

## Short report

## An external evaluation of a peer-run outreach-based syringe exchange in Vancouver, Canada

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## ABSTRACT

**Objective:** Vancouver, Canada has been the site of an epidemic of human immunodeficiency virus (HIV) amongst injection drug users (IDU). In response, the Vancouver Area Network of Drug Users (VANDU) initiated a peer-run outreach-based syringe exchange programme (SEP) called the Alley Patrol. We conducted an external evaluation of this programme, using data obtained from the Vancouver Injection Drug Users Study (VIDUS).

**Methods:** Using generalised estimating equations (GEE) we examined the prevalence and correlates of use of the SEP amongst VIDUS participants followed from 1 December 2000 to 30 November 2003.

**Results:** Of 854 IDU, 233 (27.3%) participants reported use of the SEP during the study period. In multivariate GEE analyses, service use was positively associated with living in unstable housing (adjusted odds ratio [AOR] = 1.83, 95% confidence interval [CI]: 1.39–2.40), daily heroin injection (AOR = 1.31, 95% CI: 1.01–1.70), daily cocaine injection (AOR = 1.34, 95% CI: 1.03–1.73), injecting in public (AOR = 3.07, 95% CI: 2.32–4.06), and negatively associated with needle reuse (AOR = 0.65, 95% CI: 0.46–0.92).

**Conclusion:** The VANDU Alley Patrol SEP succeeded in reaching a group of IDU at heightened risk for adverse health outcomes. Importantly, access to this service was associated with lower levels of needle reuse. This form of peer-based SEP may extend the reach of HIV prevention programmes by contacting IDU traditionally underserved by conventional syringe exchange programmes.

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## Introduction

Human immunodeficiency virus (HIV) epidemics amongst people who inject drugs (IDU) remain a challenge globally (Mathers et al., 2008; UNAIDS, 2008). Although various evidence-based HIV prevention programmes for this population exist (Farrell, Gowing, Marsden, Ling, & Ali, 2005; Needle et al., 2005; Wodak & Cooney, 2006), only 8% of IDU worldwide have access to HIV prevention initiatives (The Global HIV Prevention Working Group, 2007).

Whilst a growing body of research demonstrates the effectiveness of HIV prevention service provision through peer-based outreach (Broadhead, Heckathorn, Grund, Stern, & Anthony, 1995; Broadhead et al., 1998; Grund et al., 1992; Latkin, 1998; Needle et al., 2005), the impact and reach of “drug user-initiated” HIV prevention programmes are seldom evaluated, primarily because such

grass-root activities rarely incorporate rigorous evaluation activities (Friedman et al., 2007). Fortunately, in Vancouver, Canada, the existence of a prospective cohort study of IDU enabled us to conduct an external evaluation of a peer-run outreach-based syringe exchange programme (SEP) initiated by the Vancouver Area Network of Drug Users (VANDU), a local drug user organisation.

### VANDU Alley Patrol syringe exchange programme

In the 1990s, Vancouver had an epidemic of HIV amongst IDU despite the presence of one of the largest SEPs in North America (Strathdee, Patrick, Currie, et al., 1997). In autumn 2000, VANDU established the Alley Patrol, a novel peer-based outreach programme, designed to address gaps in conventional public health services by providing education on subjects such as HIV prevention as well as the means to prevent harm amongst those who used drugs in public spaces (Kerr et al., 2006). Approximately 20 trained volunteers paired up and distributed sterile injection equipment and condoms, collected used syringes, and provided harm reduction education to IDU in public places in Vancouver's Downtown Eastside, where public drug use was concentrated. Each pair

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worked 4-h shifts and received a small volunteer stipend (\$20 CAD). Depending on funding, their patrol shifts ranged from 2 to 5 days a week during days or nights. The volunteers experienced many challenges whilst providing this support, such as finding IDU displaced during police crackdowns (Csete & Cohen, 2003; Eby, 2006). The programme ended in 2005, but several members later created the Injection Support Team. This provides support to IDU experiencing difficulty with injecting in the open drug scene.

## Methods

Data for this study were obtained from the Vancouver Injection Drug Users Study (VIDUS), an ongoing prospective cohort study of IDU recruited through self-referrals and street outreach since May 1996 (Tyndall et al., 2003; Wood et al., 2001). Eligibility criteria for participation include injecting drugs a minimum of once in the previous month, residing in the greater Vancouver region and providing written informed consent. Participants complete an interviewer-administered questionnaire and provide a blood sample at semi-annual follow-up visits so that drug use, HIV risk behaviour, and HIV incidence can be tracked longitudinally. The study has been approved by St. Paul's Hospital and the University of British Columbia's Research Ethics Board. As the VANDU established the Alley Patrol programme, the VIDUS questionnaire was modified to examine whether study participants were obtaining syringes from Alley Patrol volunteers.

