

# Denial of pain medication by health care providers predicts in-hospital illicit drug use among individuals who use illicit drugs

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**BACKGROUND:** Undertreated pain is common among people who use illicit drugs (PWUD), and can often reflect the reluctance of health care providers to provide pain medication to individuals with substance use disorders.

**OBJECTIVE:** To investigate the relationship between having ever been denied pain medication by a health care provider and having ever reported using illicit drugs in hospital.

**METHODS:** Data were derived from participants enrolled in two Canadian prospective cohort studies between December 2012 and May 2013. Using bivariable and multivariable logistic regression analyses, the relationship between having ever been denied pain medication by a health care provider and having ever reported using illicit drugs in hospital was examined.

**RESULTS:** Among 1053 PWUD who had experienced  $\geq 1$  hospitalization, 452 (44%) reported having ever used illicit drugs while in hospital and 491 (48%) reported having ever been denied pain medication. In a multivariable model adjusted for confounders, having been denied pain medication was positively associated with having used illicit drugs in hospital (adjusted OR 1.46 [95% CI 1.14 to 1.88]).

**CONCLUSIONS:** The results of the present study suggest that the denial of pain medication is associated with the use of illicit drugs while hospitalized. These findings raise questions about how to appropriately manage addiction and pain among PWUD and indicate the potential role that harm reduction programs may play in hospital settings.

**Key Words:** Addiction; Canada; Drug use; Health services; Pain management

People who use illicit drugs (PWUD) are vulnerable to an array of health-related harms that often lead to an over-reliance on emergency departments and acute hospital wards as a regular source of care (1,2). In the past, PWUD have experienced disproportionately high rates of HIV and hepatitis C virus (HCV) transmission, although recent evidence indicates that there has been a decline in HIV incidence among this population (3). Specifically, in 2012, the British Columbia Centre for Disease Control reported that approximately 12% of all new HIV diagnoses were among individuals who inject drugs (4). While overdose and AIDS-related illness continue to be the leading causes of morbidity and mortality among PWUD (5,6), injection-related soft tissue infections have increasingly accounted for a considerable proportion of hospitalizations among this population (7,8). As a consequence, these adverse health outcomes may require

## Le refus d'analgésiques par les professionnels de la santé, prédicteur de consommation de drogue en milieu hospitalier par les personnes qui en consomment

**HISTORIQUE :** Le traitement insuffisant de la douleur est courant chez les consommateurs de drogue (CD) et reflète souvent l'hésitation des dispensateurs de soins à prescrire des analgésiques aux consommateurs de substances psychotropes.

**OBJECTIF :** Examiner le lien entre s'être fait refuser des analgésiques par un dispensateur de soins et avoir déclaré consommer de la drogue en cours d'hospitalisation.

**MÉTHODOLOGIE :** Les données étaient dérivées des participants inscrits à deux études prospectives de cohorte canadiennes réalisées entre décembre 2012 et mai 2013. Au moyen des analyses de régression logistique bivariable et multivariable, ils ont examiné le lien entre s'être fait refuser des analgésiques par un dispensateur de soins et avoir déclaré consommer de la drogue à l'hôpital.

**RÉSULTATS :** Chez les 1 053 CD qui avaient été hospitalisés au moins une fois, 452 (44 %) ont déclaré avoir consommé de la drogue pendant cette période et 491 (48 %) ont déclaré s'être fait refuser un analgésique. Dans un modèle multivariable rajusté pour tenir compte des facteurs confusionnels, le fait de s'être fait refuser des analgésiques s'associait à la consommation de drogue en milieu hospitalier (RC rajusté 1,46 [95 % IC 1,14 à 1,88]).

**CONCLUSIONS :** D'après les résultats de la présente étude, le refus d'administrer des analgésiques s'associe à la consommation de drogue pendant l'hospitalisation. Ces constatations soulèvent des questions sur la prise en charge pertinente de l'accoutumance et de la douleur chez les CD et démontrent le rôle potentiel des programmes de réduction des méfaits en milieu hospitalier.

lengthy and costly inpatient hospital admissions (8,9). In fact, a study conducted in Vancouver reported that the average hospital utilization cost per day among a cohort of individuals who inject drugs (IDU) was \$610 in 1999 (95% CI \$576 to \$645) (9).

