WHITEHORSE I-TRACK REPORT

Monitoring Risk Behaviour among People Who Inject or Inhale Drugs in Whitehorse, Yukon

Whitehorse I-Track Report: Monitoring Risk Behaviour among People Who Inject or Inhale Drugs in Whitehorse, Yukon is available on the Internet at the following address: http://bloodties.ca/

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Respondents: All those who participated in the I-Track survey in Whitehorse.

DISCLAIMER

Please note that while this project was carried out in collaboration with and was funded by the Public Health Agency of Canada, this report is not a publication of the Public Health Agency of Canada and was produced for the Government of Yukon and Blood Ties Four Directions Centre. The views expressed in this report do not necessarily represent the views of the Public Health Agency of Canada.

ABBREVIATIONS

AOR – Adjusted Odds Ratio
BTFD – Blood Ties Four Directions
CI – Confidence Interval
DBS – Dried Blood Specimen
HCV – Hepatitis C Virus
HIV – Human Immunodeficiency Virus
IDU – Injection Drug Use
IDUs – People who inject drugs[1]
NEP – Needle Exchange Program
OR – Odds Ratio
PHAC – Public Health Agency of Canada
SD – Standard Deviation

[1] "IDUs" is an acronym for the term "Injection Drug Users"; however, this term is no longer in use as it has been identified by this community as derogatory. "IDUs" is still accepted as an abbreviation, but the long version has been changed to "People who inject drugs."

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EXECUTIVE SUMMARY

Introduction

People who inject drugs (IDUs)[2] are at increased risk for acquiring blood-borne infections such as human immunodeficiency virus (HIV) and hepatitis C virus (HCV), through the use of contaminated drug equipment. Yukon has the highest reported rate of HCV in Canada. Little is known about people who use drugs in Yukon and the rates of HIV and HCV in this population.

I-Track is a national enhanced surveillance system of urban-based IDUs in Canada. For the first time, Whitehorse was selected as a participating sentinel site in Phase 3 of the I-Track survey, with the aim to describe the patterns of drug injecting practices, sexual risk behaviour and HIV testing behaviour among IDUs in Whitehorse.

Methods

An electronic interviewer-administered questionnaire was conducted in 2011 and 2012 with people who use drugs, collecting information on demographics, drug use and related risk behaviour, sexual risk behaviour, HIV and HCV testing behaviour, access and use of needle exchange programs and other health services, and knowledge and attitudes around HIV-related risk behaviour. A dried blood sample (DBS) was taken and tested for HIV and HCV antibodies. Descriptive statistics were calculated; Chi-square/Fisher's exact tests assessed differences in proportions; Student's t-test and ANOVA were used to calculated differences in means; significance level was set at $p<0.05$ (p values below $p=0.05$ were considered significant). Univariate and multivariate logistic regression models were used to determine correlates of HCV seropositivity and correlates of sharing used needles, syringes and/or equipment, and to estimate odds ratios (OR), adjusted odds ratios (AOR) and 95% confidence intervals (CI).

Results

Demographic Characteristics of Respondents

A total of 103 participants were recruited. Highlights of demographic characteristics of respondents include:

- 55 were current injectors and 48 were not current injectors.
- 62.1% were male and 37.9% were female.
- Average age of all participants was 39.3 years, with an age range of 19 to 63 years.
- 73.8% of respondents identified as Aboriginal[3] (First Nations, Inuit or Métis).
- 65.0% of respondents did not complete high school.

[2] "IDUs" is an acronym for the term "Injection Drug Users"; however, this term is no longer in use as it has been identified by this community as derogatory. "IDUs" is still accepted as an abbreviation, but the long version has been changed to "People who inject drugs."

[3] The survey instrument specifically asked participants "Are you an Aboriginal person?" However, the term "Indigenous" is now preferred. Therefore, in this report, "Aboriginal" is used as it reflects the survey instrument, and "Indigenous" is used in the discussion section.

- The majority of respondents (89.2%) identified as heterosexual.
- 38.8% of respondents lived in more than one city or community in the 6 months prior to the interview.
- At the time of the interview, 47.6% lived in unstable housing (defined as living in a friend's place, hotel or motel room, rooming or boarding house, shelter or hostel, transition or half-way house, drug treatment facility, correctional facility, or public place, such as the street).

A sketch of an average person who uses injection or inhalation drugs in Whitehorse[4]:

B. is a 40 year old heterosexual male who didn't complete high school and may have spent some time incarcerated.

- A quarter of participants (25.5%) reported their monthly income as less than $500.
- Main source of income for 38.8% of respondents was social assistance, and for 33.0% of respondents it was regular or seasonal work.
- 23.3% of respondents had been incarcerated in the 6 months prior to the interview.
- Compared to those that did not currently inject, current injectors were more likely to have lived in more than one city or community in the 6 months prior to the interview (p=0.022).
- Compared to male participants, females were younger (p=0.005) – average age for females was 35.8 years compared to 41.4 years for males and 15.4% of female respondents were 25 years of age and under compared to only 1.6% of male participants in this age group.
- Compared to male participants, females were more likely to report a lower personal monthly income (p=0.039), and were more likely to report social assistance as their main source of income (p= 0.022).
- Female respondents were also marginally more likely to identify as Aboriginal than males (p=0.051).

Drug Use and Related Risk Behaviour

- For all participants who had ever injected drugs for non-medicinal purposes, average age of first injection was 23.9 years, with a range from 12 to 57 years of age. 38.3% first injected between the ages of 20-29 years.
- Average time since first injection was 15.9 years for all participants, with a range of 0-43 years since first injection. 33.3% of respondents first injected drugs 21 years ago or more, and 29.6% of respondents first injected drugs 11-20 years ago. Just 4.9% of participants first injected drugs less than a year ago.
- Of all respondents who injected drugs in the 6 months prior to the interview, 74.1% reported injecting cocaine (at all in the 6 months prior to the interview) and 55.6% reported injecting non-prescribed morphine (at all in the 6 months prior to the interview). Almost half of respondents (47.0%) reported injecting non-prescribed morphine most often in the previous 6 months, whereas 37.0% reported injecting cocaine most often. Other drugs

[4] Sketches of characteristics of people who use drugs have been presented in this report. These sketches are based on average characteristics from the survey sample. These sketches are fictitious and do not represent any particular person who uses drugs in Whitehorse.

injected by about a quarter of respondents or more included oxycontin/oxycodone, crack cocaine, heroin and dilaudid.

- 36.4% of respondents reported not injecting at all in the month prior to the interview, whereas 23.6% of respondents reported injecting every day in the previous month. Over 40% of respondents reported that most often they inject alone. Just over a quarter injected with their regular sex partner most often, and just under a quarter injected with their friends or people they know well. The most commonly reported places of injection were one's own apartment or house (41.8%), and a friend's place (21.8%). 14.6% of injectors most commonly injected in a public place (e.g. street, park, washroom, etc.).
- 93.2% of respondents reported using crack cocaine in the 6 months prior to the interview, and 21.4% reported it to be their non-injected drug of choice. Of those who smoked crack, almost half (47.9%) stated that they smoke crack "once in a while, not every week". 83.5% of respondents reported using alcohol in the past six months, and this was also the most commonly used substance. Other commonly used non-injected drugs included marijuana (68% of respondents), cocaine (62.1% of respondents), and codeine (37.9% of respondents).
- The majority (85.2%) of injectors used a sterile needle and syringe at their last injection. 20.0% of injectors reported borrowing used needles in the 6 months prior to the interview and 19.2% reported lending used needles. For those that borrowed or lent used needles, they did so most frequently from and to their regular sexual partner. 41.8% of injectors reported borrowing other used equipment (cookers, tourniquets, water, acidifiers, filters, swabs), and this equipment was most commonly borrowed from a regular sexual partner or friends. 43.8% of injectors reported lending their used equipment to others.
- Of those who both injected and inhaled, 62.5% reported preferring injection but sometimes inhaled, whereas 37.5% preferred inhalation but sometimes injected. For those who preferred injecting, reasons for sometimes inhaling included drug availability (73.3%), opportunity to use for free (40.0%) and inhaling if partner or peers were doing it (23.3%). For those who preferred inhaling, reasons for sometimes injecting included if partner or peers were doing it (44.4%), drug availability (38.9%) and "depending on mood" (22.2%).
- Sharing used needles and/or syringes and/or equipment was associated with time since first injection (p=0.004) and most common drug partner (p=0.004). Those who started injecting 3-10 years ago were 89% less likely to share used needles, syringes or equipment than those who started injecting 11 years ago or more (OR=0.11, 95% CI=0.03-0.49). Those who injected most often with people they know well, such as a regular sex partner, friends or family, were 5.6 times more likely (95% CI=1.7-18.2) to share used needles syringes or equipment as those who injected most often with people they don't know well or who

A sketch of an average drug use pattern among people who use injection or inhalation drugs in Whitehorse:

B. started injecting 16 years ago at the age of 24 years. He mainly injects alone in his apartment, and prefers to inject cocaine. The last time he injected, he used a clean needle and syringe, but often borrows other equipment from his friends and regular sex partner. He prefers injecting, but also smokes crack once in a while when it is available or when an opportunity arises to use for free.

injected alone. Interestingly, time since first injection was also associated with injecting most commonly with someone known well: those who started injecting 11 years ago or more were more likely to report injecting most commonly with someone known well (p=0.024). In addition, the association between injecting most commonly with someone known well and sharing of used needles and equipment was strongest among those who started injecting 11 years ago or more.

