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Enhanced Surveillance of Risk Behaviours among Injecting Drug Users in Canada

PILOT SURVEY REPORT
February 2004

Canada

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February 2004

Surveillance and Risk Assessment Division
Centre for Infectious Disease Prevention and Control
Population and Public Health Branch
Health Canada

Information to Readers

The Surveillance and Risk Assessment Division, Centre for Infectious Disease Prevention and Control, Health Canada, together with its collaborators is pleased to present the report of the pilot survey of the I-Track Enhanced Surveillance of Risk Behaviours among Injecting Drug Users (IDU) in Canada conducted in 2002 and 2003.

The pilot phase was conducted between fall 2002 and spring 2003 in Regina, Sudbury, Toronto and Victoria to assess the feasibility of the proposed methods for conducting behavioural surveillance of IDU populations across Canada. Behavioural surveillance among IDU has been ongoing within the SurvUDI research group in Quebec and Ottawa since 1995. At the beginning of 2003, this group conducted a feasibility study of the I-Track questionnaire and the collection of DBS in selected sites within the network. Recruitment for the feasibility study was completed in August 2003 and analysis of these data is still pending.

The purposes of this document are:

- To outline the process of development of a national enhanced surveillance system of risk behaviours among IDU in Canada, and to present the evaluation of the pilot project. This includes feedback from collaborating partners in Regina, Sudbury, Toronto and Victoria, SurvUDI group, and members of expert advisory group.
- To present the results of the data collected in Regina, Sudbury, Toronto and Victoria.

The results of the data collected by SurvUDI group (in 268 participants) are not presented in this document and will be incorporated at a later stage.

The lessons learned from the pilot study represent a key component in the establishment of a national surveillance system that would track HIV- and hepatitis C (HCV)- associated risk behaviour in IDU populations in urban and semi-urban centres across Canada. Ongoing monitoring of risk behaviours in IDU populations in urban and semi-urban locales is essential for program planning and evaluation, and I-Track is able to provide such information at the national and local levels. The success of the pilot study demonstrates that a national surveillance system for monitoring of risk behaviours in IDU populations can be established in Canada with the collaboration of local and provincial health authorities, researchers and community-based programs. Special thanks must be given to the study participants themselves without whose cooperation this study would not have been possible.

We look forward to launching Phase One of the I-Track Survey in the fall of 2003.

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Executive Summary

Introduction

The Injecting Drug Use Unit of the Surveillance and Risk Assessment Division, CIDPC, is establishing an enhanced surveillance system to track HIV- and hepatitis C (HCV) - associated risk behaviours in injecting drug users (IDU) populations (I-Track) in urban and semi-urban centres across Canada. It forms a part of the second-generation HIV surveillance as advocated by WHO and UNAIDS. Through this system, national, and to a certain extent provincial and local, trends in injecting and sexual risk behaviours among IDU can be assessed. Behavioural trend data obtained through the system will provide important information that can be triangulated with other data sources to assess the effects of prevention efforts and policies at the local, provincial, and national levels.
The surveillance system is being established in collaboration with local and provincial health departments, community-based organizations and researchers. Within Health Canada, internal collaborations involve the Community Acquired Infections Division, the National HIV and Retrovirology Laboratory and the HIV/AIDS Policy, Coordination and Programs Division.

Objectives

The objectives of national surveillance of HIV/HCV-associated risk behaviours among IDU in Canada are to describe changing patterns in drug injecting practices, HIV-testing behaviours and sexual behaviours among IDU. Depending on the feasibility of collecting a biological sample (and the type of biological sample that is collected), additional objectives are:

- To describe changing patterns in the prevalence and incidence of HIV infections among IDU at the national and local level.
- To describe changing patterns in the prevalence and incidence of hepatitis C (HCV) infections among IDU at the national and local level.

Pilot Study

The pilot study was undertaken during 2002 and 2003 in Regina, Sudbury, Toronto, and Victoria to assess the feasibility of the proposed methods for conducting behavioural surveillance of IDU populations across Canada. In addition, the SurvUDI group, which has been conducting studies among IDU at selected centres in Quebec and Ottawa since 1995, piloted the questionnaire and studied the feasibility of collection of biological specimen.
The pilot study assessed the feasibility and mechanism of development of a national level surveillance system and its sustainability in the long run. A review of the pilot study was carried out in a meeting held on March 27th and 28th, 2003 wherein, feedback from each of the participating centres was discussed, and the pilot phase was evaluated with respect to the objectives. The meeting also laid the foundation for establishment of a national risk behaviour surveillance system among IDU in Canada.

Results of the pilot study

A total number of 794 participants were recruited from four cities viz. Toronto (221), Regina (254), Sudbury (169), and Victoria (150). In addition, the SurvUDI group has recently (August, 2003) finished recruitment of 257 IDU to conduct the pilot. The survey instrument consisted of 35 core questions and site-specific questions were added depending on site requirements. The biological surveillance was undertaken through collection of dried blood specimens (DBS) at four sites. The SurvUDI collected DBS for over 90 participants, venous and saliva sample for nearly 60 participants and only saliva sample for the remaining participants. This report contains results of the survey completed in four cities viz. Toronto, Regina, Sudbury, and Victoria and the report on the evaluation of the pilot at the participating centres including SurvUDI group. The results of the pilot study undertaken by SurvUDI will be presented separately.

Recruitment

Recruitment was mainly carried out at the needle exchange program (NEP) centres or their mobile and outreach services and through word-of-mouth. At some sites, promotion of the survey was done through flyers and posters that were displayed at prominent sites being frequented by the IDU.

Demographics of the study population

The study population comprised 514 (64.8%) males and 279 (35.2%) females (information on gender was missing for one participant). The mean age of the study population was 35 years (range 16 to 69), and was higher for males (36.4 years) as compared to females (32.2 years). Nearly 97% of the study population was living in the city of recruitment although 3% of the study participants came from adjoining cities to participate in the survey. In terms of level of education, 44.5% of participants had completed high school or above, and 55.5% of participants had some high school or less. Nearly 40% of the study participants identified themselves to be Aboriginal and of these nearly 60% were recruited in Regina, where nearly 90% of the study population identified themselves as Aboriginal. Just over half of the study population reported having stable housing (living in their own house or apartment or parent's/relative's house) and 8% were living with friends. Among the study participants 9% were living in shelters and 8% were living on the street at the time of recruitment.

Drug use

One-third of the study population reported injecting drugs every day and 19.6% injected drugs once in a while, not every week. The mean age of injecting drug use initiation was 21.4 years (range 7-53 years) and one third of the study population had started to inject by the age of 16 years. The commonly injected drugs included cocaine used by 81.9% of IDU, morphine 54.3%, dilaudid 50.2%, heroin 42.8%, crack 30.5%, ritalin alone 26.3%, and talwin and ritalin 22.6% of IDU. The drugs injected varied by city: for example in Regina, the majority of IDU reported ritalin alone (or in combination with talwin) as the most commonly injected drug, while in Victoria it was cocaine. In Toronto, a large proportion of IDU reported injecting crack most often, but its use was limited in other cities.

Seroprevalence of HIV and Hepatitis C

The seroprevalence of HIV (average of four sites) was 8.1% among the study participants and varied by city [Regina 1.2%, Toronto 5.1%, Sudbury 10.1%, and Victoria 16.0%]. The seroprevalence of Hepatitis C was 63.8% (average of four sites) and varied by city [Toronto 54.3%, Regina 60.2%, Sudbury 61.5%, and Victoria 79.3%]. The HIV/HCV co-infection rate was found to be 7.8% (average of four sites).

Sharing of needles and injecting equipment

When asked about sharing needles and other injecting equipment such as cookers, water, cotton, filter etc. within six months prior to participating in the study, almost a quarter of the study population reported borrowing needles for injection. Needles were mostly borrowed from close friend/family or sex partners. In terms of other injection equipment, 43.2% of the study population had borrowed cookers, water, cotton, filter etc. mostly from close friend/family or regular sex partners. Almost a third of the study participants reported passing on injecting equipment they had used to others. Nearly 20% and 40% of the study population reported borrowing needle and other injecting equipment respectively for injections within one month prior to participating in the study.

Sexual behaviours

A significant proportion (84.7%) of the study population (including 80.4% of males and 94.9% females) across the four sites reported engaging in some kind of sexual activity during the preceding 6 months. Nearly 40% of females IDU reported having client male sex partners, 7.1% of the males had female client sex partners and 4.3% of the males reported having a male sexual partner within six months prior to study. Condom use during penetrative sex was higher compared with condom use during oral sex. Condom use during penetrative and oral sex became more infrequent as the IDU developed more stable relationships with their sexual partners. Condom use during penetrative sex was higher in the group of IDU who were aware of their HIV positivity as compared to those who knew that they were HIV negative.

Testing behaviours

In terms of HIV/ HCV testing, 89.7% and 85.3% of the study population, who responded to this question, reported that they had ever been tested for HIV and HCV, respectively. The proportions varied by site with nearly 96% of the study population in Victoria and 83.4% in Regina reported having been tested for HIV. In Regina, 83.8% of the study population was ever tested for HCV as compared to Victoria, where 94.0% of the participants were tested for HCV. When asked about testing for HIV in the one-year period preceding the study, 72.7% in Victoria, 52.0% in Regina, 58.0% in Sudbury, and 64.7% in Toronto reported being tested.

Conclusions

The results of the pilot study indicated that the prevalence of HIV and HCV remains unacceptably high in IDU populations in Canada. There is a high level of needle sharing and multi-person use of other drug injecting paraphernalia, and high rates of sexual activity, highlighting that the conditions exist for the spread of blood-borne viruses and sexually transmitted infections among networks of IDU. Ongoing monitoring of risk behaviours in IDU populations in urban and semi-urban locales is essential for program planning and evaluation and I-Track is able to provide such information at the national and local levels. The success of the pilot study indicates that a national surveillance system for monitoring of risk behaviours in IDU populations can be established in Canada with the collaboration of local and provincial health authorities, community-based organizations and researchers.

Phase I of the study is proposed to be undertaken in fall of 2003 in Victoria, and in the spring of 2004 in Regina, and Winnipeg, Toronto and Sudbury. The SurvUDI research group will continue to collaborate by ongoing recruitment at eight sites in Quebec and in Ottawa. Efforts are being made to recruit additional sites in the surveillance system in the future.

1. Introduction

1.1 The need for Behaviour Surveillance of Injecting Drug User Populations in Canada

Injecting drug users (IDU) are at risk of acquiring HIV and other blood-borne viruses through the sharing of contaminated injecting equipment. IDU are additionally at risk of HIV and other sexually transmitted infections through unprotected sex. Recognition of these risks has lead to the establishment of prevention programs in Canada and internationally that aim to limit the spread of HIV and other blood-borne pathogens among IDU. The focus of most prevention programs is on trying to encourage IDU to adopt safer behaviour. However, few countries have made substantial efforts to monitor injecting and sexual risk behaviours among IDU reliably over time. To date, most countries have centred their surveillance efforts on tracking reported cases of HIV and AIDS, and these data have been used to inform prevention and care program design and practice.

Recognizing this, as well as the need for countries to focus surveillance resources on subgroups in which HIV infection is most likely to be concentrated, UNAIDS, WHO, and other organizations have developed a framework for "second generation HIV surveillance", to help countries to track HIV-associated behaviours in risk groups, such as IDU and men who have sex with men (MSM)[1]. Second generation surveillance emphasizes the importance of using behavioural data in addition to routine surveillance data to help explain changes in HIV incidence and prevalence, and of using behavioural data as an early warning system for HIV spread. In addition, since behaviour change is the goal of most prevention programs, second generation surveillance advocates for more extensive use of behavioural information to inform program design and to help evaluate programs [1].

1.2 Background

IDU and HIV/HCV

In many countries around the world, injecting drug use with needle sharing has provided a means for rapid spread of HIV among IDU themselves, and then via sexual and vertical transmission to their sexual partners and children. Examples of this type of rapid HIV spread include jurisdictions as diverse as New York, Edinburgh, Bangkok, and Manipur, India[2]. There has been less research about the potential for diffusion of HIV to IDU in small cities and rural areas, and there is very limited information about this issue in Canada. Recent studies in Prince Albert and Regina, Saskatchewan[3-4], have documented relatively high levels of needle sharing and multi-person use of other drug injecting paraphernalia, highlighting that the conditions exist for the spread of blood-borne viruses among networks of IDU outside major urban Canadian centres. Ongoing monitoring of risk behaviours in IDU populations in urban and semi-urban locales would serve as an early warning system for HIV spread and would provide continuous data for prevention programming and evaluation.

Available research indicates that HIV incidence and prevalence remain unacceptably high among Canadian IDU. For example, HIV incidence in 2000 in the ongoing SurvIDU study of drug injectors attending needle exchange and other services ranged from 3.0 per 100 person years (PY) in Quebec City, to 4.7 per 100 PY in Montreal, to 5.1 per 100 PY in Ottawa and 3.9 per 100 PY for the overall SurvUDI network[5]. Estimates of HIV prevalence among IDU recruited from a variety of settings in 1999 or 2000 range from 2% to 5.8% in Regina and semi-urban centres in Quebec respectively, to 17% in Montreal, to around 20% in Victoria and Ottawa[3,6,7]. Ongoing monitoring of the extent of HIV infection and trends in its spread among IDU from a variety of jurisdictions in Canada is needed given the worrisome levels of HIV infection that have been documented for this population.

The situation with respect to hepatitis C and injecting drug users is currently less clear since fewer Canadian studies have addressed this issue directly. However, studies in Vancouver and Montreal have detected a hepatitis C prevalence of around 85% in IDU cohorts in these cities and an annual incidence of 26% and 27% respectively. Studies of IDU in Regina, Prince Albert, and Cape Breton have documented hepatitis C infection in 46%, 50%, and 47% of participants respectively[3,4,8]. Given the paucity of data on the extent of HCV among IDU in Canada, there is an urgent need to track HCV infection and trends in its spread among IDU from both large and small centres in Canada.

1.3 Development of system for surveillance of risk behaviours among injecting drug users in Canada

Although several ongoing regional studies (VIDUS in Vancouver, SurvUDI in Quebec and Ottawa) in Canada collect risk behaviour data on IDU and a number of one-time cross-sectional surveys on risk-taking among IDU has been conducted (e.g. Regina Seroprevalence Study, RARE project Victoria, eastern project Cape Breton, Prince Albert seroprevalence study etc.), it is challenging, if not impossible, to compare levels of risk behaviours between data sets. A national surveillance system that would track HIV- and hepatitis C (HCV) - associated risk behaviour in IDU populations in urban and semi-urban centres across Canada would provide critical information for those involved in planning and evaluating the response to HIV/HCV among IDU. Through such a system, national, and to a certain extent, provincial and local trends in injecting and sexual risk behaviours could be assessed. Behavioural trend data would also enhance existing national HIV/AIDS surveillance data and national incidence and prevalence estimates in monitoring the course of the HIV (and HCV) epidemic among IDU.

The development of a system for enhanced surveillance of risk behaviours among IDU in Canada (I-Track) that would contribute to achieving the above-mentioned benefits in Canada was proposed and developed by the Centre for Infectious Disease Prevention and Control (CIDPC), Health Canada, in collaboration with researchers with expertise in the area of HIV and IDU, regional health authorities or provincial health departments.

1.4 Collaboration

Partnerships were formed between Health Canada, researchers, provincial health authorities and community-based organizations that had either previously expressed interest in participating in such a proposal or had collaborated with CIDPC in studies among IDU in the past. This resulted in collaboration between CIDPC, Health Canada, researchers, regional health authorities and community stakeholders in Victoria, Regina, Sudbury, and Toronto. In addition, linkages were developed with the ongoing SurvUDI study in Quebec and Ottawa, to examine the feasibility of using similar data collection methods. A pilot of the I-Track was undertaken in the fall of 2002. Health authorities in Winnipeg also expressed interest in the survey and are expected to participate in Phase I of the survey.

1.5 Participating Centres

The I-Track Survey was piloted in the following sites in the fall of 2002:

Victoria, BC
Regina, SK
Sudbury, ON
Toronto, ON

The data collection instruments including collection of dried blood spots were pre-tested by the SurvUDI group during the first half of 2003. However, this document contains the study results from Victoria, Regina, Sudbury and Toronto.

2. Objectives of Surveillance of Risk Behaviours among IDU Populations across Canada

2.1 Objectives

The objectives of national surveillance of HIV/HCV-associated risk behaviours among IDU are:

- To describe the changing patterns in drug injecting practices among IDU at the national and regional level
- To describe the changing patterns in HIV-testing behaviour among IDU at the national and regional level
- To describe changing patterns in sexual risk behaviours among IDU at the national and regional level

Depending on the feasibility of collecting a biological sample (and the type of biological sample that is collected), additional objectives are:

- To describe changing patterns in the prevalence and possibly incidence of HIV infections among IDU at the national and regional level
- To describe changing patterns in the prevalence of hepatitis C (HCV) infections among IDU at the national and regional level

2.2 Pilot Survey Objectives

The pilot study was conducted from October 2002 to February 2003 to assess the feasibility of the proposed methods for conducting behavioural surveillance of IDU populations cross Canada including:

- Recruitment strategies
- The length of the recruitment period/target sample size
- The length of time to complete the interview, debriefing, and specimen collection
- The various strategies to prevent duplicate participation by respondents in a given survey round
- The collection of dried blood spot specimens to test for HIV and HCV
- The feasibility of use of the detuned assay to identify recent HIV infection among respondents who test positive for HIV

The pilot survey also assessed the data collection instrument with respect to:

- The ease of its administration by interviewers
- Non-response rates/missing data for questions
- Its suitability and face validity

3. Methods

3.1 Survey Design

Cross-sectional survey of injecting drug users in participating sentinel centres across Canada.

