injection drug users in East Baltimore. J Acquir Immune Defic Syndr Hum Retrovirol 1998;18 Suppl 1:S120-5.

ABSTRACT Summary: We assessed the acceptability and the use of a community-based needle and syringe disposal project designed to serve injection drug users. In June 1996, three surplus U.S. mail collection boxes were painted red and used as syringe and needle drop boxes in locations with high drug use in East Baltimore. Acceptance of the drop boxes was measured by focus groups of residents, drug users, and police, held before and after project implementation. Use was measured by weekly counts of needles recovered from the red boxes. A sample of all deposited needles was randomly chosen for needle washing and subsequent HIV antibody testing. Community impact was measured by systematic surveys of needles discarded on public sidewalks, in areas with and areas without drop boxes. Before implementation, members of focus groups expressed concerns that drop boxes could convey mixed messages to youth (e.g. seeming to condone drug use), might result in increased loitering, and could further community stigmatization. After project implementation, all focus groups expressed support of project expansion. In the first 10 months, 2971 needles were collected. Of 156 needles tested, 10.9% were positive for HIV antibody. Needle counts on the street showed no significant change in red box areas compared with control areas. In this pilot project, red boxes were accepted by the community and drug users. Police officers also used the boxes to dispose of confiscated needles. Although limited in the number of drop boxes and follow-up time, this pilot project shows promise as a community-based method of safe needle disposal.

COMMENT This paper addresses the important issue of safe disposal of used injection equipment. While the study design is not directly linked with a syringe exchange program, the issues of access to, and safe disposal of, used syringes are important to consider as components of an overall public health and safety effort. The drop boxes were placed in high drug use areas of Baltimore, which has existing NEPs. The 11% HIV antibody positivity rate in discarded syringes

highlights the role that safe disposal mechanisms can play in reducing the circulation time of infected needles, regardless of the presence or absence of a syringe exchange program.

Needle Exchange and Hepatitis B and C Viruses

Hagan H, McGough JP, Thiede H, Weiss N, Hopkins S, Russell A. (1999). Syringe exchange and risk of infection with hepatitis B and C viruses. *American Journal of Epidemiology*, 149, 203-213.

ABSTRACT The authors utilized a cohort study among Seattle injection drug users (IDUs) to assess whether participation in a syringe exchange program was associated with incidence of hepatitis B virus (HBV) and hepatitis C virus (HCV) infection. Susceptible IDU subjects (187 seronegative for antibody to HCV, and 460 seronegative for core antibody to HBV) were identified in drug treatment, corrections, and social service agencies from June 1994 to January 1996, and followed for seroconversion one year later. The subjects included in the analysis were Seattle-King county (Washington State) area IDUs enrolled in a larger multipurpose cohort study, the Risk Activity Variables, Epidemiology, and Network Study (RAVEN Study). There were 39 HCV infections (20.9/100/year) and 46 HBV infections (10.0/100/year). There was no apparent protective effect of syringe exchange against HBV (former exchange users, relative risk (RR) = 0.68, 95% confidence interval (CI) 0.2-2.5; sporadic exchange users, RR = 2.4, 95% CI 0.9-6.5; regular users, RR = 1.81, 95% CI 0.7-4.8; vs. RR = 1.0 for nonusers of the exchange; adjusted for daily drug injection). Neither did the exchange protect against HCV infection (sporadic users, RR = 2.6, 95% CI 0.8-8.5; regular users, RR = 1.3, 95% CI 0.8-2.2; vs. RR = 1.0 for nonusers; adjusted for recent onset of injection and syringe sharing prior to enrollment). While it is possible that uncontrolled confounding or other bias obscured a true beneficial impact of exchange use, these data suggest that no such benefit occurred during the period of the study.

COMMENT: Seattle is an area with a high HCV prevalence (70%-80%) and low HIV prevalence (5%) among the IDU population. The probability that an IDU was an HCV carrier was greater than 70%; and given the efficiency of HCV transmission, any syringe sharing or sharing of other injection equipment (e.g., cooker, rinse water, cotton) increases the risk for HCV infection. During the period in which HBV/HCV was studied in this cohort, the incidence of HIV infection was quite low, with only 4 seroconversions (0.2%) among 1651 study participants. A high incidence of viral hepatitis can occur in the presence of low HIV incidence, presumably related to higher prevalence of HCV/HBV carriers as well as the greater infectiousness and higher per-contact risk of acquiring HBV than HIV.

Needle Exchange Programs in Vancouver: An Update on Needle Exchange Programs and HIV Incidence

Schechter M, Strathdee S, Cornelisse PGA et al. Do needle exchange programs increase the spread of HIV among injection drug users: An investigation of the Vancouver outbreak. AIDS 1999 Apr 16;13(6):F45-51.