- Sharing of used needles and/or syringes and/or equipment was also associated with frequency of use of needle exchange programs (p=0.028). Those who used a needle exchange program regularly were 4.0 times more likely (95% CI=1.1-14.0) to share used needles, syringes or equipment compared to those who used a needle exchange program occasionally; this was explained by the fact that those who used a needle exchange program regularly were also more likely to inject with people they knew well (p=0.012) and were less likely to have started injecting 3-10 years ago compared to those who used a needle exchange program occasionally (p=0.020). Hence, the association between regular use of NEPs and sharing of used needles, syringes or equipment was therefore confounded by time since first injection and injecting most commonly with someone known well; that is, the association was due to these two other factors, and not regular NEP use. Moreover, frequency of NEP use interacted with these two factors, illustrating different risk profiles among frequent NEP users and occasional NEP users.
- In multivariate analyses, only time since first injection remained significantly associated with sharing used needles and/or syringes and/or equipment (and hence was found to be the most important factor associated with sharing of used needles, syringes or equipment): those who started injecting 3-10 years ago were 93% less likely (AOR=0.07, 95% CI=0.01-0.62) to share used needles, syringes or equipment than those who started injecting 11 years ago or more. In other words, long-term injectors are more likely to use NEPs and are more likely to share needles with their regular sex partner or someone they know well.

Sexual Risk Behaviour

- 37.9% of participants reported two or more sex partners in the past 6 months.
- 28.7% reported condom use at last sex, and of those who reported having sex in the past month, 17.7% reported using a condom at last sex. Of those who had multiple sexual partners, 30.8% used a condom the last time they had sex. Those with multiple sex partners were equally likely to use condoms as those without multiple sex partners.
- 41.8% of respondents had sex with a casual sex partner in the six months prior to the interview. Of those who had vaginal sex with a casual sex partner in the six months prior to the interview, approximately half (52.5%) always used a condom, and 40.5% never used a condom. Of those who had anal sex with a casual sex partner in the previous six months, 71.4% reported never using a condom.

A sketch of average sexual risk behaviour of people who use injection or inhalation drugs in Whitehorse:

B. has a regular sex partner and does not use condoms with his regular sex partner. His friend C. always uses condoms with his casual sex partner, and his other friend D. never uses condoms with his casual sex partner.

- 8.7% of respondents had sex with a client sex partner (not defined in the survey instrument, but presumed to mean partner who paid participant for sex) in the six months prior to the interview, and of these, 66.7% used a condom the last time they had sex with a client sex partner. Females were more likely to report having sex with a client sex partner (p=0.002).
- 51.5% of all respondents reported a history of a diagnosis with an STI, and females were more likely to report having been diagnosed with an STI than were males (p=0.016).

HIV and Hepatitis C Prevalence

- Of all respondents who had given a sufficient blood sample, 5.9% (95% CI=2.2%-12.5%) were HIV positive and 45.0% (95% CI=35.0%-55.3%) had a lifetime prevalence of hepatitis C (indicating acute, chronic or resolved infection) (Table below). 2.0% were seropositive for HIV only, 41.0% were seropositive for hepatitis C only, 4.0% were seropositive for both HIV and hepatitis C, and 53.0% were seronegative for both hepatitis C and HIV. There were no differences in HIV or hepatitis C seropositivity between males and females.
- Among current IDUs, 7.4% (95% CI=2.1%-17.9%) were HIV positive and 57.4% (95% CI=43.2%-70.8%) had a lifetime prevalence of hepatitis C. Current IDUs were equally likely to have an HIV positive lab result as previous IDUs and those who never injected (p=0.623), but were more likely to have a hepatitis C positive lab result than previous IDUs and those who never injected (p<0.001).

Table I: HIV and hepatitis C seropositivity, Whitehorse I-Track Survey, Whitehorse, Yukon (n=103, 2011-2012 data).

Laboratory Results	All Participants (n=103) N (%)	Current Injectors (n=55) N (%)	Previous Injectors (n=26) N (%)	Never Injectors (n=22) N (%)
HIV seroprevalence*	6 (5.9)	4 (7.4)	2 (7.7)	0 (0.0)
Lifetime prevalence of Hepatitis C**	45 (45.0)	31 (57.4)†	12 (48.0)†	2 (9.5)†
HIV and Hepatitis C Serostatus* **				
Seropositive for HIV only	2 (2.0)	1 (1.9)	1 (4.0)	0 (0.0)
Seropositive for Hepatitis C only	41 (41.0)	28 (51.9)†	11 (44.0)†	2 (9.5)†
Seropositive for both HIV & Hepatitis C	4 (4.0)	3 (5.6)	1 (4.0)	0 (0.0)
Seronegative for both HIV & Hepatitis C	53 (53.0)	22 (40.7)†	12 (48.0)†	19 (90.5)†
HIV Awareness				
Proportion of participants aware of HIV positive status (among participants laboratory-tested HIV positive)	6 (100.0)	4 (100.0)	2 (100.0)	N/A
Hepatitis C Awareness** **				
Proportion of participants aware of ever having HCV (among participants laboratory-tested HCV positive)	38 (84.4)	27 (87.1)	10 (83.3)	1 (50.0)

*Among participants who provided a biological sample of sufficient quantity for testing. HIV screening was performed using the Bio-Rad GS rLAV HIV-1 EIA assay. Confirmatory testing was subsequently performed using the Bio-Rad Genetic Systems HIV-1 Western Blot assay. A positive result indicates a current HIV infection. Both the HIV screening (EIA) and confirmatory assay (Western Blot) used are approved by Health Canada as diagnostic assays for use with dried blood specimens.

**Among participants who provided a biological sample of sufficient quantity for testing. Hepatitis C (HCV) testing was performed using the Ortho HCV version 3.0 EIA. Confirmatory testing is not performed for samples that test positive. A positive result indicates past or present hepatitis C infection, and does not discriminate acute from chronic or resolved infection.

***Among participants who provided a biological sample of sufficient quantity for both HIV and hepatitis C testing.

****Hepatitis C awareness was based on the variable "Have you ever been told by a health professional (e.g. doctor, nurse) that you have or had a hepatitis C infection?"

†Significantly different since p<0.05.

- All those with HIV were aware of their infection; there were no differences in HIV awareness between males and females and between current IDUs and previous IDUs.
- The majority (84.4%) of those who had a positive hepatitis C lab result (indicating acute, chronic or resolved infection) were aware of their infection (i.e. were ever told by a health professional that they have or had a hepatitis C infection). Males were more likely to be aware of ever having hepatitis C compared to females (p=0.031).

Characteristics Associated with HIV and HCV Positive Results

- Those who were HIV positive were less likely to lend a used crack pipe; in fact, no HIV positive respondents reported lending used crack pipes, compared to 62.9% of HIV negative respondents who did (p=0.005).
- HCV positive result was associated with being incarcerated (p=0.048): the odds of being incarcerated in the 6 months prior to the interview among HCV positive respondents were 2.6 times higher (95% CI=1.0-6.6) than the odds of being incarcerated among HCV negative respondents.
- Current injectors were more likely to have a positive HCV laboratory result than those who currently did not inject (p=0.007). The odds of currently injecting among those who were HCV positive were 3.1 times higher (95% CI=1.3-7.1) than the odds of currently injecting among those who were HCV negative.
- Among previous and current injectors, time since first injection was associated with a positive hepatitis C result (p=0.007). Those who started injecting drugs 2 years ago or less were 92% less likely as those who started injecting drugs 11 years ago or more to be HCV positive (OR=0.08, 95% CI=0.01-0.71). Only 2.3% of those who were HCV positive started injecting 2 years ago or less.
- Among current injectors, an HCV positive result was inversely associated with borrowing used injection equipment (p=0.010). The odds of borrowing used injection equipment among those who were HCV positive were 78% lower than the odds of borrowing used injection equipment among those who were HCV negative (OR=0.22, 95% CI=0.07-0.71). In other words, HCV positive respondents were 78% less likely to borrow used injection equipment as HCV negative respondents.
- While sharing used needles, syringes or equipment was not associated with a positive HIV or hepatitis C result, of those who were HIV positive and injected drugs in the past 6 months, 25.0% reported borrowing used needles, but no HIV positive respondents reported lending used needles. 12.9% of HCV positive respondents reported borrowing used needles, and 16.7% of HCV positive respondents reported lending used needles.

A sketch of average HIV and HCV-related characteristics among people who use injection or inhalation drugs in Whitehorse:

B. was diagnosed with HCV but is HIV negative. He was incarcerated 6 months prior to the interview and currently injects drugs.

