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ARTICLE

Can Syringe Exchange Serve as a Conduit to Substance Abuse Treatment?

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Abstract – *To determine how the city-run New Haven syringe exchange program (SEP) expedited requests for entry into treatment, records of the SEP's drug treatment coordinator were analyzed. During the study period, a majority of those requesting treatment did not use the SEP to obtain sterile syringes. Comparisons between the people requesting treatment and those exchanging syringes revealed that those requesting treatment were more likely female and less likely White. Factors associated with failure to enter treatment included long lag times, worse insurance, cocaine use, and requesting primary detoxification only. Majorities of the requests, appointments, and entries came from individuals whose treatment was to be paid through city welfare. A managed care initiative from the city welfare department, which excluded the SEP, halved requests and entries. Subsequent addition of the SEP to the initiative did not significantly increase requests or entries. Although the SEP initially acted as a conduit to treatment, its effectiveness was curtailed by the imposition of bureaucratic restrictions.* © 1998 Elsevier Science Inc.

INTRODUCTION

THE TWIN EPIDEMICS of AIDS and drug addiction intersect at the injection drug user (IDU), especially in the northeastern United States where HIV-1 prevalence levels among IDUs are in excess of 50% (Des Jarlais et al., 1994; Holmberg, 1996; Kaplan & Heimer, 1992). Public health responses have tended to treat each epidemic separately, resulting in strategies directed at one but overlooking the other. Nevertheless, some stategies address the intertwining, affecting both drug use and HIV-1 transmission. On one level, this is intuitive: less illegal drug use means lower injection frequency, which in turn results in a lower likelihood of becoming infected with HIV-1. There is data that some substance abuse treatment, especially methadone maintenance, lowers risky drug injection practices (Caplehorn & Ross, 1995; Friedman et al., 1995). Furthermore, epidemiological data has suggested that the provision of treatment has resulted in lowered risk for HIV-1 transmission. In one retrospective study of 58 methadone maintenance patients in New York City who had been in treatment for an average of 17 years, no individuals were HIV-1 seropositive (Novick et al., 1990). In a second retrospective study of 67 methadone maintenance patients in Sweden who had

been in treatment since 1983, HIV-1 seroprevalence was only 3%, compared to a prevalence estimated at 14% for the population of Swedish IDUs (Blix & Gröbladh, 1991). In a prospective study of 152 in-treatment and 103 out-of-treatment IDUs, seroconversion rates were six-fold lower in the in-treatment group (Metzger et al., 1993). In an observational study with 681 initially seronegative San Francisco IDUs tested at least twice, subjects with more than 12 months in methadone maintenance during their lives were four-fold less likely to become infected with HIV-1 (Moss et al., 1994).

A major thrust in the public health response to the epidemic of AIDS among IDUs has been the establishment of syringe exchange programs (SEPs). Several comprehensive analyses have concluded that SEPs have been effective in reducing transmission risks among IDUs (Lurie & Reingold, 1993; Nadel, 1993; Normand et al., 1995). This conclusion has been based in large part on the studies of the New Haven SEP. The city of New Haven, which operates the SEP, sought to develop a program that reduced both HIV-1 transmission and drug abuse. The first objective had been met when it was determined that the SEP produced, at a minimum, a one-third reduction in HIV-1 transmission among program participants (Heimer et al., 1993; Kaplan, & Heimer, 1994; Kaplan & O'Keefe, 1993). This conclusion has been endorsed by federally funded studies of syringe exchange programs (Nadel, 1993; Normand et al., 1995).

In New Haven, it also has been noted that the SEP can serve as a route by which substance abuse treatment is entered. During the SEP's first 7 months, it was observed that as many as one-quarter of the SEP clients requested treatment and one seventh entered (Heimer et al., 1994). The drug treatment referral workload became so heavy that the SEP added a Drug Treatment Coordinator to its staff in September 1992, and, following this addition, the request rate for drug treatment doubled (Heimer & Lopes, 1994).