3.2 Eligibility Criteria

In order to be considered eligible to participate in the survey the person must:

- Have injected drugs for non-therapeutic purposes in the past six months
- Be 15/16 years old or older (age varied by province)
- Be capable of understanding the information provided about the survey and is therefore able to provide informed consent
- Understand English or French
- Not have already participated in the current round of the annual survey

3.3 Sample Size

150-250 participants from each participating centre

3.4 Survey Staff and Training

Procedural guidelines for survey implementation were developed. Site coordinators and interviewers were hired or assigned for survey implementation at each participating centre. Coordinators and interviewers were trained in all aspects of the survey protocol including questionnaire administration and DBS collection technique.

3.5 Sampling and recruitment

The pilot survey was conducted between October 2002 and March 2003. The sampling and recruitment strategies were guided by the constraints of time, budget, and access to populations. A venue-based sampling through needle exchange program sites (which acted as primary sampling units) offered a suitable site for recruitment because of high reported rates of NEP use by IDU in Canada. Distinctive posters and/or business cards that advertised the survey were displayed at needle exchange sites. In many communities, NEPs had several modes of service delivery, including fixed, mobile, and street outreach components. Many NEPs had also partnered with other community-based agencies to conduct satellite needle exchange, and therefore, recruitment occurred in all of these settings. To further broaden participation beyond NEP attendees, recruitment, where feasible, was conducted through other community-based agencies that serve an IDU clientele. Posters and leaflets were distributed at strategic locations frequently visited by IDU, though their use varied from site to site.

The recruitment was mainly carried out through invitation and participation. Several different strategies were used to recruit IDU. Staff involved in needle exchange services promoted the survey to their clients and directly solicited IDU clients attending local needle exchange sites to participate in the study and participants also reported learning about the survey through their peers. Staff at participating community-based agencies that serve an IDU clientele were also asked to promote the survey

throughout the recruitment period. If appropriate, these promotional materials were displayed in other public venues identified by local stakeholders who work with the IDU population. Participants were paid $20 upon completion of the questionnaire and specimen collection in recognition of their time and effort.

3.6 Summary of Recruitment methods and sample size by centre

Table 1: Mode of recruitment, survey timeframes and sample size conducted between October 2002 and February 2003 by centre

Centres	Mode of Recruitment	No. of Interviewers	Timeframe	No. IDU Recruited
Victoria, BC	NEP Word of mouth Posters at NEP	2	12 days	150
Regina, SK	4 NEPs Word of mouth Flyers/posters	3	20 days	254
Sudbury, ON	NEP Word of mouth Flyers/posters	3	24 days	169
Toronto, ON	7 NEPs Word of mouth	6*	70 days	221
TOTAL				**794**

* One primary interviewer was used for the majority of the interviews. Needle exchange staff who had also received survey training conducted the remainder.

3.7 Data Collection

Two methods of data collection were employed:

- Interviewer administered interviews with injecting drug users
- Anonymous HIV and hepatitis C testing using dried blood spots

Potential candidates were screened by interview staff and/or NEP staff as to their eligibility for participation in the survey. Candidates were given a survey information sheet outlining a description of what the survey entailed which emphasized the confidential and voluntary aspects of the survey. Those candidates that were interested and eligible for participation were interviewed immediately when possible or more often provided with an appointment time and date for administration of the survey.

Interviews took place in a quiet confidential area at the NEP, or in the mobile van, or in a mutually convenient location such as a café. The consent form was read aloud by the interviewer at the beginning of the interview. A copy of the consent form was provided for the participant to take away. Similar to the survey information sheet, the consent form stressed the confidentiality of the survey and informed the candidates of their rights as a research study participant with respect to: choosing not to answer any question; ending the interview at any time; the fact that their right to services and/or treatment would not be affected by their decision to participate or not, in the survey. The interviewer then recorded the participant's verbal consent at the end of the consent form and initialled and dated the form.

On obtaining informed consent, the interviewer then administered the questionnaire. The median length of time to complete the questionnaire was 20 minutes.

At the end of the interview, debriefing was conducted to counsel the participant on safer sexual and drug injecting practices if appropriate. Participants were encouraged to ask any questions they may have. Referrals to appropriate social and HIV and hepatitis C testing services were provided when appropriate.

3.7.1 Questionnaire

The questionnaire was developed in consultation with the expert advisory group who reviewed the questionnaire at various stages of its development and provided feedback on its face validity, potential biases, and the usefulness of the questions posed. Most of the injecting and sexual risk behaviour questions were adopted from the SurvIDU core questionnaire; other questions on demographics, drug use, and testing behaviours were selected from a variety of different Canadian studies that were reviewed for the aforementioned inventory.

The core questionnaire comprised a total of 35 questions (Appendix A). Eleven core items also pertained to injection risk behaviours. The questionnaire contained six core items that examine the number of male and female partners in the past six months, and condom use during penetrative (defined as vaginal or anal) and oral sex with regular, casual, and client partners of the same and opposite sex. Nine core items on HIV/HCV testing and treatment as well as two questions related to NEP use and frequency of NEP use. Finally, there were seven core socio-demographic items addressing: gender, age, ethnicity, education, type of housing, and interprovincial mobility. Two items on history of NEP use and frequency of NEP use were also included.

3.7.2 Additional questions of local interest

Each participating sentinel centre had the option of adding five to ten additional questions to the survey instrument. This was intended to allow local research or programmatic issues to be addressed at relatively little cost to the behavioural surveillance survey. Additional questions were inserted into the core questionnaire in places appropriate to the overall flow of the questionnaire. Local survey teams were asked to contribute any questions that they develop and use in each survey round to a bank of questions managed by the surveillance system coordinator in CIDPC. The purpose of this bank of questions is intended for information sharing. Survey teams at all sentinel centres have access to these questions and are able to incorporate them into their annual surveys if appropriate. This will enhance comparability of any additional questions that are used across annual surveys by collaborating centres.

3.8 HIV and hepatitis C testing

3.8.1 Dried Blood Spot Collection

After completion of the interview and debriefing, consenting participants provided a finger prick blood sample that was collected on to a cotton-fibre based paper product designed for the collection of body fluids (No.903, Schleicher and Schuell (S & S), Keene, NH).

The finger prick blood sample was collected using the following technique:

The participant either washed their hands with warm soapy water and/or with a hand-sanitizing product such as "Purel" or equivalent product. The participant was advised to select a finger of the non-dominant hand, and to lay the finger on a hard surface to stabilize the hand. The area to be punctured was swabbed with an alcohol swab. A microlancet (Brand Safety Flow Lancet – Becton & Dickinson & Co.) was then used to puncture the swabbed area. A large drop of free-flowing blood was allowed to collect at the puncture site and then dropped on to filter paper. Efforts were made to completely fill the 5 perforated circles outlined on the filter paper. Participants were supplied with a Band-Aid to cover the puncture site.

Filter papers were labeled by the interviewer with a unique study code that corresponded to the code on the completed questionnaire. No personal identifiers were placed on either the questionnaire or the DBS filter paper. Filter papers were allowed to dry for at least 3 hours in a suspended vertical position. When dry, glycine weigh papers were placed between each paper, and several papers were stored in a zip-lock bag in a dry area. Filter papers were shipped according to standard shipping procedures for diagnostic specimens, in batches of 50 to the HIV Reference laboratories in Ottawa for testing.

3.8.2 Interviewer assistance with DBS collection

The survey protocol stipulated that the participant's were to self-collect the DBS in the manner outlined above. However, during the course of the pilot survey, interviewers found that participants often assumed and expected that the interviewer would perform the collection procedure. It was also noted that when interviewers assisted with DBS collection by performing the lancing procedure, this resulted in reduced client stress, reduction in the length of the interview and improvement the quality of the sample collected. Interviewers also felt that the collection procedure was conducted in a more controlled and safe manner when the interviewer performed the lancing procedure. Therefore, in the majority of participating centres, assistance with DBS collection was offered and given by the interviewer, only after the participant had attempted and had difficult performing the DBS collection themselves and had consented to assistance being provided by the interviewer. By the end of the pilot survey, interviewers had provided assistance to participants during DBS collection at least half of the time, and assistance was provided most of the time in some sites.

3.8.3 Laboratory Testing

DBS spots were tested for HIV using enzyme immuno-assay (EIA) and reactive samples were confirmed with Western Blot.

Hepatitis C (HCV) testing were screened with an ortho HCV version 3 EIA and reactive samples were confirmed using a supplemental EIA kit. It should be noted the testing methodology for hepatitis C has not been approved for use in DBS and that this methodology for HCV testing was piloted during this survey.

4. Data Analysis

Frequency of demographic, drug use, risk behaviour, and HIV/ hepatitis C (HCV) testing variables was assessed; seroprevalence for HIV and HCV was estimated for each site. This analysis was done overall, and by participating centre. Agreement between self-reported HIV and HCV status and survey test results was calculated. Reliability of self-reported results was assessed using sensitivity and specificity calculations.

The analysis of data collected through non-probability samples especially in circumstances where the sample size from each participating centre in not proportional to the IDU populations in that city, presents biased results if the sample is treated as one sample. Hence, we decided not to combine the populations from the four participating centres into one sample but rather to present the results on the basis of the average of four sites. However, in the section on the condom use by male study participants who had a male sexual partner, the data from four sites has been combined due to small number of participants in this group, hence the results may need to be interpreted with caution.

5. Results

5.1 Socio-Demographic Characteristics of Participants

Number of participants

A total of 794 self-reported IDU were recruited into the study at four sites. Table 2 shows the breakdown of number of participants by site and by sex. The study population consisted of 65% males and 35% females. The majority of the study participants in Toronto (73.6%) and Victoria (70.7%) were males. In Sudbury the study population was composed of 65.1% males and 34.9% females while Regina's population consisted of 53.5% males and 46.5% females.

Table 2. Number and gender distribution of participants

	Number (%)	Number Females (%)	Number Males (%)
Regina	254 (32.0)	118 (46.5)	136 (53.5)
Sudbury	169 (21.3)	59 (34.9)	110 (65.1)
Toronto*	221 (27.8)	58 (26.4)	162 (73.6)
Victoria	150 (18.9)	44 (29.3)	106 (70.7)
Total	794 (100)	279 (35.2)	514 (64.8)

*Data on gender missing for 1 participant in Toronto

Age group distribution

The age group distribution of participants is shown in Table 3. There were significantly older individuals (>30 years) in Toronto and Victoria as compared to Sudbury and Regina.

Table 3. Age group distribution

Age (yrs)	Regina N=252* (%)	Sudbury N=169 (%)	Toronto N=221 (%)	Victoria N=150 (%)	Average of Four sites (%)
Less than 20	21 (8.3)	8 (4.7)	7 (3.2)	3 (2.0)	4.6
20 to 30	68 (27.0)	58 (34.3)	52 (23.5)	33 (22.0)	26.7
30 to 40	91 (36.1)	53 (31.4)	70 (31.7)	56 (37.3)	34.1
40 to 50	58 (23.0)	42 (24.9)	74 (33.5)	43 (28.7)	27.5
50 and above	14 (5.6)	8 (4.7)	18 (8.1)	15 (10.0)	7.1
Mean Age	33.9	33.5	36.4	36.4	35.0

* Data missing for 2 participants

Age distribution by gender

The age distribution by gender indicates (Table 4) that the male population was significantly older than the female population at all sites. Between the sites, Sudbury had the youngest female population with mean age of 29.4 years. The oldest female population was found in Toronto with mean age of 34.9 years. The oldest male population was found in Toronto and Victoria with mean ages of 37.0 and 37.8 years.

Table 4. Age distribution by gender

		Female	Male
	N	Mean age (yrs)	Mean age (yrs)
Regina	252*	31.6	35.3
Sudbury	169	29.4	35.7
Toronto	221	34.9	37.0
Victoria	150	32.8	37.8
Average of Four sites	792	32.2	36.4

* Data missing for 2 participants.

Education

Table 5 shows the education level of participants, 55.5% of participants had some high school education or less. Twenty-one percent of participants had completed high school, 13.6% had more than high school education (i.e. attended university or college), and almost 10.0% completed college or university education. While the majority of participants had some high school education or less at all sites, the populations in Toronto and Victoria had a higher percentage (14.9% and 19.3%, respectively) of people pursuing education beyond high school.

Table 5. Highest education level completed

	Regina N=254 N (%)	Sudbury N=169 N (%)	Toronto N=221 N (%)	Victoria N=150 N (%)	Average of Four sites N (%)
Some high school or less	172 (67.7)	99 (58.6)	110 (49.8)	69 (46.0)	55.5
High school completed	57(22.4)	33 (19.5)	44 (19.9)	33 (22.0)	21.0
More than high school	21 (8.3)	20 (11.8)	33 (14.9)	29 (19.3)	13.6
Completed college/university	4 (1.6)	17 (10.1)	34 (15.4)	19 (12.7)	9.9

Current Residence

The majority of participants (96.8% in all cities interviewed) were local residents of their respective cities. (Table 6) The remaining 3.2% of the study population were from the nearby areas, who, had either come to participate in the study by hearing from friends or had come to utilize the services being offered at the NEP.

Table 6. Current residence

	Current City N (%)	Other City N (%)
Regina, N=254	247 (97.2)	7 (2.8)
Sudbury, N=169	162 (95.9)	7 (4.1)
Toronto, N=221	218 (98.6)	3 (1.4)
Victoria, N=149*	143 (95.3)	6 (4.7)
Average of Four sites (%)	96.8	3.2

*Data missing for 1 participant.

Past Residence

At the time of interview, 26% of the participants reported moving to the interview city within the last six months (Table 7). The highest proportion of participants who moved during the preceding 6 months was found in Victoria (32.0%) while the lowest percentage was found in Sudbury (16.2%).

Table 7. Past residence within the past 6 months

	Not lived elsewhere	Have lived elsewhere
Regina, N=254	181 (71.3)	73 (28.7)
Sudbury, N=167*	140 (83.8)	27 (16.2)
Toronto, N=221	163 (73.8)	58 (26.2)
Victoria, N=150	102 (68.0)	48 (32.0)
Average of Four sites (%)	74.3	26.0

*Data missing for 2 participants

Type of Past Residence

The largest proportion of participants had lived in their own apartment (58.9%), followed by those who lived at a friend's place (31.8%) and those who lived at a parent or relative's house (27.4%) in the six months prior to interview (Table 8). Twenty percent of the study participants reported history of incarceration in the preceding six months.

Table 8. Types of places where participants have lived in the past 6 months

	Regina N=254 N (%)	Sudbury N=169 N (%)	Toronto N=221 N (%)	Victoria N=150 N (%)	Average of Four sites (%)
Own apartment	87 (34.3)	128 (75.7)	123 (55.7)	105 (70.0)	58.9
Friend's place	58 (22.8)	44 (26.0)	89 (40.3)	57 (38.0)	31.8
Parent's/relative's house	124 (48.8)	39 (23.1)	48 (21.7)	24 (16.0)	27.4
Own house	169 (66.5)	20 (11.8)	14 (6.3)	13 (8.7)	23.3
Streets	17 (6.7)	22 (13.0)	86 (38.9)	80 (53.3)	28.0
Shelter	27 (10.6)	21 (12.4)	94 (42.5)	56 (37.3)	25.7
Rooming and squats	19 (7.5)	20 (11.8)	86 (38.9)	65 (43.3)	25.4
Hotel	35 (13.8)	22 (13.0)	73 (33.0)	55 (36.7)	24.1
Jail	54 (21.3)	30 (17.8)	58 (26.2)	22 (14.7)	20.0
Other	14 (5.5)	12 (7.1)	18 (8.1)	18 (12.0)	8.2
Recovery centre	32 (12.6)	7 (4.1)	9 (4.1)	7 (4.7)	6.4
Psychiatric institution	5 (2.0)	9 (5.3)	5 (2.3)	3 (2.0)	2.9

Type of current residence

In terms of current residence (Table 9), Regina had the highest percentage of people living in stable housing (own apartment/house or parent/relative's house) at 88.2%. Toronto and Victoria had a high percentage of people living in temporary homes compared to other sites. At these sites, 20.4% and 13.3%, respectively, were living in shelters compared to 1.2% at other sites; and 12.2% and 18.7%, respectively, currently lived on the street compared to 0.4% and 0.6% in Regina and Sudbury. Overall, over half (52.2%) of the study population reported living in stable housing while a third (35.4%) reported unstable housing conditions.

Table 9. Type of place where participants currently live

	Regina N=254 N (%)	Sudbury N=169 N (%)	Toronto N=221 N (%)	Victoria N=150 N (%)	Average of Four sites (%)
Own apartment/house	182 (71.7)	62 (36.7)	74 (33.5)	63 (42.0)	46.0
Missing	3 (1.2)	76 (45.0)	6 (2.7)	3 (2.0)	12.7
Shelter	3 (1.2)	2 (1.2)	45 (20.4)	20 (13.3)	9.0
Friend's place	17 (6.7)	16 (9.5)	25 (11.3)	7 (4.7)	8.0
Parent's/relative's house	42 (16.5)	6 (3.6)	7 (3.2)	2 (1.3)	6.2
Street	1 (0.4)	1 (0.6)	27 (12.2)	28 (18.7)	8.0
Rooming	1 (0.4)	3 (1.8)	1 (0.5)	13 (8.7)	2.9
Other	4 (1.6)	2 (1.2)	26 (11.8)	5 (3.3)	4.5
Hotel	1 (0.4)	0	1 (0.5)	8 (5.3)	1.6
Squats	0	1 (0.6)	9 (4.1)	1 (0.7)	1.4

Ethnic Background

With respect to ethnic background, 38.6% of the study participants identified themselves to be of Aboriginal background (including First Nations status and non-status, Metis, and Inuit), most of them were mainly from Regina, where 90.2% of the study population was Aboriginal (Table 10). While eliciting ethnic background information, interviewers were provided with a list of different ethnic backgrounds (See Appendix A, Questionnaire). The list was not read aloud to participants but interviewers were allowed to prompt if necessary. A significant proportion of participants (25.3%) chose not identify themselves as being of any particular ethnic background and preferred to self-identify themselves as 'Canadians'. There were no significant differences among the other three sites viz. Sudbury, Toronto, and Victoria.

