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Short communication

Willingness to use drug checking within future supervised injection services among people who inject drugs in a mid-sized Canadian city

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ABSTRACT

Background: Esclating epidemics of fatal overdose are affecting communities across Canada. In many instances, the unanticipated presence of powerful opioids, such as fentanyl, in street drugs is a contributing factor. Drug checking offered within supervised injection services (SIS) is being considered as a potential measure for reducing overdose and related harms. We therefore sought to characterize the willingness of people who inject drugs (PWID) to use drug checking within SIS.

Methods: Data were derived from a cross-sectional survey examining the feasibility of SIS in London, Canada, a mid-sized city. Multivariable logistic regression was used to examine factors associated with willingness to frequently (always or usually) use drug checking at SIS.

Results: Between March and April 2016, 180 PWID were included in the present study, including 68 (38%) women. In total, 78 (43%) reported that they would frequently check their drugs at SIS if this service were available. In multivariable analyses, female gender (Adjusted Odds Ratio [AOR] = 2.31; 95% confidence interval [CI]: (1.20–4.46), homelessness (AOR = 2.36; 95% CI: 1.14–4.86), and drug dealing (AOR = 2.16; 95% CI: 1.07–4.33) were positively associated with willingness to frequently check drugs at SIS.

Conclusion: These findings highlight the potential of drug checking as a complement to other services offered within SIS, particularly given that subpopulations of PWID at heightened risk of overdose were more likely to report willingness to frequently use this service. However, further research is needed to determine the possible health impacts of offering drug checking at SIS.

1. Introduction

Escalating epidemics of fatal overdose are affecting communities across North America. In many instances, these deaths involve the inadvertent use of powerful opioids, including illicitly-manufactured fentanyl and related analogues, that have been added to street drugs such as heroin (Canadian Centre on Substance Abuse, 2015). Although Canada's Western provinces are presently experiencing the highest rates of opioid-related mortality in the country, overdose epidemics are also a growing concern in Central and Eastern Canada (Health Canada, 2017a). For example, between 2011 and 2016, the annual rate of opioid-related deaths increased from 4.2 to 6.2 per 100,000 population in Ontario, Canada's most populous province, where these deaths now far exceed those related to motor vehicle accidents (Public Health Ontario, 2017a; Road Safety Research Office, 2015).

In response to this ongoing public health challenge, health officials are increasingly undertaking efforts to implement supervised injection services (SIS), where individuals can inject pre-obtained illicit drugs in

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a hygienic environment under the supervision of healthcare professionals or trained staff (Kerr et al., 2017a). A total of 17 SIS are presently operating in nine Canadian cities, including Vancouver, Montreal, and Toronto, while ten additional SIS have received federal approval and are expected to begin operating in the coming months (Health Canada, 2017b). Although SIS have been shown to contribute to reductions in overdose-related morbidity and mortality (Kennedy et al., 2017; Marshall et al., 2011), the provision of drug checking at SIS is being considered as another measure that could potentially reduce overdose-related harms. Depending on the technology employed, such a service would allow individuals to submit samples of illicit drugs for analytical testing to determine contents, including the presence and possibly the quantity of potentially-harmful adulterants such as fentanyl (Harper et al., 2017). This could hypothetically contribute to reductions in overdose if users of this service were to modify their drug-related behaviours in response to positive adulterant results, as has been found in some studies of drug checking services in party settings (e.g., festivals, nightclubs) (Barratt et al., 2018; BC Overdose Action Exchange, 2016; Martins et al., 2017; Public Health Ontario, 2017b). Further, information collected from this service could facilitate monitoring of illicit drug markets, including for adulterants and novel psychoactive substances, to inform intervention implementation (BC Overdose Action Exchange, 2016; Brunt et al., 2017; Public Health Ontario, 2017b).

Given that SIS allow for activities involving controlled substances under exemptions from federal drug laws and also provide access to various services, including overdose emergency response and prevention education, these facilities could be both feasible and appropriate settings in which to provide drug checking (Public Health Ontario, 2017b). As such, a pilot drug-checking programme for detecting fentanyl using dipstick technology was recently implemented at Insite, Canada's first and largest SIS, in Vancouver. Preliminary evidence from the evaluation of this programme suggests that, compared to those receiving negative results, clients receiving positive results for fentanyl are more likely to reduce doses, but not to dispose of their drugs (Lysyshn et al., 2017). This programme is currently being expanded to other SIS in Canada, and more technologically-advanced drug checking methods using infrared spectrometry are being piloted and evaluated in these settings (CBC News, 2017a). However, previous studies specific to drug checking have primarily examined this form of service in party settings (Public Health Ontario, 2017b), and the willingness of people who inject drugs (PWID) to use drug checking within SIS has not yet been well characterized. We therefore undertook the present study to characterize willingness to frequently use drug checking at SIS among PWID in London, Ontario, a medium-sized city located mid-way between Toronto and Detroit that has a higher drug-related mortality rate than the provincial average (Middlesex-London Health Unit, 2014). As plans are presently underway to establish SIS in London (CBC News, 2017b; Kerr et al., 2017b), this study may provide important information regarding the potential acceptability of drug checking at SIS to inform the development of future SIS programming in this setting.