ABSTRACT Objective: An association between needle exchange attendance and higher HIV prevalence rates among injecting drug users (IDU) in Vancouver has been interpreted by some to suggest that needle exchange programmes (NEP) may exacerbate HIV spread. We investigated this observed association to determine whether needle exchange was causally associated with the spread of HIV. Design and Method: Prospective cohort study of 694 IDU recruited in the downtown eastside of Vancouver. Subjects were HIV-negative at the time of recruitment and had injected illicit drugs within the previous month. Results: Of 694 subjects, the 15-month cumulative HIV incidence was significantly elevated in frequent NEP attendees (11.8+ 1.7 versus 6.2 + 1.5%; log-rank $P = 0.012$). Frequent attendees (one or more visits per week) were younger and were more likely to report: unstable housing and hotel living, the downtown eastside as their primary injecting site, frequent cocaine injection, sex trade involvement, injecting in 'shooting galleries', and incarceration within the previous 6 months. The Cox regression model predicted 48 seroconversions among frequent attendees; 47 were observed. Although significant proportions of subjects reported obtaining needles, swabs, water and bleach from the NEP, only five (0.7%) reported meeting new friends or people there. When asked where subjects had met their new sharing partners, only one out of 498 respondents cited the needle exchange. Paired analysis of risk variables at baseline and the first follow-up visit did not reveal any increase in risk behaviours among frequent attendees, regardless of whether they had initiated drug injection after establishment of the NEP. Conclusions: We found no evidence that this NEP is causally associated with HIV transmission. The observed association should not be cited as evidence that NEPs may promote the spread of HIV. By attracting higher risk users, NEPs may furnish a valuable opportunity to provide additional preventive/support services to these difficult-to-reach individuals.

COMMENT This report from the Vancouver Injection Drug User Study documents the severity of drug use, high risk behaviors and lifestyle characteristics of frequent attenders of the Vancouver needle exchange program compared with infrequent attenders of the program. There was no evidence that the NEP promoted new needle sharing network formation, and no evidence of increased risk behaviors related to injection practices. Significant variables distinguishing the frequent attenders from infrequent attenders (at $p < 0.001$ level) included unstable housing, living in a hotel, injecting in shooting galleries, frequency of heroin and cocaine use, incarceration in the past 6 months, involvement in the sex trade, and other sources of illegal income. The impact of these differences must be noted, and two statistical models were used to assess the impact of these higher risk characteristics on expected new HIV seroconversions. A multivariate Cox regression model containing these variables yielded a good fit with the actual observation of new seroconversions in both frequent attenders (48 predicted, 47 observed) and among infrequent

attenders (18 seroconversions predicted, 17 observed). A second analysis was conducted using a logistic regression model, with predicted seroconversion rates of 45 among frequent attenders and 19 among infrequent attenders - fairly close to the 47 observed in frequent attenders and 17 observed in infrequent attenders, respectively. This suggests that these risk factors themselves are more predictive of HIV seroconversion than patterns of SEP attendance. A more comprehensive approach to addressing the needs of the IDU may be required, in addition to the availability of sterile injection equipment, to achieve effective HIV prevention in this highest risk population.

SUMMARY POINTS From Updated Syringe Exchange Literature

- ▶ Laboratory studies show prolonged viability of HIV in used needles (> 4 weeks), providing strong biologic rationale for removal of used drug injection equipment from circulation.
- ▶ Syringe exchange programs (SEPs) consistently attract persons with highest risk profiles for HIV infection and severe drug use, and are successful in referring SEP clients into detoxification and substance abuse treatment programs.
- ▶ SEP-referred clients have similar rates of retention in substance abuse treatment as individuals from standard referral sources, despite more severe baseline drug use and high-risk lifestyles.
- ▶ Clients participating in SEPs have decreased reuse of contaminated syringes and reduced sharing of injection equipment
- ▶ The data indicate that the presence of a syringe exchange program does not increase the use of illegal drugs among participants, and in many cases, a decrease in injection frequency has been observed among those attending these programs.
- ▶ - Provision of sterile injection equipment through SEPs and pharmacy access is cost-effective; one HIV infection can be prevented for one third the cost of medical care for an infected person.
- ▶ The scientific evidence accumulated to date provides a basis on which municipalities that are heavily affected by an HIV epidemic driven by injection drug use should consider syringe exchange programs as a tool for the identification, referral and retention of active users of injection drugs into these services, as part of a comprehensive HIV prevention plan.

TAB 2

Presidential Advisory Council on HIV/AIDS Fifteenth Meeting

The Radisson Barcelo Hotel
2121 P Street, NW
Washington, DC
(202) 293-3100
(202) 857-0134 FAX

DRAFT AGENDA

Sunday, March 19, 2000

New Member Orientation
2:30 p.m. to 5:30 p.m.

Monday, March 20, 2000

8:30 a.m.	Welcome The Honorable Ronald V. Dellums, Chair
9:00 a.m.	Update of Interim Activities and Appropriations Overview Daniel C. Montoya, Executive Director Regina Aragon, Chair, Appropriations Subcommittee
9:30 a.m.	Office of National AIDS Policy Update Sandra Thurman, Office of National AIDS Policy
10:00 a.m.	Full Council Presentation (TBA)
11:00 a.m.	Full Council Presentation Update and Overview of Ryan White Care Act Programs and Reauthorization Joe O' Neill M.D., M.P.H., HRSA, HIV/AIDS Bureau
12:30 p.m.	LUNCH (on your own)
2:00 p.m.	Full Council Panel Presentation Update on the International Initiatives and Overview of the Pandemic Paul DeLay, Agency for International Development

Susan Rice, State Department

Gayle Smith, National Security Council

Thomas Novomy, M.D., M.P.H, International and Refugee
Health (HHS)

3:00 p.m. **Public Comment**

3:30 p.m. **Full Council Panel Presentation**
Minority AIDS Initiative Overview
Eric Goosby M.D., HIV/AIDS Policy Office (HHS)