In this report, we discuss in greater detail the operation of the drug treatment coordinator of the New Haven SEP, collecting and compiling the data pertaining to: (a) requests for treatment; (b) appointments for primary care made; (c) appointments kept; and (d) entry into aftercare. Individuals making the requests provided information regarding age, sex, ethnicity, drug(s) for which treatment was being sought, previous treatment histories, insurance type, and use of the SEP to obtain syringes. These data have allowed us to analyze who used the SEP to gain access to drug treatment and how changes in access to treatment altered SEP effectiveness.

The latter issue arose because in March 1994, the New Haven Welfare Department, which paid for the majority of those entering substance abuse treatment through the SEP, began a managed care initiative (MCI). The purpose of the MCI was to make sure that all eligible clients were screened and approved prior to their appearance at substance abuse treatment facilities. It was hoped that the MCI would decrease costs and increase the entry of

individuals committed to making their treatment work. Four gateways to entry were created and the SEP was not included as one of the four authorized referral centers. After 8 months, the SEP was added to the list of referral sites. The data collected and compiled as part of this study were used to investigate the consequences of these events.

METHODS

The New Haven SEP was authorized by the state of Connecticut in 1990 when the legislature amended its statutes to permit a demonstration SEP that exempted its clients from the laws prohibiting the sale and possession of syringes without prescription. Operated by outreach workers of the New Haven Health Department from a van that travels to urban neighborhoods 4 days a week, the SEP has provided new sterile syringes in exchange for old ones on a one-for-one basis since November 1990 (Kaplan, 1991). In addition to syringes, outreach workers distribute bleach kits, condoms, and alcohol wipes, disseminate AIDS prevention literature, direct clients to HIV-1 testing and counseling services, and offer the opportunity for IDUs to seek substance abuse treatment. In September 1992, a Drug Treatment Coordinator was added to staff the SEP with the sole responsibility of managing the requests for drug treatment.

Requests for treatment came from three avenues: the SEP van, walk-ins to the office, and telephone calls. For individuals requesting treatment by the first two routes, an evaluation began by the requester providing information for an intake form designed to assist the Coordinator in compiling the data necessary to arrange an appointment for the client to enter drug treatment. Included on this form was requester's name and code name, if a client of the SEP; date of encounter and length of time spent with that individual; locator information including address and telephone number; demographic data including age, sex, and ethnicity; current drugs(s) for which treatment was being sought and past treatment history; type of insurance coverage; services provided including treatment facility contacted; contact person at that facility; anticipated date of entry; and follow-up data on outcome of the initial appointment for treatment. For telephone requests, individuals were asked to come into the office for the initial evaluation, but on a few occasions evaluations and arrangements for treatment entry were made over the telephone.

In addition to the intake forms, monthly reports were prepared, which included information on the client's entry into and progress through treatment. The data pertained to the outcome of the initial appointment, whether primary treatment was completed, and whether secondary or after-care treatment was initiated.

After initial evaluation, the coordinator, consulting a listing of available treatment slots, made appointments for the individual either to enter a suitable program that had an available slot, to be placed on a waiting list for a slot, or to complete the treatment programs's intake in-

terview. Transportation to the appointment for entry or interview was provided by the Coordinator's office.

The data compiled and analyzed in this study were obtained from the data intake forms and monthly records maintained by the Drug Treatment Coordinator. A list of client names was prepared and alphabetized. Each client was then assigned a number in a random manner. A data abstraction form, using only the client number to collect the pertinent data without identifiers, included SEP client status, demographic data, insurance coverage, drug use and treatment histories, type of treatment requested and referred to, and outcomes of referrals. Dates for each step in the referral and treatment processes were included as available from monthly reports. In instances of discrepancy between the intake form and the monthly report, preference was given to the intake form. The database was established on EpiInfo using double entry to ensure accuracy. The demographic data were compared using chi squared analysis to that obtained from syringe exchangers upon their enrollment in the SEP (Heimer et al., 1994).