Use of Services

- The majority (90.3%) of respondents reported ever using a needle exchange program (NEP), and 57.5% used a NEP occasionally in the past six months. The most common place to obtain new needles was a fixed site NEP (51.9% of respondents), and the most common place to obtain new crack kits was both a fixed site NEP and a mobile vehicle NEP, 34.0% and 27.7%, respectively. The majority (79.3%) of participants found it very easy to access new needles, and the majority (61.4%) also found it very easy to access a new crack kit.
- The most commonly reported place to dispose of used needles and/or syringes was to return them to the NEP (27.8% of respondents) or to put them in the garbage (29.6% of respondents).
- A greater proportion of females than males reported accessing a hospital (p=0.035) and a needle exchange program (p=0.019) in the 12 months prior to the interview.

Sketch of average use of services of people who use injection or inhalation drugs in Whitehorse:

B. uses a needle exchange program (NEP) occasionally, and gets his new needles most commonly at the Blood Ties Four Directions Centre and his new crack kits at Blood Ties or the Outreach Van. He finds it easy to access new needles and new crack kits. He usually disposes of used needles and syringes by returning them to Blood Ties or putting them in the garbage.

Knowledge of HIV and HIV Transmission

- Although the majority of participants correctly answered the HIV knowledge and transmission questions, there were a significant proportion who answered "don't know" to some of the questions, including 18.5% of respondents who didn't know whether a person can get HIV from mosquito bites, 10.7% of respondents who didn't know whether a person can get HIV by sharing a meal with someone who is infected, and 13.6% of respondents who didn't know whether there is a cure for HIV/AIDS.

Comparisons to National Data

- HIV and HCV prevalence among people who inject drugs in Whitehorse was lower or on par with national results (which included people who inject drugs in Whitehorse, Prince George, Edmonton, Regina, Sudbury, Toronto, Kingston, Thunder Bay, London, the SurvUDI network, and Halifax).
- Prevalence of injection risk behaviour such as sharing of needles, syringes and equipment among people who inject drugs in Whitehorse appears to be higher or on par with national results.
- Prevalence of sexual risk behaviour among people who use drugs in Whitehorse appears to be higher than national results.

Discussion

To our knowledge, this is the first study to document rates of HIV, hepatitis C and associated risk behaviour among people who use drugs in Whitehorse, Yukon. Results of this survey indicate that HIV and hepatitis C prevalence among people who use drugs in Whitehorse is high in comparison to the general population, albeit lower or on par with Canadian rates for people who use drugs.

The study documented a high prevalence of injection risk behaviour and sexual risk behaviour among people who use drugs in Whitehorse. Time since first injection and injecting with people known well (e.g. regular sex partner or friends) were associated with sharing used needles, syringes and/or equipment. Use of needle exchange programs interacted with these two variables. Incarceration, injection status, time since first injection and borrowing used injection equipment were associated with HCV positivity. These associations suggest opportunities for interventions in specific sub-groups of people who use drugs in Whitehorse, particularly those who are either new or well-experienced injectors.

Limitations of the study included the non-random, convenience sampling methods; as a result, surveillance findings may not be representative of all people who inject or inhale drugs in Whitehorse. Findings were based on self-reported data which are subject to social desirability and recall bias. The small sample size often limited our ability to make definitive conclusions.

The results of this survey indicate that there are many opportunities for education and outreach among people who use drugs in Whitehorse. Some gender-based differences were observed in the data, which may have implications for offering programming. A determinants-based approach is essential for understanding and addressing the needs of people who use drugs in Whitehorse, as well as for the prevention, reduction and cessation of illicit drug use in Whitehorse and in Canada.

Recommendations[5]

Based on the study results and discussion, the local lead investigators offer the following recommendations in the areas of increased education and outreach, service provision, and future research.

Recommendations for Education and Outreach

Increased education and outreach efforts are recommended for the following:

***Drug injection use and sharing of used injection equipment**:*

- Education efforts and interventions aimed at decreasing habituation to risk among more experienced IDUs as well as younger IDUs not aware of the risk, and education efforts related to risk behaviour for HIV and hepatitis C acquisition among close emotional contacts (e.g. intimate sex partners) would be most beneficial to reducing rate of sharing behaviour among people who inject drugs.

[5] These recommendations have been made by the Chief Medical Officer of Health for Yukon as well as the Blood Ties Four Directions Centre. These recommendations do not come from and do not necessarily reflect the views of the Public Health Agency of Canada and/or the Government of Yukon.

- Targeted prevention and education strategies for new injectors have the potential to reduce injecting overall and increase uptake of treatment interventions.
- Messaging about safe needle disposal should be scaled up.

Drug inhalation use:

- Agencies and service providers should consider and address the lack of knowledge concerning risks when sharing used pipes (crack kits) as well as motivational factors that prevent safer inhalation use.
- Targeted education for those who prefer inhaling but sometimes inject, that addresses motivational factors such as peer and partner influences may be beneficial in reducing injection drug use, as well as encouraging safer alternatives such as methadone services.

Sexual risk behaviour*:*

- Opportunities to improve sex education and outreach should be sought amongst people who use drugs, bearing in mind that education efforts and counseling should focus not only on the use of condoms as a factor in decreasing STI transmission, but also on other risk-reduction strategies such as reducing number of partners and avoiding high-risk sexual activity (e.g. concurrent partnerships, sex work, anal sex).
- It is important to reiterate the increased risk of hepatitis C transmission for injection drug use compared to sexual activity.
- There is a continued need for education regarding HIV and HIV transmission.

Recommendations Related to Service Provision

- Minimizing barriers to accessing HIV and hepatitis C testing as well as encouraging annual or more frequent testing for people who inject or inhale drugs – as recommended by the Public Health Agency of Canada – is encouraged.
- Since a high proportion of people who use drugs have a history with incarceration, ensuring access to methadone treatment while incarcerated is recommended.
- The Whitehorse group of women surveyed in this study was younger with lower income and higher rates of social assistance use than their male peers, which indicates particular vulnerability. Developing programming and services specifically targeted to women would be meaningful for this community.
- The high proportion of people who use drugs in Whitehorse who identify as Indigenous highlights the importance of culturally competent and culturally relevant programming and interventions for people who inject or inhale drugs in Whitehorse.
- Social determinants should be at the forefront of programming for people who inject or inhale drugs in Whitehorse.

Recommendations for Future Research

- Further research in Whitehorse should examine whether young individuals who use drugs are an underserved population or whether the population exists.
- Future research could examine possible explanations for the gender-based differences observed in this study.
- To gain more accurate estimates of hepatitis C prevalence, future studies in Whitehorse among people who inject drugs would ideally include testing for current HCV infection.

1.0 INTRODUCTION

People who inject drugs (IDUs)[6] are at increased risk for acquiring blood-borne infections such as human immunodeficiency virus (HIV) and hepatitis C virus (HCV), through the use of contaminated drug equipment (1). The majority of HCV cases in Canada are among people who inject drugs: among newly acquired HCV cases with known risk factor information, injection drug use was associated with 61% of infections (1). Injection drug use is also the third-leading risk factor for HIV, accounting for 17% of cases (13.6% of HIV cases among males and 29.9% of HIV cases among females) (2,3). HIV (and to a much lesser extent, HCV) may also be acquired through sexual transmission, which place IDUs at additional risk for infection (1). Illicit drug use has been associated with high-risk sexual behaviour and a greater risk of exposure to HIV and HCV (4-6).

Yukon has the highest reported hepatitis C rate in the country, with a reported rate of 107.0 cases of hepatitis C per 100,000 population in Yukon compared to 33.7 cases of hepatitis C per 100,000 population in Canada (7). While it has been postulated that HIV and HCV rates are high among people who inject and/or inhale drugs in Whitehorse, Yukon's capital, and in Yukon overall, data to date have been limited.

I-Track is a national enhanced surveillance system of IDUs in Canada. The objectives of I-Track are to describe the changing patterns in drug injecting practices, sexual risk behaviour and HIV testing behaviour among IDUs at the national, regional and local levels (8). 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 IDUs at national, regional and local levels, and to describe changing patterns in the prevalence and incidence of HCV infections among IDUs at national, regional and local levels (8). Phase 3 of the I-Track survey took place in 2010-2012 with 11 participating sentinel sites across Canada. Whitehorse was selected as a participating sentinel site in Phase 3 of the I-Track survey.

The objectives of the I-Track survey in Whitehorse were to gain a better understanding of the population of individuals who inject and/or inhale drugs, including drug use patterns and risk behaviour, sexual risk behaviour, as well as HIV and HCV prevalence in this population. In addition, the survey would provide information on services used by people who use drugs in Whitehorse, including needle exchange program (NEP) services. The intent was to use the data from the survey to better understand and to better serve the population of individuals who inject and/or inhale drugs in Whitehorse. We also wanted to improve our understanding of factors predisposing to HIV and HCV infection as well as risk behaviour in this population, in order to target prevention efforts and programs effectively.