4:00 p.m. **Full Council Presentation**
Prevention Overview
Eva Seiler, Centers for Disease Control and Prevention
David Holtgrave, M.D., M.P.H., Centers for Disease
Control and Prevention

6:00 p.m. **ADJOURN**

RECEPTION

Tuesday, March 21, 2000

8:30 a.m. Full Council Presentation
Appropriations Overview
Office of Management & Budget (HHS-Representative,
TBD)

Jeanne Lambrew Ph.D., Office of the Assistant Secretary
for Management and Budget

10:00 a.m. Full Council Panel Presentation
"HIV/AIDS and the API Community"

Shamina Singh, The White House Initiative on Asian
Americans and Pacific Islanders

Judy Auerbach Ph.D., National Institutes of Health (OAR)

Valerie Mills, M.S.W., Substance Abuse and Mental Health
Services Administration

Nathan Stinson, Ph.D., M.D., M.P.H., Office of Minority
Health

George Roberts Ph.D., Centers for Disease Control and
Prevention

Virginia Bourassa, HIV/AIDS Bureau, Health Resources
and Services Administration

12:00 noon LUNCH (on your own)

1:30 p.m. Full Council Presentation
Overview on HIV/AIDS and Medicaid .
Timothy M. Westmoreland, J.D., Center for Medicaid and
State Operations (HCFA)

2:00 p.m. Subcommittee Meetings:
Prevention Subcommittee

Research Subcommittee

Services Subcommittee

3:00 p.m. Subcommittee Reports

5:00 p.m. Other Business

6:00 p.m. ADJOURN

TAB 3

March 17, 2000 1:06 PM
FOR INTERNAL USE ONLY

SYRINGE EXCHANGE PROGRAMS

Questions and Answers

March 17, 2000

Q1. What's new in this report?

Q.

A1. This document reviews the most recent scientific literature on the public health effects of syringe exchange which has been published, or accepted for publication, since April 1998. The new data confirms what we said in 1998, that the scientific evidence shows that well-designed syringe exchange programs can be an effective part of a comprehensive strategy to reduce the incidence of HIV infection and do not encourage the use of illegal drugs.

BACKGROUND: The new studies contribute substantially to the strength of the data showing the following effects of effective syringe exchange programs: a decrease in people contracting HIV; an increase in the numbers of injection drug users referred to and retained in substance abuse treatment, and well documented opportunities for multiple prevention services and referral and entry into medical care.

Q2. Why was it prepared?

A2. This most recent summary of published data on syringe exchange was prepared by the Surgeon General in response to a letter to the Secretary from Rep. Nancy Pelosi (D-CA) requesting this information.

Q3. Is HHS encouraging States and local governments to begin syringe exchange programs?

A3. The Secretary of Health and Human Services, after consultation with her scientific advisers, determined in 1998 that the scientific evidence shows that needle exchange programs reduce the risk of HIV infection, and do not encourage the use of illegal drugs.

The Administration decided at that time that the best course of action was to have local communities which choose to implement their own programs use their own dollars to fund needle exchange programs, and to communicate what has been learned from science so that communities can construct the most successful programs possible to reduce the transmission of HIV, while not encouraging illegal drug use.

Q4. The report says that local communities should consider syringe programs. Are you substituting your judgment for the local communities'?

A4. No. Dr. Satcher's review simply says that local communities that are heavily affected by an HIV epidemic driven by injection drug use should consider needle exchange programs. These programs offer communities that are heavily affected by an HIV epidemic related to injection drug use yet another option in their fight against AIDS. In

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those communities that choose to use them, needle exchange programs are a form of public health intervention to reduce the transmission of the human immunodeficiency virus (HIV) among drug users, their sex partners and their children, and to increase referral and entry into substance abuse treatment and important health services.

Q5. Does ONDCP agree with HHS that syringe exchange programs can play a useful role in reducing new HIV infections and getting hard to reach populations into drug treatment?

A5. General McCaffrey and HHS are in absolute agreement on the necessity to reduce drug use in this country, especially among teenagers. No one should doubt that illegal drugs are wrong and that they can kill you. ONDCP and HHS also agree that we need to maintain and increase the funding available for drug treatment.

Q6. Doesn't encouraging syringe exchange programs send the wrong message to young people? It makes it appear that using injection drugs is okay.

A6. Absolutely not. The intravenous use of drugs is illegal, unhealthy and wrong. It is clearly a major health problem as well as a law enforcement concern. That's why the entire federal government is sending a unified message to young people and to people of any age. Drugs put your future at risk. They can kill you. And they can infect you with HIV.

We are very proud of this Administration's record on fighting the drug epidemic. We have sharply increased the availability of drug treatment. We have worked in partnership with communities to fight drugs in and around schools. We have worked with state and local governments to put 100,000 more police officers on the streets and we have doubled the number of border guards. As a result the use of drugs has declined by 50% in the last decade. And after seven years of hard work, drug use among young people has begun to stabilize. We will continue to fight drug use in this country and to offer drug treatment to those who are addicted so that they can stop using drugs.

Q7. Does this mean HHS is certifying that syringe exchange programs ought to be funded with federal dollars?

