



Original article

Cessation of Injecting and Preceding Drug Use Patterns Among a Prospective Cohort of Street-Involved Youth

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A B S T R A C T

Purpose: Injection drug use is prevalent among street-involved youth, but patterns of cessation are poorly described. We identified drug use patterns preceding injection cessation among street-involved youth.

Methods: From September 2005 to May 2015, we collected data from the At-Risk Youth Study, a prospective cohort of street-involved youth in Vancouver, Canada, and limited the sample to actively injecting youth. The primary outcome was cessation of injecting self-reported at semi-annual follow-up visits. We used Cox regression to identify drug use patterns preceding cessation.

Results: Among 383 youth, 65% were male, mean age was 22.3 (standard deviation, 2.5; range, 15–30) years, and 171 (45%) ceased injecting for 6 months or more (crude incidence density 22 per 100 person-years; 95% confidence interval [CI], 19–26). Youth who ceased were less likely to have injected daily (adjusted hazard ratio [AHR], .40; 95% CI, .28–.56), injected heroin (AHR, .40; 95% CI, .29–.56), or injected crystal methamphetamine (AHR, .43; 95% CI, .31–.59) before cessation. Noninjection heroin use was positively associated with injection cessation (AHR, 1.52; 95% CI, 1.12–2.08). Addiction treatment was not associated with cessation. At the time of cessation, 101 (59%) youth continued to use “hard” noninjection drugs such as heroin and crystal methamphetamine.

Conclusions: Periods of injection cessation were common but frequently accompanied by ongoing noninjection drug use. Findings indicate that trajectories of injection drug use among youth are complex and highlight the need to further explore relationships between ongoing noninjection drug use and injection cessation.

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IMPLICATIONS AND
CONTRIBUTION

Patterns of injection drug use cessation remain poorly described. Among a prospective cohort of street-involved youth, nearly half ceased injecting for ≥ 6 months during the 10-year study period. Youth injecting heroin or crystal methamphetamine were less likely to cease injecting, and cessation was frequently accompanied by ongoing noninjection drug use.

Conflicts of Interest: The authors have no conflicts of interest to disclose.

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Street youth—that is, young people who live or work on the street—are a marginalized population with excess morbidity and mortality relative to the general population of adolescents and young adults [1,2]. Injection drug use is prevalent among street youth [1,3] and is associated with risk for death, as well as nonfatal overdose and infection with HIV and hepatitis C virus

[2,4–7]. Although data suggest that once they initiate injecting youth are at risk of rapidly transitioning to regular use, less is known about transitions out of injection [8]. Some youth who inject may cease injection, either by exclusively using noninjection drugs or by abstaining from drug use altogether [9]. Patterns of drug use preceding and accompanying injection cessation among youth remain poorly described, thus hampering clinicians, researchers, and policymakers from directing interventions to support cessation.

The majority of studies to date examining injection cessation have focused on older populations of people who inject drugs [10–13]. In these studies, those who were least likely to cease injection were those who were younger at age of first drug use [10–13], injected daily [10], or injected heroin or cocaine [10,12]. Since intervening early in the trajectory of injection drug use may help avert lifelong harms associated with addiction, it is critical to identify drug use patterns that may precede or accompany (and thus facilitate or impede) cessation among young people. Furthermore, conducting studies of youth in the community may help better elucidate the natural history of injection drug use, as compared with studies in treatment settings where individuals may offer socially desirable reporting in the presence of clinicians actively managing their addiction care [14]. Recent data from street youth recruited from community settings are needed, particularly in light of the emerging understanding of risk associated with crystal methamphetamine injection amidst an ongoing heroin and prescription opioid crisis [15–18].

Drawing on a prospective cohort study of street-involved youth in a Canadian setting with high prevalence of injection drug use, we undertook the present study to characterize the prevalence of injection cessation and identify the patterns of drug use that precede cessation events. We also sought to determine whether abstinence from all substances was common after cessation, or whether ongoing noninjection drug use was more frequently observed.