Two outcome variables were chosen as indicators of success of the drug treatment component of the SEP. The first variable was the making of an appointment for an individual to enter primary treatment. At this level, a successful intervention was indicated, irrespective of the requester's eventual entry. The second variable was entry into the treatment program. At this level, success did not require completion of treatment. Because of issues of confidentiality, reports on completion of primary treatment and on entry into secondary care were anecdotal. As a result, no attempt has been made to ascertain the factors associated with successful completion of primary care or entry into secondary care.

The relationships among data from the intake forms and the outcome variables were analyzed in a three-step process. First, each independent variable was categorized as a demographic or drug-related variable. Second, logistic regression using Statistical Analysis Software (SAS) was run within each category to identify significant variables. Third, once significant independent variables were identified, each was entered into a final logistic regression model.

Two time-dependent analyses were performed. First, seasonality was investigated using a Kruskal-Wallis test on the data grouped into 3-month periods. Second, during the period under study, the New Haven Welfare Department instituted a managed care initiative (MCI), which restricted access of its clients to drug treatment. The changes in requests for treatment and entries were analyzed by analysis of variance (ANOVA) using SAS.

RESULTS

Who Requested Drug Treatment Through the SEP and How Did They Compare to SEP Participants?

During the period from September 1992 to December 1994, there were 597 requests for treatment made through the SEP's Drug Treatment Coordinator. These 597 requests were made by 409 individuals. Demographic data were compiled on each of these individuals as available and analyzed (Table 1). Of the 409 individuals, 289 (70.7%) were male and 120 (29.3%) were female. Data on age were compiled as a categorical variable; 5 individuals (1.2%) were less than 20 years old and 27 (6.6%) were 45 or older. In terms of ethnicity, 190 (46.5%) were African American, 109 (26.7%) were Latino/a, and 83 (20.3%) were White. These data were compared to the clients of the SEP who used the program to obtain clean syringes (Table 1). Significant differences were discovered in terms of sex and ethnicity, but not in terms of age. There was, relatively, a greater use of the Drug Treatment Coordinator by women, African Americans, and Latinos/as.

To facilitate entry into drug treatment, the Coordinator requested information on insurance status, but did not collect this information from 94 individuals. Of the remaining 315, 202 (64%) had access through general assistance provided by the New Haven Welfare Department, 55 (17%) had Title 19 state Medicaid, 13 (4%) had private insurance, and 45 (14%) had no insurance coverage (Figure 1A).

The 409 individuals reported which drug(s) in current use, including opiates, cocaine, and alcohol, were the cause for their seeking treatment (Table 2). Most individuals reported multiple drugs. Of the minority (43%) reporting only a single drug, 21% reported heroin only, 14% reported alcohol only, and 8% reported cocaine only. In contrast, 10% used all three drugs, while the largest single group was that reporting both alcohol and cocaine use (23%). Comparison of the drug use data on those requesting drug treatment to syringe exchangers revealed that for both sets of individuals multiple drug use was common (Table 2), but strict comparisons could not be made because data on alcohol use was not collected from syringe exchangers.

It emerged, unexpectedly, that alcohol use was frequently a reason for seeking treatment. The high level of alcohol-related requests (47%), approximately equal to the requests arising from opiate use (49%), suggested that many of those seeking treatment were not using self-injected drugs. This was further evidenced by the observation that only 110 of the 409 individuals seeking treatment (26.9%) were identified as syringe exchangers (Figure 1B). The remaining 299 (73.1%) were not positively identified as syringe exchangers, although only 214 (52.3%) were positively identified as nonexchangers on the drug treatment intake form.

Since a minority of those requesting treatment were known syringe exchangers, we investigated whether there were differences between exhangers and nonexchangers requesting treatment comparing known exchangers with known nonexchangers and also comparing known exchangers to all others. (The second set of analyses were performed because discussions with the Drug Treatment Coordinator and the outreach staff suggested