Despite the considerable health burden associated with illicit drug use, PWUD continue to face challenges in their interactions with the health care system. Various barriers have been known to impede access, utilization and retention in care among this population (10-12). In particular, undertreated pain is a common concern among PWUD, which may reflect the challenges that health care providers face in providing adequate pain medication to individuals with addictions (13,14). Specifically, fears of contributing to worsened addiction or relapse (15,16), or misinterpretation of requests for pain medication as 'drug-seeking' behaviour (17,18), have been documented as reasons

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for denying pain medication to PWUD. Appropriate treatment of pain among PWUD is often complex due to the concomitant use of opioid substitution therapies, comorbidities and the lack of clear guidelines for pain management among this population (19).

A growing body of literature has shown that in Vancouver, British Columbia – a setting with a long-standing epidemic of illicit drug use – a substantial proportion of the illicit drug-using population are hospitalized annually (9,20). Previous studies have shown that as many as 49% of IDUs were admitted to a hospital between May 1996 and August 1999 (8), and one-third of admissions were due to a soft tissue infection (9). It is noteworthy that the high rates of hospitalization among active PWUD has resulted in a well-recognized local drug market where patients can obtain illicit drugs for injection or inhalation around hospital premises (21). For example, the Downtown South area of Vancouver, where the majority of Vancouver's street youth spend most of their time, and the Downtown Eastside of Vancouver, an open street-based drug scene, are located within minutes of St Paul's Hospital, a hospital that services the majority of illicit drug users in this setting. Various drugs, including heroin, crack cocaine, diverted prescription opioids and methamphetamine, are widely available within these settings (3). However, hospitals in this setting largely rely on abstinence-based approaches to drug use, including prohibiting use of illicit drugs on hospital premises and the distribution of sterile drug-use paraphernalia (22). Given the limited body of evidence that has explored the self-management of pain among PWUD in acute-care settings, the present study sought to quantitatively examine the impact of being denied pain medication by a health care provider on the use of illicit drugs in hospitals.

## METHODS

The Vancouver Injection Drug Users Study (VIDUS) and the AIDS Care Cohort to evaluate Exposure to Survival Services (ACCESS) are two prospective cohort studies involving PWUD who have been recruited through self-referral and street outreach since May 1996. These cohorts have been described in detail previously (23,24). In brief, individuals were eligible to enter the VIDUS if they had injected illicit drugs at least once in the previous month and resided in the Greater Vancouver region at enrollment. Individuals were eligible to enter the ACCESS study if they were HIV-positive and had used illicit drugs other than cannabinoids in the previous month. Participants who only used cannabinoids were excluded because the intended focus of the study was on individuals who use 'hard' drugs (eg, heroin, cocaine) and the inclusion of individuals who only use cannabinoids would have introduced a selection bias in the study sample; in particular, the characteristics of these individuals are likely different from PWUD who use 'hard' drugs. All eligible participants provided written informed consent. At baseline and semiannually, study participants completed an interviewer-administered questionnaire and provided blood samples for HIV and HCV testing, and HIV disease monitoring. At the conclusion of each visit, study participants receive \$20 for their time. The study has received ethics approval from Providence Health Care/the Research Ethics Board of University of British Columbia (Vancouver, British Columbia).

The present study included only participants who experienced at least one hospitalization. The primary outcome of interest for this analysis was having ever reported using illicit drugs in hospital. The primary explanatory variable of interest was having ever been denied pain medication by a health care provider, ascertained by asking participants the following questions: "In the last six months, have you requested a prescription for pain medication? If yes, were you refused a prescription in the last six months?" Secondary variables believed to be confounders included: age (per year increase); gender (male versus female); daily injection drug use, defined as the cumulative proportion of reported daily injection drug use in the past six months during the cohort study period ( $\geq 50\%$  of the time versus  $< 50\%$  of the time); daily noninjection drug use, defined as the

cumulative proportion of reported daily noninjection drug use in the past six months during the cohort study period ( $\geq 50\%$  of the time versus  $< 50\%$  of the time); and binge drug use, defined as the cumulative proportion of reported binge drug use by injection or noninjection in the past six months during the cohort study period ( $\geq 50\%$  of the time versus  $< 50\%$  of the time). Because the present study was a cross-sectional analysis drawn from a prospective cohort study, the latter three variables were derived from longitudinal data beginning from the participant's initial date of enrollment to the current study period. This measure was used to account for the fact that the outcome variable was a lifetime measure of illicit drug use in hospital.

