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The Impact of a Needle Exchange's Closure

S Y N O P S I S

Objective. The Windham, Connecticut, needle exchange closed in May 1997 after becoming embroiled in a public controversy in which it was blamed for the city's drug problem, discarded syringes, and even the economic decline of the city itself. The authors interviewed injection drug users and conducted a community survey of discarded drug paraphernalia to explore the effects of the needle exchange's closure.

Methods. After the needle exchange was closed in March 1997, the authors re-recruited former participants in an AIDS prevention research project, the majority of whom were clients of the needle exchange. The authors analyzed responses from these respondents' pre-closure interviews and from 111 post-closure initial interviews and 78 post-closure follow-up interviews as well as data on discarded syringes and "dope bags."

Results. Following the closure of the needle exchange, significant increases were found in the percentage of respondents who reported an unreliable source as their primary source of syringes, in respondents' reports of the frequency of reusing syringes, and in the percentage of respondents who reported sharing of syringes. Surveys of outdoor drug-use areas found that the closure of the needle exchange did not reduce the volume of discarded syringes and other drug-injection debris.

Conclusions. The problems in Windham that led to the closure of the exchange still remain, and the city's drug injectors are engaging in higher levels of HIV risk behavior.

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On April 20, 1998, the Secretary of the US Department of Health and Human Services declared in a press release that "a meticulous scientific review has now proven that needle-exchange programs can reduce the transmission of HIV and save lives without losing ground in the battle against illegal drugs."¹ The Secretary was responding to a Consensus Statement on *Interventions to Prevent HIV Risk Behaviors* published by the National Institutes of Health.² The report was prepared by a panel of 12 non-advocate experts representing the fields of psychiatry, psychology, behavioral and social science, social work, and epidemiology. The panel reviewed the available scientific evidence on the effectiveness of needle exchange programs obtained through a MEDLINE search and considered presentations of empirical studies by 15 experts from the same array of disciplines. In a second DHHS press release on needle exchange programs³ published the same day as the Secretary's press release, three additional scientific review panel reports were also cited as having concluded that needle exchange programs can be an effective component of a comprehensive community-based HIV prevention effort, and that needle exchanges can serve as a pathway for linking injection drug users to other important services, such as drug treatment.⁴⁻⁶

However, despite the preponderance of scientific findings documenting the effectiveness of needle exchange, such programs remain controversial and unpopular.⁷ We report on the first empirical study of the impact of an established needle exchange's closure on its clients' risk behaviors and on the community at large. The study was conducted in Windham, Connecticut, located in the state's northeastern corner, where a state-sponsored needle exchange operated from 1993 through 1997, serving several hundred injection drug users per year. The exchange was closed in March 1997 following 10 months of public debate and controversy, sparked when a child was pricked by a discarded syringe she found while playing in her yard.

NEEDLE EXCHANGE PROGRAMS IN CONNECTICUT

In July 1992, to help combat the spread of HIV, the Connecticut General Assembly passed legislation authorizing state support for needle exchange programs and allowing the non-prescription sale of syringes by pharmacies. In 1993, a statewide assessment showed that most Connecticut pharmacies sold non-prescription syringes, that

fewer drug users were obtaining syringes from street sources, and that rates of syringe sharing had decreased under the new law.⁸ By 1994, six state-sponsored needle exchanges were operating, including one in Windham.

The town of Windham has a population of approximately 22,000. As of July 1999, 115 Windham residents had been diagnosed with AIDS, according to the state AIDS Office; 39% were described as white, 43% as Hispanic, and 17% as African American.⁹ Among them, 59% were classified as having contracted HIV through injection drug use.⁹ According to the Centers for Disease Control and Prevention, 25.1% of cases of HIV infection nationally are due to injection drug use.¹⁰

The Windham exchange. The Windham needle exchange began in March 1990 as an underground operation, organized through the efforts of two community activists. Over the next two years, both were arrested several times by the local police. Although the State's Attorney attempted to prosecute the activists on several occasions, all of the charges against them were eventually dropped or dismissed. Beginning in 1994, with state support, the needle exchange began operating five days a week, six hours a day, staffed by several part-time workers. By 1996, the exchange reported that it had registered 308 clients, of whom some 200 were described as regulars (Personal communication, Tony Clark, Senior Needle Exchanger, Windham Needle Exchange Program, May 1997).