A7. No. The Administration decided in April 1998 that the best course was to have local communities which choose to implement their own programs use their own dollars to fund needle exchange programs, and to communicate what has been learned from the science so that communities can construct the most successful programs possible to reduce the transmission of HIV, while not encouraging illegal drug use.

This report simply reviews the more recent literature on the public health effects of syringe exchange.

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Q8. How sure are you that syringe exchange programs don't promote injection drug use?

A8. The Congress asked us to apply a very stringent scientific test and to answer two questions. First, do needle exchange programs reduce the transmission of HIV? Second, do such programs encourage the use of illegal drugs? Some of the best scientific minds in the country pored over the data and concluded in April 1998 that both of these tests were met.

Q9. What about the two Canadian studies that seem to indicate increased drug use and increased HIV transmission in Montreal and Vancouver where needle exchanges are up and running?

A9. We have examined the research on both the Vancouver and Montreal needle exchange programs carefully. First, *two more recent studies from Montreal and Vancouver, included in our review, show that attendance at a syringe exchange program was not an identified risk factor for contracting HIV.*

There are also several important factors to take into account when examining the past studies. First, the drug epidemic in both of those cities is very different from those in American cities. It is dominated by the frequent injection of cocaine. Users of injectible cocaine average 10 to 15 injections every day compared with 3 to 5 times a day for heroin users. Cocaine users are more sexually active during drug use and have more sexually transmitted diseases. Nevertheless, more recent data from both cities indicate that the rate of HIV transmission among drug users who remain in needle exchange programs is two-thirds lower (4.9% as compared to 18.6%) than those who drop out of needle exchange programs.

Also, in an Op-Ed in *The New York Times*, the authors of the Canadian studies said that the rise in drug use experienced in Vancouver and Montreal was caused by an epidemic of injecting of cocaine in those two cities and a failure to link the programs to drug treatment. The science shows that successful needle exchange programs are linked to drug treatment through mandatory referrals.

Q10. The Congress has already placed a ban on using federal money for syringe exchange, so why is HHS continuing to put out more information about syringe exchange programs?

A10. The current scientific review was prepared in response to a request from Rep. Pelosi.

Q11. Is HHS responding to political pressure from advocates to keep putting material out about syringe exchange?

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A11. Absolutely not. It is the job of scientists to examine the science. It is the job of public leaders to follow the science. It is the job of advocates to push us all to do our jobs, do them well, and, whenever possible, do them quickly.

Q12. How much research is being done looking at the effects of syringe exchange programs, and is this being funded by HHS?

A12. Since 1992, NIDA has been supporting research to evaluate the public health effects of syringe exchange programs. Currently NIDA is funding 15 studies of syringe exchange programs and sterile syringe access through pharmacies.

NANCY PELOSI
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Congress of the United States
House of Representatives
Washington, DC 20515-0508

August 30, 1999

COMMITTEE ON APPROPRIATION:
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OF OFFICIAL CONDUCT
CONGRESSIONAL WORKING
GROUP ON CHINA, CHAIR
AT-LARGE WHIP

The Honorable Donna Shalala
Secretary of the Department of
Health and Human Services
200 Independence Ave., S.W.
Washington, D.C. 20201

Dear Madame Secretary:

In light of the ongoing debate on the efficacy of needle exchange programs, I am writing to request that the Department of Health and Human Services issue an update on the scientific literature related to needle exchange as soon as possible.

Data released by the Centers for Disease Control and Prevention conclude that over half of all new HIV infections nationally are related to injection drug use. Last year a group of leading government scientists, including Dr. Harold Varmus, Director of the National Institutes of Health, sent you a memo stating their conclusion that, "...needle exchange programs, as part of a comprehensive HIV prevention strategy, are an effective public health intervention that reduces the transmission of HIV and does not encourage the use of illegal drugs."

Since then, new research has been published in medical journals, and the debate over needle exchange has continued in Congress and in states and cities around the country. An updated review of the literature on this issue would be both timely and important.

Thank you for your prompt attention to this request.

Sincerely,


NANCY PELOSI
Member of Congress

Presidential Advisory Council on HIV/AIDS Fifteenth Meeting

The Radisson Barcelo Hotel
2121 P Street, NW
Washington, DC
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DRAFT AGENDA

Sunday, March 19, 2000

New Member Orientation
2:30 p.m. to 5:30 p.m.

Monday, March 20, 2000

8:30 a.m.	Welcome The Honorable Ronald V. Dellums, Chair
9:00 a.m.	Update of Interim Activities and Appropriations Overview Daniel C. Montoya, Executive Director Regina Aragon, Chair, Appropriations Subcommittee
9:30 a.m.	Office of National AIDS Policy Update Sandra Thurman, Office of National AIDS Policy
10:00 a.m.	Full Council Presentation (TBA)
11:00 a.m.	Full Council Presentation Update and Overview of Ryan White Care Act Programs and Reauthorization Joe O' Neill M.D., M.P.H., HRSA, HIV/AIDS Bureau
12:30 p.m.	LUNCH (on your own)
2:00 p.m.	Full Council Panel Presentation Update on the International Initiatives and Overview of the Pandemic Paul DeLay, Agency for International Development

Susan Rice, State Department

Gayle Smith, National Security Council

Thomas Novotny, M.D., M.P.H., International and Refugee
Health (HHS)

3:00 p.m.

Public Comment

3:30 p.m.