TABLE 1
Demography of Syringe Exchange Program Clients

	Syringe Exchangers (n = 1496)		Treatment Requesters (n = 409)		p Value*
Sex					p < .001
Female	323	21.6%	120	29.3%	
Male	1173	78.4%	289	70.7%	
Age					p = .208
15–19	11	0.7%	5	1.2%	
20–24	110	7.4%	27	6.6%	
25–29	258	17.2%	62	15.2%	
30–34	392	26.2%	71	17.4%	
35–39	382	25.5%	81	19.8%	
40–44	230	15.4%	44	10.8%	
≥ 45	85	5.7%	27	6.6%	
Unknown	28	1.9%	92	22.5%	
Ethnicity					p < .001
African American	541	36.2%	190	46.5%	
Latino/a	299	20.0%	109	26.7%	
White	641	42.8%	83	20.3%	
Other	4	0.3%	1	0.2%	
Unknown	11	0.7%	26	6.4%	

*Unknowns removed from the age and ethnicity data before p values based on χ^2 analysis were calculated. A significant result ($p < .05$) supports the hypothesis that the two groups are different.

that all those not positively identified as exchangers were likely to be nonexchangers.) The two sets of analyses yielded, for the most part, identical results. Significant differences between known exchangers and known nonexchangers included race, the type of drug treatment requested, and drugs used. Exchangers were less likely to be African American (40% vs. 60% of nonexchangers), more likely to request treatment that included detoxification only (60% vs. 46% of nonexchangers), more likely to use heroin (74% vs. 44% of nonexchangers), and less likely to use either cocaine (53% vs. 63% of nonexchangers) or alcohol (29% vs. 56% of nonexchangers). Upon addition of those not positively identified as exchangers or nonexchangers to the group of nonexchangers, no new significant differences between the two groups emerged and cocaine use disappeared as a significant difference.

What Factors Were Associated With Successful Entry Into Primary Drug Treatment?

From November 1992 through December 1994, the Drug Treatment Coordinator received 597 requests, and 442 (74%) resulted in an appointment with the intake arm of a drug treatment facility. The Coordinator could select from a roster of over 2,400 slots (not including a variable number of slots in research protocols) at 34 treatment facilities. Two thirds of the slots were for outpatient services and half of these were methadone maintenance for opiate dependency. Approximately 40% of the slots excluded cocaine dependency as an eligibility criterion. Approximately 400 of the slots provided only short-term

detoxification. Of the 442 appointments, 146 (33%) were made for exchangers and 230 (52%) were made for known nonexchangers. In terms of treatment modalities, 190 appointments (43%) were made for a detoxification-only treatment and 252 (57%) were made for both detoxification with follow-up after-care treatment either at a single facility or by combining care at two facilities. We compared the data on the individuals from whom appointments were made to all those making the treatment requests and found that only one factor was associated with failure to make an appointment. Those individuals who began the intake process by making requests for detoxification only as the type of treatment desired were less likely to have an appointment for entry into treatment made on their behalf (OR = 0.197, 95% CI: 0.104, 0.373). A Kruskal-Wallis test for seasonality found no significant seasonal trend for requests for entry into drug treatment when the data were grouped into 3-month periods ($p = .331$).