Table 10. Ethnic background

	Regina N=254 N (%)	Sudbury N=169 N (%)	Toronto N=221 N (%)	Victoria N=150 N (%)	Average of Four sites (%)
Aboriginal	229 (90.2)	54 (32.0)	25 (11.3)	31 (20.7)	38.6
Canadians	0 (0.0)	38 (22.5)	102 (46.1)	49 (32.7)	25.3
Other European	16 (6.3)	19 (11.2)	45 (20.4)	37 (24.7)	15.7
Eastern European	6 (2.4)	43 (25.4)	18 (8.1)	5 (3.3)	9.8
Caucasian	2 (0.8)	6 (3.6)	6 (2.7)	17 (11.3)	4.6
Southern European	0 (0.0)	5 (3.0)	10 (4.5)	4 (2.7)	2.6
Others	1 (0.4)	2 (1.2)	8 (3.6)	4 (2.7)	2.0
Missing/unknown	0 (0.0)	2 (1.2)	7 (3.2)	3 (2.0)	1.6

5.2 Drug use

Drugs injected

Among drugs that were injected, participants reported injecting on an average four different types of drugs (Table 11). A large proportion of participants (81.9%) injected cocaine, followed by morphine (54.3%) and dilaudid (50.2%), alone or in combination with others. There were marked site-specific variations in drugs injected. The majority (83.9%) of IDU in Regina reported injecting ritalin alone compared to 4.7% - 8.3% at other sites. A large number of participants at Sudbury reported using dilaudid (73.4%) while only 29.9% to 50.0% participants use dilaudid at other sites. In Toronto, a large proportion (63.3%) of IDU reported injecting crack as compared with 9.3% to 37.9% at other sites. Heroine and heroine combined with cocaine were reported by 73.3% and 47.3% respectively, of the Victoria IDU population as compared to 7.9% and 5.1% of IDU, respectively, in Regina.

Table 11. Drugs injected by site

	Regina N=254 N (%)	Sudbury N=169 N (%)	Toronto N=221 N (%)	Victoria N=150 N (%)	Average of Four sites (%)
Cocaine	185 (72.8)	141 (83.4)	174 (78.7)	139 (92.7)	81.9
Morphine	158 (62.2)	104 (61.5)	103 (46.6)	70 (46.7)	54.3
Dilaudid	76 (29.9)	124 (73.4)	105 (47.5)	75 (50.0)	50.2
Heroin	20 (7.9)	47 (27.8)	137 (62.0)	110 (73.3)	42.8
Crack	29 (11.4)	64 (37.9)	140 (63.3)	14 (9.3)	30.5
Others	51 (20.1)	41 (24.3)	88 (39.8)	47 (31.3)	28.9
Amphetamines	64 (25.2)	48 (28.4)	65 (29.4)	49 (32.7)	28.9
Ritalin alone	213 (83.9)	14 (8.3)	18 (8.1)	7 (4.7)	26.3
Heroin and cocaine	13 (5.1)	36 (21.3)	56 (25.3)	71 (47.3)	24.8
Talwin & ritalin	188 (74.0)	13 (7.7)	12 (5.4)	5 (3.3)	22.6
Benzodiazepines	51 (20.1)	18 (10.7)	20 (9.0)	13 (8.7)	12.1

Drugs non-injected

Table 12 shows that alcohol and marijuana were the non-injected substances used by the large percentage of participants (78.6% and 76.4%, respectively). In Regina, Sudbury, and Victoria, participants used on average five non-injected drugs, while in Toronto, the average number was seven. Participants in Toronto use more benzodiazepines (48.9%) versus 0% to 3.1% at other sites and ecstasy (26.2%) versus 5.5% to 16.6% at other sites). The participants in Toronto and Victoria used more crack (78.7% and 54.0%, respectively) and heroin (41.6% and 48.0%, respectively) than participants at other sites.

Table 12. Non-injected drugs, by site

	Regina N=254 N (%)	Sudbury N=169 N (%)	Toronto N=221 N (%)	Victoria N=150 N (%)	Average of Four sites (%)
Alcohol	204 (80.3)	130 (76.9)	185 (83.7)	110 (73.3)	78.6
Marijuana	193 (76.0)	141 (83.4)	176 (79.6)	100 (66.7)	76.4
Others	141 (55.5)	84 (49.7)	207 (93.7)	84 (56.0)	63.7
Cocaine	132 (52.0)	82 (48.5)	153 (69.2)	99 (66.0)	58.9
Tylenol with codeine	133 (52.4)	98 (58.0)	112 (50.7)	72 (48.0)	52.3
Crack	83 (32.7)	73 (43.2)	174 (78.7)	81 (54.0)	52.2
Dilaudid	41 (16.1)	50 (29.6)	70 (31.7)	46 (30.7)	27.0
Heroin	13 (5.1)	13 (7.7)	92 (41.6)	72 (48.0)	25.6
Methadone	47 (18.5)	26 (15.4)	69 (31.2)	53 (35.3)	25.1
Barbiturates	62 (24.4)	56 (33.1)	48 (21.7)	20 (13.3)	23.1
Amphetamines	49 (19.3)	36 (21.3)	53 (24.0)	28 (18.7)	20.8
Mushrooms	45 (17.7)	53 (31.4)	44 (19.9)	17 (11.3)	20.1
Demerol	45 (17.7)	24 (14.2)	35 (15.8)	23 (15.3)	15.8
Ecstacy	14 (5.5)	28 (16.6)	58 (26.2)	14 (9.3)	14.4
Benzodiazepines	8 (3.1)	1 (0.6)	108 (48.9)	0 (0.0)	13.2

Drugs most commonly injected

Table 13 shows the seven most commonly drugs injected by the study participants at different sites. The four most common drugs injected by participants were cocaine (35.9%), heroin (14.8%), and equal proportions of talwin and ritalin and morphine (10.6%) although there were site-specific variations in the drug most commonly used (Table 13). In Regina the most common drug injected was talwin and ritalin (42.5%), followed by ritalin alone (28.1%), cocaine (18.9%), and morphine (17.3%). In Sudbury, the most common injected drug was cocaine (35.5%), followed by dilaudid (28.3%), and morphine (10.7%). In Toronto, the most common drug injected was heroin (26.2%), followed by cocaine (25.3%), crack (24.0%), and morphine (10.9%). In Victoria, the most common drug was cocaine (64.0%), followed by heroin (26.7%), dilaudid (4.7%), and morphine (3.3%).

Table 13. Seven most common injected drugs, by site

	Regina N=254 N (%)	Sudbury N=166* N (%)	Toronto N=221 N (%)	Victoria N=150 N (%)	Average of Four sites (%)
Cocaine	48 (18.9)	60 (35.5)	56 (25.3)	96 (64.0)	35.9
Heroin	1 (0.4)	10 (5.9)	58 (26.2)	40 (26.7)	14.8
Talwin & Ritalin	108 (42.5)	0	0	0	10.6
Morphine	44 (17.3)	18 (10.7)	24 (10.9)	5 (3.3)	10.6
Dilaudid	2 (0.79)	47 (28.3)	13 (5.9)	7 (4.7)	9.9
Crack	1 (0.4)	1 (0.6)	53 (24.0)	0	6.3
Ritalin alone	46 (18.1)	0	0	0	
Multiple	1(0.4)	26 (15.4)	0	0	

*Information missing in 3 participants.
Multiple implies that participants used multiple drugs in equal amount.

Age of injection initiation

The mean age of initiation of injecting drug use was 21.4 years (Table 14). The mean age of injection initiation in Regina and Toronto was 20.4 and 20.8 years respectively, while the mean age in Sudbury and in Victoria was slightly older at 22.1 years. The age of initiation of injecting drug use was 16 years or less in 239 participants (30.1%).

Table 14. Age of injection initiation

	N	Mean age (yrs)
Regina	254	20.4
Sudbury	169	22.1
Toronto	221	20.8
Victoria	150	22.1
Average of Four sites		21.4

Frequency of Injection

Table 15 shows that within the preceding one month, the largest proportion of participants (33%) reported injecting daily, 19.6% reported injecting once in a while, 18.9% of participants reported injecting regularly (three or more times in a week) and 17.2% reported injecting regularly (once or twice a week). A further 10.9% of participants reported not having injected at all in one month prior to the survey.

The results by site indicate that in Regina, the largest proportion of participants (26.8%) injected regularly (three or more times a week). In Sudbury and Victoria, the largest proportion (35.5% and 44.7%, respectively) injected everyday. In Toronto, 22.6% reported not having injected in the preceding one month.

Table 15. Frequency of injection in the preceding one month

	Regina N=254 N (%)	Sudbury N=169 N (%)	Toronto N=221 N (%)	Victoria N=150 N (%)	Average of Four sites (%)
Not at all	15 (5.9)	22 (13.0)	50 (22.6)	3 (2.0)	10.9
Once in a while (not every week)	45 (17.7)	42 (24.8)	41 (18.5)	26 (17.3)	19.6
Regularly (once or twice a week)	46 (18.1)	26 (15.4)	45 (20.4)	22 (14.7)	17.2
Regularly (three or more times a week)	68 (26.8)	17 (10.1)	38 (17.2)	32 (21.3)	18.9
Everyday	79 (31.1)	60 (35.5)	46 (20.8)	67 (44.7)	33.0
Missing	1 (0.4)	2 (1.2)	1 (0.5)	0	0.5

Sharing

Injecting behaviour

A large proportion (86.7%) of the study participants reported injecting with someone else while only 13.3% injected alone (Table 16). Of these 76% of participants reported injecting with close friends or family member and 49.2% with their sex partner. In Toronto and Victoria larger proportions (66.5% and 76.5% respectively) reported injecting alone while this proportion was lower at other sites.

Table 16. Participant injecting behaviour, by site

	Regina N=254 N (%)	Sudbury N=169 N (%)	Toronto N=221 N (%)	Victoria N=150 N (%)	Average of Four Sites (%)
Always alone	18 (7.1)	21 (12.4)	54 (24.4)	14 (9.3)	13.3
Injected with someone else	236 (92.9)	148 (87.6)	167 (75.5)	136 (90.7)	86.7

Most Common Injecting Partner

Almost 37% of participants reported injecting most often with close friends or family members during the preceding 6 months while 32.1% reported injecting most often with their regular sex partner (Table 17). Site-specific differences were observed in Toronto and Victoria where 32.3% and 42.6% of participants, respectively, reported injecting alone most often while other sites reported 10.8% or less.

Table 17. Partner with whom participant injects most often during past 6 months

	Regina N=236 N (%)	Sudbury N=148 N (%)	Toronto N=167 N (%)	Victoria N=136 N (%)	Average of Four sites (%)
Close friends/family	114 (48.3)	62 (41.9)	55 (32.9)	33 (24.3)	36.9
Don't know at all	1 (0.4)	2 (1.4)	2 (1.2)	1 (0.7)	0.9
Do not know well	3 (1.3)	11 (7.4)	6 (3.6)	5 (3.7)	4.0
No one	1 (0.4)	16 (10.8)	54 (32.3)	58 (42.6)	21.5
Regular sex partner	114 (48.3)	35 (23.6)	48 (28.7)	38 (27.9)	32.1
Missing	3 (1.3)	22 (14.9)	2 (1.2)	1 (0.7)	4.5

Injecting with used needles and syringes

Almost one quarter (24.5%) of study participants reported injecting with used needles in the preceding 6 months. By site, proportions ranged from 16.5% in Regina to 30.7% in Victoria reported this behaviour. (Table 18)

Table 18. Number of participants who injected with used needles/syringes during past 6 months

	Regina N=254 N (%)	Sudbury N=169 N (%)	Toronto N=221 N (%)	Victoria N=150 N (%)	Average of Four sites (%)
Yes	42 (16.5)	65 (26.6)	53 (24.0)	46 (30.7)	24.5
No	211 (83.1)	123 (72.8)	167 (75.5)	102 (68.0)	74.8
Do not know/ Refused/ Missing	1 (0.4)	1 (0.6)	1 (0.5)	2 (1.3)	0.7

Injecting with other used injection equipment

A considerable proportion (43.2%) of participants reported injecting with other used injection equipment (cotton, filters, cookers, water, etc.) in the preceding 6 months (Table 19). These proportions ranged from 31.7% in Toronto to 53.5% in Regina.

Table 19. Number of participants who injected with used injection equipment during past 6 months

	Regina N=254 N (%)	Sudbury N=169 N (%)	Toronto N=221 N (%)	Victoria N=150 N (%)	Average of Four sites (%)
Yes	136 (53.5)	67(39.7)	70 (31.7)	72 (48.0)	43.2
No	117 (46.1)	47 (27.8)	150 (67.8)	76 (50.7)	48.1
Do not know/ Refused/ Missing	1 (0.4)	55 (32.5)	1 (0.5)	2 (1.3)	8.7

Used Needle and syringe borrowing partner

Table 20 shows that of participants who reported borrowing needles and syringes, a higher proportion borrowed them from close friends and family members (53.9%) and from their regular sex partner(s) (49.3%) during the preceding 6 months. Twenty-one percent of the people who borrowed needles and syringes reported borrowing from people whom they don't know well or at all (the proportion of these people was highest in Victoria).

Table 20. Partner from whom participant borrowed used needles/syringes during past 6 months

	Regina N=40 N (%)	Sudbury N=43 N (%)	Toronto N=53 N (%)	Victoria N=42 N (%)	Average of Four sites (%)
Close friends/family	25 (62.5)	22 (51.2)	35 (66.0)	15 (35.7)	53.9
People I don't know at all	3 (7.5)	2 (4.7)	4 (7.5)	3 (7.1)	6.7
People I don't know well	4 (10.0)	7 (16.3)	5 (9.4)	9 (21.4)	14.3
Regular sex partner(s)	18 (45.0)	20 (46.5)	22 (41.5)	27 (64.3)	49.3

Most Common Borrowing Partner (Needles/syringes)

Table 21 shows that when asked about the most common person from whom needles and syringes were borrowed during the preceding 6 months, participants reported borrowing mostly from their regular sex partner(s) (45.1%) and from close friends or family members (43.2%). Almost 12% of the people who borrowed needles and syringes reported borrowing from people whom they don't know well or at all.

Table 21. Partner from whom participant borrowed needles/syringes most often during past 6 months

	Regina N=39 N (%)	Sudbury N=43 N (%)	Toronto N=53 N (%)	Victoria N=41 N (%)	Average of Four sites (%)
Close friends/family	19 (48.7)	18 (41.9)	28 (52.8)	12 (29.3)	43.2
People I don't know at all	2 (5.1)	0 (0.0)	1 (1.9)	2 (4.9)	3.0
People I don't know well	2 (5.1)	7 (16.3)	2 (3.8)	4 (9.8)	8.7
Regular sex partner(s)	16 (41.0)	18 (41.9)	22 (41.5)	23 (56.1)	45.1

Other Used Injection Equipment Borrowing Partner

The borrowing of other injection equipment (cotton, filters, cookers, water, etc.) in the preceding six months followed a similar trend as borrowing of needles and syringes (Table 22). Similar proportions of participants reported borrowing other injection equipment from close friends and family members (51.1%) and from regular sex partner(s) (50.3%) during the preceding 6-month period.

Table 22. Partner from whom participant borrowed used injection equipment during past 6 months

	Regina N=134 N (%)	Sudbury N=65 N (%)	Toronto N=70 N (%)	Victoria N=65 N (%)	Average of Four sites (%)
Close friends/family	76 (56.7)	33 (50.8)	44 (62.9)	22 (33.8)	51.1
People I don't know at all	7 (5.2)	7 (10.8)	5 (7.1)	9 (13.8)	9.2
People I don't know well	11 (8.2)	19 (29.2)	8 (11.4)	18 (27.7)	19.1
Regular sex partner(s)	73 (54.5)	25 (38.5)	36 (51.4)	37 (56.9)	50.3
Refused	0	1 (1.5)	0	0	0.4

Most Common Borrowing Partner (Other Injection Equipment)

Table 23 shows that when asked from whom they borrowed injection equipment (cotton, filters, cookers, water, etc.) most often, participants reported borrowing most often from regular sex partner(s) (45.4%). A similar proportion borrowed most often from close friends and family members (40.3%), and 11.4% borrowed from people they do not know well during the preceding 6 months.

Table 23. Partner from whom participant borrowed injection equipment most often during past 6 months

	Regina N=132 N (%)	Sudbury N=64 N (%)	Toronto N=70 N (%)	Victoria N=65 N (%)	Average of Four sites (%)
Close friends/family	62 (47.0)	27 (42.2)	32 (45.7)	17 (26.2)	40.3
People I don't know at all	4 (3.0)	0 (0.0)	1 (1.4)	4 (6.2)	2.7
People I don't know well	3 (2.3)	14 (21.9)	3 (4.3)	11 (16.9)	11.4
Regular sex partner(s)	63 (47.7)	22 (34.4)	34 (48.6)	33 (50.8)	45.4
Refused	0 (0.0)	1 (1.6)	0 (0.0)	0 (0.0)	0.4

Lending used needles or syringes

As seen in Table 24, 20.5% of participants reported lending needles or syringes to someone else in the preceding six months. By site, the range was from 15.7% in Regina to 30.0% in Victoria.