The exchange's rapport with the larger community of Windham remained problematic. After years of illegal operation, the exchange's underground legacy continued to shape the staff's orientation toward the community and the community's orientation toward the exchange. Although the program received state sponsorship and the community came to tolerate it, the exchange was located well out of public view, in a garage in a back alley off Main Street. Staff members clung to their identities as activists. The staff members' main reference group was the clients, and they worked hard to be both accepted and respected by the drug community, rather than by the community at large. Staff members did little to broaden the program's public support or to develop a rapport with the larger community. The program did not make an effort to educate the community about its success in working with drug injectors, partly because the community was not particularly interested and partly because staff members continued to see themselves as dissidents, at odds with the community and its hostile attitude against drug users. Thus, when public criticism of the

Following closure of the needle exchange, drug injectors' access to clean syringes was significantly reduced, as reflected in significant increases in the percentage of respondents who reported an unreliable source as their primary source of syringes.

exchange began and gained in momentum, the exchange became increasingly exposed and isolated. In the local newspaper, and in several city council meetings and public forums, the needle exchange's opponents succeeded in placing the blame for the above-mentioned needle stick incident and the city's "needle problem" squarely on the needle exchange. The exchange became a convenient target for all kinds of rhetorical excesses, as exemplified by a city councilman's claim that "the needle exchange is one gear in the big drug addiction machine. By allowing its presence here, we're condoning and enabling drug use."¹¹ Others blamed the needle exchange for an economic decline they claimed the city was experiencing. By March 1997, the community's opposition to the program was strong enough to force the state to withdraw funding and close it down. As the controversy, like a storm, began, gained in strength, peaked, and then blew itself and the needle exchange away, all of the problems blamed on the exchange have remained, including a large and active illicit drug scene.¹²

THE ECHO PROJECT

For three years prior to the closure of the Windham needle exchange, from March 1994 to February 1997, the Eastern Connecticut Health Outreach (ECHO) Project, an AIDS prevention research project directed by authors RSB and DDH, conducted baseline interviews with 330 injection drug users on their HIV risk-related behaviors, and 173 six-month follow-up interviews.¹³ The ECHO Project was similar to some 40 other demonstration outreach projects to combat AIDS among injection drug users in more than 60 inner-city communities throughout the United States, funded by the National Institute on Drug Abuse.¹⁴

In Windham, health educators conducted the baseline and follow-up interviews using a questionnaire adapted from standardized instruments, the Risk Behavior Assessment Questionnaire and the Risk Behavior Follow-up Questionnaire, developed by the National AIDS

Research Project of the National Institute on Drug Abuse.¹⁵ Interviews were conducted two days a week in a storefront located a half mile from the needle exchange program. Respondents were recruited by a staff of three outreach workers. For agreeing to participate, respondents were paid \$20.00 for initial interviews and \$30.00 for follow-up interviews. In addition to the risk assessment interviews, the respondents were offered free, voluntary HIV tests and counseling. Although the ECHO Project and the needle exchange operated independently, 175 (53%) of the respondents to the baseline interviews identified the needle exchange as their primary source of syringes during the previous 30 days.

Following the closure of the Windham needle exchange in March 1997, we conducted another set of initial and follow-up interviews to evaluate the effect of the exchange's closure on drug injectors' HIV risk behavior. In addition, we conducted a community survey of discarded drug paraphernalia to assess the effect of closure on Windham's drug scene.

METHODS

Post-closure interviews. Following the exchange's closure, the ECHO project began re-recruiting former respondents who remained in the area. Respondents were offered the same nominal rewards for participating as in the earlier baseline and follow-up interviews. The recruitment effort continued for 11 months, during which time the outreach workers succeeded in re-recruiting 152 of the 330 original ECHO project respondents. Forty-one of the 152 reported that they had not injected drugs in the previous six months; these respondents were dropped from the study because the closure of the needle exchange would have had no direct effect on their day-to-day lives. The remaining 111 respondents were administered a post-closure initial interview, and three months later, 78 (70%) of the same respondents were re-recruited and administered a post-closure follow-up interview. Approximately five or six post-closure initial or follow-up

Following closure, respondents reported a higher average rate of reusing syringes, and a higher percentage reported sharing syringes.

interviews were conducted per week for the 11 months of what we came to call the "aftermath study."