Full Council Panel Presentation

Minority AIDS Initiative Overview

Eric Goosby M.D., HIV/AIDS Policy Office (HHS)

4:00 p.m.

Full Council Presentation

Prevention Overview

Eva Seiler, Centers for Disease Control and Prevention

David Holtgrave, M.D., M.P.H., Centers for Disease
Control and Prevention

6:00 p.m.

ADJOURN

RECEPTION

Tuesday, March 21, 2000

8:30 a.m. Full Council Presentation
Appropriations Overview
Office of Management & Budget (HHS-Representative,
TBD)

Jeanne Lambrew Ph.D., Office of the Assistant Secretary
for Management and Budget

10:00 a.m. Full Council Panel Presentation
"HIV/AIDS and the API Community"

Shamina Singh, The White House Initiative on Asian
Americans and Pacific Islanders

Judy Auerbach Ph.D., National Institutes of Health (OAR)

Valerie Mills, M.S.W., Substance Abuse and Mental Health
Services Administration

Nathan Stinson, Ph.D., M.D., M.P.H., Office of Minority
Health

George Roberts Ph.D., Centers for Disease Control and
Prevention

Virginia Bourassa , HIV/AIDS Bureau, Health Resources
and Services Administration

12:00 noon LUNCH (on your own)

1:30 p.m. Full Council Presentation
Overview on HIV/AIDS and Medicaid
Timothy M. Westmoreland, J.D., Center for Medicaid and
State Operations (HCFA)

2:00 p.m. Subcommittee Meetings:
Prevention Subcommittee

Research Subcommittee

Services Subcommittee

3:00 p.m. **Subcommittee Reports**

5:00 p.m. **Other Business**

6:00 p.m. **ADJOURN**

PREVENTING HIV IN WOMEN AND CHILDREN: NEEDLE EXCHANGE AS A COMPONENT OF A COMPREHENSIVE HIV PREVENTION STRATEGY

Changing Dynamics of the HIV Epidemic

AIDS incidence has been increasing more rapidly in women than men, largely because HIV prevalence has disproportionately increased in injection drug users (IDUs) and heterosexual contacts (Wortley and Fleming, 1997).

IDUs alone now account for approximately half of all new infections and "... the HIV epidemic is now clearly driven by infections occurring among injection drug users, their sex partners, and their offspring" ... and, in terms of emerging risk groups "... a consistent profile of the highly at-risk person is a generally young, minority, indigent woman who uses crack cocaine ..." (Holmberg, 1996: 649-650).

As more women of childbearing age become HIV infected, the number of children infected will also rise (HCFA, 1997). Specifically:

- o 92,000 adolescent and adult women have been diagnosed with AIDS -- 13,714 between July 1996 and June 1997 (CDC, 1997).
- o 44% of cumulative AIDS cases are in female IDUs (CDC, 1997).
- o The number of women diagnosed with AIDS increased 63% between 1991 and 1995 (Wortley and Fleming, 1997).
- o Greatest increases in AIDS incidence rates were observed in heterosexual women born between 1970 and 1974, i.e., women who were 14 to 18 years old in 1988 (Wortley and Fleming, 1997).
- o AIDS death rates in women increased by 3% between January to June 1996 compared to the same time period in 1995, and decreased by 15% in men (CDC, 1997).
- o Increasing mortality affects children. It is estimated that between 125,000 and 150,000 children born to the 80,000 women alive with HIV in 1992, will be orphaned in the 1990s (Women's Interagency HIV Study, NIH, 1997).
- o Each year, approximately 7,000 infants are born to HIV infected women in the U.S. (Davis, 1995).
- o Women with HIV are disproportionately minority and poor.
- o Only 10% of the 1.5 million female and male IDUs have access to syringes, risk reduction information, condoms, and referral to other services through Needle Exchange Programs (NEPs).

Preventing HIV Transmission in Women: NEPs and Drug Treatment

HIV transmission can be prevented. Stopping drug use and providing access to the means for behavior change is the priority for all HIV prevention programs. The goal of needle exchange programs is to reduce the transmission of HIV and other blood-borne infections associated with drug injection by providing sterile syringes in exchange for used, potentially contaminated syringes. In addition to dispensing new needles and collecting used ones, most NEPs offer a variety of other materials and services, including the provision of condoms and risk reduction

From: Holmberg, S. (1996). The estimated prevalence and incidence of HIV in 96 large U.S. metropolitan areas. *Am J Public Health*, 86: 642-654.

- o There are an estimated 2.07 million men and women at high risk for HIV infection through heterosexual contact. Women at risk are estimated to outnumber men by a ratio of 4:1.
- o Reflecting the risk of HIV transmission from IDU men to non-IDU women, most new HIV infections among heterosexuals are apparently occurring along the eastern seaboard. As many as 1/4th of all new infections from heterosexual transmission in the U.S. may occur in N.Y. City alone.
- o Most new infections among IDUs are occurring in MSAs between Boston and D.C., in Miami, and in San Juan, PR.
- o A subepidemic of HIV appears to be occurring among young heterosexual women, particularly young women who live in large metropolitan areas, who use crack cocaine, who have multiple sexual partners and trade sex for crack, other drugs, and money, and who have positive serologies for other STDs (e.g., syphilis and herpes simplex type 2).