The present analyses included data from participants who completed follow-up visits between 1 December 2000 and 30 November 2003 and who reported having injected drugs during 6 months prior to their visits. The study period ending in November 2003 was chosen because after autumn of 2003, SEPs in Vancouver were radically changed by the opening of the supervised injection facility (Kerr, Tyndall, Li, Montaner, & Wood, 2005). The primary outcome of interest was the use of the VANDU Alley Patrol SEP during 6 months prior to the interviews. Explanatory variables were selected with the aim of evaluating the vulnerability of Alley Patrol SEP users to HIV infection and other forms of drug-related harm, and to evaluate potential impacts of the Alley Patrol SEP. These included age (continuous), gender, Aboriginal ancestry and

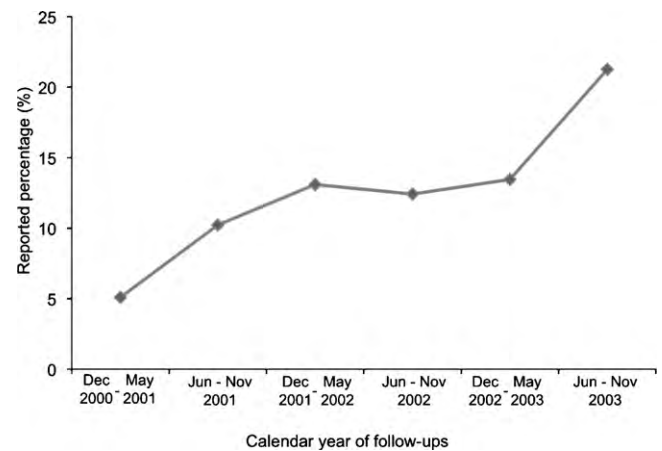


Fig. 1. Rates of self-reported use of the VANDU Alley Patrol SEP amongst active injection drug users in Vancouver, Canada (December 2000–November 2003).

HIV sero-status, as well as other relevant behaviours and activities during the previous 6 months: unstable housing; sex work; daily heroin and cocaine injection; injecting in public; injecting with others; requiring help injecting; having difficulty accessing sterile syringes; borrowing syringes; average needle reuse (>once vs. once); syringe disposal (unsafe vs. safe); and non-fatal overdose. All variables were coded dichotomously as yes or no, unless otherwise stated. Variable definitions were identical to earlier reports (DeBeck et al., 2009; Wood, Kerr, Spittal, et al., 2003).

First, we examined the rates of the VANDU Alley Patrol SEP use throughout the study period. The rate was derived as the proportion of individuals who accessed the SEP during a 6-month period over all individuals followed during that period. Next, we examined univariate associations between the explanatory variables and the use of the Alley Patrol SEP. Since the variables used for the analyses included serial measures for each subject, we used generalised estimating equations (GEE) (Lee, Herzog, Meade, Webb, & Brandon, 2007). We then applied an *a priori*-defined statistical protocol that examined factors associated with the use of the SEP. This was done by fitting a GEE multivariate logistic regression model that included

Table 1

Univariate and multivariate GEE analyses of factors associated with accessing the VANDU Alley Patrol syringe exchange amongst a cohort of active injection drug users in Vancouver, Canada (study period December 2000–November 2003;  $n = 854$ ).

Characteristic	Unadjusted		Adjusted	
	Odds ratio (95% CI)	p-Value	Odds ratio (95% CI)	p-Value
Older age (per year older)	0.97 (0.95–0.98)	<0.001	1.00 (0.98–1.01)	0.681
Gender (male vs. female)	0.79 (0.59–1.04)	0.095		
Aboriginal ancestry (yes vs. no)	1.40 (1.05–1.86)	0.022	1.24 (0.95–1.63)	0.113
HIV positivity (yes vs. no)	1.23 (0.92–1.64)	0.155		
Unstable housing <sup>a,b</sup> (yes vs. no)	2.04 (1.56–2.66)	<0.001	1.83 (1.39–2.40)	<0.001
Sex work <sup>a</sup> (yes vs. no)	1.71 (1.24–2.34)	<0.001	1.26 (0.91–1.74)	0.162
Heroin injection frequency <sup>a</sup> ( $\geq 1$ per day vs. <1 per day)	1.94 (1.51–2.49)	<0.001	1.31 (1.01–1.70)	0.039
Cocaine injection frequency <sup>a</sup> ( $\geq 1$ per day vs. <1 per day)	1.69 (1.31–2.18)	<0.001	1.34 (1.03–1.73)	0.029
Injected in public <sup>a,c</sup> (yes vs. no)	3.47 (2.66–4.53)	<0.001	3.07 (2.32–4.06)	<0.001
Injected with others <sup>a,d</sup> (yes vs. no)	1.28 (0.96–1.70)	0.089		
Required help injecting <sup>a</sup> (yes vs. no)	1.50 (1.17–1.93)	0.001	1.30 (1.00–1.68)	0.050
Difficulty accessing syringes <sup>a</sup> (yes vs. no)	1.27 (0.96–1.66)	0.092		
Borrowed syringe <sup>a</sup> (yes vs. no)	1.04 (0.73–1.47)	0.836		
Average needle reuse <sup>a</sup> (>1 vs. 1)	0.67 (0.48–0.94)	0.020	0.65 (0.46–0.92)	0.016
Syringe disposal <sup>a</sup> (unsafe vs. safe) <sup>e</sup>	0.71 (0.51–0.97)	0.034	0.75 (0.54–1.04)	0.080
Non-fatal overdose <sup>a</sup> (yes vs. no)	1.37 (0.88–2.14)	0.163		

GEE, generalised estimating equations; VANDU, Vancouver Area Network of Drug Users; CI, confidence interval.