Table 24. Participants who lent used needle/syringes to someone else during past 6 months

	Regina N=254 N (%)	Sudbury N=169 N (%)	Toronto N=221 N (%)	Victoria N=150 N (%)	Average of Four sites (%)
Yes	40 (15.7)	31 (18.3)	40 (18.1)	45 (30.0)	20.5
No	213 (83.9)	137 (81.1)	179 (81.0)	102 (68.0)	78.5
Do not know/ Refused/ missing	1 (0.4)	1 (0.6)	2 (0.9)	3 (2.0)	1.0

Lending other used injection equipment

Almost one third of participants reported lending injection equipment to someone else in the preceding six months (Table 25). By site, the proportions ranged from 21.9% in Sudbury to 40.5% in Regina.

Table 25. Participants who lent used injection equipment to someone else

	Regina N=254 N (%)	Sudbury N=169 N (%)	Toronto N=221 N (%)	Victoria N=150 N (%)	Average of Four sites (%)
Yes	103 (40.5)	37 (21.9)	66 (29.9)	59 (39.3)	32.9
No	149 (58.7)	61 (36.1)	153 (69.2)	88 (58.7)	55.7
Do not know/ Refused/ missing	2 (0.8)	71 (42.0)	2 (0.9)	3 (2.0)	11.4

Frequency of borrowing used needles and syringes in preceding one month

Within the preceding one month, 20.5% of participants reported injecting with needles or syringes that were previously used by other people (Table 26). Most of the study participants who reported sharing (17.5%), reported that half or less of the needles and syringes they used to inject had already been used by someone else while 1.7% and 1.3% reported that more than half or all of the needles/syringes they used to inject had been previously used respectively.

Table 26. Frequency of sharing used needles or syringes in preceding one month

	Regina N=240 N (%)	Sudbury N=164 N (%)	Toronto N=177 N (%)	Victoria N=148 N (%)	Average of Four sites (%)
Did not share	205 (85.4)	130 (79.3)	141 (79.7)	109 (73.6)	79.5
Shared ≤ 50%	25 (10.4)	29 (17.7)	32 (18.1)	35 (23.7)	17.5
Shared > 50% but < 100%	5 (2.1)	3 (1.8)	3 (1.7)	2 (1.35)	1.7
Shared 100%	5 (2.1)	2 (1.2)	1 (0.6)	2 (1.35)	1.3

Frequency of borrowing used injection equipment in preceding one month

Within the preceding one-month, 38.8% participants reported using other injecting equipment (cotton, filters, cookers, water etc.) that was previously used by other people (Table 27). About a quarter reported that half or less of the other injection equipment that they used to inject was already used by someone else while 5.9% and 8.8% reported that more than half or all of the other injection equipment that they used had already been used by someone else respectively.

Table 27. Frequency of sharing other used injection equipment in preceding one month

	Regina N=243 N (%)	Sudbury N=158 N (%)	Toronto N=177 N (%)	Victoria N=148 N (%)	Average of Four sites (%)
Did not share	116 (47.7)	104 (65.8)	124 (70.0)	91 (61.5)	61.2
Shared ≤ 50%	60 (24.7)	36 (22.8)	35 (19.8)	43 (29.0)	24.1
Shared > 50% but < 100%	19 (7.8)	6 (3.8)	10 (5.7)	9 (6.1)	5.9
Shared 100%	48 (19.8)	12 (7.6)	8 (4.5)	5 (3.4)	8.8

5.3 Sexual relationships

Sexual activity

A significant proportion (84.7%) of the study population (including 80.4% of males and 94.9% females) averaged at four sites reported engaging in some kind of sexual activity during the preceding 6 months. It varied between sites from a low of 77.2% in Victoria, 80.1% in Toronto, 88.2% in Sudbury, to 93.2%in Regina.

Table 28. Sexual activity during past 6 months

IDU Population (N=794)	% Sexually Active
Females	94.9
Males	80.4
Average of four sites*	84.7

*data missing for one participant

Female participants with male sexual partners

The largest proportion of female participants (38.9%) reported having had 1 male sex partner within the last 6 months (table 29). By site, the percentage of females with one male partner ranged from of 25.4% to a high of 46.6%. Notable differences between sites included a large proportion of females with six or more male partners in Sudbury and Victoria. Nearly 40% of the female IDU reported engaging in commercial sex work in the six months preceding the study. The proportions ranged from 28.8% in Regina, 36.2% in Toronto, 45.5% in Victoria, to 47.5% in Sudbury.

Table 29. Females with reported male partners during past 6 months

	Number of females				
Number of male partners	**Regina N=118 N (%)**	**Sudbury N=59 N (%)**	**Toronto N=58 N (%)**	**Victoria N=44 N (%)**	**Average of Four Sites (%)**
None	9 (7.6)	5 (8.5)	5 (8.6)	3 (6.8)	7.9
1	55 (46.6)	15 (25.4)	26 (44.8)	17 (38.6)	38.9
2 to 5	33 (28.0)	11 (18.6)	10 (17.2)	8 (18.2)	20.5
6 to 20	13 (11.0)	14 (23.7)	5 (8.6)	5 (11.4)	13.7
21 or more	7 (5.9)	14 (23.7)	9 (15.5)	11 (25.0)	17.5
Refused	1 (0.9)	0	3 (5.2)	0	1.5

For female participants who reported having a male sex partner during the preceding 6 months, 81.2% reported having had regular partners, 27.2% had casual partners, and 43.1% had client partners (Table 30a.).

Table 30. Type of male sex partner(s) reported by female study population during past 6 months
a. Average of Four sites

	Male regular partner (%)	Male casual partner (%)	Male client partner (%)
Missing	5.8	20.0	13.5
No	13.0	52.8	43.4
Yes	81.2	27.2	43.1

b. Results by site

	Male regular partner				Male casual partner				Male client partner			
	Regina N=108 N (%)	Sudbury N=54 N (%)	Toronto N=50 N (%)	Victoria N=41 N (%)	Regina N=108 N (%)	Sudbury N=54 N (%)	Toronto N=50 N (%)	Victoria N=41 N (%)	Regina N=108 N (%)	Sudbury N=54 N (%)	Toronto N=50 N (%)	Victoria N=41 N (%)
Missing	3 (2.8)	6 (11.1)	1 (2.0)	3 (7.3)	12 (11.1)	21 (38.9)	4 (8.0)	9 (22.0)	10 (9.3)	15 (27.8)	1 (2.0)	6 (14.6)
No	7 (6.5)	7 (13.0)	4 (8.0)	10 (24.4)	65 (60.2)	15 (27.8)	36 (72.0)	21 (51.2)	64 (59.3)	11 (20.4)	29 (58.0)	15 (36.6)
Yes	98 (90.7)	41 (75.9)	45 (90.0)	28 (68.3)	31 (28.7)	18 (33.3)	10 (20.0)	11 (26.8)	34 (31.5)	28 (51.9)	20 (40.0)	20 (48.8)

Table 30b. shows the results by site. The proportion of participants who had regular sex partners ranged from 68.3% in Victoria to 90.7% in Regina. Those who had casual sex partners ranged from 20.0% in Toronto to 28.7% in Regina. In regards to male client sex partners, the range was from 31.5% in Regina to 51.9% in Sudbury.

Table 31a. shows the number of female participants who reported having had penetrative or oral sex within the last 6 months with their regular, casual, or client sex partner(s). Of these, 97.6% had penetrative sex and 78.8% had oral sex with their male regular partner. With regard to casual sex partner(s), 84.1% had penetrative sex and 64.6% had oral sex within the past 6 months. For male client partners, 84.5% reported having penetrative sex and 89.3% had oral sex during this time period. Table's 31b to 31e show the results by site.

Table 31. Number of females who had penetrative or oral sex with their male sex partner(s) during past 6 months

a. Average of Four sites

	Male regular partner		Male casual partner		Male client partner	
	Penetrative sex (%)	Oral sex (%)	Penetrative sex (%)	Oral sex (%)	Penetrative sex (%)	Oral sex (%)
Missing	0.3	0.6	1.6	1.4	0.7	0.9
No	2.1	20.6	14.3	34.0	14.8	11.0
Yes	97.6	78.8	84.1	64.6	84.5	88.1

b. Regina

	Male regular partner		Male casual partner		Male client partner	
	Penetrative sex N=99, N (%)	Oral sex N=99, N (%)	Penetrative sex N=32, N (%)	Oral sex N=32, N (%)	Penetrative sex N=34, N (%)	Oral sex N=34, N (%)
Missing	1 (1.0)	0	2 (6.3)	0	1 (2.9)	0
No	0	41 (41.4)	2 (6.3)	16 (50.0)	4 (11.8)	1 (2.9)
Yes	98 (99.0)	58 (58.6)	28 (87.5)	16 (50.0)	29 (85.3)	33 (97.1)

c. Sudbury

	Male regular partner		Male casual partner		Male client partner	
	Penetrative sex N=41, N (%)	Oral sex N=41, N (%)	Penetrative sex N=18, N (%)	Oral sex N=18, N (%)	Penetrative sex N=28, N (%)	Oral sex N=28, N (%)
Missing	0	1 (2.4)	0	1 (5.6)	0	1 (3.6)
No	2 (4.9)	5 (12.2)	1(5.6)	4 (22.2)	1 (3.6)	2 (7.1)
Yes	39 (95.1)	35 (85.4)	17 (94.4)	13 (72.2)	27 (96.4)	25 (89.3)

d. Toronto

	Male regular partner		Male casual partner		Male client partner	
	Penetrative sex N=45, N (%)	Oral sex N=45, N (%)	Penetrative sex N=11, N (%)	Oral sex N=11, N (%)	Penetrative sex N=21, N (%)	Oral sex N=21, N (%)
No	0	5 (11.1)	3 (27.3)	3 (27.3)	5 (23.8)	4 (19.1)
Yes	45 (100.0)	40 (88.9)	8 (72.7)	8 (72.7)	16 (76.2)	17 (80.9)

e. Victoria

	Male regular partner		Male casual partner		Male client partner	
	Penetrative sex N=28, N (%)	Oral sex N=28, N (%)	Penetrative sex N=11, N (%)	Oral sex N=11, N (%)	Penetrative sex N=20, N (%)	Oral sex N=20, N (%)
No	1 (3.6)	5 (17.9)	2 (18.2)	4 (36.4)	4 (20.0)	3 (15.0)
Yes	27 (96.4)	23 (82.1)	9 (81.8)	7 (63.6)	16 (80.0)	17 (85.0)

Frequency of Condom Use by female study population with male sex partners

Table 32. Frequency of condom use by female participants who had penetrative or oral sex with male partner

a. Average of Four sites

	Male regular partner		Male casual partner		Male client partner	
	Penetrative sex (%)	Oral sex (%)	Penetrative sex (%)	Oral sex (%)	Penetrative sex (%)	Oral sex (%)
Never	69.4	80.1	28.4	34.0	0	5.7
Occasionally	8.7	5.1	4.7	1.9	0	2.0
Sometimes	3.1	2.8	5.1	8.2	1.8	3.7
Usually	2.4	0.6	5.1	13.8	5.0	11.9
Always	15.1	9.6	56.6	42.2	92.3	76.7
Missing	1.3	1.8	0	0	0.9	0

b. Regina

	Male regular partner		Male casual partner		Male client partner	
	Penetrative sex N=98, N (%)	Oral sex N=58, N (%)	Penetrative sex N=28, N (%)	Oral sex N=16, N (%)	Penetrative sex N=29, N (%)	Oral sex N=33, N (%)
Never	63 (64.3)	44 (75.9)	12 (42.9)	7 (43.8)	0	3 (9.1)
Occasionally	8 (8.2)	2 (3.5)	2 (7.1)	0	0	0
Sometimes	8 (8.2)	5 (8.6)	1 (3.6)	2 (12.5)	1 (3.5)	1 (3.0)
Usually	5 (5.1)	0	1 (3.6)	1 (6.3)	0	4 (12.1)
Always	14 (14.3)	6 (10.3)	12 (42.9)	6 (37.5)	28 (96.6)	25 (75.8)
Missing	0	1 (1.7)	0	0	0	0

c. Sudbury

	Male regular partner		Male casual partner		Male client partner	
	Penetrative sex N=39, N (%)	Oral sex N=35, N (%)	Penetrative sex N=17, N (%)	Oral sex N=13, N (%)	Penetrative sex N=27, N (%)	Oral sex N=25, N (%)
Never	21 (53.9)	20 (57.1)	4 (23.5)	5 (38.5)	0	2 (8.0)
Occasionally	4 (10.3)	5 (14.3)	2 (11.8)	1 (7.7)	0	2 (8.0)
Sometimes	0	0	1 (5.9)	1 (7.7)	1 (3.7)	0
Usually	0	0	1 (5.9)	1 (7.7)	2 (7.4)	3 (12.0)
Always	12 (30.8)	9 (25.7)	9 (52.9)	5 (38.5)	23 (85.2)	18 (72.0)
Missing	2 (5.1)	1 (2.9)	0	0	1 (3.7)	0

d. Toronto

	Male regular partner		Male casual partner		Male client partner	
	Penetrative sex N=45, N (%)	Oral sex N=40, N (%)	Penetrative sex N=8, N (%)	Oral sex N=8, N (%)	Penetrative sex N=16, N (%)	Oral sex N=17, N (%)
Never	35 (77.8)	35 (87.5)	2 (25.0)	2 (25.0)	0	1 (5.9)
Occasionally	4 (8.9)	1 (2.5)	0	0	0	0
Sometimes	2 (4.4)	1 (2.5)	0	1 (12.5)	0	1 (5.9)
Usually	2 (4.4)	1 (2.5)	0	1 (12.5)	1 (6.3)	1 (5.9)
Always	2 (4.4)	1 (2.5)	6 (75.0)	4 (50.0)	15 (93.8)	14 (82.4)
Missing	0	1 (2.5)	0	0	0	0

e. Victoria

	Male regular partner		Male casual partner		Male client partner	
	Penetrative sex N=27, N (%)	Oral sex N=23, N (%)	Penetrative sex N=9, N (%)	Oral sex N=7, N (%)	Penetrative sex N=16, N (%)	Oral sex N=17, N (%)
Never	22 (81.5)	23 (100.0)	2 (22.2)	2 (28.6)	0	0
Occasionally	2 (7.4)	0	0	0	0	0
Sometimes	0	0	1 (11.1)	0	0	1 (5.9)
Usually	0	0	1 (11.1)	2 (28.6)	1 (6.3)	3 (17.7)
Always	3 (11.1)	0	5 (55.6)	3 (42.9)	15 (93.8)	13 (76.5)

Table 32a shows the frequency of condom use by females reporting regular, casual, and client sex partners during the preceding 6 months. With regard to male regular sex partner(s), 69.4% never use condoms during penetrative sex and 80.1% never use condoms with oral sex. With male casual partners, 56.6% always used condoms and 28.4% never used condoms during penetrative sex and 42.2% always used condoms and 34.0% never used condoms during oral sex. For females with male client partners, 92.3% and 76.7% always use condoms during penetrative and oral sex, respectively. The results showed a fair degree of condom use with client male partners, however almost a third never used condoms with casual partners. Condom use was infrequent with regular male partners. Minor differences between sites were observed in the use of condom by the female study population with their male sex partners**.**

Male participants with female sexual partners

Of the male study participants in all four sites, 38.4% reported having one female sex partner and 31.6% reported having 2 to 5 partners within the preceding 6 months (Table 33). Almost 22% of the male study population reported not having had a female sex partner in the preceding 6 months. These differences were most pronounced in Toronto and Victoria (31%) compared with Regina (8.1%) and Sudbury (16.4%).

Table 33. Males with reported female sex partners during past 6 months

	Number of Males				
Number of female partners	Regina N=136 N (%)	Sudbury N=110 N (%)	Toronto N=58 N (%)	Victoria N=44 N (%)	Average of Four sites (%)
None	11 (8.1)	18 (16.4)	50 (30.9)	33 (31.1)	21.6
1	69 (50.7)	39 (35.5)	48 (29.6)	40 (37.7)	38.4
2 to 5	46 (33.8)	42 (38.2)	45 (27.8)	28 (26.4)	31.6
6 to 20	6 (4.4)	9 (8.2)	13 (8.0)	2 (1.9)	5.6
21 or more	2 (1.5)	2 (1.8)	5 (3.1)	2 (1.9)	2.1
Refused/missing/ unknown	2 (1.5)	0	1 (0.6)	1 (0.9)	0.8

Table 34 shows the type of female sex partners reported by males. Nearly 70% reported having regular female sex partners, 48.8% reported having female casual partners and 7.1% reported having female client partners (Table 34a.). By site, the proportion of males, who reported having female regular sex partner ranged from 58.6% in Toronto to 78.9% in Regina (Table 34b.). The proportion of males reported having a casual female sex partner ranged from 41.5% in Regina to 56.8% in Toronto. The proportion of female client partners ranged from 2.8% in Victoria to 12.6% in Toronto.

