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Rate of detoxification service use and its impact among a cohort of supervised injecting facility users

Evan Wood[1,2], Mark W. Tyndall[1,2], Ruth Zhang[1], Julio S. G. Montaner[1,2] & Thomas Kerr[1,2]

British Columbia Centre for Excellence in HIV/AIDS, St. Paul's Hospital[1] and Department of Medicine, University of British Columbia, Canada[2]

ABSTRACT

Background Vancouver, Canada recently opened a medically supervised injecting facility (SIF) where injection drug users (IDU) can inject pre-obtained illicit drugs. Critics suggest that the facility does not help IDU to reduce their drug use. **Methods** We conducted retrospective and prospective database linkages with residential detoxification facilities and used generalized estimating equation (GEE) methods to examine the rate of detoxification service use among SIF participants in the year before versus the year after the SIF opened. In secondary analyses, we used Cox regression to examine if having been enrolled in detoxification was associated with enrolling in methadone or other forms of addiction treatment. We also evaluated the impact of detoxification use on the frequency of SIF use. **Results** Among 1031 IDU, there was a statistically significant increase in the uptake of detoxification services the year after the SIF opened. [odds ratio: 1.32 (95% CI, 1.11–1.58); $P = 0.002$]. In turn, detoxification was associated independently with elevated rates of methadone initiation [relative hazard = 1.56 (95% CI, 1.04–2.34); $P = 0.031$] and elevated initiation of other addiction treatment [relative hazard = 3.73 (95% CI, 2.57–5.39); $P < 0.001$]. Use of the SIF declined when the rate of SIF use in the month before enrolment into detoxification was compared to the rate of SIF use in the month after discharge (24 visits versus 19 visits; $P = 0.002$). **Conclusions** The SIF's opening was associated independently with a 30% increase in detoxification service use, and this behaviour was associated with increased rates of long-term addiction treatment initiation and reduced injecting at the SIF.

Keywords Addiction treatment, detoxification, injection drug use, methadone, supervised injecting facility.

Correspondence to: Evan Wood, BC Centre for Excellence in HIV/AIDS, 608–1081 Burrard Street, Vancouver BC V6Z 1Y6, Canada. E-mail: ewood@cfenet.ubc.ca
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INTRODUCTION

Addiction treatment is well recognized as a key strategy to reduce illicit injection drug use. However, injection drug users (IDU) are recognized as a 'hidden population' that may be extremely difficult to reach with conventional treatment strategies [1]. In an effort to address this concern, Vancouver, Canada has recently opened North America's first medically supervised safer injection facility (SIF), where injection drug users can inject pre-obtained illicit drugs under the supervision of medical staff [2]. An addiction counsellor works within the facility and seeks to bridge the gap between IDU and addictions services by actively referring high-risk IDU to available addictions services [3].

Although there have been several reported benefits of SIF [4,5] and SIF are currently being considered in a range of settings [6–10], the Vancouver facility has recently been threatened with closure by the Canadian federal government [11]. This decision followed declarations of several national law enforcement bodies who have stated that the facility has 'facilitated a state of perpetual use' rather than helping addicts reduce their drug use [12–14]. Opposition to the Vancouver SIF by international agencies has been based on similar concerns [15,16]. Furthermore, in the Federal Health Minister's recent decision not to grant a full extension for the Vancouver SIF's continuation, it was stated that it remains unknown if SIF 'contribute to lowering drug use and fighting addiction' [12].

Although a recent study demonstrated that more regular use of the Vancouver SIF and contact with the facility's addiction counsellor were associated independently with initiation of residential detoxification [17],

limitations of this earlier study were that it did not examine if rates of detoxification service use differed from rates prior to the facility's opening (i.e. a control period), and it also did not evaluate the impacts of detoxification service use. These limitations may explain the concerns raised above [12–14]. Therefore, the present study was conducted to examine the patterns of detoxification programme initiation among SIF users during periods before and after the SIF's opening and to determine the impact of residential detoxification on SIF users.