Of the 442 appointments, 265 (60%) resulted in entry into primary drug treatment either at a detoxification center or into a longer-term program. Of these, 202 (76%) were males, 77 (29%) were syringe exchangers, and 153 (58%) had general assistance coverage. A logistic regression model identified four factors associated with failure to keep the appointment for entry: a long lag before the appointment date ($\chi^2 = 11.42$, $p = .0007$), type of insurance coverage ($\chi^2 = 12.41$, $p = .0004$), use of cocaine ($\chi^2 = 9.08$, $p = .0026$), and requests for primary detoxification treatment only ($\chi^2 = 39.38$, $p < .0001$). When individuals had to wait 1 day or less, 75% successfully entered treatment (Figure 2A).
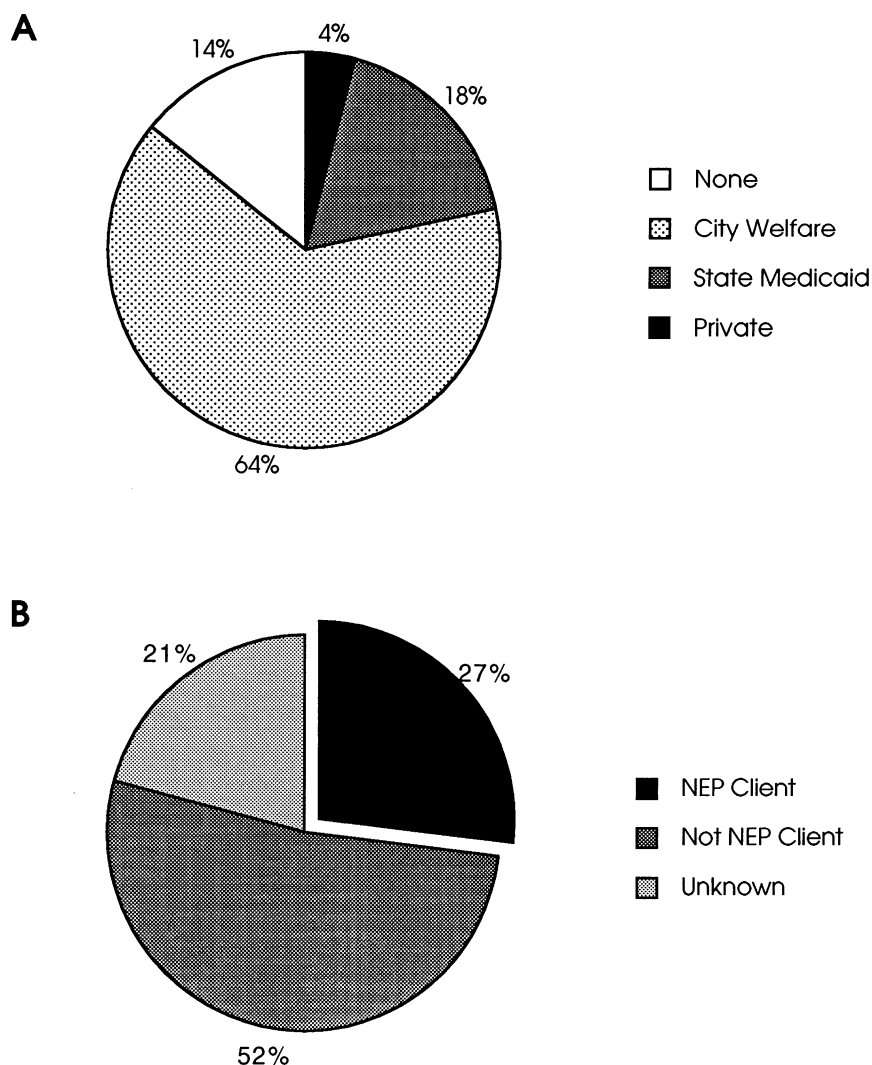
A

B

FIGURE 1. Requests for treatment, September 1992 through December 1994. (A) Percentage of individuals with different types of insurance or entitlement options to cover the cost of treatment. (B) Percentage of clients known to use and known not to use the SEP to obtain clean syringes.

There was an increase in failure associated with increasingly long waits, such that if waits were 3 weeks or more, only 20% of appointments were kept. Also significant was the association of insurance type and entry into treatment (Figure 2B). It was observed that 83% of those with private insurance, 62% of those with state Medicade, 49% with general assistance, and 36% with no insurance succeeded in entering treatment. A Kruskal-Wallis test for seasonality found no significant seasonal trend for entry into drug treatment when the data were grouped into 3-month periods ($p = .591$).

Many of the 265 individuals entering drug treatment began with a primary detoxification program. These programs required from 3 to 7 days for completion, with 5 days of detoxification the norm. Individuals who successfully concluded the primary detoxification could be

TABLE 2
Drugs in Use by Syringe Exchange Program Clients

Drug	SEP Clients ($n = 1496$)		Treatment Requesters ($n = 409$)	
Opiates	1156	77.3%[a]	200	48.9%[a]
Cocaine	1068	71.4%	241	58.9%
Amphetamines	27	1.8%	0	0%
Barbiturates	4	0.3%	0	0%
Alcohol	nd	—	192	46.9%
Steroids	1	0.1%	0	0%
Speedballs[b]	566	37.8%	115	28.1%
Unknown	0	0%	25	6.1%

nd = not determined.
[a]Since many individuals use more than one drug, the sums of the percentages exceed 100%.
[b]Speedballs are mixtures of cocaine and opiates. Individuals who indicate speedball use are included in both the opiate and cocaine category as well.