Table 34. Type of female sex partner(s) reported by males during past 6 months
a. Average of Four sites

	Female regular partner (%)	Female casual partner (%)	Female client partner (%)
Missing	8.5	16.3	26.8
No	22.3	34.9	66.1
Yes	69.2	48.8	7.1

b. Results by site

	Female regular partner				Female casual partner				Female client partner			
	Regina N=123 N(%)	Sudbury N=92 N(%)	Toronto N=50 N(%)	Victoria N=41 N(%)	Regina N=123 N(%)	Sudbury N=92 N(%)	Toronto N=50 N(%)	Victoria N=41 N(%)	Regina N=123 N(%)	Sudbury N=92 N(%)	Toronto N=50 N(%)	Victoria N=41 N(%)
Missing	4 (3.3)	12 (13.0)	9 (8.1)	7 (9.7)	14 (11.4)	25 (27.2)	11 (9.9)	12 (16.7)	17 (13.8)	39 (42.4)	24 (21.6)	21 (29.2)
No	22 (17.9)	17 (18.5)	37 (33.3)	14 (19.4)	58 (47.2)	20 (21.7)	37 (33.3)	27 (37.5)	98 (79.7)	47 (51.1)	73 (65.7)	49 (68.1)
Yes	97 (78.9)	63 (68.5)	65 (58.6)	51 (70.8)	51 (41.5)	47 (51.1)	63 (56.8)	33 (45.8)	8 (6.5)	6 (6.5)	14 (12.6)	2 (2.8)

Table 35 shows the number of male participants who reported having had penetrative or oral sex with their regular, casual, or client female sex partners within the preceding 6 months. The results showed that 97.1% of them had penetrative and 82.8% had oral sex with their regular female partners. Among male participants with casual female partners, 92.4% had penetrative and 71.2% had oral sex. For male participants with client female partners, 89.7% had penetrative and 64.1% had oral sex within the preceding 6 months (Table 35a.). The results by site are shown in Tables 35b.-e.

Table 35. Number of males who reported having had penetrative or oral sex with female partners during past 6 months

a. Average of Four sites

	Female regular partner		Female casual partner		Female client partner	
	Penetrative sex (%)	Oral sex (%)	Penetrative sex (%)	Oral sex (%)	Penetrative sex (%)	Oral sex (%)
No	2.9	17.2	7.6	29.0	10.3	35.9
Yes	97.1	82.8	92.4	71.0	89.7	64.1

b. Regina

	Female regular partner		Female casual partner		Female client partner	
	Penetrative sex N=98, N (%)	Oral sex N=98, N (%)	Penetrative sex N=52, N (%)	Oral sex N=52, N (%)	Penetrative sex N=8, N (%)	Oral sex N=8, N (%)
No	0	36 (36.7)	1 (1.9)	22 (42.3)	1 (12.5)	1 (12.5)
Yes	98 (100.0)	62 (63.3)	51 (98.1)	30 (57.7)	7 (87.5)	7 (87.5)

c. Sudbury

	Female regular partner		Female casual partner		Female client partner	
	Penetrative sex N=63, N (%)	Oral sex N=63, N (%)	Penetrative sex N=47, N (%)	Oral sex N=47, N (%)	Penetrative sex N=6, N (%)	Oral sex N=6, N (%)
No	3 (4.8)	6 (9.5)	7(14.9)	12 (25.5)	0	1 (16.7)
Yes	60 (95.2)	57 (90.5)	40 (85.1)	35 (74.5)	6 (100.0)	5 (83.3)

d. Toronto

	Female regular partner		Female casual partner		Female client partner	
	Penetrative sex N=65, N (%)	Oral sex N=65, N (%)	Penetrative sex N=63, N (%)	Oral sex N=63, N (%)	Penetrative sex N=14, N (%)	Oral sex N=14, N (%)
No	2 (3.1)	6 (9.2)	3 (4.8)	12 (19.1)	4 (28.6)	2 (14.3)
Yes	63 (96.9)	59 (90.8)	60 (95.2)	51 (81.0)	10 (71.4)	12 (85.7)

e. Victoria

	Female regular partner		Female casual partner		Female client partner	
	Penetrative sex N=53, N (%)	Oral sex N=52, N (%)	Penetrative sex N=34, N (%)	Oral sex N=34, N (%)	Penetrative sex N=2, N (%)	Oral sex N=2, N (%)
No	2 (3.9)	7 (13.5)	3 (8.8)	10 (29.4)	0	2 (100.0)
Yes	50 (96.2)	45 (86.5)	31 (91.2)	24 (70.6)	2 (100.0)	0

Table 36a. shows the frequency of reported condom use by male participants with their female sexual partners. Of male participants with female regular partners, 60.7% and 82.1% reported never using a condom during penetrative and oral sex respectively (Table 36a). Among male participants with casual partners, 54.4% reported always using condoms during penetrative sex and 56.6% reported never using condoms during oral sex. Among male participants with client female partners, 73.1% reported always using condoms with penetrative sex while 41.5% reported never using condoms during oral sex. The condom use was higher with client sex partners and for penetrative sex as compared with oral sex. There were no marked site-specific patterns in the use of condom by male population (Table 36b.-e.)

Table 36. Frequency of condom use by male participants who had penetrative or oral sex with female partner

a. Average of Four sites

	Female regular partner		Female casual partner		Female client partner	
	Penetrative sex (%)	Oral sex (%)	Penetrative sex (%)	Oral sex (%)	Penetrative sex (%)	Oral sex (%)*
Never	60.7	82.1	19.4	56.6	10.2	41.5
Occasionally	7.1	3.1	7.5	4.9	0	6.7
Sometimes	5.3	4.2	8.7	6.0	2.5	15.0
Usually	5.1	2.3	9.6	6.7	11.7	5.6
Always	21.8	8.2	54.4	25.7	73.1	31.3
Missing	0	0	0.5	0	2.5	0

*Average of 3 sites

b. Regina

	Female regular partner		Female casual partner		Female client partner	
	Penetrative sex N=98, N (%)	Oral sex N=62, N (%)	Penetrative sex N=51, N (%)	Oral sex N=30, N (%)	Penetrative sex N=7, N (%)	Oral sex N=7, N (%)
Never	70 (71.4)	48 (77.4)	16 (31.4)	15 (50.0)	1 (14.3)	3 (42.9)
Occasionally	9 (9.2)	1 (1.6)	4 (7.8)	3 (10.0)	0	0
Sometimes	7 (7.1)	6 (9.7)	3 (5.9)	3 (10.0)	0	0
Usually	3 (3.1)	1 (1.6)	7 (13.7)	2 (6.7)	0	0
Always	9 (9.2)	6 (9.7)	21 (41.2)	7 (23.3)	6 (85.7)	4 (57.1)

c. Sudbury

	Female regular partner		Female casual partner		Female client partner	
	Penetrative sex N=60, N (%)	Oral sex N=57, N (%)	Penetrative sex N=40, N (%)	Oral sex N=35, N (%)	Penetrative sex N=6, N (%)	Oral sex N=5, N (%)
Never	31 (51.7)	42 (72.7)	6 (15.0)	20 (57.1)	1 (16.7)	2 (40.0)
Occasionally	6 (10.0)	5 (8.8)	3 (7.5)	2 (5.7)	0	1 (20.0)
Sometimes	3 (5.0)	3 (5.3)	3 (7.5)	0	0	1 (20.0)
Usually	3 (5.0)	1 (1.8)	4 (10.0)	0	1 (16.7)	0
Always	17 (28.3)	6 (10.5)	24 (60.0)	13 (37.1)	4 (66.7)	1 (20.0)

d. Toronto

	Female regular partner		Female casual partner		Female client partner	
	Penetrative sex N=63, N (%)	Oral sex N=59, N (%)	Penetrative sex N=60, N (%)	Oral sex N=51, N (%)	Penetrative sex N=10, N (%)	Oral sex N=12, N (%)
Never	35 (55.6)	50 (84.8)	7 (11.7)	29 (56.9)	1 (10.0)	5 (41.7)
Occasionally	2 (3.2)	0	5 (8.3)	2 (3.9)	0	0
Sometimes	2 (3.2)	1 (1.7)	7 (11.7)	5 (9.8)	1 (10.0)	3 (25.0)
Usually	4 (6.4)	2 (3.4)	3 (5.0)	4 (7.8)	3 (30.0)	2 (16.7)
Always	20 (31.8)	6 (10.2)	37 (61.7)	11 (21.6)	4 (40.0)	2 (16.7)
Missing	0	0	0	0	1 (10.0)	0

e. Victoria

	Female regular partner		Female casual partner		Female client partner	
	Penetrative sex N=50, N (%)	Oral sex N=45, N (%)	Penetrative sex N=31, N (%)	Oral sex N=24, N (%)	Penetrative sex N=2, N (%)	Oral sex N=0, N (%)
Never	32 (64.0)	42 (93.3)	6 (19.4)	15 (62.5)	0	0
Occasionally	3 (6.0)	1 (2.2)	2 (6.5)	0	0	0
Sometimes	3 (6.0)	0	3 (9.7)	1 (4.2)	0	0
Usually	3 (6.0)	1 (2.2)	3 (9.7)	3 (12.5)	0	0
Always	9 (18.0)	1 (2.2)	17 (54.8)	5 (20.8)	2 (100.0)	0

Male participants with male sex partners

Table 37 reports the number of male participants who reported having had male sex partners [men who have sex with men (MSM)] in the preceding 6 months. The data in this section has been combined from all the four sites due to small number of subjects in this group. Ninety-five percent reported not having any male partners.

Table 37. Number of MSM participants

Number of male partners	Number of people N=514, N (%)
None	490 (95.3)
1	7 (1.4)
2 to 5	6 (1.2)
6 to 20	4 (0.8)
21 or more	5 (1.0)
Missing	2 (0.4)

For participants with male sex partners, the type of male sex partner is shown in Table 38. Just over 54% reported having male regular sex partners and a similar proportion reported having male casual partners, and 68.2% reported having male client partners.

Table 38. Type of MSM partner

	Male regular partner N=22 N(%)	Male casual partner N=22 N(%)	Male client partner N=22 N(%)
Missing	2 (9.0)	1 (4.6)	2 (9.0)
No	8 (36.4)	9 (40.9)	5 (22.7)
Yes	12 (54.6)	12 (54.6)	15 (68.2)

Table 39 indicates that 66.7% and 91.7% of MSM study participants had penetrative and oral sex respectively, with male regular partners. There were 25.0% of participants who had penetrative sex and 83.3% who had oral sex with male casual partners. For participants with male client partners, 33.3% reported having penetrative sex while 93.3% reported having oral sex.

Table 39. Number of male participants who had penetrative or oral sex with their male partners during past 6 months

	Male regular partner		Male casual partner		Male client partner	
	Penetrative sex N=12, N (%)	Oral sex N=12, N (%)	Penetrative sex N=12, N (%)	Oral sex N=12, N (%)	Penetrative sex N=15, N (%)	Oral sex N=15, N (%)
Refused	0 (0.0)	0 (0.0)	1 (8.3)	1 (8.3)	0 (0.0)	0 (0.0)
No	4 (33.3)	1 (8.3)	8 (66.7)	1 (8.3)	10 (66.7)	1 (6.7)
Yes	8 (66.7)	11 (91.7)	3 (25.0)	10 (83.3)	5 (33.3)	14 (93.3)

Table 40. Frequency of condom use by male participants with male sex partners

	Male regular partner		Male casual partner		Male client partner	
	Penetrative sex N=8, N (%)	Oral sex N=11, N (%)	Penetrative sex N=3, N (%)	Oral sex N=10, N (%)	Penetrative sex N=5, N (%)	Oral sex N=14, N (%)
Never	6 (75.0)	9 (81.8)	0 (0.0)	6 (60.0)	0 (0.0)	4 (28.6)
Occasionally	0 (0.0)	0 (0.0)	0 (0.0)	1 (10.0)	0 (0.0)	3 (21.4)
Sometimes	0 (0.0)	0 (0.0)	1 (33.3)	2 (20.0)	0 (0.0)	1 (7.1)
Usually	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (7.1)
Always	2 (25.0)	2 (18.2)	2 (66.7)	1 (10.0)	5 (100.0)	5 (35.7)

Table 40 shows that 75.0% and 81.8% of MSM IDU never used condoms for penetrative or oral sex respectively, with regular male sex partners. The reported condom use was high during penetrative sex (66.7%) with casual sex partners, but was never used by 60.0% during oral sex. All the MSM IDU participants reported that they always used condom with client partners during penetrative sex but only 35.7% reported using them always during oral sex. A significant proportion (28.6%) reported never using condom during oral sex with their client partners.

5.4 HIV and Hepatitis C Testing

HIV Testing Patterns

Number of participants ever tested

The average number of participants who reported ever been tested for HIV was 89.7% for the four sites (Table 41). Victoria had the highest percentage of people previously tested at 95.3% and was closely followed by Toronto (94.1%). Sudbury and Regina had lower percentage of people previously tested with 88.2% and 81.2%, respectively.

Table 41. Number of participants ever tested for HIV

	Regina N=254 N (%)	Sudbury N=169 N (%)	Toronto N=221 N (%)	Victoria N=150 N (%)	Average of Four sites (%)
Yes	206 (81.2)	149 (88.2)	207 (94.1)	143 (95.3)	89.7
No	41 (16.2)	20 (11.8)	11 (5.0)	6 (4.0)	9.3
Do not know/ missing	6 (2.4)	0 (0.0)	2 (0.9)	1 (0.7)	1.0

Reported number of HIV tests done in last two years

Table 42 shows the percentage of people who reported having been tested for HIV during the last two years. An average of 73.2% of the study population reported having being tested for HIV in the preceding two years. The average number of times tested during the previous 2 years was 1.3. Victoria had the highest percentage of people tested (83.2%), followed by Toronto (76.6%), Regina (66.8%) and Sudbury (66.3%). Of the people who got tested in the last two years, the average number of times tested ranged from 1.2 in Sudbury and Victoria to 1.5 in Regina.

Table 42. Reported number of tests done and number of participants tested in the last two years

City	Total Number of participants	Number of participants tested (%)	Number of tests done	Average number of times tested
Regina	247	165 (66.8%)	249	1.5
Sudbury	169	112 (66.3%)	133	1.2
Toronto	218	167 (76.6%)	236	1.4
Victoria	149	124 (83.2%)	149	1.2
Average of Four sites		73.2	191	1.3

Number of times tested for HIV

Participants were asked to provide dates of HIV testing in the past two years. This information was missing or incomplete in 38.5% of study population. (Table 43) In Regina and Sudbury, nearly 30% of the study population did not get tested in the last two years, while in Victoria, they seem to get tested more often.

Table 43. Number of times participants tested for HIV in the last 2 years

	Regina N=254 N (%)	Sudbury N=169 N (%)	Toronto N=221 N (%)	Victoria N=150 N (%)	Average of Four sites (%)
None	81 (31.9)	51 (30.2)	48 (21.7)	22 (14.7)	24.6
One to Two	45 (17.7)	25 (14.8)	62 (28.1)	39 (26.0)	21.7
Three to Four	24 (9.4)	12 (7.1)	15 (6.8)	25 (16.7)	10.0
More than four	10 (3.9)	5 (3.0)	5 (2.3)	18 (12.0)	5.3
Missing	94 (37.0)	76 (45.0)	91 (41.2)	46 (30.7)	38.5

Table 44. Number of participants reporting HIV testing and reported year of testing

Site (N)	Total number participants tested	Number tested in 12 months prior to survey	Number tested 12-24 months prior to survey
Regina (247)	165 (66.8%)	132 (53.4%)	67 (27.1%)
Sudbury (169)	112 (66.3%)	98 (58%)	22 (13%)
Toronto (218)	167 (76.6%)	143 (65.6%)	49 (22.5%)
Victoria (149)	124 (83.2%)	109 (73.1%)	26 (17.5%)
Average of Four sites (%)	73.2	62.5	20.0

Of those who were tested for HIV within the preceding two years, participants were asked to recall the dates on which they were tested (Table 44). Results show that the majority of participants indicated being tested for HIV during the 12 months prior to the survey. Reported testing rates decreased significantly when the testing period was 12-24 months prior to the survey.

Frequency of HIV testing

Of those tested for HIV, 102 (18%) chose to provide information on frequency of tests in the last two years; the results are shown in Table 45. A significant proportion of those who provided this information (44%) reported getting tested every 5-8 months.

Table 45. Frequency of HIV testing

	Regina N=17 N (%)	Sudbury N=17 N (%)	Toronto N=15 N (%)	Victoria N=53 N (%)	Average of Four sites (%)
Every 1-4 months	6 (35.3)	5 (29.4)	5 (33.3)	19 (35.8)	33.4
Every 5-8 months	8 (47.1)	8 (47.1)	6 (40.0)	22 (41.5)	44.0
Every 9-12 months	3 (17.6)	4 (23.5)	4 (26.7)	12 (22.6)	22.6

Under treatment for HIV

Out of the 46 people self-reported as HIV positive, 95.6% reported that they were under the care of a doctor for their HIV (Table 46).

Table 46. Number of HIV positive people under a doctor's care for HIV, by site

	Regina N=1 N (%)	Sudbury N=15 N (%)	Toronto N=11 N (%)	Victoria N=18 N (%)	Average of Four sites (%)
Yes	1 (100.0)	14 (93.3)	11 (100.0)	16 (88.9)	95.6
No	0 (0.0)	1 (6.7)	0 (0.0)	2 (11.1)	4.4

Despite a large percentage of participants under the care of a doctor, only 48.7% were taking medication for their HIV infection (Table 47). Victoria had the lowest percentage of people at 55.6% under drug treatment for HIV.

