

High rates of primary care and emergency department use among injection drug users in Vancouver

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Abstract

Background Frequent use of emergency rooms by injection drug users (IDUs) has been attributed to a lack of access to primary care and barriers to health services. Using a community-based sample of IDUs, we examined rates of primary care and emergency room use among IDUs and identified correlates of frequent emergency department use.

Methods From January to November 2003, we enrolled IDUs into a prospective cohort study involving a baseline questionnaire, comprehensive retrospective and prospective health record linkages. We examined rates of primary care and emergency department utilization, and diagnoses upon arrival in the emergency room. Logistic regression was used to determine factors independently associated with frequent emergency room use.

Results Of the 883 IDUs included in this analysis, 687 (78 per cent) accessed a primary care clinic in the previous year, while 528 (60 per cent) participants accessed the emergency room (ER) during the years 2002 and 2003. Abscesses, cellulitis and other skin infections accounted for the greatest proportion of ER use. Factors independently associated with frequent ER use included: frequent crystal methamphetamine injection (AOR = 2.4, 95 per cent CI: 1.0–5.6); non-fatal overdose (AOR = 2.1, 95 per cent CI: 1.4–3.3); HIV-positive status (AOR = 1.5, 95 per cent CI: 1.1–2.1), having been physically assaulted (AOR = 1.5, 95 per cent CI: 1.1–2.1); and primary care utilization (AOR = 1.5, 95 per cent CI: 1.0–2.1).

Discussion High rates of ER use were observed among IDUs, despite high rates of primary care use among this same population. ER use was due primarily to preventable injection-related complications that are less amenable to primary care interventions, and therefore educational and prevention efforts that encourage and enable sterile injection practices should be promoted.

Introduction

Illicit injection drug use has been associated with severe health-related harms and high rates of hospital utilization, including emergency room (ER) use.^{1,2} Frequent use of ERs by injection drug users (IDUs) has been attributed to a lack of access to primary care, difficulties in attending set appoint

times, and poor relations between health care providers and IDUs.^{2–5} Limited access to primary care and an over-reliance on ERs by IDUs is believed to result in delays in seeking treatment and the need for more frequent and lengthy hospital admissions.^{2,6}

In response to evidence indicating poor health and high rates of hospital utilization among IDUs in the Downtown Eastside (DTES) of Vancouver,^{2,7,8} Vancouver Coastal Health (VCH) implemented new primary care services in the neighbourhood. Consistent with recommendations from previous studies of hospital utilization by IDUs in Vancouver,² VCH increased the number of primary clinics in the DTES, and integrated harm reduction and addiction services within these primary care settings. More specifically, one new primary clinic was added, another was moved and substantially scaled up in terms of size and available services, and a low-threshold contact centre designed to target street-entrenched IDUs was added. The contact centre employs nurses who provide primary care and referrals to other health services. A third of the large primary care clinic remained in operation in the community and was virtually unchanged.

Although high rates of ER use among IDUs have been repeatedly attributed to a lack of access to primary care and

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barriers to health care, the relationships between ER use, primary care use, and specific barriers to health care have not been well investigated, particularly in settings where primary care is widely available and accessible. Therefore, we undertook this study to examine rates of primary care and ER use among a community-based sample of IDUs following the expansion of local primary care services. In addition, we examined the most common reasons for ER use as well as associations between demographic and drug use characteristics, primary care use, barriers to health care, and frequent ER use.

Methods

The Community Health and Safety Evaluation (CHASE) Project is a prospective open cohort that was established to evaluate the impact of recently implemented health initiatives on residents of the DTES and to identify priority health issues. All community residents are eligible to participate, and are recruited through various community organizations and door-to-door canvassing in a random sample of local hotels. The goal is to enroll a large representative sample of people residing and using services in the community. A short questionnaire is administered by a trained interviewer, and includes questions pertaining to demographic information, health status, health care utilization, barriers to healthcare, and patterns of illicit drug use. As well, permission is requested to link personal identifiers to health service registries. Linked data sources used for this analysis included the British Columbia Centre for Disease Control (BCCDC) communicable diseases testing database and the St. Paul's Hospital Emergency Department database. Study participants receive \$10 upon completion of the survey. The University of British Columbia/Providence Health Care Research Ethics Board approved this study.

This analysis was restricted to CHASE participants who self-identified as being injection drug users. Demographic variables considered in these analyses included: gender, ethnicity, age, housing status, recent incarceration, recent physical assault, having slept outdoors, and non-fatal illicit drug overdose. Given the recent observation that Aboriginal IDUs in Vancouver are at heightened risk for HIV infection,⁷ Aboriginal and non-Aboriginal ethnicity were examined. Unstable housing was defined as living in a single room occupancy hotel, shelters, or no fixed address. Drug use variables included: frequency of cocaine, heroin, and crystal methamphetamine injection, and frequency of crack smoking. As in our previous work,⁹ persons who reported injecting or smoking crack once or more per day were defined as frequent injectors and frequent crack smokers respectively. Variables pertaining to barriers to health care included: long wait lists, poor treatment by health care providers, difficulty keeping appointments, not knowing where to go to access care, and limited hours of operation. All of these questions use the previous 6 months as a reference period (e.g. 'In the past 6 months, when you were using, which of the following drugs did you inject?'). Participants were also asked to indicate

if they had accessed each of the primary care clinics in the DTES in the year prior to their recruitment in the study, and to indicate how many times they had visited each of the clinics during the same time period. HIV status was obtained through a confidential record linkage to the BCCDC HIV testing database. We also performed a confidential record linkage to the St. Paul's Hospital ER database to determine the frequency of ER use, the presenting diagnosis, and the frequency of admissions to hospital through the ER for the years 2002 and 2003. This period included both time before and time after participant recruitment in the study. In order to determine correlates of ongoing frequent ER use, we defined *a priori* frequent ER use as three or more visits during the 2 year period.