[6] "IDUs" is an acronym for the term "Injection Drug Users"; however, this term is no longer in use as it has been identified by this community as derogatory. "IDUs" is still accepted as an abbreviation, but the long version has been changed to "People who inject drugs."

2.0 METHODS

2.1 Advisory Committee

An I-Track Whitehorse Steering Committee was formed in early 2011. The Steering Committee oversaw the implementation of the project. The Steering Committee consisted of the following members: Yukon's Chief Medical Officer of Health, Executive Director for Blood Ties Four Directions Centre, HIV/HCV Counsellor at Blood Ties, Therapeutic Counsellor at Blood Ties/private practice, Methodone Clinic Nurse at River Valley Medical Clinic, Street Outreach Nurse for Kwanlin Dun Health Centre and Health Director for Council of Yukon First Nations. Blood Ties Four Directions was designated to lead the project. The Steering Committee selected the survey/recruitment sites and also discussed and created additional site-specific questions for Whitehorse. The additional questions pertained to survey participants who use both injection drugs and inhalation drugs.

2.2 Memorandum of Agreement

The Public Health Agency of Canada (PHAC) had a memorandum of agreement with the Government of Yukon to carry out the survey. Blood Ties Four Directions Centre was the coordinating site for the survey.

2.3 Ethics Review Process

The study protocol and questionnaire, along with the Whitehorse site-specific questions, were approved by the Health Canada/Public Health Agency of Canada Research Ethics Board. As this was a surveillance study under PHAC auspices, a Yukon research license was not required. Whitehorse General Hospital waived the privilege of providing a local ethics review of the project.

2.4 Confidentiality and Informed Consent

The I-Track survey was an anonymous survey, that is, no identifying information was collected; the participant's name, address or date of birth were not collected. After an initial screening to assess their eligibility, participants were required to provide verbal consent, including whether they would allow future testing of their biological samples should other tests for HIV or hepatitis C be developed. Once consent was obtained, participants were given an information sheet outlining the survey details and emphasizing the confidential and voluntary aspects of the survey as well as relevant contact information for interviewers/coordinator of the survey. Participants were assigned a unique, anonymous code that would allow their questionnaire to be linked to their biological specimens.

2.5 Survey Design

The survey was part of the national I-Track Phase 3 survey cycle. This was the first time that Whitehorse had been selected as a participating I-Track site. The I-Track utilizes a cross-sectional study design and a combination of convenience and snowball sampling methodologies. The survey included an interviewer-administered questionnaire and a finger-prick blood sample. The Whitehorse I-Track survey was administered between June 2011 and March 2012.

2.6 Target Sample Size and Population

The target sample size for Whitehorse was 200 participants. The target sample size was based on an estimation of the injection and inhalation drug use population in Whitehorse as well as a sufficient sample size to detect significant results.

2.7 Recruitment Sites

Participants were recruited from three organizations that provide services to people who inject and/or inhale drugs in Whitehorse. The primary recruitment site was Blood Ties Four Directions Centre. Secondary recruitment sites included Kwanlin Dun Health Centre and River Valley Medical Clinic. The Outreach Van was also used to recruit participants, although surveys were not carried out at the van.

2.8 Promotion

I-Track promotional posters were distributed at various locations throughout Whitehorse. Posters included phone numbers for people to call to book appointments for interviews either at Blood Ties Four Directions, Kwanlin Dun Health Centre or River Valley Medical Clinic. In addition, small postcard-type flyers were printed and inserted into every injection kit handed out through the needle exchange program at Blood Ties and the Outreach Van.

2.9 Eligibility Criteria and Screening

Whitehorse was one of two I-Track Phase 3 sites that included sub-samples of crack smokers as site-specific survey add-ons. Individuals were eligible to participate in the study if they met all of the following inclusion criteria:

- met the minimum age of consent (as determined by the survey site), which in Whitehorse was determined as 16 years of age
- injected drugs or inhaled drugs in the past 6 months
- had not previously participated during the current survey phase
- were able to understand English or French
- were able to provide informed consent

Whitehorse recruited the following survey sample groups of which Group 1 and Group 2 were included in the national I-Track sample:

- Group 1: Current injector and current crack smoker (i.e., injected drugs and smoked crack in the 6 months prior to the interview)
- Group 2: Current injector but not a crack smoker
- Group 3: Current crack smoker and previous injector (more than 6 months since last injection)
- Group 4: Current crack smoker but never injected drugs

2.10 Questionnaire

The questionnaire consisted of approximately 170 questions, and was administered electronically by an interviewer. All questions were close-ended questions. The questionnaire

was divided into the following sections: 1) demographic information; 2) drug use and related risk behaviour; 3) sexual risk behaviour; 4) HIV and hepatitis C testing behaviour; 5) access and use of needle exchange programs and other health and social services; and 6) knowledge and attitudes around HIV-related risk behaviour. Demographic questions asked about gender, age, ethnicity, education and place of residence, amongst others. Questions related to drug use asked about drugs most frequently injected or inhaled, frequency of injection or inhalation, sharing of needles and other equipment, and places where users inject. Sexual behaviour questions asked about condom use and number and type of sexual partners. The HIV and hepatitis C testing behaviour section surveyed frequency, location and results of tests, and whether respondents were under the care of a physician for HIV or hepatitis C.

2.11 Blood Specimen

Consenting participants provided a finger-prick blood sample that was collected on a cotton-fibre based paper product designed for the collection of body fluids. The dried blood sample (DBS) cards were shipped to the National HIV and Retrovirology Laboratories in Ottawa for testing. DBS cards were tested for HIV using enzyme immune-assay (EIA) and the results of reactive samples were confirmed with Western Blot. HCV testing was performed with an Ortho HCV Version 3 EIA. Confirmatory testing was not performed for HCV samples that tested positive. A positive HCV result indicated past or present hepatitis C infection, and did not discriminate acute from chronic or resolved infection.

2.12 Data Analysis

Data were cleaned and verified (including removal of duplicates) by the Public Health Agency of Canada. A complete dataset was distributed to the survey site for further analysis. A 95% binomial confidence interval (CI) using the Exact method was calculated for overall HIV and HCV seroprevalence. Chi-square analyses were used to test for differences in proportions; Fisher's exact test was used if cell size counts were less than 5. Student's t-test was used to compute differences in means for variables with two categories; the ANOVA (analysis of variance) procedure was used to compute differences in means for variables with two of more categories. Univariate and multivariate logistic regression models were used to determine correlates of HCV seropositivity and correlates of sharing used needles, syringes and/or equipment, and to estimate odds ratios (OR), adjusted odds ratios (AOR) and 95% confidence intervals (CI). Data were analyzed using SAS version 9.3 (SAS Institute Inc., Cary, NC, USA).

To allow statistical power to make comparisons, Group 1 (current injector and crack smoker) and Group 2 (current injector but not a crack smoker) were merged into the "Current Injectors" Group while Group 3 (current crack smoker and previous injector) and Group 4 (current crack smoker but never injected drugs) were merged into the "Not Current Injectors" group. Comparisons for males and females were also presented, using the variable "gender", which implied self-reported sex. Results for the variable "gender" were compared to the variable "sex at birth" and the discrepancy was minimal (a difference of one respondent). Statistical comparisons with a p-value less than 0.05 were considered significant. Participants who responded as *Not stated, Don't know,* or *Refused* as well as participants who were ineligible to answer a question based on their previous responses were excluded from each individual analysis.

Whitehorse data were compared to data for the national sample published in a poster presentation at a conference in April 2013 (9). The national sample included people who inject drugs in Whitehorse, Prince George, Edmonton, Regina, Sudbury, Toronto, Kingston, Thunder Bay, London, the SurvUDI network and Halifax. Please note that the Whitehorse overall sample included both people who inject drugs (IDUs) and people who inhale drugs (non-IDUs), whereas the national data sample consisted of people who inject drugs only. Statistical comparisons were not performed between Whitehorse data and the national sample.

3.0 Results

3.1 Recruitment Sites

A total of 103 participants were recruited. Table 1 presents the sample sizes from each recruitment site and interview location. The majority of participants (91, 88.4%) were recruited from and interviewed at the Blood Ties Four Directions Centre (Table 1). The remainder were interviewed at the Kwanlin Dun Health Centre, River Valley Medical Clinic, the client's home or hotel room (Table 1).

Table 1: Interview location, Whitehorse I-Track Survey, Whitehorse, Yukon (n=103, 2011-2012 data).

