

Do Supervised Injecting Facilities Attract Higher-Risk Injection Drug Users?

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Background: In Western Europe and elsewhere, medically supervised safer injection facilities (SIFs) are increasingly being implemented for the prevention of health- and community-related harms among injection drug users (IDUs), although few evaluations have been conducted, and there have been questions regarding SIFs' ability to attract high-risk IDUs. We examined whether North America's first SIF was attracting IDUs who were at greatest risk of overdose and blood-borne disease infection.

Methods: We examined data from a community-recruited cohort study of IDUs. The prevalence of SIF use was determined based on questionnaire data obtained after the SIF's opening, and we determined predictors of initiating future SIF use based on behavioral information obtained from questionnaire data obtained before the SIF's opening. Pearson's chi-square test was used to compare characteristics of IDUs who did and did not subsequently initiate SIF use.

Results: Overall, 400 active injection drug users returned for follow-up between December 1, 2003 and May 1, 2004, among whom 178 (45%) reported ever using the SIF. When we examined behavioral data collected before the SIF's opening, those who initiated SIF use were more likely to be aged <30 years (odds ratio [OR]=1.6, 95% confidence interval [CI]=1.0–2.7, $p=0.04$); public injection drug users (OR=2.6, 95% CI=1.7–3.9, $p<0.001$); homeless or residing in unstable housing (OR=1.7, 95% CI=1.2–2.7, $p=0.008$); daily heroin users (OR=2.1, 95% CI=1.3–3.2, $p=0.001$); daily cocaine users (OR=1.6, 95% CI=1.1–2.5, $p=0.025$); and those who had recently had a nonfatal overdose (OR=2.7, 95% CI=1.2–6.1, $p=0.016$).

Conclusions: This study indicated that the SIF attracted IDUs who have been shown to be at elevated risk of blood-borne disease infection and overdose, and IDUs who were contributing to the public drug use problem and unsafe syringe disposal problems stemming from public injection drug use.

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Introduction

Illicit injection drug use has led to serious public health problems, such as HIV infection, as well as major community concerns, such as public injection drug use.^{1–6} As has been well described,⁷ due to limited prevention resources and the potential for rapid blood-borne disease incidence among high-risk individuals,³ it is critical that HIV prevention interventions are targeted to the highest-risk injection drug

users (IDUs), such as those who are at highest risk of HIV infection and overdose.

In an effort to address public health concerns and problems stemming from public injection drug use, a number of cities have opened medically supervised safer injection facilities (SIFs) where injection drug users can inject preobtained illicit drugs.^{8–10} Within SIFs, IDUs are typically provided with sterile injecting equipment and emergency care in the event of an accidental overdose, as well as primary medical care and referral to addiction services.^{11,12} However, there has recently been some question as to whether SIFs attract those IDUs at highest risk of health-related harms.^{8,13} While a key contribution to our understanding of SIFs has come from the recent evaluation of the SIFs in Sydney, Australia, this evaluation was limited in its ability to examine this question due to the lack of a prospective cohort of IDUs that had been operating before the SIFs' opening.¹⁴

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On September 22, 2003, Vancouver, Canada opened North America's first government-sanctioned SIF.⁸ Within the SIFs, IDUs can inject pre-obtained drugs under the supervision of nurses, and addictions counseling is provided on site. A primary concern before the SIF's opening was that a medically oriented space would not attract those IDUs who were contributing most to community harms resulting from public injection drug use, as well as those IDUs at particular risk of the negative health consequences of injection drug use, such as bloodborne disease infections and overdose. Using data from a community recruited cohort of IDUs, we examined the behaviors of IDUs who were associated with subsequent use of the Vancouver SIF.

Methods

Beginning in May 1996, IDUs were recruited into the Vancouver Injection Drug User Study (VIDUS), a prospective cohort study that has been described in detail previously.^{15,16} Briefly, snowball sampling methods were used to recruit IDUs, and at baseline and semiannually, subjects provided blood samples and completed an interviewer-administered questionnaire. Participants are provided a nominal stipend (CDN \$20) at each visit, and the study is annually approved by the University of British Columbia Research Ethics Board. Beginning at the first semiannual follow-up after the SIF's opening, questions were added to the VIDUS questionnaire to measure IDUs' use of the SIFs.¹⁷

We were interested in behaviors that predicted subsequent initiation of SIF use. Therefore, we examined all VIDUS participants who reported active injection drug use and who returned for follow-up between December 1, 2003 and May 1, 2004, which was the first full semiannual follow-up cycle to occur after the opening of the SIF. Based on data obtained from the cohort of active IDUs that were seen during this cycle, we defined participants as SIF users or nonusers if they reported having ever used the SIF. We then used behavioral information from each participant's visit that immediately preceded the SIF's opening. Individuals who had no previous visit to the VIDUS office because they were recruited into the cohort after the SIFs opened were not eligible since we were primarily interested in behaviors before the opening of the SIFs, and individuals whose previous questionnaire was >36 months before the opening of the SIFs were excluded since we did not want to examine behaviors that had occurred many years before the opening.