METHODS

The Vancouver SIF is being evaluated through the Scientific Evaluation of Supervised Injecting (SEOSI) cohort, which has been described in detail previously [18]. In brief, SIF users were recruited randomly to enrol in the cohort and were interviewed at baseline and at semi-annual follow-up visits. SEOSI participants recruited between 1 December 2003 and 1 March 2005 were considered in the present study.

In the primary analysis, we used retrospective and prospective database linkages with the city's three residential detoxification facilities to examine the rate of detoxification service use among SEOSI participants in the year before versus the year after the SIF opened. The detoxification facilities have been described in detail recently [19] and offer medically monitored residential withdrawal care with on-site nursing and medical care. Here we used an a priori defined statistical protocol whereby the 2-year period was stratified into 24 1-month intervals, and generalized estimating equation (GEE) for binary outcomes with logit link were used to examine if there were differences in the monthly rate of detoxification programme initiation between the year before versus the year after the SIF opened. These methods provided standard errors adjusted by multiple observations per person using an exchangeable correlation structure [20,21].

Detoxification service use was selected as the primary end-point, as it is the entry point into the addiction treatment continuum in our setting [19]. Nevertheless, in secondary analyses we examined if having been enrolled in detoxification between follow-up visits was associated with the time to (1) enrolling into methadone and (2) enrolling into another form of addiction treatment (defined as a recovery house, treatment centre, an addictions counsellor or participating in Narcotics Anonymous). Here we used separate Cox proportional hazards regression analyses to evaluate the time to methadone use and the time to other addiction treatment, and in each case enrolment in detoxification prior to each follow-up visit was evaluated as an independent variable. Lastly, as a marker for reduced injecting, we evaluated if detoxification service use was associated with less subsequent use of the SIF. As previously [17], SIF use was determined based on a linkage with the facility's intake database, and we evaluated this outcome by comparing the month prior to detoxification initiation in comparison to the month after discharge from detoxification. All multivariate analyses described above were fitted using an a priori-defined statistical protocol of adjusting for age, years injecting and gender. For the comparison of the rates of detoxification use in the year before versus after the SIF opened, we also adjusted for whether the participant had been injecting during the entire pre-SIF year. Analyses were conducted using SAS version 9.1 (SAS, Cary, NC, USA).

RESULTS

During the study period, 1031 individuals were recruited into the SEOSI cohort, among whom the median age was 39 (IQR 33–45), 296 were female and 277 were non-white. During the year prior to the SIF's opening, the mean monthly number of individuals entering a detoxification programme was 21.6 in comparison to 31.3 during the year after the SIF's opening ($P < 0.001$).

In the GEE analysis shown in Table 1, in univariate analyses, the year after the SIF opened was associated with increased use of detoxification services [odds ratio: 1.32 (95% CI, 1.11–1.57); $P = 0.002$]. In multivariate analyses, after adjustment for age ($P = 0.985$), gender ($P = 0.139$), years injecting ($P = 0.035$) and if participants reported injection drug use in the year prior to the SIF's opening ($P = 0.747$), the year after the SIF opened was associated independently with elevated uptake of detoxification services [odds ratio: 1.32 (95% CI, 1.11–1.58); $P = 0.002$].

By 30 June 2005, 808 individuals had returned for follow-up, and it was possible to evaluate the impact of detoxification use between baseline and follow-up on subsequent initiation of other forms of addiction treatment. Among the 614 (76.0%) of these individuals who were not on methadone at baseline, after adjustment for age ($P = 0.904$), gender ($P = 0.790$) and years injecting ($P = 0.999$), detoxification programme use between baseline and follow-up was associated independently with elevated rates of methadone use [relative hazard = 1.56 (95% CI, 1.04–2.34); $P = 0.031$]. Similarly, among the 553 (68.4%) individuals who were not in any form of addiction treatment at baseline, after adjustment for age ($P = 0.507$), gender ($P = 0.05$) and years injecting ($P = 0.223$), detoxification programme use between baseline and follow-up was associated independently with elevated rates of other addiction treatment use as defined above [relative hazard = 3.73 (95% CI, 2.57–5.39); $P < 0.001$].

Table 1 Univariate and multivariate GEE analysis of factors associated with initiating detoxification during a 24-month period spanning the year before and after the SIF opened.