Table 47. Number of self-reported HIV positive participants taking drugs for their HIV

	Regina N=1 N (%)	Sudbury N=15 N (%)	Toronto N=11 N (%)	Victoria N=18 N (%)	Average of Four sites (%)
Yes	0 (0.0)	10 (66.7)	8 (72.7)	10 (55.6)	48.7
No	1 (100.0)	5 (33.3)	3 (27.3)	8 (44.4)	51.3

HIV Prevalence Rates

Table 48. HIV Prevalence, by site

Site	No. of Participants	HIV prevalence (%)
Regina	251	1.2
Sudbury	169	10.1
Toronto	215	5.1
Victoria	150	16.0

As indicated in Table 48, HIV prevalence rates among the study population ranged from 1.2% in Regina to 16.0% in Victoria.

Self-reported and Actual HIV result

Of the 705 participants who reported previous HIV testing, 86.4% of the participants reported being HIV negative while 6.5% reported being HIV positive (Table 49).

Table 49. Self-Reported HIV result, by site

	Regina N=206 N (%)	Sudbury N=149 N (%)	Toronto N=207 N (%)	Victoria N=143 N (%)	Average of Four sites (%)
Negative	188 (91.3)	125 (83.9)	185 (89.4)	116 (81.1)	86.4
Positive	1 (0.5)	15 (10.1)	11 (5.3)	18 (12.6)	7.1
Do not know/ missing/refused	17 (8.3)	9 (6.0)	11 (5.3)	9 (6.3)	6.5

Table 50 compares the reported and actual serostatus of participants (the data has been combined for 4 sites to assess the validity of self-reported serostatus). While 44 participants reported being HIV positive, 55 participants were tested positive for HIV. Eleven of these 55 HIV positive participants reported being HIV negative, 2 did not know their status, and 1 refused to answer. Of the 44 participants who reported being HIV positive, 41 were tested positive.

Table 50. Self-reported and actual HIV result at four sites combined

		Actual HIV result	
		Positive N=55 N(%)	Negative N=730 N(%)
Self-reported HIV result	Positive	41 (74.5)	3 (0.4)
	Negative	11 (20.0)	599 (82.1)
	Do not know/ missing/ refused	3 (5.5)	128 (17.5)

Out of the 730 participants who were tested negative, 599 or 82.1% correctly reported their status as HIV negative, while 3 (0.4%) reported being positive. 128 (17.5%) of the HIV negative participants either did not know, or refused to answer or the information was missing.
The sensitivity and specificity of self-reported HIV status was found to be 78.9% and 99.5% respectively.

Table 51 shows the reported and actual HIV result comparison by site.

Table 51. Self-reported and Actual HIV result, by site

		Actual HIV result							
		Positive				Negative			
		Regina N=3 N (%)	Sudbury N=17 N (%)	Toronto N=11 N (%)	Victoria N=24 N (%)	Regina N=248 N (%)	Sudbury N=152 N (%)	Toronto N=204 N (%)	Victoria N=126 N (%)
Self-reported HIV result	Positive	1 (33.3)	14 (82.4)	9 (81.8)	17 (70.8)	0	1 (0.7)	1 (0.5)	1 (0.8)
	Negative	1 (33.3)	2 (11.8)	2 (18.2)	6 (25.0)	185 (74.6)	123 (80.9)	181 (88.7)	110 (87.3)
	Don't know/ missing/ refused	1 (33.3)	1 (5.9)	0	1 (4.2)	63 (25.4)	28 (18.4)	22 (10.8)	15 (11.9)

Hepatitis C (HCV) Testing

Previous HCV testing

Out of all four sites, 85.3% of participants had previously been tested for HCV (Table 52). Victoria had the highest percentage of people previously tested at 93.9% followed by Toronto with 84.6%. For Regina and Sudbury, both had just over 81% of participants previously tested for HCV.

Table 52. Number of people previously tested for HCV

	Regina N=254 N (%)	Sudbury N=169 N (%)	Toronto N=221 N (%)	Victoria N=150 N (%)	Average of Four sites (%)
Yes	207 (81.5)	138 (81.7)	187 (84.6)	140 (93.3)	85.3
No	40 (15.7)	31 (18.3)	27 (12.2)	9 (6.0)	13.0
Don't know/ missing	7 (2.8)	0 (0.0)	7 (3.2)	1 (0.7)	1.7

Date of most recent HCV test

For those who reported having been tested for HCV, the largest proportion (48.2%) was tested in the period of 2002-2003. The second largest group was tested in the period of 2000 to 2001. (Table 53)

Table 53. Date of most recent HCV test

	Regina N=207 N (%)	Sudbury N=138 N (%)	Toronto N=187 N (%)	Victoria N=140 N (%)	Average of Four sites (%)
Prior to 1996	11 (5.3)	11 (7.9)	26 (13.9)	12 (8.6)	8.9
1996-1997	5 (2.4)	7 (5.1)	18 (9.6)	9 (6.4)	5.9
1998-1999	20 (9.7)	10 (7.2)	18 (9.6)	9 (6.4)	8.2
2000-2001	68 (32.9)	31 (22.5)	31 (16.6)	32 (22.9)	23.7
2002-2003	98 (47.3)	70 (50.7)	84 (44.9)	72 (51.4)	48.6
Missing	5 (2.4)	9 (6.5)	10 (5.3)	6 (4.3)	4.6

HCV Prevalence Rates

As shown in Table 54, HCV prevalence rates among the study population ranged from 60.2% in Regina to 79.3% in Victoria.

Table 54. HCV Prevalence, by site

Site	No. of Participants	HCV prevalence (%)
Regina	251	60.2
Sudbury	169	61.5
Toronto	210	54.3
Victoria	150	79.3

Self-reported past HCV result

For those who reported having been tested, 55.6% reported that they were HCV positive while 37.7% reported being HCV negative (Table 55). Victoria had the highest percentage of self-reported HCV positivity.

Table 55. Self-reported past HCV result where testing was done

	Regina N=207 N (%)	Sudbury N=138 N (%)	Toronto N=187 N (%)	Victoria N=140 N (%)	Average of Four sites (%)
Negative	96 (46.4)	57 (41.3)	71 (38.0)	35 (25.0)	37.7
Positive	89 (43.0)	72 (52.2)	102 (54.5)	102 (72.9)	55.6
Don't know/ missing	22 (10.6)	9 (6.5)	14 (7.5)	3 (2.1)	6.7

Self-reported and actual HCV result

Table 56 compares the self-reported and actual result of HCV testing. Out of the 488 HCV positive participants, 75 (15.4%) reported negative; and out of the 292 HCV negative participants, 17(5.8%) reported positive. The sensitivity and specificity of self-reported HCV status was found to be 81.9% and 91.5% respectively. Table 57 shows the same comparison by site.

Table 56. Self-reported and actual HCV result for four sites combined

		Actual HCV result	
		Positive N=488 N(%)	Negative N=292 N(%)
Reported HCV result	Positive	339 (69.5)	17 (5.8)
	Negative	75 (15.4)	183 (62.7)
	Don't know/ missing	74 (15.2)	92 (31.5)

Table 57. Self-reported and actual HCV result, by site

		Actual HCV result							
		Positive				Negative			
		Regina N=151 N(%)	Sudbury N=104 N(%)	Toronto N=114 N(%)	Victoria N=119 N(%)	Regina N=100 N(%)	Sudbury N=65 N(%)	Toronto N=96 N(%)	Victoria N=31 N(%)
Self-reported HCV result	Positive	83 (55.0)	72 (69.2)	85 (74.5)	99 (83.2)	5 (5.0)	0 (0.0)	9 (9.4)	3 (9.7)
	Negative	34 (22.5)	17 (16.4)	14 (12.3)	10 (8.4)	61 (61.0)	40 (61.5)	57 (59.4)	25 (80.6)
	Don't know/ missing	34 (22.5)	15 (14.4)	15 (13.2)	10 (8.4)	34 (34.0)	25 (38.5)	30 (31.3)	3 (9.7)

Under treatment for HCV

Over half (55.9%) of the 365 self-reported HCV positive participants were not under the care of a doctor (Table 58). The proportion of self-reported HCV positive participants, not under the care of a doctor was highest in Toronto.

Table 58. Number of HCV positive people under the care of a doctor for HCV

	Regina N=89 N (%)	Sudbury N=72 N (%)	Toronto N=102 N (%)	Victoria N=102 N (%)	Average of Four sites (%)
No	44 (49.4)	42 (58.3)	63 (61.8)	55 (53.9)	55.9
Yes	43 (48.3)	30 (41.7)	38 (37.3)	47 (46.1)	43.3
Missing	2 (2.2)	0 (0.0)	1 (1.0)	0 (0.0)	0.8

Table 59 shows that a large majority of self-reported HCV positive participants (90.7%) reported not taking drugs for their HCV. By site, the percentage of participants taking drugs ranged from 1.0% in Toronto to 4.5% in Regina.

Table 59. Number of people taking drug for HCV

	Regina N=89 N (%)	Sudbury N=72 N (%)	Toronto N=102 N (%)	Victoria N=102 N (%)	Average of Four sites (%)
No	80 (89.9)	70 (97.2)	99 (97.1)	80 (78.4)	90.7
Yes	4 (4.5)	2 (2.8)	1 (1.0)	4 (3.9)	3.0
Missing	5 (5.6)	0 (0.0)	2 (2.0)	18 (17.6)	6.3

Co-infection rates

Table 60 shows the co-infection rates of HIV and HCV, 7.8% of the study population was infected with both HIV and HCV. Among the HCV infected individuals, 11.4% were infected with HIV and among the HIV positive individuals, 93.2% were infected with HCV. The difference in the co-infection rates among the four sites was mainly due to different HIV prevalence.

Table 60. HIV and HCV Co-infection Rates by site

HIV/HCV Status	Regina (%)	Sudbury (%)	Toronto (%)	Victoria (%)	Average of Four sites (%)
Both HIV and HCV positive	1.2	10.1	3.8	16.0	7.8
Only HCV positive	59.0	51.5	50.5	63.3	56.1
Only HIV positive	0.0	0.0	1.4	0.0	
Both HIV and HCV negative	39.8	38.4	44.3	20.7	35.8
Proportion of HCV infected participants who are also infected with HIV	2.0	16.3	7.0	20.2	11.4
Proportion of HIV infected participants who are also infected with HCV	100.0	100.0	72.7	100.0	93.2

5.5 Representativeness of the Study Population

Due to non-probabilistic nature of the study sample, it is difficult to assess the representativeness of the study sample in relation to the clients attending the needle exchange program and to the IDU populations in the city. However, in Victoria, the Needle Exchange Program (NEP) maintains a database of all the attendees who utilize the services of the NEP. A comparison was made on selected characteristics between the study sample and the IDU who reported attending the NEP in the month of October. The results of such a comparison are given in Table 61.

Table 61. Characteristics of Study population compared to those of IDU attending a Victoria NEP

Characteristics	NEP Attendees (%)	Study Sample (%)
Sex		
Female	30.2	29.3
Male	68.1	70.7
Age Group		
<20 Years	1.9	2.0
20-29 Years	28.5	22.0
30-39 Years	33.9	37.3
40-49 Years	28.0	28.7
50 Years and above	7.6	10.0
Ethnicity		
Aboriginal	10.2	20.0
Non-Aboriginal	83.8	80.0
Drug Most Often Injected		
Cocaine	48.7	64.0
Heroin	42.7	26.7

The results showed that there was no significant difference in the age and gender of the study population as compared with the NEP attendees during the same period, though the study sample contained a slightly older population. The study sample recruited from the NEP did include a higher proportion of Aboriginal persons. The IDU who reported injecting cocaine most often tended to be overrepresented in the study population, which may be due to their increased frequency of injections and increased number of visits for needle exchange and hence more likelihood for inclusion as the study subjects.

Use of NEP Services

The recruitment of study population was mainly done at NEP sites but 12.4% of the study participants had not used the services of NEP in the past (Table 62). This group represents the population which is likely to be missed when sampling is carried out at NEP sites. To study the difference between the NEP-users and non NEP-users (including indirect users) for generalizability of the study results, we examined demographic characteristics of the two populations, the results are presented in Table 63. The NEP-users tended to be little older, and more likely to have higher level of education. There were no differences in the sex distribution and self-reported Aboriginal status. There was a higher proportion of IDU among NEP-users who reported injecting cocaine most often. In our study, a higher proportion of female NEP-users reported commercial sex activity compared to female non NEP-users.

Table 62: Use of NEP by study population by site

Did not use NEP				
Regina	**Sudbury**	**Toronto**	**Victoria**	**Average of Four Sites**
13.8%	27.2%	4.5%	4.0%	12.4%

Table 63: Comparison of characteristics of NEP-users vs. Non NEP-users (Data combined for four sites)

Variable	NEP-Users	Non NEP-Users
Median Age (yrs)	35	33
Male (%)	64	71
Education (%)		
High school or less	76.2	84.5
More than high school	23.0	15.5
Self-reported Aboriginal Status	42.5	43.3
Drug Most Often Injected (%)		
Cocaine	81.2	75.3
Heroin	6.7	5.2
Others	12.1	19.6
Sex Trade Workers (%)	39.0	17.9

6. Discussion

While the objectives of the pilot I-Track Survey included assessing the feasibility of the proposed methods for conducting behavioural surveillance of IDU populations across Canada, the results offer a unique snapshot of the current situation of IDU at the participating sentinel centres. The evaluation of the methodology and feasibility of the proposed behavioural surveillance system among IDU in Canada is outlined in Appendix B.

General Characteristics of I-Track participants

Almost two thirds of the study participants were male, half were 35 years of age or younger, over one-third self-identified as being of Aboriginal ethnic background and a further one-third of European background. A further 25% reported being of 'Canadian' background. Site-specific differences in ethnicity were observed, particularly in Regina, where over 90% of the study participants were Aboriginal, compared to 11% in Toronto reporting Aboriginal background. Gender differences were observed in that male study participants were significantly older that their female counterparts at all sites, with Sudbury reporting the youngest female population (mean age 29.4 years). Over half of all participants had not completed high school at the time of the survey, and over one-third reported unstable housing conditions. While the majority of participants (97%) cited the city where surveyed as their place of residence, the data suggest that IDU are relatively mobile with over a quarter (26%) of the study population reporting having lived elsewhere during the six month period prior to the study. IDU in Victoria were the most mobile with almost one third of participants reporting having lived elsewhere in the preceding six months. The results show a high degree of geographic mobility of the IDU populations across Canada and thereby potential for spread of HIV infection within different cities. The characteristics of the IDU population in participating sentinel centres are generally comparable to those reported in studies conducted in some of these and neighbouring centres in the past.[4,5,7].

How well are the non NEP-users represented in the study population?

One of the limitations of the recruiting the participants from the NEP centres is limited generalizability to the IDU populations as the characteristics of the IDU using NEP may differ from the non NEP-users or indirect users (who obtain the needles and other equipment from NEP sites through their contacts). Although a majority of the study participants had used the services of the NEP in the past, 12.4% had not used NEP services before. To examine the effect of recruitment primarily from NEP sites, we compared the characteristics of the NEP-users and non NEP-users (Table 63). The NEP-users were a little older than non NEP-users, male NEP-users were less represented, and the NEP-users tend to be more educated than non NEP-users. There were no differences in the self-reported Aboriginal status between the two groups. The NEP-users tend to inject cocaine more often, although the probability of their inclusion in the study is more because of increased frequency of injections and thereby more visits at NEP sites because of increased need to obtain needles frequently. Similarly the female commercial sex workers among non NEP-users were

less represented. Due to the complex inter-relationship of these characteristics, it is difficult to measure the extent and direction of the sampling bias, although it appears that the sample from the NEP is likely to overestimate the HIV prevalence because of age and use of cocaine. Though our study sample contains a proportion of non NEP-users, it is likely that it may not be representative of the non NEP-user IDU population in each centre.

Does the sample represent the IDU who use the NEP services?

Data on selected demographic variables on the IDU who used the services of the NEP during the month of the study was available in Victoria. We compared the study participants with those IDU who visited the NEP during the same time period (Table 61). We observed similar pattern as noted in non NEP-users, as the study participants were little older, tend to inject cocaine more often although Aboriginal population was overrepresented in the study sample.

Effect of inclusion criteria on the generalizability of the results?

The inclusion criteria limited the study sample to participants older than 15 or16 years of age (depending on age of consent in the province). In our study, we observed that 30% of the participants reported starting to inject drugs at age 16 years or less. The New Montreal Street Youth Cohort in 2003 reported that of the street youth who are IDU, the mean age of first injection was 16.5 years similar to that found in our study.[9] By limiting our study criteria to 15 years or above, we were not able to capture a significant number of young IDU in the study.

Drug use Pattern

The drugs commonly injected were found to be cocaine (81.9% of IDU) followed by Morphine (54.3%), while Heroin was reported by 42.8%. The pattern of drug injected showed marked variation between sites. While cocaine and heroin were the injected by majority of IDU in Toronto and Victoria, most of the IDU in Sudbury used cocaine and dilaudid. In Regina, IDU reported injecting talwin alone or in combination with Ritalin most often, similar to the findings of the Regina seroprevalence study[4]. There seemed to be an increased use of injecting crack in Toronto while its use was found to be limited at other sites. Over three quarters of the study participants reported use of alcohol and marijuana through non-injecting route. In Toronto and Victoria, a high proportion of the participants reported using crack through non-injecting route also similar to as observed in a 1998 study by P. Millson *et al*[10]. This reflects the need to develop site-specific programs taking into consideration the rapidly changing drug culture within any community.