2. Methods

Data were derived from the Ontario Integrated Supervised Injection Services Feasibility Study, a cross-sectional study of PWID in London and Thunder Bay, Ontario, Canada. The present study relied exclusively on data from London. The methods for this study have been detailed previously (Kerr et al., 2017b; Scheim et al., 2017). Briefly, between March and April 2016, PWID were recruited through peer outreach and word of mouth. Eligibility criteria included being age eighteen or older and having injected illicit drugs in the previous six months. Peer research associates (i.e., individuals with research training and lived experience of illicit drug use) administered a questionnaire programmed on electronic tablets that elicited information on socio-demographics, behavioural patterns, and willingness and operational preferences for using SIS. A total of approximately 200 questions were included in the questionnaire. Three of these questions focused specifically on drug checking, all of which were assessed in the present study. Participants gave written informed consent and were provided with an honourarium ($25 CAD). The study was approved by the University of Toronto and University of British Columbia Research Ethics Boards.

The primary outcome for this analysis was response to the question, "If it was possible to check your drug before injecting at a SIS, how often do you think you would test your drug?" (always or usually *vs.* sometimes, occasionally or never). We *a priori* selected social, demographic, and behavioural explanatory variables that were considered on the basis of previous studies examining the use of harm reduction services among PWID (Archibald et al., 1998; Bennett et al., 2011; Wood et al., 2006). Variables assessed included: age (per year older), gender (women *vs.* men), ethnicity (White *vs.* non-White), education (≥high school diploma *vs.* < high school diploma), and frequency of injection (≥daily *vs.* < daily). Other variables considered included: homeless, employed, heroin injection, cocaine injection, methamphetamine injection, prescription opioid injection, tranquilizer or benzodiazepine injection, ever overdosed, public injection, inject alone, require help injecting, drug dealing, and obtained adulterated drugs (all yes *vs.* no). Obtained adulterated drugs was defined as response to the question: "In the last six months, have you gotten a drug that you think was cut with another substance?" All variables refer to the six months preceding the interview date unless otherwise indicated.

Bivariable statistics were used to determine factors associated with willingness to frequently use drug checking at SIS. We then applied an *a priori*-defined statistical protocol to construct an explanatory multivariable logistic regression model. First, we fit a full model that included all variables significant at the level of $p \leq 0.20$ in bivariable analyses. This set of variables was then subjected to a backward selection procedure in which each variable with the highest Type-III *p*-value was removed sequentially, with the final model including the set of variables associated with the lowest Akaike information criterion (AIC) (Lima et al., 2008).

As a sub-analysis, we used descriptive statistics to analyze responses to the question, "How important is drug testing (a service to check if your drugs may have been cut with another potentially-dangerous substance) as a service to provide with SIS?" (very important or important *vs.* moderately, slightly or not that important). We also descriptively analyzed responses to the question, "How long would you wait to get the results of the drug test?" (≤5 min or > 5 to ≤10 min *vs.* > 10 to ≤15 min or > 15 min) among those reporting willingness to frequently check drugs at SIS. We conducted all analyses with SAS version 9.4 (SAS Institute Inc., Cary, NC). All *p*-values were two-sided.

3. Results

Of 180 PWID included in the present study, 68 (38%) were women, 130 (72%) were White, and the median age was 39 (interquartile range = 33–50). In total, 78 participants (43%) reported that they would always or usually check their drugs at SIS if this service were available. The results of bivariable analyses are shown in Table 1.

As shown in Table 2, in the final multivariable model that included gender, homelessness, education, heroin injection and drug dealing as covariates, factors that remained independently and positively associated with willingness to frequently check drugs at SIS included: female gender (adjusted odds ratio [AOR] = 2.31; 95% CI: 1.20–4.46, $p = 0.013$) homelessness (AOR = 2.36; 95% CI: 1.14–4.86, $p = 0.021$) and drug dealing (AOR = 2.16; 95% CI: 1.07–4.33, $p = 0.031$).

In sub-analyses, 133 participants (74%) reported that drug checking was an important or very important service to provide at SIS. Of 78 participants reporting willingness to frequently check drugs at SIS, 53 (68%) reported that they would be prepared to wait a maximum of ten minutes for test results.