In this analysis, we considered variables that had previously been shown to be associated with HIV infection and/or overdose in our setting including: gender,¹⁸ age (>29 vs ≤29),¹⁹ sex trade involvement,¹⁹ current methadone use,³ public injecting,⁵ difficulty accessing syringes,²⁰ borrowing syringes,³ residing in unstable housing (homeless, shelter, or low-income hotel),²¹ daily cocaine injection,³ daily heroin injection,²⁰ and recent nonfatal overdose.²² Variable definitions were identical to those used in previous studies, and unless otherwise indicated, behaviors described above were in reference to the 6-month period before the interview.^{3,5,18-22} Behavioral characteristics of participants who did and did not subsequently initiate SIF use were compared using Pearson's

chi-square test and odds ratios and 95% confidence intervals were calculated. Analyses were conducted using SAS, version 8.0 (SAS Institute Inc., Cary NC, 1999).

Results

Overall, 705 VIDUS participants returned for the semiannual follow-up between December 1, 2003 and May 1, 2004, among whom 274 (38.8%) were excluded from the primary analysis because they had not injected illicit drugs in the previous 6 months. Of the 431 individuals who reported actively injecting drugs in the previous 6 months, 28 had to be excluded since this was their baseline visit (i.e., no pre-SIF opening data), and an additional 3 individuals were excluded since it had been >36 months since their previous study site visit. Among the remaining 400 participants, 178 (45%) reported ever using the SIF. During the month before the interview, 11 reported using the SIF for all their injections, whereas 19 reported using the SIF for >75%, 46 reported using the SIF for 26% to 74% of injections, and 102 reported using the SIF for <25% of their injections. Overall, the median duration between the acquisition of pre-SIF opening behavioral data and the more recent questionnaire, where SIF use was measured, was 8 months (interquartile range of 6 to 12).

Table 1 shows the sociodemographic and behavioral characteristics of participants from questionnaire data obtained before the SIF's opening, stratified by whether participants subsequently initiated SIF use or not. As shown here, those that initiated SIF use were more likely to be aged <30 years (odds ratio [OR]=1.6, 95% confidence interval [CI]=1.0-2.7, $p=0.04$); public injection drug users (OR=2.6, 95% CI=1.7-3.9, $p<0.001$); homeless or residing in unstable housing (OR=1.7, 95% CI=1.2-2.7, $p=0.008$); daily heroin injectors (OR=2.1, 95% CI=1.3-3.2, $p=0.001$); daily cocaine injectors (OR=1.6, 95% CI=1.1-2.5, $p=0.025$); and individuals who had a recent overdose (OR=2.7, 95% CI=1.2-6.1, $p=0.016$). No other variables achieved statistical significance. We were aware that there was potential for misclassification in our primary analysis, if individuals had used the injection site only once out of curiosity, and did not really require a safe place to inject. As such, we conducted a subanalysis in which we defined individuals who had used the SIF for <25% of their injections in the last 6 months as nonusers. Here, we found that results were similar with public injectors, daily heroin injectors, and younger participants being significantly more likely to initiate use of the SIF (all $p<0.05$; data not shown).

Discussion

In the present study, we found that the behaviors that predicted subsequent use of a medically supervised injecting facility were specifically those risk factors that

Table 1. Characteristics of Vancouver injection drug users that subsequently did or did not initiate supervised injecting facilities (SIF) use

Characteristic	Never used <i>n</i> (%)	Initiated use <i>n</i> (%)	Odds ratio (95% CI)	<i>p</i> value
Gender				
Male	132 (59.5)	102 (57.3)		
Female	90 (40.5)	76 (42.7)	1.1 (0.7–1.6)	0.664
Age (years)				
>29	185 (83.3)	134 (75.3)		
≤29	37 (16.7)	44 (24.7)	1.6 (1.0–2.7)	0.04
HIV infected				
No	148 (66.7)	124 (69.7)		
Yes	74 (33.3)	54 (30.3)	0.9 (0.6–1.3)	0.523
Sex trade involved				
No	178 (80.2)	143 (80.3)		
Yes	44 (19.8)	35 (19.7)	1.0 (0.6–1.6)	0.970
On methadone				
No	122 (55.0)	99 (55.6)		
Yes	100 (45.1)	79 (44.4)	1.0 (0.7–1.5)	0.895
Injected in public				
No	153 (68.9)	82 (46.1)		
Yes	69 (31.1)	96 (53.9)	2.6 (1.7–3.9)	<0.001
Difficulty accessing rigs				
No	206 (92.8)	156 (87.6)		
Yes	16 (7.2)	22 (12.4)	1.8 (0.9–3.6)	0.081
Borrowed used needles				
No	201 (90.5)	163 (91.6)		
Yes	21 (9.5)	15 (8.4)	0.9 (0.4–1.8)	0.720
Unstable housing				
No	96 (43.2)	54 (30.3)		
Yes	126 (56.8)	124 (69.7)	1.7 (1.2–2.7)	0.008
Daily heroin injection				
No	173 (77.9)	112 (62.9)		
Yes	49 (22.1)	66 (37.1)	2.1 (1.3–3.2)	0.001
Daily cocaine injection				
No	164 (73.9)	113 (63.5)		
Yes	58 (26.1)	65 (36.5)	1.6 (1.1–2.5)	0.025
Recently overdosed				
No	213 (96.0)	160 (90.0)		
Yes	9 (4.0)	18 (10.1)	2.7 (1.2–6.1)	0.016