Perinatal Transmission: Women Drug Users

- 
- Women IDUs or women who are sex partners of IDUs are the largest group of HIV-infected women of childbearing age (Normand et al., 1995)
 - Some studies suggest that birthrates among female IDUs may be higher than among nonaddicted women and that female IDUs may also be less frequent condom users than other women (Normand et al., 1995).
 - Data from the CA shows that 157 women (3.1% of female recruits) were pregnant at baseline, of whom 15 (9.6%) were HIV-positive.
 - Data from the CA shows that 63 IDUs (2.6% of female IDU recruits) were pregnant at baseline (serostatus unknown).

Perinatal Transmission: Women in General

- 
- An estimated 80,000 heterosexual women of childbearing age are HIV infected and approximately 7,000 of whom (9%) become pregnant every year (NIH, 1995).
 - Modeling estimates a 25% vertical transmission rate through HIV+ women. Results from the ACTG protocol 076 showed that AZT administered to pregnant women and their newborns reduced vertical transmission of HIV 25.5% to 8.3% (Connor et al., 1994).

Heterosexual transmission to women by male IDUs

- Male IDUs are the main reservoir of infection for heterosexually infected women (Wortley & Fleming, 1997).

HIV/AIDS — from MMWR 9/19/97:

o **AIDS deaths** declined 23% (from 50,140 to 38,780) in 1996 compared with 1995.

Among men, the change was -25%, and among women, it was -10%.

By race/ethnicity, the decline was greatest among whites (32%), followed by Hispanics (20%), then by Blacks (13%).

By exposure category, deaths declined 30% in MSM and 25% in MSM IDU, however, the decline was only 10% among female IDU. Among persons exposed to HIV through heterosexual contact, the decline was 8.0% in both males and females.

o **AIDS incidence** (based on estimates of AIDS Opportunistic Illnesses [AIDS-OI]) between 1995 and 1996 changed dramatically compared to the average annual changes between 1992 and 1995.

Between 1992 and 1995, AIDS OI incidence increased, but at a slowing rate (i.e., at an average annual rate of 2%). Between 1995 and 1996, AIDS OI incidence declined by 6% overall, from 60,620 to 56,730.

There were notable disparities in the magnitude and direction of the average annual change in AIDS-OI incidence from '92-'95 compared to '95-'96. See below.

The declines in AIDS OI incidence in 1995-1996 were greater in men (-8%) than women (+2%), in Whites (-13%) and Hispanics (-5%) compared to Blacks (0), and among MSM (-11%) and MSM-IDUs (-15%) compared to male IDUs (-6%) and female IDUs (-4%).

AIDS-OI incidence declined among white heterosexual males by -2% and females by -4% between 1995 and 1996.

There were large increases in AIDS-OI among black heterosexual males (+19%) and females (+12%) and among Hispanic heterosexual males (+13%) and females (+5%).

o **AIDS prevalence** 1995 and 1996 increased by 11% overall between 1995 to 1996. The largest proportion of AIDS prevalent cases were MSMs (+48%), but the largest increases in prevalence were among male (+28% from '95 to '96) and female (+23% from '95 to '96) heterosexuals.

o The positive news is tempered by: (1) HIV continues to be a leading cause of death among persons aged 25-44 years; (2) there continue to be disparities in health care access and in obtaining expensive (and life-long) antiretroviral therapies; (3) there are substantial increases in AIDS-OI incidence among racial and ethnic minorities, both male and female, who are exposed through heterosexual contact.

o Among persons exposed to HIV by heterosexual contact, the ratio of AIDS-OI incident cases in 1996 was 1.6 (women) to 1.0 (men). I.e., 62% women and 38% men.

o Among men exposed to HIV by heterosexual contact, the proportions of AIDS-OI incident cases in 1996

133 Explosive HIV Epidemics in Injection Drug Users - What are the Causes and Controls?

Rahoud JM*, Thorne AE, Strathdee SA, O'Shaughnessy MV, Schechter MT.
Canadian HIV Trials Network and the BC Centre for Excellence in HIV/AIDS.
Vancouver BC, Canada.

Objective: To determine the role of various factors in explosive outbreaks of HIV among IDUs in cities such as Vancouver, where incidence rapidly increased to 18.6/100 person years following a long stable period with annual rates of 1-2%.

Methods: Computer simulations were used to examine the effects of the following factors on rates of HIV seroprevalence and seroincidence: number of needle-sharing partners, rate of change of partners, pattern of social networks in the IDU community, and high rates of infectivity in the first 3 months after seroconversion (the acute period). Infectivity in the acute phase was set at 50-100 fold relative to the chronic phase based on acute phase viral load data collected at our centre.

Results: We were able to simulate the outbreak documented in the Vancouver Injection Drug Use Study by introducing an approximate doubling in contact rates as likely occurred when IDUs switched from heroin to injection cocaine use in 1994. However, use of the same behavioral parameters but without high acute phase infectivity did not result in any epidemic. Reducing infectivity during the latter part of the acute period for some subjects (as would occur with aggressive screening and immediate antiviral treatment) limited the epidemic significantly. The presence of a "core group" of high risk individuals and the number of concurrent needle-sharing partners were also very influential.

Conclusions: Public health messages must continue to focus on reducing needle sharing behaviors and limiting concurrent partnerships. Initiating therapy among newly injected IDUs to reduce infectivity may be effective in curbing explosive outbreaks in other cities. We conjecture that explosive outbreaks occur not when the prevalence rises above a certain level as has been suggested, but when the reproductive rate during the acute phase crosses a critical threshold.