Measures of risk behavior. In their post-closure interviews, the respondents were asked the same questions they had been asked as ECHO project respondents prior to the closure of the needle exchange, questions bearing on their drug-related risk behaviors; the number of times they had injected drugs in the previous week and the previous 30 days; the number of times they had borrowed someone else's syringe during the same periods; and what their primary source for new syringes had been during the previous 30 days. We asked these same questions in order to compare respondents' self-reported risk behaviors related to drug injection prior to and following the closure.

We defined family or friends, diabetics, and street sources as "unreliable" because the drug injector could not be sure that syringes from these sources were unused and sterile.

Community surveillance. From September 1996, seven months prior to the closure of the needle exchange, until September 1998, or 18 months following the closure, one of the authors (YvH) and a research assistant surveyed four public outdoor areas in Windham where high levels of drug use occur on a quarterly basis.¹² To be as unobtrusive as possible, the surveys occurred during early morning hours, usually beginning at 6:30 a.m. No surveys were conducted on mornings when the weather was bad or when there was snow on the ground, in order to standardize our ability to see discarded syringes and other debris across the seasons. Two of the high-use locations were near a 600-unit public housing project, about two miles from downtown. The other two areas were located on and near the banks of a river that runs through Windham. From late spring to early fall, all four areas are surrounded by dense foliage, which facilitates outdoor drug use because the foliage makes it virtually impossible to see what is going on while walking or driving by. All four locations are accessible only by foot, and one of

them requires climbing over rocks and steep embankments down to the river's edge.

We organized the survey data into three-month increments corresponding to the four seasons: fall (September, October, and November); winter (December, January, and February); spring (March, April, and May); and summer (June, July, and August). Comparing like seasons with like seasons allowed us to control for seasonal effects.

Discarded syringes. As part of the survey, we counted the number of discarded syringes we found in each of the four locations. A syringe was counted when it consisted of at least a plunger and a barrel or a needle and a barrel. Syringe parts were collected but not counted. We picked up all syringes and parts in order to avoid recounting them during subsequent surveys and as a public service.

In addition to our own survey efforts, the Town of Windham independently maintained a monthly "recovery log" of syringes found by the police department, the department of public works, and an AIDS prevention outreach worker, who began turning in "recovery logs" in January 1997. Earlier, the outreach worker had collected discarded syringes around the community but did not turn in a log.

Since the purpose of our study was not to assess the effects of seasonal variation on discarded syringes, we controlled for this factor by comparing like seasons. In making these comparisons, we combined the numbers of discarded syringes gathered by the Town of Windham and by our own efforts, calculating an average number of syringes found per month for each three-month season.

"Dope bags." At one of the four locations, we counted and collected discarded "dope bags," since they serve as an indication of the volume of drug use. We did this at only one location because of the large number of dope bags that could be found at each of the four sites and because of the considerable amount of time and effort such collection entailed. Dope bags are the packages in which heroin is sold on the streets. The bags are about the size of a large

postage stamp and are imprinted with a "brand" name or symbol such as Bronco, Black Sunday, Magic Three, F-16, Bad Boy, Crazy Boy, High Power, or Five Star.

Pharmacies. Finally, we surveyed Windham's seven local pharmacies to determine how many were selling syringes without prescriptions. Two years before the controversy over the needle exchange began, we had sent a male research assistant to each of the seven pharmacies to purchase syringes. In early November 1996, in the midst of the controversy, we sent a male research assistant to the same pharmacies to purchase syringes; later in the month, we sent a female research assistant.

The results of the pre- and post-closure interviews and the community surveys of drug-related activities allowed us to investigate three hypotheses: (a) that following the closure of the exchange, former clients would increase their drug-related risk behaviors; (b) that closure of the needle exchange would not reduce the number of discarded syringes in Windham; and (c) that closure of the needle exchange would not reduce the level of illicit drug use in Windham.