<sup>a</sup> Activities/events in the previous 6 months.

<sup>b</sup> Living in a single room occupancy hotel, transitional living arrangements, or homelessness.

<sup>c</sup> Injecting drugs in bars, restaurants, parks, streets, public washrooms, parking lots, abandoned buildings, or other public settings.

<sup>d</sup> Injecting drugs with somebody at least once in the previous 6 months.

<sup>e</sup> Unsafe disposal refers to “threw it in the garbage or on the ground,” “gave it to another user,” or “flushed it down the toilet.” Safe disposal refers to “put it in: sharps containers, a safe place, syringe exchange, clinics or the Contact Centre.”

all variables that were significantly associated with the use of the SEP at the  $p < 0.05$  level in univariate analyses. All  $p$ -values were two-sided.

## Results

In total, 854 IDU were eligible for this analysis, including 350 (41.0%) females and 292 (34.2%) individuals of Aboriginal ancestry. The median age at baseline was 37.4 years (interquartile range (IQR): 29.2–44.2 years). In total, 233 (27.3%) participants reported obtaining syringes from VANDU Alley Patrol volunteers at some point during the study period. As shown in Fig. 1, the proportions of IDU who accessed the Alley Patrol SEP steadily increased during the study period.

Table 1 presents the results of the univariate and multivariate GEE analyses of factors associated with the self-reported use of the SEP. In the multivariate GEE analyses, service use was associated with unstable housing (adjusted odds ratio [AOR]=1.83, 95% CI: 1.39–2.40), frequent heroin injection (AOR=1.31, 95% CI: 1.01–1.70), frequent cocaine injection (AOR=1.34, 95% CI: 1.03–1.73), injecting in public (AOR=3.07, 95% CI: 2.32–4.06), and needle reuse (AOR=0.65, 95% CI: 0.46–0.92).

## Discussion

Consistent with previous studies of peer-based outreach HIV prevention programmes for IDU (Broadhead et al., 1998; Grund et al., 1992; Needle et al., 2005), our findings indicate that the VANDU Alley Patrol SEP succeeded in reaching a sub-population of local IDU at a high risk of HIV infection. Specifically, frequent cocaine injection has been shown to be strongly associated with HIV sero-conversion amongst IDU in Vancouver (Tyndall et al., 2003). Previous studies have also demonstrated that unstable housing (Corneil et al., 2006) and public injecting (DeBeck et al., 2009) are associated with elevated HIV risk in this setting. Of note is that the Alley Patrol SEP continued to serve this highly vulnerable population during periodic police crackdowns in Vancouver's Downtown Eastside (Eby, 2006). These crackdowns have been shown to have significantly decreased access to other local fixed-site SEPs (Csete & Cohen, 2003; Small, Kerr, Charette, Schechter, & Spittal, 2006; Wood, Kerr, Small, et al., 2003; Wood et al., 2004). The findings indicate further value of the Alley Patrol SEP in providing the equipment and support needed to reduce risks associated with unsafe injection practices.

Importantly, needle reuse was independently and negatively associated with the use of the VANDU Alley Patrol SEP, despite the fact that the IDU served by the SEP possessed several characteristics, such as unstable housing and frequent cocaine injection, that can increase the likelihood of needle reuse (Corneil et al., 2006; Strathdee, Patrick, Archibald, et al., 1997; Wood et al., 2002, 2001). The Alley Patrol SEP, therefore, may have succeeded in reducing needle reuse amongst local IDU.

Our study has several limitations. We cannot infer causation from this observational study. Since VIDUS is not a random sample, our study findings may not be generalisable to other populations of IDU in Vancouver or other settings. The self-reported data may be affected by socially desirable reporting. However, since the participants and interviewers were blinded to the eventual use of the data, we believe it unlikely that socially desirable responding affected our findings. Lastly, it is unknown whether Alley Patrol SEP users would have simply used other SEPs in the local area if the Alley Patrol did not exist.

In sum, we found that the VANDU Alley Patrol SEP succeeded in reaching IDU at heightened risk for adverse health outcomes. Importantly, access to this service was associated with lower levels

of needle reuse. These findings point to the important role that drug user-led initiatives can play in extending the reach of conventional public health programmes.

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## Conflict of interests

None.

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