Interview Location	Number of Participants (%)
Blood Ties Four Directions Centre	91 (88.4)
Kwanlin Dun Health Centre	4 (3.9)
River Valley Medical Clinic	3 (2.9)
Other: Client's home or hotel room	5 (4.9)

3.2 Characteristics of Respondents

A total of 103 individuals participated in the Whitehorse I-Track survey (Table 2). Highlights of respondent characteristics include:

- 55 were current injectors and 48 were not current injectors.
- 62.1% were male and 37.9% were female.
- Average age of all participants was 39.3 years, with an age range of 19 to 63 years. Just 6.8% of respondents were under 25 years old, and almost half (47.6%) were over 40 years old.
- 73.8% of respondents identified as Aboriginal[7] (First Nations, Inuit or Métis).
- 65.0% of respondents did not complete high school.
- The majority of respondents (89.2%) identified as heterosexual.
- 90.3% of respondents lived in Whitehorse.
- 38.8% of respondents lived in more than one city or community in the past 6 months.
- At the time of the interview, 47.6% lived in unstable housing (defined as living in a friend's place, hotel or motel room, rooming or boarding house, shelter or hostel, transition or half-way house, drug treatment facility, correctional facility, or public place, such as the street).
- A quarter of participants (25.5%) reported their monthly income as less than $500.
- Main source of income for 38.8% of respondents was social assistance, and for 33.0% of respondents it was regular or seasonal work.
- 23.3% of respondents had been incarcerated in the past 6 months.

Compared to those that did not currently inject, current injectors were more likely to have lived in more than one city or community in the past six months (p=0.022) (Table 2). Important gender differences were also found. Compared to male participants, females were younger (p=0.005) – average age for females was 35.8 years compared to 41.4 years for males

[7] The survey instrument specifically asked participants "Are you an Aboriginal person?" However, the term "Indigenous" is now preferred. Therefore, in this report, "Aboriginal" is used as it reflects the survey instrument, and "Indigenous" is used in the discussion section.

and 15.4% of female respondents were 25 years of age and under compared to only 1.6% of male participants in this age group (Table 3). Compared to male participants, females were more likely to report a lower personal monthly income (p=0.039), and were more likely to report social assistance as their main source of income (p=0.022). Female respondents were also marginally more likely to identify as Aboriginal than males (p=0.051).

Table 2: Demographics by injection status, Whitehorse I-Track Survey, Whitehorse, Yukon (n=103, 2011-2012 data).

Demographics	All Participants (n=103) N (%)	Current Injectors (n=55) N (%)	Not Current Injectors (n=48) N (%)
Gender			
Male	64 (62.1)	34 (61.8)	30 (62.5)
Female	39 (37.9)	21 (38.2)	18 (37.5)
Age group			
25 years and under	7 (6.8)	6 (10.9)	1 (2.1)
26 to 40 years	47 (45.6)	26 (47.3)	21 (43.8)
41 years and over	49 (47.6)	23 (41.8)	26 (54.2)
Age in years			
Mean (SD)	39.3 (10.0)	38.9 (11.1)	39.7 (8.9)
Median	39.0	37.0	41.0
Range	19.0-63.0	20.0-63.0	19.0-58.0
Ethnicity			
Aboriginal*	76 (73.8)	38 (69.1)	38 (79.2)
Non-Aboriginal	27 (26.2)	17 (30.9)	10 (20.8)
Education			
Did not complete high school	67 (65.0)	37 (67.3)	30 (62.5)
Completed high school	36 (35.0)	18 (32.7)	18 (37.5)
Sexual Orientation			
Heterosexual	91 (89.2)	47 (87.0)	44 (91.7)
Gay/Lesbian, bisexual, two spirit	11 (10.8)	7 (13.0)	4 (8.3)
Live in Whitehorse			
Yes	93 (90.3)	49 (89.1)	44 (91.7)
No	10 (9.7)	6 (10.9)	4 (8.3)
Lived in more than one city or community in past 6 months			
Yes	40 (38.8)	27 (49.1)†	13 (27.1)†
No	63 (61.2)	28 (50.9)	35 (72.9)
Housing status at time of interview			
Stable housing**	54 (52.4)	29 (52.7)	25 (52.1)
Unstable housing***	49 (47.6)	26 (47.3)	23 (47.9)
Monthly income			
Less than $500	26 (25.5)	12 (22.2)	14 (29.2)
Between $500-$999	15 (14.7)	8 (14.8)	7 (14.6)
Between $1000-$1999	28 (27.5)	14 (25.9)	14 (29.2)
More than $2000	33 (32.3)	20 (37.0)	13 (27.1)
Main source of income			
Work (year-round or seasonal)	34 (33.0)	15 (27.3)	19 (39.6)
Social Assistance/Support	40 (38.8)	21 (38.2)	19 (39.6)
Pension, EI, Disability	7 (6.8)	3 (5.5)	4 (8.3)
Other sources of income****	22 (21.4)	16 (29.1)	6 (12.5)
Incarcerated in the past 6 months			
No	79 (76.7)	40 (72.7)	39 (81.3)
Yes	24 (23.3)	15 (27.3)	9 (18.8)

†Significantly different since p<0.05.

*The survey instrument specifically asked participants "Are you an Aboriginal person?" However, the term "Indigenous" is now preferred. Therefore, in this report, "Aboriginal" is used as it reflects the survey instrument, and "Indigenous" is used in the discussion section.

**Stable housing: living in own apartment or house or a relative's apartment or house at the time of the interview.

***Unstable housing: living in a friend's place, hotel or motel room, rooming or boarding house, shelter or hostel, transition or half-way house, drug treatment facility, correctional facility, public place (i.e. street, park, etc.) at the time of the interview.

****Other sources of income include: money from family and friends, sex work, panhandling, other: money from partner, pawning, theft, or dealing drugs.

Table 3: Demographics by gender, Whitehorse I-Track Survey, Whitehorse, Yukon (n=103, 2011-2012 data).

Demographics	All Participants (n=103) N (%)	Males (n=64) N (%)	Females (n=39) N (%)
Gender			
Male	64 (62.1)		
Female	39 (37.9)		
Age group			
25 years and under	7 (6.8)	1 (1.6)†	6 (15.4)†
26 to 40 years	47 (45.6)	27 (42.2)	20 (51.3)
41 years and over	49 (47.6)	36 (56.3)	13 (33.3)
Age in years			
Mean (SD)	39.3 (10.0)	41.4 (9.2)†	35.8 (10.5)†
Median	39.0	42.5	35.0
Range	19.0-63.0	25.0-63.0	19.0-58.0
Ethnicity			
Aboriginal*	76 (73.8)	43 (67.2)††	33 (84.6)††
Non-Aboriginal	27 (26.2)	21 (32.8)	6 (15.4)
Education			
Did not complete high school	67 (65.0)	41 (64.1)	26 (66.7)
Completed high school	36 (35.0)	23 (35.9)	13 (33.3)
Sexual Orientation			
Heterosexual	91 (89.2)	58 (92.1)	33 (84.6)
Gay/Lesbian, bisexual, two spirit, other	11 (10.8)	5 (7.9)	6 (15.4)
Live in Whitehorse			
Yes	93 (90.3)	56 (87.5)	37 (94.9)
No	10 (9.7)	8 (12.5)	2 (5.1)
Lived in more than one city or community in past 6 months			
Yes	40 (38.8)	27 (42.2)	13 (33.3)
No	63 (61.2)	37 (57.8)	26 (66.7)
Housing status at time of interview			
Stable housing**	54 (52.4)	30 (46.9)	24 (61.5)
Unstable housing***	49 (47.6)	34 (53.1)	15 (38.5)
Monthly income			
Less than $500	26 (25.5)	13 (20.6)†	13 (33.3)†
Between $500-$999	15 (14.7)	8 (12.7)	7 (18.0)
Between $1000-$1999	28 (27.5)	15 (23.8)	13 (33.3)
More than $2000	33 (32.3)	27 (42.9)	6 (15.4)
Main source of income			
Work (year-round or seasonal)	34 (33.0)	26 (40.6)†	8 (20.5)†
Social Assistance/Support	40 (38.8)	18 (28.1)	22 (56.4)
Pension, EI, Disability	7 (6.8)	6 (9.4)	1 (2.6)
Other sources of income****	22 (21.4)	14 (21.9)	8 (20.5)
Incarcerated in the past 6 months			
No	79 (76.7)	49 (76.6)	30 (76.9)
Yes	24 (23.3)	15 (23.4)	9 (23.1)

†Significantly different since p<0.05. †† Marginally significant since p=0.051.

*The survey instrument specifically asked participants "Are you an Aboriginal person?" However, the term "Indigenous" is now preferred. Therefore, in this report, "Aboriginal" is used as it reflects the survey instrument, and "Indigenous" is used in the discussion section.

**Stable housing: living in own apartment or house or a relative's apartment or house at the time of the interview.

***Unstable housing: living in a friend's place, hotel or motel room, rooming or boarding house, shelter or hostel, transition or half-way house, drug treatment facility, correctional facility, public place (i.e. street, park, etc.) at the time of the interview.

****Other sources of income include: money from family and friends, sex work, panhandling, other: money from partner, pawning, theft, or dealing drugs.

3.3 Drug Use History

For all participants who had ever injected drugs for non-medicinal purposes (n=81), average age at first injection was 23.9 years (Table 4), with a range from 12 to 57 years of age.

Average age at first injection did not differ between males and females (p=0.252); however, the most common age at first injection for females (15 years) was lower than the most common age at first injection for males (30 years). Males also had a wider range of age at first injection (12 to 57 years) compared to females (14 to 36 years).