Bivariable analyses were conducted to determine factors associated with having ever reported using illicit drugs in hospital using simple logistic regression. To fit a multivariable logistic regression model, a cutoff of  $P < 0.05$  was used to determine which variables were potentially associated with having ever used illicit drugs in hospital in the simple logistic regression analyses described above. Subsequently, a full model was fit, including these explanatory variables, noting the value of the coefficient associated with having ever been denied pain medication. In a stepwise manner, the secondary explanatory variable corresponding to the smallest relative change in the effect of having ever been denied pain medication on having ever used illicit drugs in hospital was removed from further consideration. This iterative process was continued until the minimum change of the value of the coefficient for having ever been denied pain medication from the full model exceeded 5%. Remaining variables were considered confounders in multivariable analysis. This model selection method has been used previously and successfully in other studies of PWUD (25,26). All  $P$  values were two-sided.

## RESULTS

Among all the participants who were interviewed between December 2012 and May 2013, a total of 1053 (96%) PWUD had experienced at least one hospitalization and were included in the study: 341 (32.4%) were female, 509 (48.3%) had completed high school and the median age was 48 years (interquartile range 42 to 54 years). During the six-month study period, 132 (12.5%) reported being homeless and 229 (21.7%) reported having stable employment (ie, a regular job, temporary job or self-employed). In total, 465 (44.2%) reported having ever used illicit drugs while in hospital and 504 (47.9%) reported having ever been denied pain medication. As indicated in Table 1, in bivariable analyses, having ever been denied pain medication was positively associated with having ever used illicit drugs in hospital (OR 1.44 [95% CI 1.13 to 1.83]). Secondary factors positively associated with having ever used drugs in hospital included: daily injection drug use, daily noninjection drug use and binge drug use, while older age and male gender were negatively associated with the outcome (all  $P < 0.05$ ).

Table 2 summarizes the results of the multivariable analysis examining the relationship between having ever been denied pain medication and having ever used illicit drugs in hospital. In the multivariable logistic regression model adjusted for various confounders, having been denied pain medication remained positively and independently associated with having used illicit drugs in hospital (adjusted OR 1.46 [95% CI 1.14 to 1.88]).

## DISCUSSION

In the present study, we found that a substantial proportion of a community-recruited sample of PWUD in Vancouver reported having ever used illicit drugs in hospital. We also found an association between having ever been denied pain medication and in-hospital illicit drug use, after adjusting for a range of confounders. Our findings suggest that PWUD may resort to the self-management of pain via high-risk methods after being denied pain medication in acute-care settings. There are several possible explanations for our findings. First, it may be that the stigma and discrimination PWUD experience in hospitals contributed to the denial of pain medication in our setting,

**TABLE 1**  
**Bivariable logistic regression analyses of factors associated with having ever used street drugs in hospital among people who use illicit drugs (n=1053)**

Characteristic	Ever used street drugs in hospital			P
	Yes (n=465)	No (n=588)	OR (95% CI)	
Ever denied pain medication				
Yes	246 (52.9)	258 (43.9)	1.44 (1.13–1.83)	0.004
No	219 (47.1)	330 (56.1)		
Age				
Median (interquartile range)	47 (41–53)	50 (43–55)	0.99 (0.99–1.00)	<0.001
Gender				
Male	282 (60.6)	430 (73.1)	0.57 (0.44–0.73)	<0.001
Female	183 (39.6)	158 (26.9)		
Proportion of daily injection drug use over time				
≥50% of the time	146 (31.4)	103 (17.5)	2.16 (1.61–2.88)	<0.001
<50% of the time	319 (68.6)	485 (82.5)		
Proportion of daily non-injection drug use over time				
≥50% of the time	249 (53.5)	229 (38.9)	1.81 (1.41–2.31)	<0.001
<50% of the time	216 (46.5)	359 (61.1)		
Proportion of binge drug use over time				
≥50% of the time	204 (43.9)	209 (35.5)	1.42 (1.10–1.82)	0.006
<50% of the time	261 (56.1)	379 (64.5)		

Data presented as n (%) unless otherwise indicated

**TABLE 2**  
**Multivariable logistic regression of factors associated with ever having used street drugs in hospital among people who use illicit drugs (n=1053)**

Variable	Adjusted OR	95% CI	P
Ever denied pain medication (yes versus no)	1.46	1.14–1.88	0.003
Age (per year increase)	0.97	0.96–0.99	<0.001
Proportion of daily injection drug use over time (≥50% versus <50%)	1.93	1.44–2.60	<0.001