expected to request entry and enroll into long-term secondary drug treatment programs. We analyzed the data available to the Drug Treatment Coordinator, and observed that 193 individuals (73%) made appointments that included secondary care. However, for several reasons we have only anecdotal information about the appearance of clients at the secondary sites. One reason is that the primary job of the Drug Treatment Coordinator was to facilitate entry into primary care and arrange an appointment for secondary care, if requested, and not to follow-up on the transition from primary to secondary care facilities. A second reason is that the coordinator did not obtain consent from the individuals entering treatment to gain access to their records to determine the success in completing primary treatment and in making the transition to secondary care. Thus, individuals were lost to follow-up unless they took the trouble to report back to the Drug Treatment Coordinator or used the Coordina-
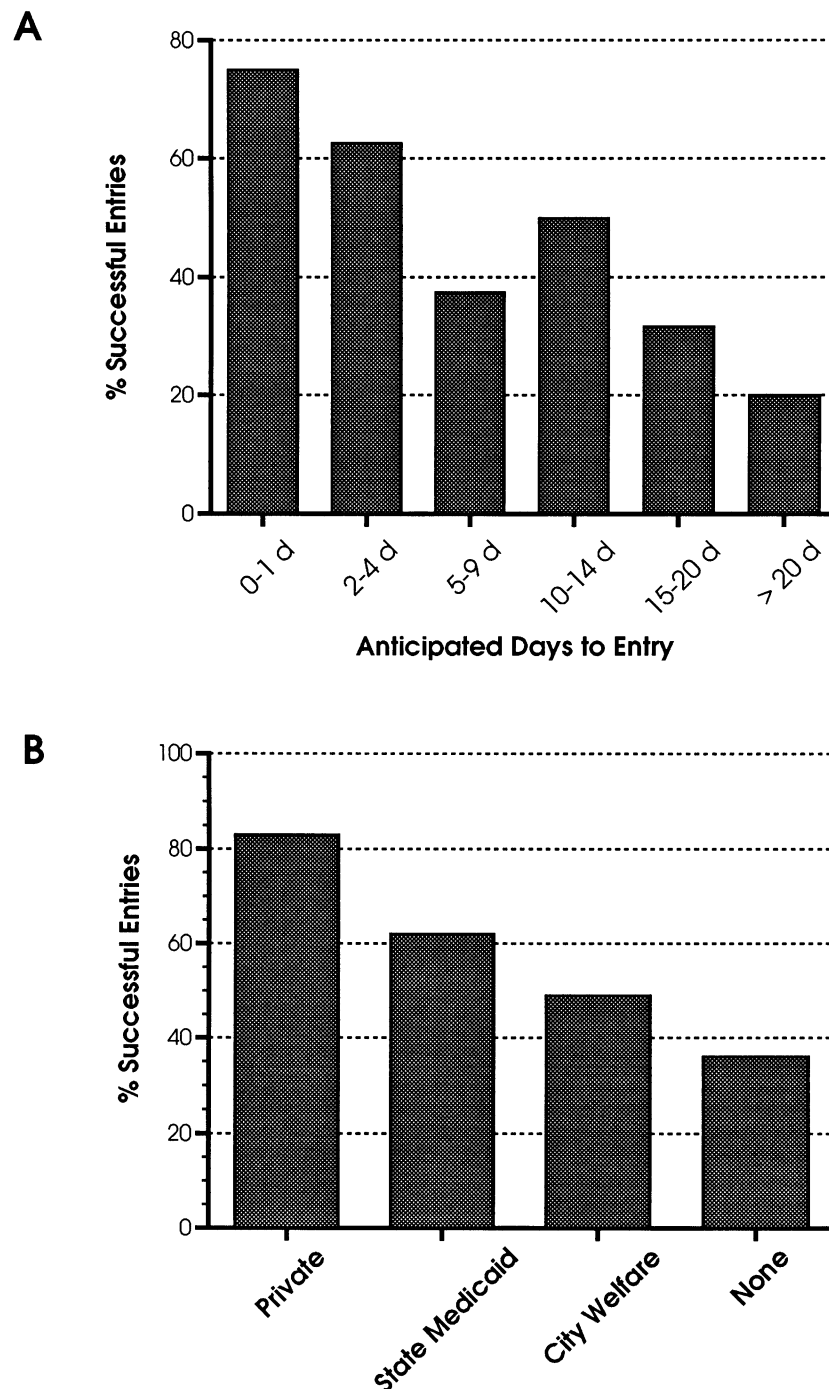