134 Needle Exchange Programs: Availability and Participation Among Injection Drug Using Women J. D. RICH*, J. ASTEMBORSKI*, D. K. SMITH*, E. SCHOENBAUM*, K.

DAVENNY*, P. SCHULMAN*, D. VLAHOV*, Brown University, Providence, RI
Johns Hopkins University, Baltimore, MD, CDC Atlanta, GA, Montefiore/Einstein
Brown, NJ, NIDA, Rockville, MD, Wayne State University, Detroit, MI.

Objective: To describe Needle Exchange Program (NEP) participation in women injection drug users (IDUs). **Methods:** NIDA-HERS substudy questionnaire was administered to all women enrolled in the multi-site HER Study who reported injection drug use within six months at semi-annual follow-up visits between January 1996 and September 1997. NEP administrators were contacted in all four cities. **Results:** 209 women reported injection drug use within 6 months; 70% were HIV positive; 39% reported obtaining at least some syringes at a NEP. Women were more likely to use NEP in cities where needle exchange was more available (48% vs 17%, $p < .01$). There was no difference in NEP participation between HIV(-) and HIV(+) women (39% vs 37%, $p = 0.7$). NEP participants were more likely to inject within previous 2 days (64% vs 33%, $p < .01$), or to inject a speedball (78% vs 25%, $p < .01$). Daily injectors were more likely to participate in NEP than less frequent injectors of cocaine (62% vs 38%, $p < .01$), heroin (55% vs 45%, $p < .01$), and speedballs (63% vs 37%, $p < .01$). 19% reported using non-sterile rinse water or syringes, of whom 63% did not use NEP. **Conclusions:** 61% of injection drug using women did not participate in needle exchange programs. Injection drug using women who reported heavier and more frequent drug use were more likely to participate in needle exchange programs. Availability of an established NEP is an important predictor of NEP use. Infrequent users may require more outreach. Further studies of obstacles to NEP use by injection drug using women are needed. **ACKNOWLEDGEMENTS:** Support by NIDA grant DA-00265 and a cooperative agreement by CDC and NIDA (64-CCU-106793).

135 Passive HIV Antibody Reactivity in Worker (HCW) Accident: A Case Report Exposure Management, C.

Frenkel, P Gupta, JI Mullins, MP Busch, In
Francisco: U Wash, Seattle: Childrens Hosp
Background. A baseline blood sample, collected after a hand laceration on a Vacutainer tube from patient (P), was reactive on a 3rd generation (Abbott 3A77) with gp120/160 bands on Western blot (WB) exposure (PE). N tested (-) by WB but (+) by EIA and WB seroconversion over the next month. **Objective:** To determine the biologic linkage of HIV-1 strains in N and P required for passive anti-HIV reactivity. **Methods.** [1] Two groups independently analyzed V3-V5 regions from N and P samples (<100 bp) by genetic analysis. [2] Serial (5x) dilutions of serum from N and P were tested by HIV-1 lysate and HRP. **Results.** Both groups found that samples from N and P harbored 2 populations of highly related sequences. The sequences were highly similar by V3 loop motif and deletion pattern. The sequences differed by <2%. No seq with <10% homology among >34,000 HIV seqs in databases. **Conclusion.** This is the first well-documented case of HIV-1 seroconversion after a large-volume blood exposure. A reactive baseline blood sample, should be used to detect infection or to exclude PE prophylaxis, but not for testing.

**136 Postexposure Antiretroviral Therapy in
Exposure to HIV at Bichat**
E. BOUNET*, M.H. PREVOT, S. MATHIAS*,
Claude Bernard Hospital, Paris, France and
During the summer of 1997, a survey of
Human Immunodeficiency Virus (HIV) fol-
lowed up in Hôpital Bichat, a university hospi-
tal. A collaborative system for postexposure
prophylaxis has been in use for one year in our
hospital. The system consists of a dedicated
free-of-charge HIV screening and the phar-
maceutical counselling in response to non-occupational
and antiretroviral treatment are available
questionnaires are used and analyzed.

Over a period of two months, 27 non-occupational
exposures were reported. 10 were accepted for
treatment. 17 were not accepted for treatment.
04/15/98 WED 11:27 FAX

Author: Richard Needle <RNEEDLE@ngmsmtp.nida.nih.gov> at INTERNET
Date: 4/15/98 11:19 AM
Priority: Normal
TO: Eric Goosby at -OPHS_DC, Deborah Von Zinkernagel at -OPHS_DC
CC: RNeedle@ngmsmtp.nida.nih.gov at INTERNET
Subject: women

Deb, some thoughts

Needle Exchange programs, and Injection Drug Using women.

If NEPs are available, and services cprovided, female IDUs will access services.

Women who use NEPs are at higher risk than female injectors who do not use NEPs (rich)

women are more likely to be secondary exchangers, and thus not directly benefit from the array of services that can be provided.

Neps not only porvide syringes, but the ancillary services can help women prevent sexually transmitted diseases (STD tscreening and treamtmet and condoms)

NEPs bridge women to drug abuse treatment. If they enter treatment, the longer they can be retained in treatment the greater the liklihood that they reduce their drug sue, needle and sexual risks(checking Brooner)

Minotiry women are disproptionately eimpacted by HIV/AIDS; services to help female IDUs or services to minrity mnale IDUs-particularly to reduce risk related to HIV through contaminated syringes and providing condoms and testing and counseling to assist men to know their status will limitthe effects on women. forty percent of NEPs provide on site HIV testing and counseling.