Average age at first injection did not differ between current injectors (24.0 years, SD 9.0 years) or former injectors (23.5 years, SD 6.5 years) (p=0.770).

Table 4. Age first injected drugs by gender, Whitehorse I-Track Survey, Whitehorse, Yukon (n=81, 2011-2012 data).

Age First Injected Drugs	All Participants* (n=81) N (%)	Males (n=50) N (%)	Females (n=31) N (%)
Less than or equal to 14 years	6 (7.4)	5 (10.9)	1 (3.2)
15-19 years	24 (29.6)	12 (24.0)	12 (38.7)
20-29 years	31 (38.3)	19 (38.0)	12 (38.7)
30-39 years	17 (21.0)	11 (22.0)	6 (19.4)
40+ years	3 (3.7)	3 (6.0)	0 (0.0)
Average age at first drug injection (±SD)	23.9 (8.3)	24.6 (9.2)	22.6 (6.4)

*This analysis was restricted to current and previous injectors only.

For all participants who had ever injected drugs for non-medicinal purposes (n=81), average time since first injection was 15.9 years, with a range of 0 to 43 years since first injection. 33.3% of participants first injected drugs 21 years ago or more, and 29.6% of participants first injected drugs 11 to 20 years ago (Table 5). Just 4.9% of participants first injected drugs less than a year ago (Table 5). Average time since first injection was not statistically different between males and females (p=0.062), even though the median time since first injection was lower for females (10 years) than it was for males (18.5 years). Time since first injection also did not differ between current (14.9 years, SD 11.6 years) and former injectors (18.1 years, SD 11.4 years) (p=0.245). Time since first injection was associated with age at time of interview (older participants had a longer time since first injection) (p<0.0001).

Table 5. Time since first drug injection by gender, Whitehorse I-Track, Whitehorse, Yukon (n=81, 2011-2012 data).

Time Since First Drug Injection	All Participants* (n=81) N (%)	Males (n=50) N (%)	Females (n=31) N (%)
< 1 year	4 (4.9)	1 (2.0)	3 (9.7)
1-2 years	6 (7.4)	3 (6.0)	3 (9.7)
3-5 years	10 (12.4)	3 (6.0)	7 (22.6)
6-10 years	10 (12.4)	7 (14.0)	3 (9.7)
11-20 years	24 (29.6)	17 (34.0)	7 (22.6)
21+ years	27 (33.3)	19 (38.0)	8 (25.8)
Average time since first drug injection (±SD)	15.9 (11.5)	17.8 (11.0)	12.9 (11.8)

*This analysis was restricted to current and previous injectors only.

3.4 Drugs Used

Figure 1 summarizes information on the use of injected drugs among participants who injected drugs in the 6 months prior to the interview (n=55). 74.1% of respondents reported injecting cocaine in the 6 months prior to the interview, and 37.0% reported it to be their injected drug of choice. 55.6% of respondents reported injecting non-prescribed morphine in the 6 months prior to the interview, and this was also the most commonly injected drug (47.0% of Whitehorse IDUs). Other drugs injected by approximately a quarter of respondents or more included oxycontin/oxycodone (33.3%), crack (29.6%), heroin (24.1%) and dilaudid (24.1%). There were no statistically significant differences in drug use and preference for males and females (analyses not shown in this report).

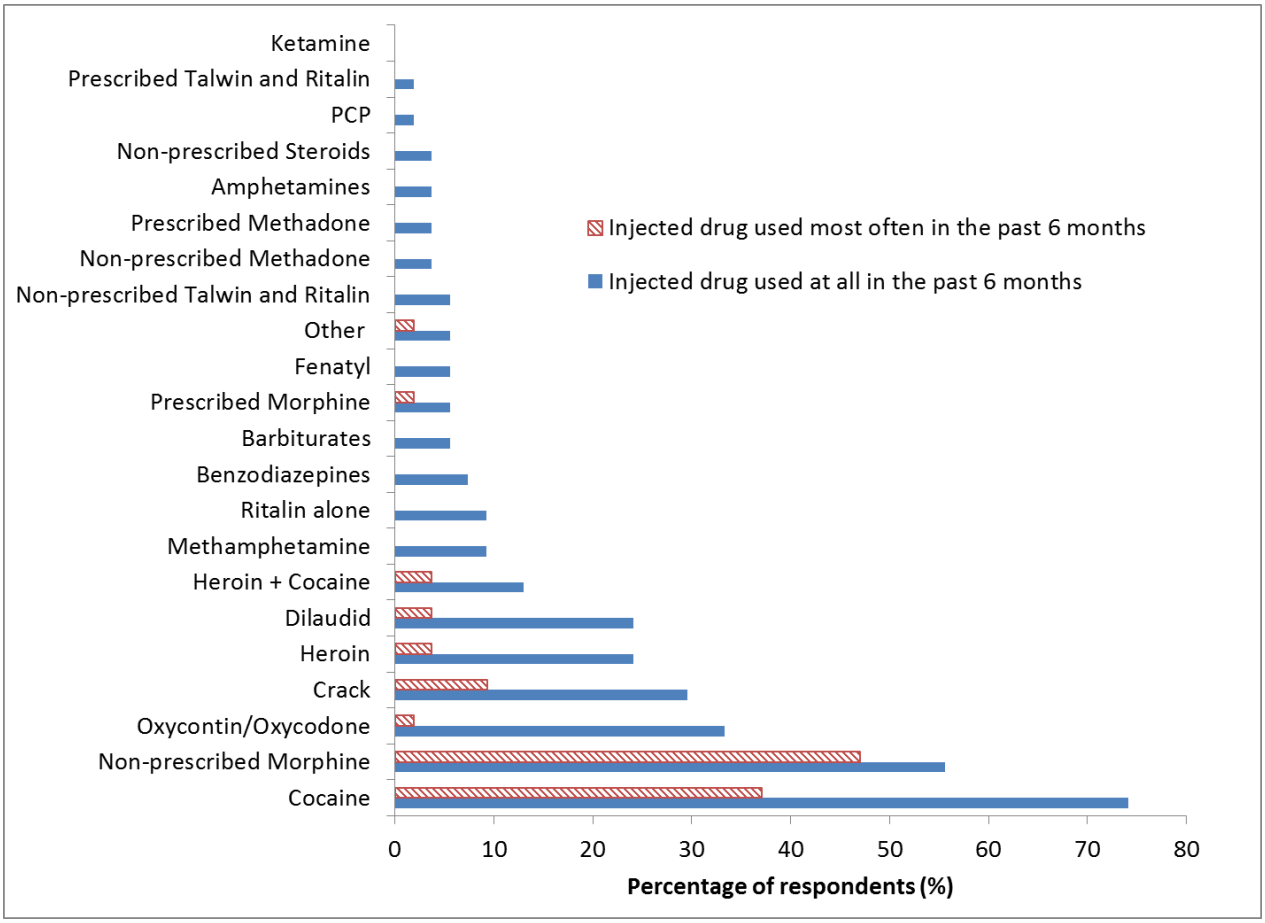

Figure 1. Percentage of respondents reporting drugs injected most often and at all in the 6 months prior to the interview, Whitehorse I-Track Survey, Whitehorse, Yukon (n=55, 2011-2012 data).

Figure 2 summarizes information on the use of non-injected drugs among participants who used non-injected drugs in the 6 months prior to the interview (n=103). 93.2% of respondents reported using crack cocaine in the 6 months prior to the interview, and 21.4% reported it to be their non-injected drug of choice. Of those who smoked crack cocaine, almost half (47.9%) stated that they smoke crack "once in a while, not every week." 15.6% reported using crack "regularly, once or twice a week," and 22.9% reported using crack "regularly, three

or more times a week." 13.5% of respondents reported using "every day," with a range from 2 to 50 times per day.

Other drugs most commonly used included alcohol, marijuana, cocaine and codeine. 83.5% of respondents reported using alcohol in the past six months, and this was also the most commonly used substance (42.7% of respondents). Other non-injected drugs used at all in the 6 months prior to the interview included marijuana (68% of respondents), cocaine (62.1% of respondents), and codeine (37.9% of respondents). Females and males were equally likely to report using most drugs except for morphine, where females were more likely to report using it (p=0.027), and for mushrooms, where males were more likely to report using it (p=0.044) (analyses not shown in this report).

