Drug Use and Risk of Bloodborne Infections

A Survey of Female Prisoners in British Columbia

Ruth Elwood Martin, MD, CCFP, FCFP[1]
Fiona Gold, RN[2]
Wendy Murphy, RN[3]
Valencia Remple, RN, MSN[4]
Jonathan Berkowitz, PhD[1]
Deborah Money, MD, FRCSC[5]

ABSTRACT

Background: Clinicians working in a women's prison in British Columbia observed hepatitis C sero-conversion among inmates, prompting this study to determine: the characteristics of women who do and do not report illicit drug use in prison; patterns of drug use inside prison; factors associated with illicit drug use that might contribute to bloodborne transmission inside prison.

Methods: A cross-sectional observational data set was created using an anonymous 61-item self-administered survey.

Results: Eighty-three percent (104/126) of eligible inmates participated. Seventy-four percent (77/104) reported their current prison sentence was related to illicit drug use and 25% (26/104) reported their ethnicity as Aboriginal. Ninety-three percent (97/104) reported a prior history of illicit drug use, of whom 70% (68/97) reported a history of injection drug use. Thirty-six percent (37/104) reported illicit drug use in prison, and 21% (22/104) reported injection drug use in prison. Fifty-two percent (54/104) reported hepatitis C sero-positivity, and 8% (8/104) reported HIV sero-positivity. Of the 22 women who reported prison injection drug use, 91% (20/22) reported hepatitis C infection and 86% (19/22) reported injecting with shared needles inside prison, with or without bleach cleaning. Women were more likely to report illicit drug use in prison if they had had illegal sources of income prior to incarceration (p=0.0081, OR 3.19), had previously injected drugs (p=0.036, OR 2.97), and had first injected drugs at a friend's house (p=0.066, OR 2.70).

Interpretation: The majority of women reporting prison injection drug use also reported hepatitis C sero-positivity and shared needle use. Canadian prisons are risk situations for transmission of bloodborne pathogens, and provide opportunities for harm reduction strategies.

MeSH terms: Prisoners; high risk women; street drugs; hepatitis C; HIV

La traduction du résumé se trouve à la fin de l'article.

1. Clinical Associate Professor, Department of Family Practice, University of British Columbia (UBC)
2. Team Leader, AIDS Prevention Street Nurse Program, British Columbia Centre for Disease Control (BCCDC)
3. AIDS Prevention Street Nurse Program, BCCDC
4. Research Program Coordinator, Epidemiology Services, BCCDC
5. Assistant Professor and Head, Division of Maternal Fetal Medicine, Department of Obstetrics and Gynecology, UBC

Correspondence and reprint requests: Dr. Ruth Elwood Martin, UBC Department of Family Practice, Mather Building, 5804 Fairview Crescent, Vancouver, BC, V6T 1Z3; Tel: 604-822-1891; Fax: 604-266-5445; E-mail: remartin@interchange.ubc.ca

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Risky sexual practices, drug use behaviours, tattooing and piercing practices all contribute to the transmission of bloodborne pathogens including hepatitis C and HIV.[1-3] There are approximately 16,000 to 20,000 injection drug users in British Columbia.[4] Because injection drug use occurs covertly in institutional settings such as hospitals and prisons, few studies have explored female injection drug use in prisons or asked women to self-report on their injection drug use and risk factors, and to comment on proposed harm reduction measures.[5]

Transmission of bloodborne viruses, due to shared injection equipment among prisoners, has been reported in Scotland, England, Germany, Ireland, Australia, Russia, Spain, USA and Thailand.[1,2,6-12] Data from Canada suggest that Canadian prisoners are more likely to be infected with HIV and hepatitis C than the average Canadian. Canadian studies have documented sero-prevalence within female prison populations of 0.9-4.7% for HIV and 25.5-41.2% for hepatitis C, compared with a general population sero-prevalence of 0.2% and 0.8% respectively.[13-16]