UCSF Cost Savings Data

1987-1995

	Low Effectiveness		High Effectiveness	
	Cumulative Infections Prevented	Unnecessary Treatment Costs	Cumulative Infections Prevented	Unnecessary Treatment Costs
Atlanta	85	\$ 4,729,400	186	\$ 10,349,040
Baltimore	227	\$ 12,630,280	499	\$ 27,764,360
Boston	83	\$ 4,618,120	182	\$ 10,126,480
Chicago	255	\$ 14,188,200	561	\$ 31,214,040
Dallas	18	\$ 1,001,520	39	\$ 2,169,960
Detroit	69	\$ 3,839,160	152	\$ 8,457,280
Gary	6	\$ 333,840	14	\$ 778,960
Houston	118	\$ 6,565,520	260	\$ 14,466,400
Los Angeles	43	\$ 2,392,520	86	\$ 5,285,800
Miami	135	\$ 7,511,400	2,397	\$ 16,525,080
New York City	1,049	\$ 58,366,360	2,308	\$ 128,417,120
Newark	180	\$ 10,015,200	397	\$ 22,089,080
Philadelphia	291	\$ 16,191,240	641	\$ 35,665,240
San Juan	143	\$ 7,956,520	315	\$ 17,526,600
Seattle	22	\$ 1,224,080	48	\$ 2,670,720
Washington, DC	294	\$ 16,358,160	646	\$ 35,943,440
TOTALS	3,018	\$ 167,921,520	8,731	\$ 369,449,600

1996-2000

	Low Effectiveness		High Effectiveness	
	Cumulative Infections Prevented	Unnecessary Treatment Costs	Cumulative Infections Prevented	Unnecessary Treatment Costs
Atlanta	160	\$ 5,897,840	234	\$ 13,019,760
Baltimore	287	\$ 15,968,680	632	\$ 35,164,480
Boston	95	\$ 5,285,800	209	\$ 11,628,760
Chicago	323	\$ 17,971,720	710	\$ 39,504,400
Dallas	20	\$ 1,112,800	44	\$ 2,448,160
Detroit	85	\$ 4,729,400	188	\$ 10,460,320
Gary	8	\$ 445,120	18	\$ 1,001,520
Houston	149	\$ 8,290,360	328	\$ 18,249,920
Los Angeles	46	\$ 2,559,440	100	\$ 5,564,000
Miami	164	\$ 9,124,960	360	\$ 20,030,400
New York City	1,184	\$ 65,877,760	2605	\$ 144,942,200
Newark	177	\$ 9,848,280	388	\$ 21,588,320
Philadelphia	368	\$ 20,475,520	810	\$ 45,068,400
San Juan	174	\$ 9,672,360	382	\$ 21,254,480
Seattle	27	\$ 1,502,280	60	\$ 3,338,400
Washington, DC	371	\$ 20,642,440	817	\$ 45,457,880
TOTALS	3,638	\$ 199,404,760	7,885	\$ 438,721,400

- 2 -

FEDERAL RESEARCH ON NEEDLE EXCHANGE

While Congress has restricted the use of federal funds for needle exchange programs since 1989, lawmakers have authorized funding for research into the efficacy of needle exchange programs as a public health intervention to reduce the transmission of HIV and to examine the impact of such programs on drug use. The federal government has supported and will continue to support research into the effectiveness of needle exchange programs.

Effect of Needle Exchange Programs on HIV Transmission

Three major expert reviews of the scientific literature on needle exchange programs conclude that such programs can be an effective component of a comprehensive community-based HIV prevention effort. Additionally, needle exchange programs can provide a pathway for linking injection drug users to other important services such as risk reduction counseling, drug treatment, and support services. The reviews include:

- *Needle Exchange Programs: Research Suggests Promise as an AIDS Prevention Strategy*, United States General Accounting Office, March 1993, is an extensive review of U.S. and international data looking at the effects of needle exchange programs. It estimated that a needle exchange program in New Haven, Connecticut, had led to a 33% reduction in HIV infection rates among drug users in that city.
- *The Public-Health Impact of Needle Exchange Programs in the United States and Abroad*, prepared by the University of California, San Francisco, September 1993, reported that needle exchange programs served as an important bridge to other health services, particularly drug counseling and treatment. It also found that needle exchange programs reached a group of injecting drug users with long histories of drug use and limited exposure to drug treatment.
- *Preventing HIV Transmission: The Role of Sterile Needles and Bleach*, National Research Council and Institute of Medicine, September 1995, concluded that needle exchange programs have beneficial effects on reducing behaviors such as multi-person reuse of syringes. It estimated a reduction in risk behaviors of 80% and reductions in HIV transmission of 30% or greater.

Based on that scientific evidence, in February 1997, Secretary Shalala reported to Congress that a review of scientific findings indicated that needle exchange programs "can be an effective component of a comprehensive strategy to prevent HIV and other blood borne infectious diseases in communities that choose to include them." She also directed the Department's scientific agencies to continue to review research findings regarding the effect of needle exchange programs on illegal drug use.