FIGURE 2. Correlates of successful entry into drug treatment. (A) Effects of waiting time on entry. (B) Effects of different types of insurance or entitlement options on entry.

tor's office to arrange transportation to the secondary care facility. From the anecdotal information, we calculated that there were 56 known entrants into secondary care and 49 known failures.

What Were the Effects of the Managed Care Initiative?

As described above, a majority of requests for and entries into substance abuse treatment came from individuals whose treatment was paid by general assistance. In February 1994, the MCI was inaugurated by the city's Welfare Department. Four sites of facilitated entry into drug treatment were designated. The SEP was initially excluded from the list, but was added as a fifth site in September 1994. During the 16 months prior to the MCI, the SEP received an average 26.3 requests per month (Table 3) and entered 14.0 individuals per month into treatment. During the period of exclusion, requests and successful entries fell to 12.7 and 5.1 per month, respectively. The decline among requests was statistically significant by ANOVA ($p < .0001$). The decline was largely, but not exclusively, limited to those receiving general assistance. Among these individuals, requests fell from 15.0 to 5.4 per month ($p = .0002$); among individuals with other forms of insurance, requests fell from 11.3 to 7.3 per month ($p = .0875$). Addition of the SEP to the roster of sites in September 1994 had little effect in increasing referrals. In the 9 months after addition of the SEP to the list MCI-approved triage sites, requests and entries were 15.5 and 6.7 per month, respectively. Requests among those on general assistance or with other insurance plans were 6.7 and 8.8 per month, respectively. None of the increases from the period of exclusion to the subsequent inclusion in the MCI was significant.

DISCUSSION

It is evident from the data reported above that the drug treatment referral program of the New Haven SEP facilitated the entry of many individuals into drug treatment. At the height of its effectiveness in 1993 and early 1994, nearly one person per day was referred. The effective-

ness can also be seen in the breadth of referrals seen by the Drug Treatment Coordinator. Only 27% of the requests came from known syringe exchangers; a majority of the requests came from those known not have used the SEP as a source for clean syringes. We suspect that many of the nonexchanging individuals were not injectors, as ascertained from the observations that only 49% of requesters mentioned opiates while opiate use exceeded 90% among exchangers. Among the requesters, the strong associations of heroin use with exchangers and alcohol use with nonexchangers supports the conclusion that many nonexchangers were noninjectors. The smaller differences in cocaine use between exchangers and nonexchangers is probably a result of the fact that the intake form failed to distinguish between cocaine injection and crack use. In conclusion, one measure of success of the drug treatment referral program was the degree to which it had its impacts on a community larger than that served by the SEP in its primary role as a provider of clean syringes.

Indeed, the SEP is based on a harm reduction approach that offers a variety of direct and associated services that, in effect, make it a multicomponent outreach program that offers syringe exchange (Heimer et al., 1994). This, in itself, is not uncommon. Syringe exchanges throughout the United States offer more than just exchange; for example, 97% offer referrals to drug service (Paone et al., 1997). But the SEP in New Haven began as, has kept its primary focus as, and is known within the community as the New Haven Needle Exchange Program. Thus, it remains appropriate to evaluate the other services offered by the exchange as occurring within the context of syringe exchange and as perceived of as a service of the exchange.