Sharing of needles and other injecting equipment

Most of the study participants injected in the company of other persons, the most common drug injecting partners included close friends and family and sex partners. Only 13.5% of the study population reported always injecting alone, mostly in Toronto. Nearly a quarter of study participants reported injecting with used needles in the preceding six months while use of borrowed equipment was higher (43.2%). In

Regina, a high proportion of IDU reported borrowing equipment (53.5%) while only 16.5% reported borrowing needles and syringes. In Regina seroprevalence study in 2000, 37.2% of the IDU reported borrowing equipment and 29% of the IDU reported borrowing needles[4].

Most of the time the needles and syringes and other injecting equipment were borrowed from the people with whom they inject most often (close friends and family and regular sex partners), though a small proportion also borrowed needles and other equipment from people whom they did not know well. Over 20% of the study participants reported passing on used needles and syringes and one-third of participants reported passing on other used injecting equipment in six months preceding the study. The sharing of needles and syringes in a month preceding the study pattern showed a similar pattern and an unacceptable high proportion of the IDU always borrowed needles and other equipment from others.

The injecting practices indicate that the drug use in these communities is largely a group phenomenon and the potential of transmission of infections such as HIV and HCV exists. The sharing of needles and other injection equipment remains unacceptably high, more evident in case of sharing of equipment, where, there appears to be false sense of complacency.

Sexual behaviours

A vast majority of the study participants (84.7%) reported being sexually active, 39.5% of females reported commercial sex work, and 4.4% of men reported having a male sexual partner in the six months preceding the study. Condom use during penetrative sex was higher as compared with oral sex and the condom use during penetrative and oral sex became more infrequent as the IDU developed more stable relationships with their sexual partners. A similar trend has been observed in other studies[4-5, 13]. Condom use during penetrative sex was higher in the group of IDU who knew their HIV status as positive as compared to those who knew that they were HIV negative. This may be related to their interaction with health care providers and knowledge of harm reduction practices and highlights the importance of bringing more IDU for testing and counseling.

Testing patterns

The results of the testing patterns of IDU for HIV and HCV showed similar patterns and a high majority of the IDU (89.7% for HIV and 85.3% for HCV) had been tested at least once. IDU in Regina were more unlikely to have been tested as compared to other sites. Over 60% of the study participants were tested for HIV in one year preceding the study period while 20% of the study population reported having been tested between 12-24 months prior to the study. This may largely be due to recall difficulties as 38.5% of the study population could not provide the dates of HIV testing within two years prior to the study. The IDU in Regina and Sudbury were more unlikely to have been tested in the two years preceding the study period. Of the participants who were tested in the two years preceding the study, they were tested between 1.2 to 1.5 times per year.

Among those who reported having been tested for HCV, over 72% reported being tested in the two years prior to the study period and 48.6% were tested in one year prior to the study.

While the majority of the study population reported having been tested for HIV and HCV, nearly 40% of the IDU reported not getting tested in one year prior to the study. This rate varies within sites and there is an urgent need to encourage IDU to adopt regular testing practices.

HIV and HCV Prevalence

The overall HIV prevalence rate for the I-Track study population was 8.1% (average of four sites). The HIV seropositivity rates observed in our study are similar to the ones previously reported in other studies. The HIV seropositivity rate in Regina (1.2%) is slightly lower than the rate reported in the Regina Seroprevalence Study of a similar sample size of IDU in 2000, which reported 2.0% HIV prevalence[4]. In Toronto, the HIV prevalence rate in the I-Track Pilot survey was found to be 5.1%, slightly higher than found in a 1990 Toronto study (4.3%) and lower than 8.2% as reported in a 1998 study[11,10]. In Sudbury, HIV prevalence of 10.1% was slightly lower than the rate of 14.7% previously found by Millson et al. among IDU from Thunder Bay and Sudbury in 1999[10]. The rate of HIV prevalence in this pilot survey was found in Victoria (16%), lower than the 21% prevalence rate observed in a preliminary seroprevalence survey undertaken prior to the RARE project in 2000[7,12], which may be due to mobility of the IDU populations.

The overall HCV prevalence rate for the I-Track study population was 63.8% (average of four sites). The highest HCV prevalence rate was observed in Victoria at 79.3%, higher that the self-reported 53% HCV prevalence found by the Victoria RARE study in 2000[12] (the self-reported HCV positivity rate in our study was found to be 72.9%). On comparison of the HCV rates of IDU in Vancouver, the VIDUS study reports HCV prevalence rate of 81.6% at enrollment in that study in 1999, comparable to the rate found in the Victoria I-Track participants. In Sudbury and Ontario, HCV rates in the I-Track participants were found to be 61.5% and 54.3% respectively. The self-reported HCV prevalence rate in Sudbury was 52.3% and 54.5% in Toronto, which is higher than those reported in a study by Millson *et al.* (20% and 28% respectively)[10]. The 60.2% HCV prevalence rate among I-Track participants in Regina is higher that that reported by the Regina Seroprevalence Study conducted in 2000 (46.5%)[4], but is similar to the HCV prevalence among IDU observed at other cities.

The HIV/HCV co-infection rate was found to be 7.8% (average of four sites), which is a function of the HIV seropositivity, as 93.2% of HIV positive IDU were found to be infected with HCV, while only 11.4% of the HCV positive IDU were found to be HIV positive. Despite a common mode of transmission of HIV and HCV, a higher HCV seropositivity rate is due to infectivity of the virus and because of the higher prevalence of HCV. The preventive approach (harm reduction policies) toward HIV and HCV infection will overlap to a large extent but will have to take into consideration the disease-specific prevalence differences. Over 40% of the self-

reported HCV positive IDU were under the care of the physician, and it offers a suitable opportunity for introduction of preventive approach to HIV including counseling and advocating harm reduction policies. Just over a third of the study population tested negative both for HIV and HCV calling for an urgent action for prevention of infection among this group.

7. Conclusions and Recommendations

A review of the pilot study between Health Canada and all stakeholders was carried out in a meeting held on March 27-28, 2003, wherein feedback from each of the participating centres was discussed, and the pilot phase was evaluated with respect to the objectives. The meeting also laid the foundation for implementing enhanced surveillance of risk behaviours among IDU in Canada.

The pilot phase demonstrated that the survey was well received by the collaborating partners and the agencies that carried out the survey were extremely cooperative in any attempts to generate information on the behaviours of IDU. The establishment of this surveillance system across Canada is critical to generate information for planning and evaluating the response to HIV/HCV among IDU. Through such a system, national, and to a certain extent, provincial and local trends in injecting and sexual risk behaviours can be assessed. There is an urgent need to expand the survey to include more urban and semi-urban centres so as to make it representative at a national level. The surveillance system will have to take into account the site-specific issues especially while accessing the IDU population. Though this surveillance system has its limitations, such as cross-sectional study design, non-probability sample, recall bias, and self-reported behavioural patterns, the assessment of trends is not likely to be affected if similar methodology is used over years.

The surveillance system is a result of successful collaboration between federal, provincial, and local level of governments and other organizations working at grassroots level with IDU populations. The surveillance system will have to keep pace with the changing drug scenario and be flexible with the information needs at the local and national level. The information generated through such a system can be used to address issues such as ones related to program planning and evaluation, service delivery among others but its prime focus is still to assess the risk behaviour of IDU populations.

Our study has confirmed that HIV and HCV prevalence rates remain unacceptably high in sentinel centres across Canada. The geographic mobility and high levels of injection and sexual risk behaviours reported by participants highlight that there is potential for the spread of HIV and HCV in these IDU populations.

Given the rapidly changing and varied drug culture between centres, prevention measures must be tailored to reflect these differences within each community. Services should be directed to those IDU who are HIV/HCV -negative to help them remain negative, and at HIV/HCV-positive IDU to provide them with care and counselling to avoid further transmission of HIV and HCV.

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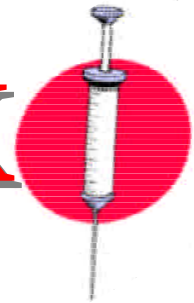
APPENDIX A: Core Questionnaire – Pilot Phase

.

I TRACK



Injecting Drug User Risk Behaviour Surveillance Survey

CONFIDENTIAL

Local Health Authority Logo

Health Canada Santé Canada

Mode of Recruitment: _____

Place ID code here

Interview Start Time: _____

I'm going to ask you some questions about your background, your drug use, your sex life, and your health. Some of these questions are very personal. Please remember that the answers that you give are totally confidential.

The first few questions are about your drug use. We are asking everyone who participates, the same questions.

1. How old were you the first time that you injected drugs (shot up/fixed)**?**
(Includes self-injection or injection by someone else)

☐☐ years old

2. In the past 6 months, which of the following drugs did you inject (shoot up/fix)**?**
> Read out list
(check all that apply)

- ☐ Cocaine (uptown, up)
- ☐ Heroin (dust, junk, horse, smack, down)
- ☐ Heroin+Cocaine (speedballs)
- ☐ Methadone
- ☐ Crack
- ☐ Methamphetamine (Crystal meth, Ice)
- ☐ Amphetamines (speed, uppers, bennies)
- ☐ PCP (angel dust)
- ☐ Talwin & Ritalin (T's and R's)
- ☐ Ritalin alone
- ☐ Benzodiazepines (Xanax, Valium, nerve pills)
- ☐ Morphine
- ☐ Dilaudid
- ☐ Barbiturates (downers)
- ☐ Steroids/hormones
- ☐ Other(s): _____

_____

3. In the past 6 months, which one of these drugs did you inject (fix/shoot up) **most often?**
> Read out drugs which were checked in Q2
(check one only)

- ☐ Cocaine (uptown, up)
- ☐ Heroin (dust, junk, horse, smack, down)
- ☐ Heroin+Cocaine (speedballs)
- ☐ Methadone
- ☐ Crack
- ☐ Methamphetamine (Crystal meth, Ice)
- ☐ Amphetamines (speed, uppers, bennies)
- ☐ PCP (angel dust)
- ☐ Talwin & Ritalin (T's and R's)
- ☐ Ritalin alone
- ☐ Benzodiazepines (Xanax, Valium, nerve pills)
- ☐ Morphine
- ☐ Dilaudid
- ☐ Barbiturates (downers)
- ☐ Steroids/hormones
- ☐ Other(s): _____

_____

4. In the past 6 months, did you use any of the following drugs or substances (not prescribed by a Dr.) without injecting (shooting up/fixing)**?**
> Read out list
(check all that apply)

- ☐ Acid (LSD)
- ☐ Alcohol
- ☐ Amphetamines (speed, uppers, bennies)
- ☐ Cocaine (uptown, up)
- ☐ Crack/Freebase
- ☐ Methamphetamine (Crystal meth, Ice)
- ☐ Demerol
- ☐ Dilaudid
- ☐ Ecstacy (E,X)
- ☐ Gasoline
- ☐ Glue
- ☐ Heroin (dust, junk, horse, smack,down)
- ☐ Marijuana (pot, hash, weed)
- ☐ MDA
- ☐ Methadone
- ☐ Mushrooms
- ☐ Solvents- drink (Aqua Velva)
- ☐ Solvents- sniff (glue, lysol, Pam)
- ☐ Talwin & Ritalin (T's and R's)
- ☐ Barbiturates (downers)
- ☐ Tylenol with codeine
- ☐ Other(s): _____

_____

5. In the past 6 months, with whom did you inject (shoot up/fix)**?** > Read out list, define regular sex partner(s)

At all? (Check all that apply)	With whom did you inject most often? (Check one only)
☐ Regular sex partner(s)	☐
☐ Close friend(s)/family	☐
☐ People you don't know well	☐
☐ People you don't know at all	☐
☐ No one (always injected alone)	☐
☐ Refused	☐

6. In the past 6 months, when you injected (shot up/fixed)**, did you use** (needles/syringes; other injection equipment) **<u>that had already been used by someone else</u>? (This includes your sex partner(s))**

Needles/Syringes	Other injecting equipment (cotton, filters, cookers, water, etc.)
☐ Yes	☐ Yes
☐ No	☐ No
☐ Refused	☐ Refused

<u>If "no" to both columns, go to question 9</u>
<u>Ask questions 7 and 8 as appropriate</u>

7. In the past 6 months, when you injected (shot up/fixed) **with needles/syringes that <u>had already been used</u>, whose needles/syringes were you using?** > Read out list

At all? (Check all that apply)	Whose needles/syringes did you use most often? (Check one only)
☐ Regular sex partner(s)	☐
☐ Close friend(s)/family	☐
☐ People you don't know well	☐
☐ People you don't know at all	☐
☐ Refused	☐

8. In the past 6 months, when you injected (shot up/fixed) **with other injection equipment** (cotton, filters, cookers, water, etc.) **that had already been used, whose equipment were you using?** > Read out list

At all? (Check all that apply)	Whose equipment did you use most often? (Check one only)
☐ Regular sex partner(s)	☐
☐ Close friend(s)/family	☐
☐ People you don't know well	☐
☐ People you don't know at all	☐
☐ Refused	☐

9. In the past 6 months, did you pass on (needles/syringes; other injection equipment) **that <u>you had already used</u>, to someone else? (This includes your sex partner(s))** > Elaborate if necessary

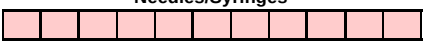
Needles/Syringes	Other injecting equipment (cotton, filters, cookers, water, etc.)
☐ Yes	☐ Yes
☐ No	☐ No
☐ Refused	☐ Refused

10. In the past month, how often did you inject (shoot up/fix)**?**

- ☐ Not at all **> <u>Go to question 12</u>**
- ☐ Once in a while, not every week
- ☐ Regularly, once or twice per week
- ☐ Regularly, 3 or more times per week
- ☐ Every day
- ☐ Refused

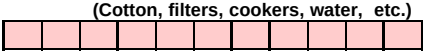
11. Of all the (needles/syringes; [other] injection equipment) **that you used to inject** (fix/shoot up) **drugs within the <u>past month</u>, how many, on a scale of 0 to 10, <u>had already been used by someone else</u>? (0 = none were previously used; 5 = about half had been previously used; 10 = all had been previously used.)** >Show visual card

Needles/Syringes



0 1 2 3 4 5 6 7 8 9 10/10

Other injection equipment (Cotton, filters, cookers, water, etc.)



0 1 2 3 4 5 6 7 8 9 10/10

The next set of questions is about your sex life. I am going to ask you some very personal questions about your sexual relationships. We are asking everyone who participates, the same questions. Some of the questions can be difficult to answer, so please feel free to not answer any that make you uncomfortable.

12. In the past 6 months, how many <u>women</u> have you had sex with? > Tell both male and female participants that this includes getting and giving oral sex

- ☐ None > **<u>Go to question 15</u>**
- ☐ 1
- ☐ 2-5
- ☐ 6-20
- ☐ 21 or more
- ☐ Refused

I'm going to ask you about condom use with regular, casual and client partners.

A "<u>regular</u>" sex partner is someone with whom you have a relationship and with whom you are emotionally involved.

A "<u>casual</u>" sex partner is someone with whom you have sexual relations once or a few times, but with whom there is no emotional involvement.

A "<u>client</u>" sex partner is someone that has given you money, drugs, goods or anything else in exchange for sex.

13. Did you have a (regular/casual/client) **<u>female</u> partner in the past 6 months?** > Ask about regular female partner first, repeat question for casual female partner, repeat again for client female partner. Note response and apply to Question 14 also

Regular	Casual	Client	
☐	☐	☐	Yes
☐	☐	☐	No

If yes, ask: **Did you have <u>penetrative (vaginal or anal) sex</u> with your** (regular/casual/client) **partner?**

Regular	Casual	Client	
☐	☐	☐	Yes
☐	☐	☐	No

If yes ask: **How often did you use condoms with your** (regular/casual/client) **female partner(s)?** > Show visual card

Regular	Casual	Client	
☐	☐	☐	Never
☐	☐	☐	Occasionally
☐	☐	☐	Sometimes
☐	☐	☐	Usually
☐	☐	☐	Always
☐	☐	☐	Refused

14. In the past 6 months did you have <u>oral</u> sex with your (regular/casual/client) **female partner(s)?**

Regular	Casual	Client	
☐	☐	☐	Yes
☐	☐	☐	No

(If yes, ask) **How often did you use condoms with your** (regular/casual/client) **female partner(s)?** > Show visual card

Regular	Casual	Client	
☐	☐	☐	Never
☐	☐	☐	Occasionally
☐	☐	☐	Sometimes
☐	☐	☐	Usually
☐	☐	☐	Always
☐	☐	☐	Refused

15. In the past 6 months, how many <u>men</u> have you had sex with? > Tell both male and female participants that this includes getting and giving oral sex

- ☐ None > **<u>Go to question 18</u>**
- ☐ 1
- ☐ 2-5
- ☐ 6-20
- ☐ 21 or more
- ☐ Refused

16. Did you have a (regular/casual/client) **male partner in the past 6 months?** > Ask about regular male partner first, repeat question for casual male partner, repeat again for client male partner. Note response and apply to question 17 also

Regular	Casual	Client	
			Yes
			No

If yes, ask: **Did you have penetrative (vaginal or anal) sex with your** (regular/casual/client) **male partner(s)?**

Regular	Casual	Client	
			Yes
			No

If yes, ask: **How often did you use condoms with your** (regular/casual/client) **male partner(s)?** > Show visual card

Regular	Casual	Client	
			Never
			Occasionally
			Sometimes
			Usually
			Always
			Refused

17. In the past 6 months did you have oral sex with your (regular/casual/client) **male partner(s)?**

Regular	Casual	Client	
			Yes
			No

(If yes, ask) **How often did you use condoms with your** (regular/casual/client) **male partner(s)?** > Show visual card

Regular	Casual	Client	
			Never
			Occasionally
			Sometimes
			Usually
			Always
			Refused

The next few questions are about blood tests that you might have had for different diseases. We are asking everyone who participates, the same questions.