Descriptive and univariate statistics were used to determine rates of primary care access, ER visits, various diagnoses upon arrival in the ER, and to determine factors associated with frequent ER visits. Categorical and explanatory variables were analysed using Pearson's χ^2 , normally distributed continuous variables were analysed using *t*-tests for independent and paired samples, and skewed continuous variables were analysed using and Wilcoxon rank sign tests. Logistic regression was used to identify factors independently associated with frequent ER use by adjusting for variables that were statistically significant ($p < 0.05$) in univariate analyses. All reported *p*-values are two-sided.

Results

In total, 941 IDUs were recruited and completed questionnaires during January 2003 to November 2003. Of those, 67 individual records were not successfully linked to external databases due to refusals to allow such linkages or incomplete information. There were no differences between those who were successfully linked and those who were not with respect to age, gender, aboriginal ethnicity, or unstable housing (all $p > 0.10$). Among the 883 IDU who were successfully linked to health care databases, 616 (70 per cent) were male, and 260 (30 per cent) were female. The median age was 41 years. HIV status was determined by a linkage to the BCCDC.

Six hundred and eighty-seven (78 per cent) participants reported use of a primary care clinic in the DTES in the previous year, with the median number of primary care clinics visits being 8 (interquartile range: 3–8). During the 2 year period examined, 528 (60 per cent) participants accessed the ER, with the median number of visits being 1 (interquartile range: 0–3). During this same period, the total number of visits to the ER was 2643, and the number of visits that resulted in admission to an acute hospital bed was 394.

The most common presenting diagnoses were determined for a 2 year period (Table 1). Abscesses, cellulitis, and other skin infections accounted for the greatest number of visits (18.3 per cent), while wounds, lacerations, and contusions accounted for 8 per cent. Substance use and overdoses accounted for 7.2 per cent of visits. The overall study population was stratified by

Table 1 Most frequent reasons for ER visits among IDUs

Reason	Post (n = 2643)	
	n	(%)
Abscesses, cellulitis and other skin infections	483	(18.3)
Wounds, lacerations, and contusions	212	(8.0)
Substance use and overdose	191	(7.2)
Respiratory infections and disorders	175	(6.6)
Musculo-skeletal injuries	168	(6.3)
Miscellaneous bacterial and viral infections	161	(6.1)
Psychiatric disorders	147	(5.6)
Medication refills	143	(5.4)
Gastrointestinal disorders	141	(5.3)
Fractures and dislocations	109	(4.1)
Neurological disorders or seizures	92	(3.5)

frequent and non-frequent emergency room use. In total, 270 (31 per cent) participants attended the ER frequently, and in univariate analyses (Table 2), these individuals were more likely: to be younger (39 versus 41 years); to have slept outdoors (OR = 1.4, 95 per cent CI: 1.0–1.8); to have been physically assaulted (OR = 1.9, 95 per cent CI: 1.4–2.5); to have had a non-fatal overdose (OR = 2.8, 95 per cent CI: 1.9–4.3); to be HIV positive (OR = 2.3, 95 per cent CI: 1.6–3.5); to have accessed a primary care clinic in the previous year (OR = 1.8, 95 per cent CI: 1.2–2.6); to be frequent crystal methamphetamine injectors (OR = 3.5, 95 per cent CI: 1.6–7.5); and to have reported being treated poorly by health care providers (OR = 1.6, 95 per cent CI: 1.2–2.1). There were no differences with respect to the other variables examined. In a logistic regression analysis (Table 2), factors independently associated with ongoing frequent emergency department use included frequent crystal methamphetamine injection (AOR = 2.4, 95 per cent CI: 1.0–5.6), non-fatal

Table 2 Univariate and logistic regression analyses of factors associated with frequent ER use

Factor	Crude OR (and 95% CI)		Adjusted OR (and 95% CI)	
	Mean age	0.9	(0.9–0.9)	1.0
Slept outdoors (yes versus no)	1.4	(1.0–1.6)	1.1	(0.7–1.4)
Physically assaulted (yes versus no)	1.9	(1.4–2.5)	1.5	(1.1–2.1)
Non-fatal overdose (yes versus no)	2.8	(1.9–4.3)	2.1	(1.4–3.3)
HIV-positive status (yes versus no)	2.3	(1.6–3.5)	1.5	(1.1–2.1)
Primary care access (yes versus no)	1.8	(1.2–2.6)	1.5	(1.0–2.1)
Frequent crystal injection (yes versus no)	3.5	(1.6–7.5)	2.4	(1.0–5.6)
Poor treatment by health care providers (yes versus no)	1.6	(1.2–2.1)	1.3	(0.9–1.8)

overdose (AOR = 2.1, 95 per cent CI: 1.4–3.3), HIV-positive status (AOR = 1.5, 95 per cent CI: 1.1–2.1), having been physically assaulted (AOR = 1.5, 95 per cent CI: 1.1–2.1), and primary care use (AOR = 1.5, 95 per cent CI: 1.0–2.1).