It is evident that the services provided by the Drug Treatment Coordinator's program were fragile. The placement of those requesting treatment was found to be diminished appreciably by several factors: the number of slots for which the individual was suited and for which the funding was available, the decision by the requester to keep appointments, and the institutional commitment to the program. Of those requesting treatment, 6 in 10 actually began treatment. Thus, 40% of those making initial requests failed to keep their appointments. Some re-

TABLE 3
Effects of the Managed Care Initiative on Requests for Drug Treatment

	Average Monthly Requests for Drug Treatment		
	All Requests	Insurance Through City Welfare	Insurance Through Other Sources
September 1992–February 1994	26.3	15.0	11.3
March 1994–September 1994	12.7[a]	5.4[a]	7.3
October 1994–June 1995	15.5[a]	6.7[a]	8.8

[a]Significantly different from the number in the period September 1992 to February 1994.

sponsibility for failure to keep their appointments to enter drug abuse treatment can be ascribed to the individuals making the requests. This is reflected in the high failure rate among those requesting detoxification only as their treatment option. For these individuals, despite their recognition of a substance abuse problem, the desire for a quick, incomplete solution may have contributed to the failure to follow through and keep an appointment. In addition, a state regulation requiring those on general assistance and aid to dependent children to obtain substance abuse treatment was implemented just prior to the study period. This regulation may have impelled many individuals, who had no self-propelled desire to enter treatment, to contact the Drug Treatment Coordinator as part of a strategy to maintain benefits.

Not all of these failures are the sole responsibility of the requester. Institutional and medical impediments to entry included long delays between request and available entry dates, use of cocaine for which there are no efficacious treatments (Rawson et al., 1994; Withers et al., 1995), and limitations imposed by insurance. There are clearly interrelationships among these factors. Long delays were necessitated when applying to the oversubscribed treatment facilities. The range of treatment programs were reduced for the 96% of requesters who did not have private insurance, and reduced still more for those whose treatment was neither covered by insurance nor by entitlement. The absence of cocaine-treatment slots led to long delays for those few available in experimental programs. In all these cases, failure to enter treatment appeared to be associated with fewer treatment options.

During the course of the 2.5 years under study, no institutional impediment proved larger than the welfare department's MCI that omitted the SEP drug treatment referral program from its initial list of approved referral sites in February 1994. As a result, the total number of referrals and entries dropped by more than half, although the major group of effected individuals were general assistance recipients. The SEP experienced a 64% decrease in requests from those requiring city welfare to pay for treatment, whereas among those with other forms of insurance, we observed a discernible but nonsignificant decrease in the number of referrals. The data also revealed that the damage done by the MCI could not be easily undone, since the addition of the SEP drug treatment referral program to the list of MCI-approved sites after 7 months off the list did not result in a significant rise in the number of referrals by those covered by city welfare during the subsequent 8 months. The lesson to be learned from this is that successful programs can be damaged by the careless application of administrative strictures. Unfortunately, the lack of adequate records prevents a broader analysis of the effects of the MCI at any level other than the SEP. There are no records of the number of requests for entry into substance abuse treatment made by city welfare clients. As for entries, any comparison of the number of entries covered by welfare in the periods before and after the start of the MCI is complicated by the fact that comprehensive records only began to be kept as a consequence of the MCI.

The conclusions to be drawn from this evaluation of the Drug Treatment Coordinator's role in the New Haven SEP is that combining services for illicit drug users fosters a broad reduction in the harms associated with such drug use. The New Haven SEP has succeeded not only in decreasing the transmission of HIV-1 and hepatitis B (Heimer et al., 1996a; Heimer et al., 1996b; Kaplan, 1994; Kaplan & Heimer, 1994). It has also acted as a conduit to bring injectors and noninjectors alike into substance abuse treatment programs. Past criticism of SEPs has included the contention that they encourage or condone illicit drug use (Martinez, 1992). This report shows that SEPs can accomplish the opposite, decreasing the community-wide use of addictive and illicit drugs. However, it must also be concluded that such gains are easily lost through the imposition of impediments to the implementation of a complete harm reduction program.

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