18. Have you ever been tested for HIV?

- ☐ Yes
- ☐ No > **Go to question 22**
- ☐ Refused > **Go to question 22**
- ☐ Don't know > **Go to question 22**

19. What was the result of your most recent HIV test?

☐ HIV-positive ☐ HIV-negative

☐ Dont' know ☐ Refused

What was the date of your most recent HIV test?

(Prompt/Probe for information)

Month/year _____ /

If date given is within the past two years of the interview date, ask about and record dates of all other times tested in the past two years:

_____

_____

If most recent HIV test was positive, also record the date of the first positive test.

Month/year _____ /

> If HIV-negative, go to question 22

20. Are you under the care of a doctor for your HIV? > Clarify as needed, see definition

- ☐ Yes
- ☐ No

21. Are you taking drugs for your HIV?

E.g.: 3TC, Retrovir(AZT), Combivir, Ziagen, Trizivir, Hivid, Videx, Zerit, Rescriptor, Sustiva, Viramune, Agenerase, Crixivan, Fortovase, Invirase, Kaletra, Norvir, Viracept.

- ☐ Yes
- ☐ No

22. Have you ever been tested for hepatitis C?

- ☐ Yes
- ☐ No > **Go to question 27**
- ☐ Refused > **Go to question 27**
- ☐ Don't know > **Go to question 27**

23. What was the result of your most recent hepatitis C test?

☐ HCV-positive ☐ HCV-negative

☐ Don't know ☐ Refused

24. What was the date of your most recent hepatitis C test?

Month (If possible)/ Year _____ /

>If HCV-negative, go to question 27

25. Are you under the care of a doctor for your hepatitis C? > Clarify as needed, see definition

☐ Yes
☐ No

26. Are you taking drugs for your hepatitis C?

E.g.: Infergen, Intron, Peg-Intron, Rebetron, Roferon, Virazole

☐ Yes
☐ No

The last few questions are general questions about your background, where you live, and your use of services from a needle exchange program. We are asking everyone who participates, the same questions.

27. Record the participant's sex.

☐ Male
☐ Female

28. What is your age?

☐☐ years

29. What ethnic group or family background do you most identify yourself with? > Do not read but may prompt; refer to list, if needed. (Check one only)

☐ Eastern European
☐ Southern European
☐ Other European
☐ Oceanic (eg. Australian, Pacific Islander)
☐ Caribbean > Specify: _____
☐ Central, Latin and Southern American
☐ East and South East Asian
☐ South Asian
☐ Middle Eastern
☐ North African
☐ Sub Saharan African
☐ Aboriginal (Indicate sub-group)
  ☐ Metis
  ☐ Inuit
  ☐ First Nation, Specify: _____
    ☐ Status ☐ Non-Status
☐ Other > Specify: _____

30. What is the highest level of education that you have completed?

☐ None
☐ Some elementary school
☐ Completed elementary school
☐ Some high school
☐ Completed high school
☐ Some college/trade school
☐ Completed college/trade school
☐ Some University
☐ Completed University
☐ Other > Specify: _____

31. Do you live in [name of city] right now?

☐ Yes ☐ No > **Where do you live?**

_____

32. Where else have you lived other than *City X* (person's community) **in the past 6 months?**

☐ Nowhere else
☐ Specify: _____

33. In the past 6 months, what types of places have you lived in?

> Read out list

At all? (Check all that apply)	Where do you live right now? (Check one only)
☐ Own Apartment	☐
☐ Own House	☐
☐ Parent(s)' house/place	☐
☐ Other relative's house/place	☐
☐ Friend's Place	☐
☐ Hotel/Motel Room	☐
☐ Rooming/Boarding house	☐
☐ Shelter/Hostel	☐
☐ Transition house/halfway house	☐
☐ Recovery House	☐
☐ Street	☐
☐ Squats	☐
☐ Jail/Prison/Corrections	☐
☐ Psychiatric institution	☐
☐ Other: _____	☐

34. Have you ever used the services of a needle exchange program?
(This includes mobile, outreach, and other exchange)

☐ Yes> **Go to Question 35**
☐ No> **End interview**

35. In the last 6 months, how often did you use the services of a needle exchange program?
(This includes mobile, outreach, and other exchange)

☐ Never
☐ Occasionally, not every week
☐ Regularly, 1-2 times per week
☐ Regularly, 3 or more times per week, but not daily
☐ Daily

Interview End Time: _____

Debriefing:
Ask participant if they have any questions. Provide risk reduction counseling as appropriate. Give referrals for HIV and/or Hepatitis C testing if appropriate. Give information on local health and social agencies if appropriate.

Now we will collect the finger prick blood sample.

DBS Collection

☐ Yes
☐ Refused

Total Time Spent with Participant: _____

Interviewer Comments:

Dried Blood Spot Specimen collection and storage

1. Use only the cotton-fibre based paper product designed for the collection of body fluids (No.903, Schleicher and Schuell (S & S), Keene, NH).

2. Label filter paper with appropriate sample number. Handle the filter paper by the edges; do not touch the areas that will be used to collect specimens.

3. Prepare the area for puncture. The puncture must be performed with sufficient force and penetration to sustain a flow of at least several drops of blood.

4. Allow a large drop of free-flowing blood to collect at the puncture site. To collect the drop, touch the filter paper to the edge of the drop, and allow another large drop to form at the puncture site. Continue to collect drops in this manner until the wound ceases to bleed or until collection is sufficient. If the wound stops flowing before sufficient blood has been collected, a second puncture should be performed. The area around the wound may be massaged very gently to encourage formation of large blood droplets. Do not squeeze the wound to obtain more blood.

5. It is important that an adequate sample be collected. To do this you must completely saturate each circle with blood. Do not layer successive drops of blood on top of each other.

6. Dry all specimens at least 3 hours in a suspended vertical position. The filter paper may be allowed to dry at room temperature overnight. When dry, the spots will be a uniform dark brown. No areas of red colouration should be seen, the appearance should be similar to that of a dried blood stain.

7. Once dry, place glycine weigh paper between each collection card. These can then be placed in a ziplock bag.

8. Blood spots on filter paper can be stored at room temperature without special precautions to control humidity for up to 30 days from time of collection.

Sample specimen card

APPENDIX B: Evaluation of Study Methods

Pilot Review Meeting

A review of the pilot study between Health Canada and all stakeholders was carried out in a meeting held on March 27th and 28th, 2003. Feedback from representatives of each of the participating centres (Regina, Sudbury, Victoria, Toronto and SurvUDI research group) was discussed, and the pilot phase was evaluated with respect to the objectives. This meeting also laid the foundation for establishment of a risk behaviour surveillance system in Canada.

The pilot study was conducted in Regina, Sudbury, Victoria and Toronto to assess the feasibility of the proposed methods for conducting behavioural surveillance of IDU populations across Canada including: the appropriateness of planned recruitment strategies; the length of the recruitment period/target sample size; the length of time to complete the interview, debriefing, and specimen collection; the various strategies to prevent duplicate participation by respondents in a given survey round; the collection of blood spot specimens to test for HIV and HCV and to assess the data collection instrument with respect to: the ease of its administration by interviewers; non-response rates/missing data for questions; its suitability and face validity.

Behavioural surveillance among IDU has been ongoing within the SurvUDI research group since 1995. At the beginning of 2003, the group conducted a feasibility study of the I-Track questionnaire and the collection of DBS in selected sites within the network. Recruitment for the feasibility study was completed in August 2003. Feedback on methodology received to date from the SurvUDI group has been incorporated in this report, however analysis of data from the SurvUDI feasibility study is still pending and is thus not included in this evaluation.

Recruitment

The recruitment of study subjects during the pilot phase was mainly carried out at the NEP sites though survey promotion was carried out at other places frequented by the IDU. Word-of-mouth recruitment and the monetary incentive played an important role in survey promotion and participation. Three-quarters of the study participants in the four centres provided information as to how they heard about the study. Of these, a large proportion (69%) cited the NEP (including mobile van) as the mode of recruitment followed by family/friends 23%, Drop-in Centres 3.9%, Methadone Treatment Programs 3.2% and flyers or word-of-mouth 0.9%.
In general, it was felt that recruitment from NEP sites offers a cost-effective recruitment strategy, although youth and sex workers tend to be under-represented in the sample. However, site-specific issues will largely determine the recruitment strategies taking into account the distribution and access to the IDU population. The wide geographic distribution of IDU populations in some cities makes recruitment of a representative sample very difficult. It was also expressed that in some situations, an ethnographic assessment may be helpful prior to launch of the survey in order to recruit a sample,

which closely represents the IDU populations, however, this will depend on the availability of resources.
During the pilot survey, the length of recruitment time and planned target sample were realistic for most sites. However, due to administrative delays, survey implementation was conducted during the winter months, resulting in an extended recruitment period and lower than expected sample size. It was recommended that winter months should be avoided for future survey rounds with perhaps the exception of sites on the west coast of Canada, which are less susceptible to cold weather conditions. Another recommendation was that commencement of recruitment should coincide with the day of issue of social assistance cheques locally, so as to limit the initial number of interested candidates to a manageable proportion for the recruiting site. The main recruitment incentive cited was the monetary honorarium of $10-$20 (site-specific) offered to participants.
In general, recruitment strategies will be site-specific in future rounds, with word-of-mouth being the primary mode used.
It was recommended that only one or two interviewers per site should be employed for the survey, to help reduce the likelihood of repeat participation. During the pilot phase, the strategy of keeping a logbook containing characteristics of each participant was found to be of limited value by interviewers. The creation of a unique identifier (composed of a combination of participant's initials, date of birth, and sex) that is then encrypted to ensure anonymity of participants has been proposed for future survey rounds. The main purpose of encryption is to help rule out any duplicate participation, remove any personal identifiers from the data, and may allow the tracking of HIV and hepatitis C incidence at each site. An encryption program for the I-Track survey is currently under development by Health Canada and will be employed in Phase One of the survey.

Eligibility Criteria

Analysis of pilot data reveals that youth are under-represented in the study population and are partially excluded by the eligibility criteria. Minimum age of consent to participate in research studies is defined by Ethics Boards.
The survey inclusion criteria currently exclude crack smokers, and former IDU who have switched to smoking crack. Some communities have noticed a shift from injecting drug use to crack use. It was felt that non-injecting drug use should be investigated, as it is also a risk factor for transmission. It is not currently known if non-injecting crack use is less risky than injecting crack use. There is a need to assess this and study the changing patterns of drug use.

Strategies to confirm that potential survey candidates are in fact IDU, were not discussed at the Pilot review meeting, however, suggestions from individual sites included recruiting at the NEPs after a needle exchange has taken place; asking candidates about the size of needle and syringe they usually use.

Informed Consent

The consent form varied between sites, due to individual requirements of the research ethics board (REB) in that jurisdiction. It was noted that the current versions of the consent form are too long and often repetitious. Feedback from participating sites indicated that half way through the reading of the consent form, participants often 'zoned out'. The consent form is under revision to incorporate ethics boards required statements and information into the consent form in plain language in a more concise format.

Questionnaire

In general, the questionnaire was considered to be relevant to IDU and maintained participants' interest and concentration. Participation in the survey provided an opportunity to engage the participant in harm reduction strategies and other appropriate services available at the recruitment site. One site reported a 32% increase in the number of IDU accessing the NEP subsequent to survey implementation.

At the pilot review meeting, the questionnaire was reviewed question-by-question; response rates and interviewer feedback were assessed. Response rates for the majority of questions were good. The questionnaire format will be revised to improve ease of administration and any revisions as a result of the evaluation will be incorporated.

Upon complete familiarization with the questionnaire and with adequate practice, interviewers found the questionnaire relatively easy to administer and took less time than initially anticipated. The median length of time taken to complete the interview was 12 minutes and the 'total time spent' with participants to complete the survey (i.e. interview, dried blood spot collection and debriefing) was 20 minutes. As expected, there were large variations in these reported times. Feedback from the sites indicated that 'total time spent' did not accurately reflect the time taken to perform all of the activities related to the interview process. As well, time required for debriefing varied depending on the needs of the participants. However, encouraged by the relatively short period of time to conduct most interviews during the pilot phase, it was considered feasible to include additional questions (that are ratified by all stakeholders) for the next survey round.

The questionnaire piloted by the SurvUDI group will continue to maintain variables and categories currently being used by the network.

Feedback from some sites indicated that competition between interviewers to complete a certain number of interviews per day or per shift, occurred. As well, some interviewers reported experiencing stress as a result of administering the questionnaire. Thus regular and frequent debriefings for interviewers were recommended. It was also proposed that a minimum time period be allowed for each interview and specimen collection, and that overall quality of the data collected rather than quantity should be emphasized during interviewer training in subsequent survey rounds.

Dried Blood Spots

The DBS methodology for collection of a blood sample was selected for the I-Track pilot survey because of it's relative ease of collection; there are no special requirements for storage and shipping; the methodology has been successfully used elsewhere in similar studies; and there is potential for the use of the detuned assay with DBS samples to help identify recent HIV infection (incidence); the potential to identify different strains of HIV.

Risk for Occupational Transmission of HCV

HCV is not transmitted efficiently through occupational exposures to blood. The average incident of an anti-HCV seroconversion after accidental percutaneous exposure from an HCV-positive source is 1.8% (range: 0% - 7%)[1-5]. One study indicates that transmission occurred only from hollow-bore needles compared with other sharps[3]. Transmission of HCV rarely occurs from mucous membrane exposures to blood and no transmission in HCW has been documented from intact or nonintact skin exposure to blood[5-7].

Risk for Occupational Transmission of HIV

The average risk of HIV transmission after a percutaneous exposure to HIV-infected blood has been estimated to be approximately 0.3% (95% confidence interval (CI) = 0.2%-0.5%)[8]. After a mucous membrane exposure, the average risk of transmission is estimated to be approximately 0.09% (95% confidence interval (CI) = 0.006%-0.5%)[9]. The average risk for transmission of HIV transmission after exposure to nonintact skin has not been precisely quantified but is estimated to be less than the risk for mucous membrane exposures[10].

Risk associated with DBS collection

DBS methodology has been used successfully in a national surveillance program of risk behaviours among IDU populations in Australia for the last several years. Personal communication with one of the lead investigators of this program, Dr. Margaret MacDonald, has indicated that when using a single-use lancet device, an average of 2,500 IDU have been sampled in Australia per year and no needle stick injuries have been reported in Australia to date[11]. In New York city, where similar studies among IDU have been conducted using the same methodology, a personal communication with a lead investigator in these studies has confirmed that no needle or lancet-associated injuries have been reported to date[12]. DBS collection is routinely used in surveillance programs in several developing countries in Africa and in Asia, however no documentation was available to date on occupational exposure as a result of DBS collection.

Pilot Phase DBS Collections

Site coordinators and interviewers were trained in all aspects of DBS collection methods and infection control guidelines. In Victoria, Regina, Sudbury and Toronto, a total of 794 participants were surveyed. Of the 794 participants asked to provide a DBS sample, there was one refusal for DBS collection. Three participants were unable provide a DBS after several failed attempts at collecting or due to a disability. Although encouraged to collect the DBS themselves, participants often assumed and expected that the interviewer would perform DBS, as would be the case for collection of a venous blood sample. Some sites found that collection of DBS by the interviewer reduced client stress and reduced the overall length of the interview. In Victoria, Regina, Sudbury and Toronto, interviewer-collected DBS ranged from 50% to the majority of specimens collected. An improvement was noted in the quality of the sample in specimens that were interviewer-collected compared to self-collected samples.

DBS collection was performed without incident at all of four centres. Feedback from these four centres indicated that DBS collection was well accepted by both survey participants and interviewers.

DBS was collected on 789 of the total 794 participants (99%) from the participating four sites. A small proportion was not tested due to insufficient quantity of sample. Samples were initially tested for HIV, and this was possible on 785 of the samples collected, 4 samples were of insufficient quantity for testing. HCV testing was performed on 780 samples, 9 samples were of insufficient quantity for testing for HCV.

Storage and shipping of DBS specimens were carried out in accordance with guidelines provided by the National HIV and Retrovirology Laboratories, and the implementation of these procedures went smoothly throughout pilot survey implementation in all sites.

Accidental Occupational Exposure

During the feasibility study of the I-Track survey in 6 sites within the SurvUDI group in Quebec, and after 93 successful DBS collections, a needle stick injury occurred during the collection of DBS. The interviewer involved was immediately placed on the appropriate antiretroviral prophylaxis therapy. The SurvUDI group subsequently suspended the collection of DBS samples for the study and reverted to the collection of saliva samples for HIV testing, a method this group has employed for IDU surveillance for the past number of years.

The accidental exposure was reported to all parties during the I-Track Pilot Review meeting in March 2003 and is being considered in ethical renewal applications in all jurisdictions. The incident was also reported in an application to Health Canada's Research Ethics Board. Steps to further enhance survey staff safety in future rounds will involve enhanced training with respect to DBS collection, with increased emphasis on safety precautions, infection control guidelines and post-exposure procedures. A newer version of the lancing device that ensures automatic and permanent blade retraction that

prohibits reuse and minimizes the possibility of injury will be used in future survey rounds.

Phase One Biological Sample

The choice of biological samples collected for Phase One of the I-Track survey will vary according to centre. Given the success of DBS collection in the pilot phase in four centres, it is likely that DBS will continue to be collected in subsequent survey rounds (pending research ethics approval from local REBs). The SurvUDI research group has elected to continue with the collection of saliva samples for HIV testing, and one site within the network (Ottawa) collected venous blood samples in addition to saliva sample for HIV and HCV testing.

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