	Unadjusted relative hazard (RH)			*Adjusted relative hazard (RH)*		
Variable	*OR*	*(95% CI)*	*P-value*	*OR*	*(95% CI)*	*P-value*
Year of interest (post versus pre-SIF)	1.32	(1.11–1.57)	0.002	1.32	(1.11–1.58)	0.002
Age (per year older)	0.99	(0.98–1.00)	0.076	0.99	(0.98–1.02)	0.985
Gender (male versus female)	1.20	(0.85–1.68)	0.298	1.31	(0.92–1.89)	0.139
Years injecting (per year longer)	0.98	(0.97–0.99)	0.010	0.98	(0.96–0.99)	0.035
Injecting previously* (yes versus no)	0.68	(0.39–1.19)	0.178	0.91	(0.50–1.65)	0.747

*Injecting previously refers to whether participants were injecting during the full year prior to the SIF's opening. GEE = generalized estimating equation; SIF = supervised injecting facility. Detoxification service use was identified based on a database linkage with one of the city's three residential detoxification facilities.

Finally, when we linked to the SIF database and compared the average monthly rate of SIF use in the 1-month period before enrolment into detoxification to the rate of SIF use in the month after discharge from detoxification, we found that the use of the SIF decreased significantly upon discharge from detoxification (24 visits versus 19 visits per month; $P = 0.002$).

DISCUSSION

The present study demonstrates that the opening of the Vancouver SIF was associated with a greater than 30% increase in the rate of detoxification service use among SIF users in comparison to the year prior to the SIF's opening. Subsequent analyses demonstrated that detoxification service use was associated with increased use of methadone and other forms of addiction treatment, as well as reduced injecting at the SIF. These findings build upon our earlier study [17], by demonstrating that the post-SIF period was associated with elevated rates of detoxification service enrolment and by demonstrating the impact of detoxification on subsequent enrolment in long-term addiction treatment and reduced injection drug use.

In light of our previous findings [17], the fact that the SIF's opening was associated with an approximately 30% increase in detoxification service use referrals among SIF users implies strongly that these programmes act as a referral mechanism to addiction treatment. The proposed mechanism for this marked increase in residential detoxification is that SIF facilitate sustained contact between the health-care system and a population which is normally highly marginalized and difficult to reach with conventional addiction treatment services. Needle exchange programmes have been shown to similarly extend the reach of the addiction treatment system [22,23], although it has been argued that the sustained contact afforded by SIF may improve health service uptake [15].

In the present study, detoxification service use was associated independently with initiation of methadone and other forms of addiction treatment. With respect to these outcomes, it is important to stress that both methadone and the other forms of addiction treatment considered have been associated independently with reduced injection drug use [24–27]. It is also noteworthy that enrolment into detoxification was associated with significantly less SIF use. The above findings should be useful to those who have recently raised concerns about the SIF [12–14].

Although comparing the same cohort in two close periods in time has a number of advantages, our observational study design was limited by the fact that differences in detoxification programme use between the pre- and post-SIF years could have been attributable to unmeasured factors independent of the SIF. However, we have shown recently that regular use of the SIF and contact with the SIF's addiction counsellor were among the strongest independent predictors of detoxification programme initiation after the SIF opened [17]. The present study builds upon this earlier work, and the available evidence suggests strongly that the SIF has resulted in increased rates of detoxification service in comparison to the rate observed previously among this population.

In summary, the present study demonstrates that the SIF was associated with increased use of detoxification service use and that residential detoxification was associated with increased rates of methadone use and other forms of addiction treatment. Given the known role of methadone and other forms of addiction treatment in reducing levels of injection drug use [24–27], and given that detoxification programme use was associated with reduced injecting at the SIF, our findings imply that the SIF has probably helped to reduce rates of injection drug use among users of the facility. This report should be useful, given recently raised questions about the Vancouver SIF [11–14,28], for international agencies concerned

about the impacts of SIF, [13,16,29,30] and for the large number of national and international settings where the merits of SIF are currently being debated as a strategy to address the injection drug use problem [6–10].

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