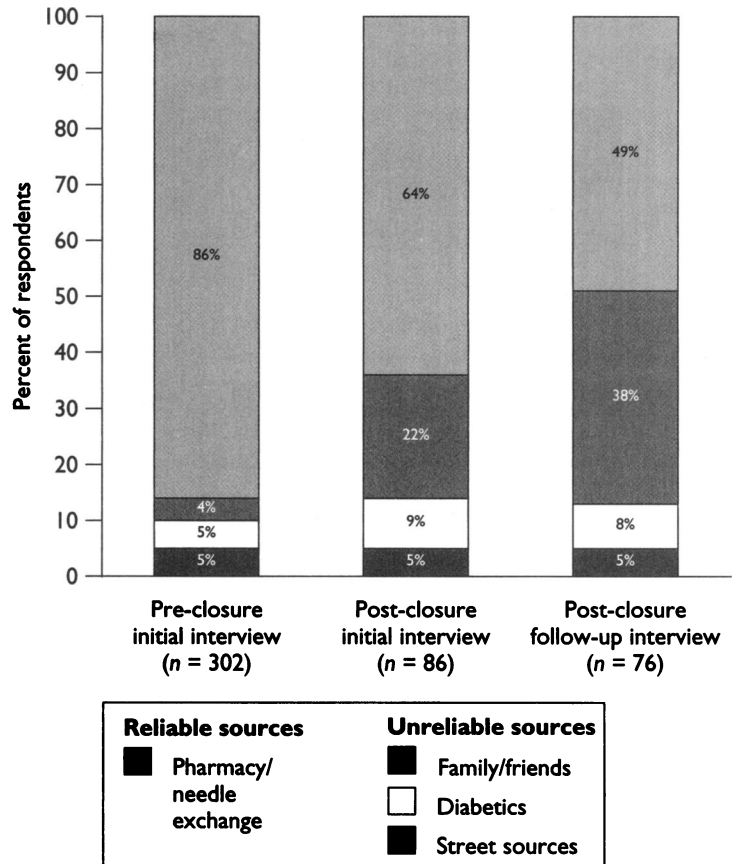
RESULTS

The study found strong support for all three hypotheses.

Sample. We found no statistically significant differences with respect to gender, race/ethnicity, educational level, HIV status, or age between the pre-closure baseline sample of ECHO respondents and the subjects re-recruited from that sample for the initial post-closure "aftermath" interviews. For example, the pre-closure baseline sample ($n = 330$) consisted of 69% men and 31% women; the post-closure initial sample ($n = 111$) consisted of 68% men and 32% women. The mean age of the pre-closure baseline sample was 35 (standard deviation [SD] = 7.88), compared with a mean age of 36 (SD = 7.69) for the post-closure initial sample.

Measures of risk behavior. Following closure of the needle exchange, drug injectors' access to clean syringes was significantly reduced, as reflected in significant increases in

Figure 1. Injection drug users' self-reported primary source of syringes for 30 days prior to interview