CI, confidence interval.

were shown to be associated with elevated risk of HIV infection in previous studies conducted in our setting. Specifically, these risk factors were younger daily cocaine injectors, and living in unstable housing conditions.^{3,15,18–20} In addition, frequent heroin injection and nonfatal overdose, as well as public injection drug use were significantly associated with subsequent initiation of SIF use. These findings are consistent with previous qualitative evaluations and anecdotal reports that have suggested that SIFs attract high risk populations,^{23,24} and have significant implications for prevention strategies for IDUs.

We have recently reported that the opening of the SIF was associated with measurable reductions in public drug use and unsafely discarded syringes.²⁵ It is, therefore, not surprising that public injection drug use was strongly associated with subsequent initiation of SIF use, and the elevated health needs of homeless persons have been previously described.²¹ It is encouraging, however, that the present study indicates that IDUs at

elevated risk of overdose and blood-borne disease infection were more likely to initiate SIF use. In particular, it is noteworthy that frequent cocaine injectors initiated SIF use, given that there has been substantial debate regarding the willingness of cocaine users to use a medically supervised SIF.²⁶ Given the characteristics identified here, it is likely that the Vancouver SIF is creating additional opportunities for intervention by attracting a population in need of healthcare support, including addiction treatment, as well as support from social services for problems such as homelessness.⁸ These data should be valuable for a number of settings where SIF pilot studies have been hindered by questions regarding potential use and potential client characteristics.^{26–29} Prospective follow-up of Vancouver IDUs will now be valuable for examining if SIF use is associated with reduced blood-borne disease incidence and other health-related harms.

This study has several limitations. First, significant collinearity between independent variables (public

drug use and homelessness, heroin injection and overdose, cocaine injection and age, with all chi-square $p < 0.05$) precluded a simple presentation of multivariate analyses. Nevertheless, it remains clearly evident that the SIF has attracted extremely high-risk IDUs, and it is arguable that qualitative analyses should now be employed to determine why IDUs have chosen to use or not use the facility. Second, while socially undesirable behaviors, such as syringe sharing, were likely under-reported in our study,³⁰ behavioral information was collected before the present study was designed and before the SIF opened, and the participants and interviewers were essentially blinded to this subsequent use of the data. In addition, our primary analysis considered any use of the SIF as initiating use. As such, it is possible that individuals who already had a safe place to inject used the SIF only once or a few times out of curiosity. Although such misclassification would likely only serve to diminish differences between SIF users and nonusers, we found that differences persisted and that results were similar in sub-analyses that applied a more rigorous definition of SIF use. Nevertheless, given that the SIF can only accommodate 12 injectors at once, it is clearly not possible for the service to supervise all injections of individuals who wish to use the program, and prospective follow-up of SIF use will be necessary once data are available. Finally, in an effort to focus on active IDUs in the community, we excluded those IDUs who were not current injectors. This may have biased our analyses toward higher-risk individuals.

In summary, we found that IDUs who reported risk behaviors which placed them at elevated risk of blood-borne disease infection and overdose, and those IDUs who were engaging in activities associated with public drug use were the most likely to subsequently initiate SIF use after the program was opened. These data suggest that SIFs may be effective in attracting highest-risk IDUs and in providing a hygienic environment where medical care and referral to addiction treatment can be provided on site, and where emergency response is available in the event of overdose. Prospective follow-up of IDUs in this community will be necessary in order to examine long-term trends in SIF use in this community, and whether SIF use is associated with reduced blood-borne disease incidence, overdose, and other health-related harms.

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EW and TK designed the present study, KL performed all statistical analyses. EW wrote the first draft of the manuscript and compiled the co-authors' suggestions. All co-authors contributed to the conceptualization of the study and the various drafts of the manuscript, and approved the final version.

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