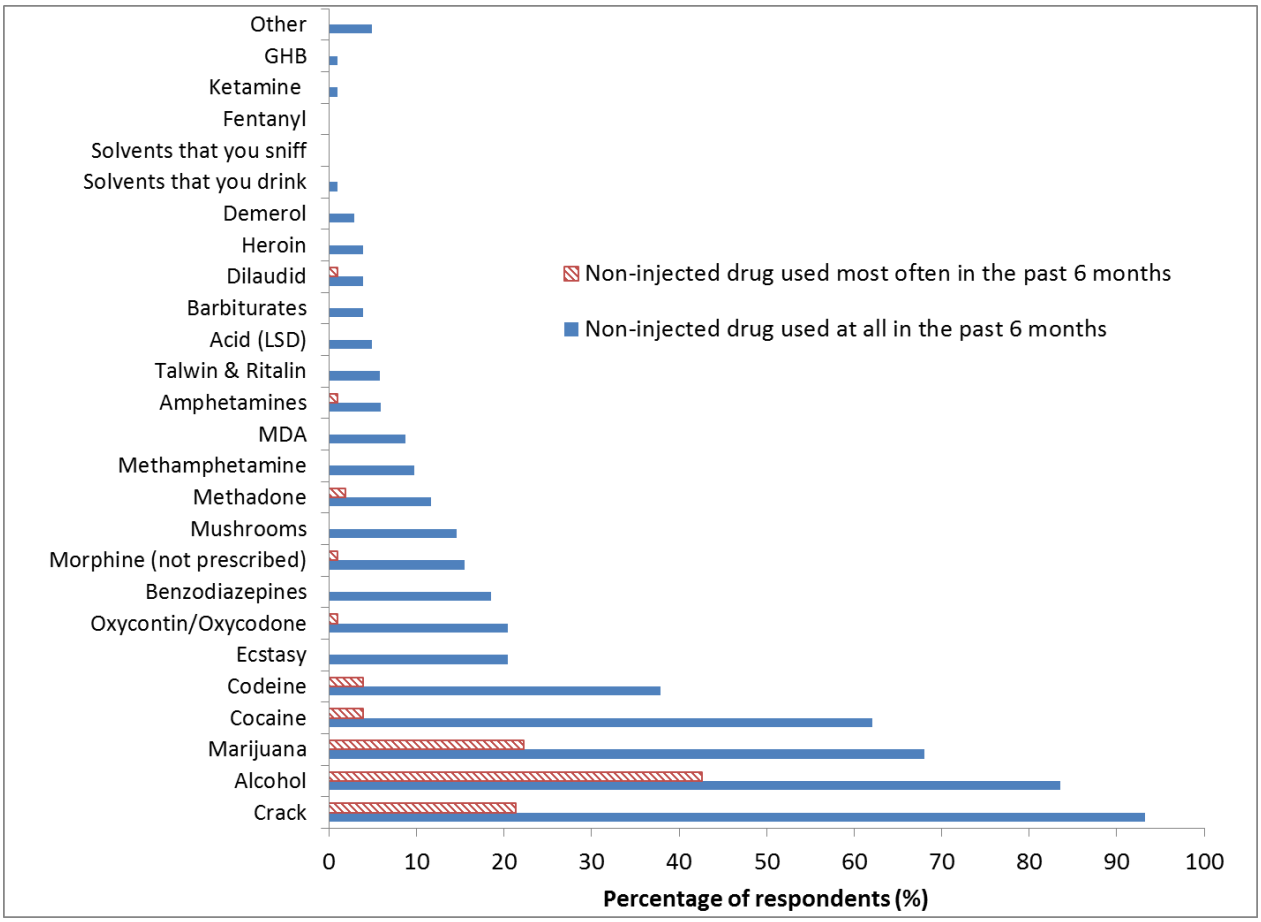

Figure 2. Percentage of respondents reporting the use of non-injected drugs most often and at all in the 6 months prior to the interview, Whitehorse I-Track Survey, Whitehorse, Yukon (n=103, 2011-2012 data).

3.5 Risk Behaviour

Injection Drug Use Risk Behaviour and Characteristics

Table 6 shows frequency of injection, people with whom the participant injected most often, most common place of injection, as well as proportion of participants sharing used needles and equipment, among participants who reported injecting in the 6 months prior to the interview (i.e. current injectors). Among current injectors, 36.4% of respondents reported not injecting at all in the past month, whereas 23.6% of respondents reported injecting every day in the past month. Over 40% of respondents reported that most often they inject alone. Just over a quarter injected with their regular sex partner most often, and just under a quarter injected with their friends or people they know well. The most commonly reported places of injection were one's own apartment or house (41.8%), and a friend's place (21.8%). Notably, 14.6% of injectors most commonly injected in a public place (e.g. street, park, washroom, etc.).

Table 6: Injection drug use risk behaviour, Whitehorse I-Track Survey, Whitehorse, Yukon (n=55, 2011-2012 data).

Injection Drug Use Risk Behaviour	Current Injectors (n=55) N (%)	Males (n=34) N (%)	Females (n=21) N (%)
Frequency of drug injection in past month			
Not at all	20 (36.4)	13 (38.2)	7 (33.3)
Once in a while, not every week	10 (18.2)	7 (20.6)	3 (5.5)
Regularly, once or twice a week	6 (10.9)	4 (11.8)	2 (9.5)
Regularly, three or more times per week	6 (10.9)	4 (11.8)	2 (9.5)
Every day	13 (23.6)	6 (17.7)	7 (33.3)
People with whom participant injected most often			
No one (i.e. injected alone)	22 (40.7)	14 (42.2)	8 (38.1)
Regular sex partner	14 (25.9)	7 (21.2)	7 (33.3)
Friends or people you know well	13 (24.1)	8 (24.4)	5 (23.8)
Family	2 (3.7)	2 (6.1)	0 (0.0)
People you don't know well	2 (3.7)	1 (3.0)	1 (4.8)
Sex partners of whom you were a client	1 (1.9)	1 (3.0)	0 (0.0)
Injected with a sterile needle and syringe at last injection	46 (85.2)	28 (84.9)	18 (85.7)
Borrowing needles: Injected with used needles and/or syringes in the 6 months prior to the interview	11 (20.0)	5 (14.7)	6 (28.6)
Lending needles: Used needles and/or syringes had been subsequently used by someone else in the past 6 months	10 (19.2)	4 (12.9)	6 (28.6)
Borrowing other equipment*: Injected with other used injection equipment in the 6 months prior to the interview	23 (41.8)	12 (35.3)	11 (52.4)
Lending other equipment*: Used injection equipment had been subsequently used by someone else in past 6 months	24 (43.6)	13 (38.2)	11 (52.4)
Most frequent place of injection in the past 6 months			
Own apartment/house	23 (41.8)	15 (44.1)	8 (38.1)
Relative's house/place	4 (7.3)	3 (8.8)	1 (4.8)
Friend's place	12 (21.8)	4 (11.8)	8 (38.1)
Hotel/motel room	7 (12.7)	4 (11.8)	3 (14.3)
Public place (street, park, washroom, etc.)	8 (14.6)	7 (20.6)	1 (4.8)
Vehicle (car, van, etc.)	1 (1.8)	1 (2.9)	0 (0.0)

*Other injection equipment included water, filter, cooker, spoons, tourniquets, ties, swabs and acidifiers.

The majority (85.2%) of injectors used a sterile needle and syringe at their last injection (Table 6). 20.0% of injectors reported borrowing used needles in the 6 months prior to the interview and 19.2% reported lending used needles. For those that borrowed or lent used needles, they did so most frequently from and to their regular sexual partner. 41.8% of injectors reported borrowing other used injection equipment (cookers, tourniquets, water, acidifiers, filters, swabs), and this equipment was most commonly borrowed from a regular sexual partner or friends. 43.6% of injectors reported lending their used equipment to others. There were no statistically significant differences in these drug injection characteristics and behaviour between male and female injectors.

We looked at characteristics of those injectors who shared (either borrowed or lent) used needles and/or syringes and/or equipment compared to those who did not share used needles and/or syringes and/or equipment. Demographic characteristics such as gender, age, ethnicity, education, income, housing and being incarcerated in the six months prior to the interview were not associated with sharing used needles and/or syringes and/or equipment.

Several behavioural characteristics were associated with sharing needles and/or syringes and/or equipment (Table 7).

Table 7: Behavioural characteristics associated with sharing (either borrowing or lending) used needles and/or syringes and/or equipment, Whitehorse I-Track Survey, Whitehorse, Yukon (n=55, 2011-2012 data).

Characteristic	All Current Injectors (n=55) N (%)	Shared Used Needles, Syringes or Equipment (n=31) N (%)	Did Not Share Used Needles, Syringes or Equipment (n=24) N (%)	OR* (95% CI*)	AOR*¥ (95% CI)
Time since first injection					
≤2 years	8 (14.6)	6 (19.4)	2 (8.3)	1.4 (0.23-8.0)	1.59 (0.12-21.9)
3-10 years	15 (27.3)	3 (9.7)†	12 (50.0)†	0.11 (0.03-0.49)	0.07 (0.01-0.62)
11+ years	32 (58.2)	22 (71.0)	10 (41.7)	1.0	1.0
Injected most often with:					
People know well€	29 (53.7)	22 (71.0)†	7 (30.4)†	5.6 (1.7-18.2)	3.2 (0.821-12.5)
People don't know well€	25 (46.3)	9 (29.0)	16 (69.6)		
Frequency of needle exchange program use**					
Regularly	22 (45.8)	17 (58.6)†	5 (26.3)†	4.0 (1.1-14.0)	≠
Occasionally	26 (54.2)	12 (41.4)	14 (73.7)		

*OR: Odds Ratio, 95% CI: 95% confidence interval, AOR: Adjusted Odds Ratio

¥Adjusted for: age, gender, frequency of injection, ever use of needle exchange program and first two variables in the table.