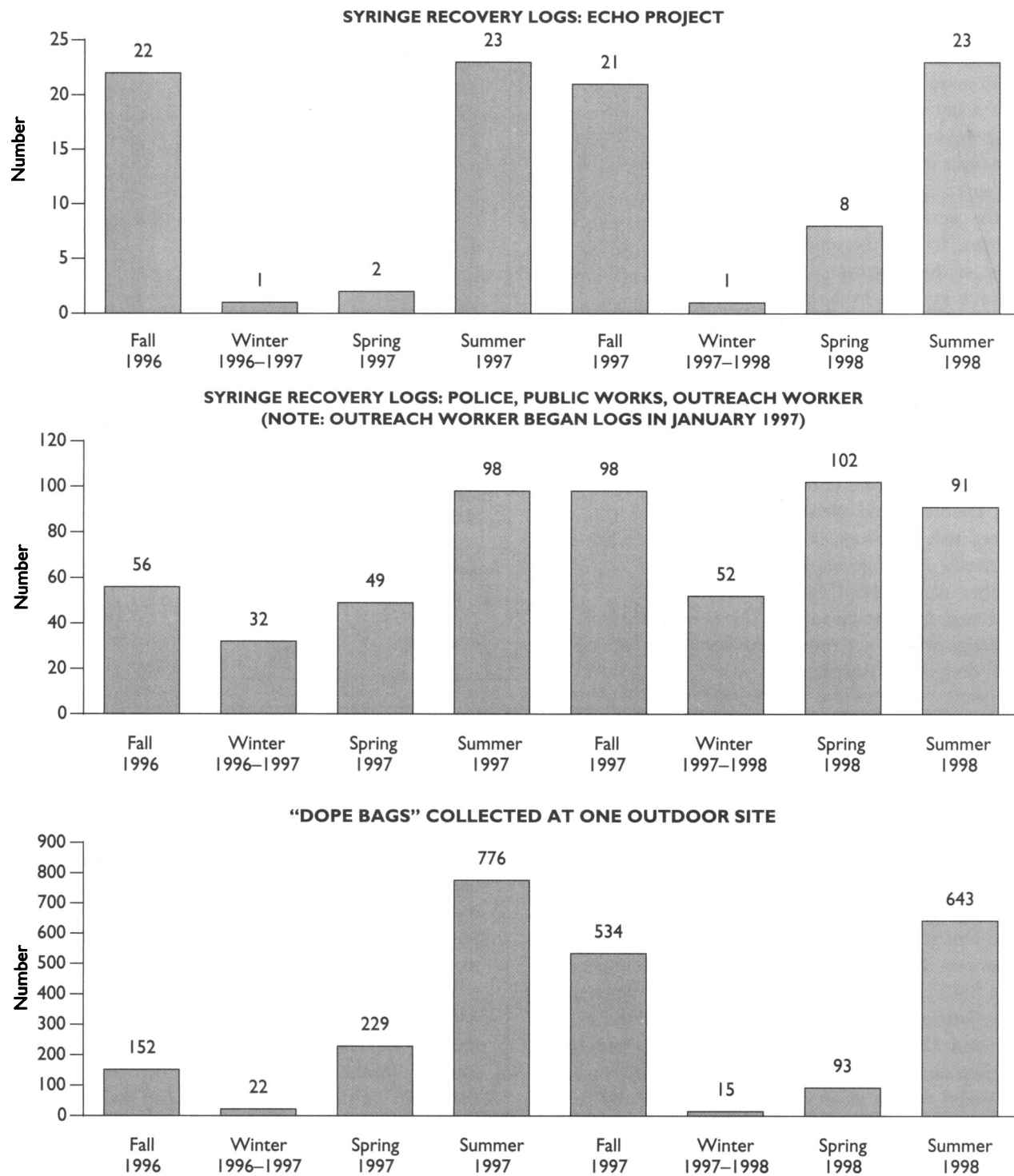


the percentage of respondents who reported an unreliable source as their primary source of syringes, in respondents' reports of the frequency of reusing syringes, and in the percentage of respondents who reported sharing of syringes.

In the findings reported below, the denominators vary because some subjects' responses were not applicable to the particular question asked. For example, with regard to primary source of syringes in the previous 30 days, we report on the 302 subjects in the initial pre-closure sample whose responses were relevant to the question; 28 of the 330 subjects reported either that they had not injected or that they had not obtained syringes in the previous 30 days. Similarly, for the post-closure initial interviews, we present the results for the 86 subjects who had been active injectors during the previous 30 days and responded to the question about sharing syringes during that period.

Source of syringes. In the pre-closure baseline interviews, only 14% (42/302) of the ECHO sample reported that

Figure 2. Results of community survey of drug-related debris before and after March 1997 closure of Windham Needle Exchange



their primary source of "new" syringes in the previous 30 days was family or friends, diabetics, or street sources (Figure 1). (Subjects were not asked about their primary source of syringes in the second set of pre-closure interviews.) At the post-closure initial interview, the percentage of respondents who reported having primarily obtained syringes during the previous 30 days from these "unreliable" sources increased to 36% (31/86, $P < 0.001$), a 165% increase. The percentage increased to 51% (39/76, $P < 0.001$) at the post-closure follow-up interview, nearly quadruple the pre-closure baseline rate. The data also indicate a significant increase in the number of drug users who reported primarily obtaining their syringes in the previous 30 days from a "street source," the least reliable way of obtaining syringes. At baseline before closure, only 4% (12/302) of respondents reported their primary source of syringes as a street source; this increased to 38% (29/76) at post-closure follow-up interviews ($P < 0.001$).