The AIDS prevention Street Nurse Program ('street nurses') of the BC Centre for Disease Control, providing anonymous HIV and STI testing to the Burnaby Correctional Centre for Women (BCCW), observed hepatitis C sero-conversions among female inmates. It was not known to what degree risk behaviours were occurring in BCCW. In order to modify risk behaviour and decrease transmission of bloodborne pathogens in prisons, we need to better understand the actual behaviours and risks. Hence, our objectives were to describe the following: the characteristics of women who do and do not report illicit drug use in prison; their patterns of drug use inside prison; factors associated with illicit drug use that might contribute to bloodborne transmission inside BCCW.

METHODS

At the time of this study, Burnaby Correctional Centre for Women (BCCW) was a 152-bed prison in British Columbia. Approximately 50 of the beds were for federally-sentenced women (sentenced to greater than two years). The remaining beds were for provincially-sentenced women (sentenced to less than two years)

and women remanded to custody (that is, awaiting sentencing), at all levels of security. About 900 women passed through the prison in a 12-month period, totalling approximately 1,200 admissions, because some women had multiple admissions.[17]

Exclusion criteria for this study was an inability to read English and absence from the prison at the time of the study (due to court appearance, electronic monitoring or parole).

A 61-item questionnaire was designed aimed at grade 9 school level. Four members of the prison inmate committee piloted the questionnaire; their feedback regarding content and face validity was incorporated into the final version.

In March 2001, two nurses (FG and WM) held informal inmate information sessions on each living unit, to explain the purpose of the study and to assure that: participation was voluntary and anonymous; sentence status and access to prison health care would not change as a result of their participation; this survey was independent of prison officials, Correctional Service Canada and BC Corrections. They encouraged women to complete the surveys as honestly as possible. Because the authors are 'street nurses', inmates know them from the community, or from previous visits to the jail, resulting in a trust relationship.

A week later, over two days, the nurses visited all secure, segregation and minimum security units, inviting inmates to complete the survey during their routinely scheduled call-time ("lockdown"). Survey participants received a small chocolate candy inside the survey envelope, but no financial inducements. At the end of lockdown, inmates placed completed surveys in a large sealed cardboard box.

Data from the surveys were entered into an SPSS for Windows database. Responses were summarized with frequency tables. Bivariate analysis of risk factors and other categoric variables was done using chi-square tests of independence.

This study was conducted with Ethics Review Board approval from the University of British Columbia, and a Research Agreement with the Corrections Branch, Ministry of Attorney General, British Columbia.

RESULTS

A total of 147 women were in prison at the time of this study. We excluded 23 women: 22 were absent, 1 did not read English.

Of the remaining 126 inmates, 104 participated giving a response rate of 83%. Reasons for survey non-participation (N=22) included 'don't feel well' (3/22), 'don't do drugs' (5/22), and 'don't feel like it' (14/22). Denominators vary because not all respondents answered all questions.

TABLE I

Socio-demographic Characteristics of Survey Participants, Burnaby Correctional Centre for Women (BCCW)

Socio-demographic Characteristic	Frequency (N=104) n	Percentage of Respondents %
Age (years)		
19-30	56	54%
31-40	34	33%
>40	14	13%
Ethnic Background		
Caucasian	69	66%
Aboriginal	26	25%
Both	3	8%
Other	1	1%
Self-reported HIV Test Positive	8	8%
Self-reported Hepatitis C Test Positive	54	52%
Number of Admissions to BCCW		
1	34	33%
2-4	34	33%
5-9	15	14%
≥10	16	15%
Unknown	5	5%
Income Sources (Multiple responses)		
Sex trade	19	18%
Illegal sources (not including sex trade)	28	27%
Worked as employee	14	13%
Owned a business	5	5%
Spouse/partner worked	11	11%
Welfare	52	50%
No income	4	4%

TABLE II

Self-reported Patterns of Illicit Drug Use and Injection Drug Use (IDU) of Survey Participants at Burnaby Correctional Centre for Women (BCCW)