Akaike information criterion = 1375.40

which are previously described experiences among this population (18,27,28). Second, this finding is also consistent with previous studies that indicate the reluctance of health care providers to provide pain medication for reasons that include concerns of exacerbating the patient's drug addiction, relapse or 'drug-seeking' behaviour (17,29). Third, physicians may be hesitant to prescribe pain medication to PWUD for fear of being disciplined by their professional regulatory bodies. Indeed, the College of Physicians and Surgeons of British Columbia have warned physicians against prescribing opioids to high-risk populations, including "patients with the lifelong disease of addiction" and "those with major psychiatric illness or personality disorders" (30). Moreover, the American Pain Society and the American Academy of Pain Medicine's clinical guidelines caution that the potential risks of opioid therapy may outweigh the benefits associated with drug misuse, abuse and addiction for some patients with a history of substance abuse (31). Finally, given that higher-intensity drug users were more likely to use illicit drugs while admitted to hospital, it may be that these individuals are simply using drugs in hospital to maintain established habits. Given the challenges associated with procuring and using drugs in hospitals (22), these same individuals may be more likely to request and be denied additional pain medication.

Similar to the presence of social, structural and environmental forces within drug scene environments that interact to produce vulnerability to poor health outcomes among PWUD, which have been

well documented in the literature (32,33), hospitals have also been recently conceptualized as a 'risk environment' for drug-using populations (22). Specifically, a qualitative study conducted in Vancouver showed that in an effort to conceal in-hospital drug use from health care providers for fear of being involuntarily discharged, IDU have resorted to injecting alone in locked washrooms or injecting with syringes of unknown origin (22). As a result, these individuals are at heightened risk of experiencing fatal overdoses or HIV/HCV infection. It is also concerning that being denied pain medication by health care providers may also lead PWUD to leave hospital against medical advice (AMA), a well-known risk factor for adverse health outcomes, which include being readmitted for a worsened health condition and mortality (34-36).

Our findings have public health implications, particularly considering the high prevalence of in-hospital illicit drug use and denial of pain medication that study participants reported. First, appropriate pain management for PWUD in acute-care settings may serve to minimize preventable morbidity and mortality associated with the risk of self-managing pain via illicit drug use. Effective pain management may contribute to a reduction in rates of leaving hospital AMA, which, in turn, may considerably decrease health care costs attributed to readmission and lengthier hospital stays with more severe health complications (9,15,34). Second, efforts to improve cultural competency and remove negative stereotypes associated with addiction through education and training programs that specialize in addiction medicine are needed in this setting (37). Third, there may be a potential role for harm-reduction programs in hospital settings to mitigate the harmful effects of in-hospital drug use (21,38). Our findings lend support to the argument for a structural shift in policy that moves away from abstinence-based drug policies and toward the implementation of a comprehensive package of harm-reduction programs, including supervised drug consumption facilities and needle/syringe distribution programs, in hospital settings. In fact, previous research has shown that integrating harm-reduction services within clinical settings has had a positive impact on the health of PWUD (39,40). Our recommendations are also consistent with studies that suggest that a harm-reduction approach has the potential to reduce drug-related risks from in-hospital drug use as well as discharge AMA among this population (22). Finally, there is a need to re-evaluate current clinical guidelines for pain management because these may

not necessarily be appropriate for health care providers who care for PWUD patients, particularly those who contend with comorbid addiction and mental health complications.

The present study had several limitations. First, the cross-sectional design of the study limited our ability to determine a temporal or causal relationship between having ever been denied pain medication and having ever used illicit drugs in hospital. Specifically, we were unable to determine whether having ever been denied pain medication resulted in illicit self-medication. Future longitudinal research should seek to more effectively estimate the causal relationship between having been denied pain medication and illicit drug use in hospital. Second, our study relied on self-reported data that are susceptible to reporting biases, including socially desirable reporting and recall bias. Third, given that the participants in the present study were not randomly selected, the interpretation of these results may not be representative or generalizable to other IDU populations. Finally, we were unable to provide data on participants' medical conditions or diagnoses, given that these variables were not included in the questionnaire.

### SUMMARY

We found that a substantial proportion of PWUD reportedly used illicit drugs within hospital settings, and this was associated with having ever been denied pain medication. Our findings suggest that denial of pain medication by health care providers is associated with in-hospital illicit drug use. Our findings indicate the need for novel efforts to improve pain management among this population, including

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education and training for health care providers, implementation of harm-reduction programs within hospitals and appropriate clinical guidelines for managing pain among PWUD. Ultimately, these efforts may serve to minimize the severe drug- and health-related harms associated with the self-management of pain via illicit drug use.

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