Reuse and sharing of syringes. At the pre-closure follow-up interviews, the respondents reported that, on average, they reused syringes 3.5 times. This increased significantly to a mean of 7.7 times ($P < 0.001$) at the post-closure initial interview, a 118% increase.

Self-reported rates of sharing syringes also increased significantly following the closure of the needle exchange. For example, at their second interview before closure, only 16% (22/136) of ECHO respondents reported having shared a syringe within the previous 30 days. More than twice that percentage, 34% (30/89, $P = 0.031$), reported in their initial post-closure interviews that they had shared a syringe within the previous 30 days.

Community surveys.

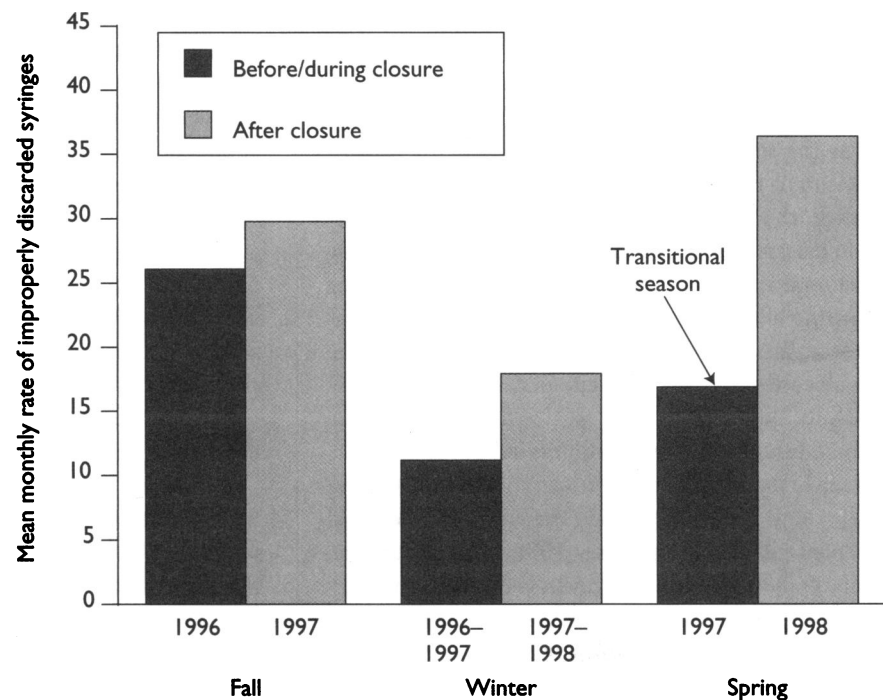
From the data we collected in surveying Windham's

outdoor drug-use sites, the closure of the needle exchange appeared to have no impact on the robustness of the larger drug scene.

Discarded syringes. As shown in Figure 2, both the ECHO project survey and the recovery logs maintained by the Town of Windham demonstrate that outdoor injection drug activities are highly seasonal in Windham, no doubt due to the harshness of New England winters.

The peak number of discarded syringes found by the ECHO Project before the closure of the needle exchange (22 per month in fall 1996) was virtually identical to the number subsequently found during the peak post-closure seasons (23 per month in summer 1997, 21 in fall 1997, 23 in summer 1998), suggesting no change in the number of discarded syringes. In contrast, the syringe recovery rate in the town's logs increased after closure. The summer and fall rates after closure (98 per month in summer 1997 and fall 1997 and 91 in summer 1998) were almost one and a half times the pre-closure peak of 56 per month in fall 1996.

Figure 3. Comparison of mean monthly rate of syringes found per season by ECHO Project, police, public works department, and outreach worker before/during vs after March 1997 closure of Windham Needle Exchange



Note: Outreach worker began syringe log in January 1997.

The closure of the needle exchange deprived drug injectors of not only a reliable and economical way of obtaining new syringes but also a convenient means of proper disposal.

These findings suggest that the closure of the needle exchange did not reduce the problem of discarded syringes. Outdoor discarding of syringes continued to occur even though respondents reported an increase in the average number of times they reused them before discarding.