Question	Frequency (N= 104) n	Percentage of Respondents %
Ever used illicit drugs at BCCW?		
Yes	37	36% (37 respondents)
No	54	52%
No response	13	12%
Which illicit drugs used at BCCW?	(N=37)	
Heroin	31	84%
Cocaine	21	57%
Crack cocaine	19	51%
Marijuana	22	59%
Pills	21	57%
Alcohol	21	57%
Route of illicit drug use at BCCW	(N= 37, multiple responses)	
Smoking	20	54%
Snorting	20	54%
Swallowing	12	32%
Injecting	22	59% (22 respondents)
Respondents who injected drugs at BCCW who	(N=22)	
… have ever used a new needle	9	41%
… have ever re-used their own needle	20	91%
… have ever shared a rig with others	19	86%
… clean used needles with bleach	20	91%
Is current sentence related to illicit drug use?	(N=104)	
Yes	77	74%
No	19	18%
No response	8	8%
Methadone Program	(N=104)	
Participated in the past	43	41%
On program now	27	25%
Have difficulties at BCCW	8	8%

Table I shows the survey participants' socio-demographic characteristics. Sixty-six percent (69/104) reported their ethnicity as Caucasian and 25% (26/104) as Aboriginal. Seventy-four percent (77/104) of survey participants reported that their current prison sentence was related to drug use. Fifty-two percent (54/104) reported that they were hepatitis C sero-positive;

TABLE III

Bivariate Analysis of Selected Risk Factors for Illicit Drug Use and Self-reported Hepatitis C Sero-positivity at Burnaby Correctional Centre for Women (BCCW) (N=91)*

		Yes		No		Total
Illicit Drug Use in BCCW:		**n**	**(%)**	**n**	**(%)**	
Illegal sources of income?	Yes	22	(56%)	17	(44%)	39
	No	15	(29%)	37	(71%)	52
						p=0.008, OR 3.19, CI [1.33-7.63]
Ever injected drugs?	Yes	31	(48%)	33	(52%)	64
	No	6	(24%)	19	(76%)	25
						p=0.036, OR 2.97, CI [1.05-8.41]
First injected drugs at a friend's house?‡ (N=64)	Yes	15	(65%)	8	(35%)	23
	No	6	(41%)	23	(59%)	39
						p=0.066, OR 2.70, CI [0.93-7.85]
Self-reported Hepatitis C Sero-positivity:		**Yes**		**No**		**Total**
Children under age 18?	Yes	42	(67%)	21	(33%)	63
	No	12	(43%)	16	(57%)	28
						p=0.033, OR 2.67, CI [1.07-6.66]
Unstable accommodation?†	Yes	26	(90%)	3	(10%)	29
	No	27	(44%)	34	(56%)	61
						p=0.0001, OR 10.9, CI [2.98-39.9]
Ever used illicit drugs?	Yes	53	(62%)	33	(39%)	86
	No	1	(20%)	4	(80%)	5
						p=0.065, OR 6.42, CI [0.69-59.9]
Ever injected drugs?§	Yes	50	(81%)	12	(19%)	62
	No	1	(5%)	21	(96%)	22
						p=0.001, OR 87.5, CI [10.7-716.9]

* 91 survey participants responded to the question about illicit drug use at BCCW; 37 responded yes and 54 responded no. This analysis is based on these 91 respondents.
† 1 missing response
‡ 2 missing responses
§ 7 missing responses

8% (8/104) reported that they were HIV positive.

Ninety-three percent (97/104) of study participants reported illicit drug use prior to incarceration. Sixty-five percent (68/104) reported injection drug use prior to incarceration. Table II shows patterns of illicit drug use and injection drug use as self-reported by prison inmates. Twenty-one percent (22/104) of survey participants reported injection drug use inside prison, of whom 91% (20/22) reported hepatitis C sero-positivity (2 reported both hepatitis C and HIV sero-positivity). Unsafe needle use practices included 'sharing a rig with others' (19/22) and not cleaning used needles with bleach (3/22). A typical comment from the survey stated "Because it is blatantly obvious that drugs do exist in BCCW, providing new needles is surely a safety precaution against the risk of hepC or HIV."