Discussion

High rates of primary care and emergency room use were observed among IDUs participating in this study. Abscesses, cellulitis, and other skin infections accounted for the greatest proportion of emergency department visits, followed by wounds, lacerations, and contusions, and substance use and overdose. Individuals who used the ER frequently were more likely to inject crystal methamphetamine frequently, be HIV positive, have recently experienced a non-fatal overdose and been physically assaulted, and more likely to have accessed primary care in the previous year.

High rates of ER use were observed among IDUs in this cohort despite high rates of primary care use among this same population. The self-reported barriers to health care that were examined were not independently associated with frequent ER use among IDUs in this study. These findings do not support the contention that high rates of ER use by IDUs are primarily due to limited access to primary care,^{2–5} or to specific barriers to primary care such as fear of discrimination, low satisfaction with care, and inability to keep appointment times.^{2,6,10–13} There are several possible explanations for our findings. First, because many IDUs access primary care intermittently and therefore present later in the course of illness, acute medical problems among IDUs are often first identified within primary care settings, which in turn increases the need for referral for emergency care or hospitalization.¹⁴ This interpretation is supported by the association between primary care and ER use that we found in our study; a finding which was noted in a previous study of Vancouver IDU.¹⁴ Secondly, given the high prevalence of HIV and hepatitis C infection among IDUs in Vancouver,^{15,16} the observed rates of ER use may reflect chronic disease burden and the related need for care.² Thirdly, many of the illnesses or injuries that account for the greatest number of ER visits (e.g. cellulitis, wounds, lacerations, overdoses) often cannot be adequately managed in primary care settings.

Consistent with a previous study of hospital utilization among Vancouver IDU,² soft-tissue infections (e.g. abscesses and cellulitis) accounted for the majority of visits to the ER. This result is understandable given the intensity of injection drug use in the DTES, and may be further influenced by the prevalence of cocaine injection, which often involves numerous injections per day.¹⁵ Collectively, these findings indicate the need for additional prevention measures that promote sterile injection. While Vancouver has recently implemented a supervised injection facility,¹⁷ which may serve to reduce the incidence of soft-tissue infections, the facility was not open during the periods examined in this study. As well, recent evidence

has indicated that increased police activity in the DTES may have deterred some IDUs from accessing prevention services,^{17–19} and therefore the impact of policing on access to primary care and emergency department use requires further investigation.

Our finding that crystal methamphetamine injection was associated with frequent ER use is novel but not surprising in light of studies indicating increases in crystal methamphetamine use in North America as well as associations between crystal methamphetamine use and a variety of acute illnesses, including cardiovascular and psychiatric problems.^{20–22} The actual number of participants in this study who report using crystal methamphetamine is relatively low compared with cocaine and heroin use, however this is expected to increase. The association between HIV-positive status and frequent ER use has been noted elsewhere,^{2,3,14} and is understandable given that soft-tissue infections constituted the most common clinical presentation and previous observations indicating that HIV-positive individuals may have a heightened susceptibility to bacterial infections.^{23,24} Furthermore, HIV-infected individuals are predisposed to a range of opportunistic infections that require tertiary care. The associations between non-fatal overdose, physical assault, and ER use is consistent with the admission diagnosis data presented earlier, and is understandable given the high rates of drug use and sex work in the DTES, and the related risks.^{9,25}

Our study has several limitations. First, we may have underestimated ER and primary care use as participants may have sought care at other settings. However, we did consider the primary care facilities and hospital ER that is used by the vast majority of people living in this community. Secondly, although our sample includes an estimated 20 per cent of all IDU living in the DTES, our sample may not be representative all IDU in the area. Furthermore, because some of the recruitment of this study was undertaken at local community health services, the sample involved in this study may include a high proportion of individuals who frequently access health services, and therefore estimates of ER use may be high. Thirdly, although attempts were made to recruit a representative sample of DTES residents, it may not be representative of IDU populations in other settings. Finally, the current study relies on self-report of drug use and primary care attendance and may be susceptible to socially desirable reporting.

In summary, we found high rates of primary care and ER use among IDUs in Vancouver's Downtown Eastside. Abscesses, cellulitis, and other skin infections were the most common reason for accessing the emergency department during the periods studied. Frequent crystal methamphetamine injectors, HIV-positive participants, and those who had recently overdosed or been physically assaulted were more likely to use the ER frequently. We also found that individuals accessing primary care in the previous year were more likely to make frequent use of the ER suggesting that interventions other than primary care services, including those that promote sterile injection, are needed to offset ER visits by injection drug users.

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