Comparing like seasons, we found that the number of discarded syringes increased from before to after the closure of the needle exchange (Figure 3). From fall 1996 to fall 1997, the rate of discarded syringes increased from 26.1 per month to a rate of 39.8 per month, a 53% increase. A comparison of winter discard rates revealed a similar increase, from 11.2 per month before closure to 17.9 afterwards, a 61% increase.

A comparison of spring rates was complicated by the fact that the initial spring for which we gathered data (1997) was the season during which the exchange closed. A comparison of this transitional season with spring 1998, a year after the closure, reveals a further substantial increase in discarded syringes, from 16.9 per month during the transitional spring of 1997 to 36.4 per month during the first spring after closure, or a 215% increase. Unfortunately, a comparison of summer rates immediately before and after closure could not be made because our data collection efforts began in the fall of 1996. However, data were gathered during the two summers subsequent to closure. Discard rates during the two summers were remarkably similar: 40.0 per month during the summer 1997, and 37.7 per month during the summer 1998, a 6% difference. This similarity between the two post-closure seasons indicates that the problem of discarded syringes in Windham was not reduced after the closure of the exchange.

Discarded "dope bags." As shown in Figure 2, the number of dope bags that we collected during our quarterly surveys varied from a low of 15 in winter 1997–1998 to peaks of

776 in summer 1997 and 643 in summer 1998, also exhibiting a seasonal pattern. These data also indicate that the robustness of outdoor drug activities in Windham was not reduced following the closure of the exchange.

Pharmacy sales of syringes. Our survey of the seven local pharmacies in Windham two years before the needle exchange closed found that all of them were selling syringes without a doctor's prescription, as the new Connecticut law allowed.¹² In early November 1996, in the midst of the controversy over the needle exchange and the "needle problem" in Windham, the male research assistant who went to the same pharmacies to purchase syringes was told by four of them that they no longer sold syringes without prescriptions. The female research assistant we sent later in the month was told the same by five of the pharmacies. One of the remaining two sold her syringes over the counter, and the other was willing to sell syringes over the counter but required each customer to purchase a \$3.00 "sharp safe" container to ensure proper disposal. Thus, only one of seven pharmacies in Windham was still selling syringes without a prescription, or without imposing some other requirement, following the closure of the exchange.

DISCUSSION

As hypothesized, injection drug users in Windham made several adjustments in reaction to the closure of the town's needle exchange. A higher percentage reported obtaining syringes primarily from unreliable sources; respondents reported a higher average rate of reusing syringes; and a higher percentage reported sharing syringes. Each of these adjustments significantly increased the risk of contracting or spreading HIV and other bloodborne pathogens.

These results suggest that following the closure of the Windham needle exchange, there was a sharp increase in the amount of time that dirty syringes were reused and remained in circulation. This is of critical importance because a relationship has been documented between the amount of time syringes remain in circulation and rates of HIV infection among drug injectors. As reported by Charles Kaplan and Robert Heimer in their highly respected "needle circulation" study of the New Haven needle exchange, a needle exchange reduces the circulation time of syringes, which reduces the probability that they will become infected.¹⁶

It is possible that, knowing we were investigating the effect of the exchange's closure, respondents may have exaggerated some of their responses, including the extent to which they obtained syringes from unreliable sources. However, in our experience, we have found that drug users have tended to underreport their level of risk behaviors in order to cast themselves in a more positive light in the presence of an interviewer.

All of the problems blamed on the needle exchange following its closure remain in place in Windham. In fact, the town now faces even worse problems. Because unused syringes are no longer provided legally by the

program and almost none of Windham's pharmacies will sell syringes over the counter, there is pressure on drug injectors to increase their rate of reusing and sharing dirty syringes. While it may seem that an increase in the reuse of syringes would reduce the number of discarded syringes, there is a countervailing factor. The closure of the needle exchange deprived drug injectors of not only a reliable and economical way of obtaining new syringes but also a convenient means of proper disposal. Contrary to the claims of the exchange's critics, the program's closure produced no reductions in the robustness of Windham's drug scene, as evidenced by the amount of discarded syringes and related debris around town. Finally, in closing the needle exchange, Windham deprived itself of one of the few scientifically proven means for reducing the spread of HIV among injection drug users and other drug-related problems within the community.

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