To evaluate characteristics associated with prison illicit drug use, we conducted a bivariate analysis in which we compared women who reported illicit drug use inside prison with those who reported no illicit drug use inside prison (Table III). Women were more likely to report illicit drug use in prison if they had had illegal sources of income prior to incarceration (p=0.0081), if they had previously injected drugs (p=0.036) and if they had first injected drugs at a friend's house (p=0.066). There was no difference between women who reported illicit drug use inside prison and those who did not with respect to ethnicity, location of residence, age of children, stability of accommodation, level of education, or age of initial drug use. Further analysis showed that there was no difference between Aboriginal and Caucasian women with respect to all the surveyed drug use behaviours.

Women reporting hepatitis C sero-positivity were significantly more likely to have children under the age of 18 years (p=0.033), to live in unstable housing prior to incarceration (p=0.0001), to have initially used drugs on the street (p=0.072) and to have experienced injection drug use (IDU) (p=0.0001). With respect to potential acquisition of bloodborne pathogens, 3% (3/104) and 40% (42/104) respectively self-reported receiving HIV and hepatitis C sero-positive test results while inside prison. Of these, one (1/3) and four (4/42) respectively reported HIV and hepatitis C sero-negative results prior to their incarceration. These five women also reported injection drug use inside prison; four reported sharing used needles inside prison.

DISCUSSION

An alarming percentage (22%) of inmates surveyed in this study have injected drugs in prison. Of those who reported injecting in prison, a significant proportion used unsafe needle practices. Eighteen percent of our survey participants reported that they have shared needles inside prison, with or without bleach cleaning.

Twenty-five percent of survey participants reported themselves as Aboriginal, reflecting the over-representation of Aboriginal people in prison: approximately 5% of the BC general population report themselves as First Nations or Aboriginal in census surveys; 3.7% of British Columbians are Status Indian. In our study, ethnicity was not a factor associated with differences in drug use behaviours. This finding contrasts that of a study of USA female prisoners, in which non-Hispanic whites were more likely to engage in prison injection drug use and needle sharing, when compared with other ethnic groups.[11]

In our study, 8% of the women surveyed reported HIV sero-positivity and 52% reported hepatitis C sero-positivity. These infection rates are higher than previously reported Canadian prison infection rates.[13-16]

The increased prison population prevalence rate of HIV and hepatitis C infection necessarily impacts prevalence rates in the outside community, since prisoners with short sentences contribute to the 'revolving door' nature of prison life. Fifteen percent of our survey participants reported that they had been admitted to prison more than ten times; approximately two thirds of this prison's daily population had sentence lengths of less than two years. Hence, this study presents a new perspective on illicit drug use and prison risk behaviours for bloodborne pathogens, because we report on a correctional facility housing women with short sentence lengths. This type of data are key to developing relevant harm reduction strategies among female prisoners in Canada.

Our survey was limited to one female prison in British Columbia, resulting in a relatively small sample size, and all data were based on inmate questionnaires and self-reported sero-prevalence. Our survey did not link length of prison stay to possible viral incubation periods. There is a need for a prospective study (with systematic hepatitis C or HIV sero-testing on admission to, and release from, prison) to provide objective evidence of acquisition of bloodborne pathogens in Canadian prisons.