Methods

Participants

The At-Risk Youth Study (ARYS) is a prospective cohort study of street youth based in Vancouver, Canada. The study has been described previously [3]. In brief, from September 2005 to May 2015, youth of age 14–26 years who had used any illicit drug (other than or in addition to marijuana) in the preceding 30 days were eligible for study enrollment. Recruited youth were street involved, defined as having been absolutely or temporarily without stable housing or having accessed street-based services in the preceding 6 months [1,6]. Street-based outreach was used to enhance study recruitment in Vancouver neighborhoods where street youth are known to congregate, and snowball sampling was used to maximize enrollment.

After providing informed consent, participants completed an interviewer-administered questionnaire regarding sociodemographic details and both noninjection and injection drug use patterns. Participants then returned at 6-month intervals thereafter for follow-up visits to reassess their drug use behaviors. Participants were provided \$30 CAN at baseline and for each completed follow-up visit as remuneration for their time. ARYS was approved by the University of British Columbia and Providence Health Care Research Ethics Board.

The present analysis was restricted to participants who reported active injection (i.e., those who reported any drug injection during the preceding 6 months, either at their baseline visit or at any follow-up visit) and who returned for at least one subsequent follow-up visit after they first reported injecting to assess for cessation. Depending on the visit at which they first reported injecting, youth could be older than the maximum enrollment age of 26 years at the time they entered into the analytic sample.

Outcomes and exposures

The primary outcome of interest was self-reported cessation of injection drug use during the preceding 6 months reported at any follow-up visit. Specifically, participants were asked, “In the last 6 months, have you used a needle to chip, fix, or muscle even once (yes/no)?”

We then examined drug use patterns potentially associated with the time to cessation of injection drug use. To determine self-reported drug use patterns that preceded injection cessation, measures were taken from the study follow-up visit that preceded the visit at which a participant reported cessation of injection and examined the reported drug use patterns at that preceding visit. Covariates included separate questions regarding injection and noninjection drug use patterns (all coded “any/none”) with regard to: daily drug use, heroin use, prescription opioid use (including dilaudid, morphine, codeine, street methadone, oxycodone, and pentazocine), crystal methamphetamine use, cocaine use, and crack use. Covariates also included polysubstance injection (injection of any two or more of (1) heroin/prescription opioids, (2) crystal methamphetamine, or (3) cocaine/crack), and engagement in addiction treatment (including methadone maintenance, outpatient treatment, residential treatment, Narcotics’ Anonymous, or detoxification).

We also examined age of first drug use as a potential covariate (as a continuous variable), as well as sociodemographic factors including age (as a continuous variable), self-identified gender, indigenous ancestry (“First Nations,” “Aboriginal,” “Inuit,” “Métis” or any other identification with a recognized indigenous group), prior completion of or current enrollment in high school, homelessness in the preceding 6 months, incarceration in the preceding 6 months, any hospitalization in the preceding 6 months, and self-reported lifetime history of mental illness. Variables were selected a priori based on the prior literature [9–12].

Analyses

We compared sociodemographic characteristics and drug use behaviors between those who did and did not cease injection drug use at any time during follow-up using Pearson χ^2 test and Fisher’s exact test (for cell counts under five) for categorical variables and the Wilcoxon test for continuous variables. Then, using the Kaplan-Meier method, we compared the cumulative incidence of cessation according to past 6-month injection use (as reported at the follow-up visit immediately preceding a visit at which a participant reported cessation) of five substances: heroin, prescription opioids, crystal methamphetamine, cocaine, and crack. We also examined the cumulative incidence of cessation among polysubstance-using youth. Participants were right censored at the time of their first cessation event (i.e., no further person-time at risk was contributed by that participant), but if they reported resuming injection drug use at a later visit, they re-entered the cohort of individuals at

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