Our findings are consistent with studies in other countries, which show that incarceration of substance-using people results in the continuation of illicit drug use and injection drug use inside prison, despite the non-availability of sterile injection equipment, and the potential for transmission of bloodborne pathogens.[1,2,6-12] Consequently, prison populations, with prevalence already higher than that of the general population, are at increased risk of transmission or acquisition of HIV, hepatitis C and hepatitis B infection. In Europe, the introduction of sterile needle exchange units into prisons resulted in no incorrect disposal or misuse of syringes, no increases in inmate drug use or overdoses, a reduction in shared needle activity, and a plateau or a reduction in the transmission of HIV, hepatitis C and hepatitis B in prison.[18,19] Our findings provide further data in support of offering harm reduction programs for women at increased risk of using illicit drugs inside prison. Our paper highlights previously unreported factors, including an illegal source of income prior to incarceration, injecting drugs prior to incarceration and first injecting drugs at a friend's house, as factors associated with illicit drug use inside prison.

The World Health Organization recommends *equivalence* for prisoners: prisoners should receive the same level of health care in prison as in their communities.[20] Despite measures to the contrary, illicit drugs continue to be smuggled not only into prisons in Canada but also worldwide.[21] Harm reduction measures, such as sterile needle exchanges, are available to women in the community but they are not available to those same illicit-substance-using women once they enter prison. In British Columbia, as in the rest of Canada, imprisoned injection drug users are not able to access sterile injection equipment, which undermines harm reduction initiatives occurring in local communities.

The data from our study suggest that needle exchange programs, modelled on the European experience, could be piloted and evaluated in Canadian prisons, in an attempt to reduce the prison transmission of bloodborne pathogens.

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RÉSUMÉ

Contexte : Le personnel clinique d'une prison pour femmes en Colombie-Britannique a observé une séroconversion par le virus de l'hépatite C chez les détenues, ce qui nous a amenés à déterminer, dans le cadre de notre étude, les caractéristiques des femmes qui déclarent ou non avoir consommé des drogues illicites en prison, les tendances de la consommation de drogues en prison, ainsi que les facteurs associés à la consommation de drogues illicites qui pourraient contribuer à la transmission d'infections véhiculées par le sang en prison.

Méthode : Nous avons créé un ensemble de données d'observation transversales d'après les réponses obtenues à un questionnaire anonyme de 61 questions, que les détenues ont rempli par elles-mêmes.

Résultats : Quatre-vingt-trois p. cent (104/126) des détenues admissibles ont participé à l'étude. Soixante-quatorze p. cent (77/104) ont déclaré que leur peine d'emprisonnement actuelle était liée à la consommation de drogues illicites, et 25 % (26/104) ont dit être d'appartenance ethnique autochtone. Quatre-vingt-treize p. cent (97/104) ont fait état d'antécédents de consommation de drogues illicites; de ce chiffre, 70 % (68/97) ont déclaré avoir fait usage de drogues injectables. Trente-six p. cent (37/104) ont déclaré avoir consommé des drogues illicites en prison, et 21 % (22/104), avoir fait usage de drogues injectables en prison. Cinquante-deux p. cent (54/104) ont dit être séropositives pour le VHC, et 8 % (8/104) ont dit être séropositives pour le VIH. Sur les 22 femmes qui s'étaient injecté des drogues en prison, 91 % (20/22) ont dit être infectées par l'hépatite C, et 86 % (19/22) avaient partagé des aiguilles en prison (nettoyées ou non à l'eau de javel au préalable). Les détenues étaient plus susceptibles de déclarer avoir consommé des drogues illicites en prison si elles avaient gagné des revenus de sources illicites avant leur incarcération ($p = 0{,}0081$, RC = 3,19), si elles s'étaient déjà injecté des drogues ($p = 0{,}036$, RC = 2,97) et si elles s'étaient déjà injecté des drogues au domicile d'un ami ou d'une amie ($p = 0{,}066$, RC = 2,70).

Interprétation : La majorité des femmes qui disent avoir fait usage de drogues injectables en prison déclarent aussi être séropositives pour le VHC et avoir partagé des aiguilles. Les prisons canadiennes présentent des risques de transmission des agents pathogènes véhiculés par le sang, et il devrait être possible d'y implanter des stratégies de réduction des méfaits.

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