†Significantly different since p<0.05.

€People know well: regular sex partner, family or friends; People don't know well: people don't know well, sex partner of whom you were a client or no one.

**Regularly included the response categories: "regularly, once or twice a week," "regularly, three or more times per week, but not every day," and "every day." Occasionally was defined as "occasionally, not every week."

≠Frequency of needle exchange program use was not included in the final model as this association was confounded by the variables "time since first injection" and "injected most often with". Frequency of needle exchange program use also interacted with these two variables. Please see Table 8.

Sharing used needles and/or syringes and/or equipment was associated with time since first injection (p=0.004), most common drug partner (p=0.004) and frequency of use of needle exchange programs (p=0.028). Those who started injecting 3-10 years ago were 89% less likely to share used needles, syringes or equipment than those who started injecting 11 years ago or more (OR=0.11, 95% CI=0.03-0.49). Those who injected most often with people they know well, such as a regular sex partner, friends or family, were 5.6 times more likely (95% CI=1.7-18.2) to share used needles syringes or equipment as those who injected most often with people they don't know well or who injected alone. Interestingly, time since first injection was also associated with injecting most commonly with someone known well: those who started injecting 11 years ago or more were more likely to report injecting most commonly with someone known well (p=0.024; data not shown). In addition, the association between injecting most commonly with someone known well and sharing of used needles and equipment was strongest among those who started injecting 11 years ago or more (data not shown).

Those who used a needle exchange program regularly were 4.0 times more likely (95% CI=1.1-14.0) to share used needles, syringes or equipment as those who used a needle exchange program occasionally (Table 7). However, those who used a needle exchange program regularly were also less likely to have started injecting 3-10 years ago compared to those who used a needle exchange program occasionally (p=0.020). Those who used a needle exchange program regularly were also more likely to most commonly inject with a regular sex partner or people they knew well than those who used a needle exchange program occasionally (p=0.012). The association between regular use of NEPs and sharing of used needles, syringes or equipment was therefore confounded by time since first injection and injecting most commonly with someone known well; that is, this association was due to these two other factors, and not regular NEP use itself. In fact, use of NEPs was found to interact with time since first injection and injecting with someone known well; results of stratified analyses are shown in Table 8 and are discussed below.

Frequency of drug injection in the past month was not associated with sharing used needles and/or syringes and/or equipment (the outcome variable of interest). However, frequency of drug injection in the past month was found to be associated with sharing used needles and/or syringes (but not equipment) (p=0.002; data not shown). Those who injected more frequently (regularly, three or more times per week, or every day) were more likely to share used needles or syringes than those who injected less frequently (not at all in the past month, once in a while or once or twice a week in the past month). Thus, frequency of drug injection appeared to have a stronger association with sharing used needles or syringes than with sharing of used equipment.

In multivariate analyses[8], which we used to ascertain the variable most strongly associated with sharing used needles, syringes or equipment, we adjusted for age, gender,

[8] Multivariate analyses are statistical methods that analyze the effects of more than one independent variable (also known as risk factor variables or exposure variables) on a dependent variable (also known as the outcome variable or variable of interest). An example of multivariate analyses is multiple logistic regression, which was used in this study to assess the effects of a number of exposure variables (time since first injection, most common drug partner, age, sex, etc.) on sharing of used needles, syringes or equipment (the dependent variable). Adjusted odds ratios for each of the independent variables/risk factors of interest were calculated by taking into account the

frequency of injection and ever use of needle exchange program (Table 7). In multivariate analyses, only time since first injection remained significantly associated with sharing used needles, syringes or equipment: those who started injecting 3-10 years ago were 93% less likely (AOR=0.07, 95% CI=0.01-0.62) to share used needles, syringes or equipment than those who started injecting 11 years ago or more.

Table 8: Stratified analysis for behavioural characteristics associated with sharing (either borrowing or lending) used needles and/or syringes and/or equipment by regular* versus occasional* use of needle exchange programs, Whitehorse I-Track Survey, Whitehorse, Yukon (n=48, 2011-2012 data).

Regular* Needle Exchange Program (NEP) Users				
Characteristic	**All Current Injectors (n=22) N (%)**	**Shared Used Needles, Syringes or Equipment (n=17) N (%)**	**Did Not Share Used Needles, Syringes or Equipment (n=5) N (%)**	**OR (95% CI)****
Time since first injection				
≤2 years	4 (18.2)	4 (23.5)	0 (0.0)	N/A***
3-10 years	1 (4.6)	0 (0.0)	1 (20.0)	N/A***
11+ years	17 (77.3)	13 (76.5)	4 (80.0)	1.0
Injected most often with:				
People know well€	16 (72.7)	13 (76.5)	3 (60.0)	2.2 (0.3-17.9)
People don't know well€	6 (27.3)	4 (23.5)	2 (40.0)	
Occasional* Needle Exchange Program (NEP) Users				
Characteristic	**All Current Injectors (n=26) N (%)**	**Shared Used Needles, Syringes or Equipment (n=12) N (%)**	**Did Not Share Used Needles, Syringes or Equipment (n=14) N (%)**	**OR (95% CI)****
Time since first injection				
≤2 years	2 (7.7)	1 (8.3)	1 (7.1)	0.38 (0.02-8.1)
3-10 years	13 (50.0)	3 (25.0)†	10 (71.4)†	0.11 (0.02-0.72)
11+ years	11 (42.3)	8 (66.7)	3 (21.4)	1.0
Injected most often with:				
People know well€	9 (36.0)	7 (58.3)†	2 (15.4)†	7.7 (1.2-51.2)
People don't know well€	16 (64.0)	5 (41.7)	11 (84.6)	

*Regular NEP use included the response categories: "regularly, once or twice a week," "regularly, three or more times per week, but not every day," and "every day." Occasional NEP use was defined as "occasionally, not every week."
**OR: Odds Ratio, 95% CI: 95% confidence interval.
***Could not calculate odds ratios due to a sample size of 0 (zero) in one or more of the cells/categories.
€People know well: regular sex partner, family or friends; People don't know well: people don't know well, sex partner of whom you were a client or no one.
†Statistically significant difference since $p<0.05$, according to the Chis-square or Fisher's Exact test.

effects of all variables in the model on the outcome. As a result of taking into account the effects of all variables rather than just one variable (which is the case in univariate analyses), results between univariate and multivariate analyses may differ, as was the case in this study. Please note that the small sample size and the inherent limitations of using categorical exposure variables with multiple logistic regression likely limited the ability to detect significant results.

Frequency of needle exchange program use was not included in the final model as this association was confounded by the variables "time since first injection" and "injected most often with," and also interacted with these two variables. As a result, stratified analyses for regular NEP users and occasional NEP users were presented in Table 8[9].

We found that the associations between time since first injection and sharing of used needles, syringes or equipment as well as injecting most often with people known well and sharing of used needles, syringes or equipment were statistically significant for occasional NEP users, but not for regular NEP users (Table 8). Occasional NEP users were 7.7 times more likely to share used needles, syringes or equipment if they most commonly injected with someone they knew well compared to those who injected alone or with someone they didn't know well. On the other hand, regular NEP users who most commonly injected with someone they knew well were equally likely to share used needles, syringes or equipment as regular NEP users who most commonly injected alone or with people they didn't know well. Occasional NEP users who started injecting 3-10 years ago were 89% less likely to share used needles, syringes or equipment than occasional NEP users who started injecting 11 years ago or more. On the other hand, among regular NEP users, time since first injection was not associated with sharing used needles, syringes or equipment; that is, all regular NEP users were equally likely to share used needles, syringes or equipment, not dependent on how long they had been injecting (p=0.145). These data suggest different risk profiles for regular NEP users and occasional NEP users.

When the two stratum-specific odds ratios (of regular and occasional NEP users) were weighted, the adjusted odds ratios continued to show a statistically significant result between injecting most commonly with someone known well and sharing used needles, syringes or equipment (AOR=4.5, 95% CI=1.2-17.5), and time since first injection and sharing used needles, syringes or equipment (AOR=0.11, 95% CI=0.02-0.62 for those who started injecting 3-10 years ago compared to those who started injecting more than 11 years ago). That is, after adjusting for NEP use, these two factors were still found to be associated with sharing used needles, syringes or equipment.

Non-Injection Drug Use Risk Behaviour and Characteristics

Of respondents who used non-injection drugs in the 6 months prior to the interview (n=96), almost half (47.9%) smoked crack cocaine once in a while, not every week in the past six months, while 13.5% reported smoking crack every day (Table 9). 58.3% reported lending or selling a used crack pipe to other people, and 54.2% reported borrowing or buying a used crack pipe from other people; similar patterns were seen for both males and females.

Respondents who borrowed or bought a used crack pipe were asked about methods of decreasing infection when using a used crack pipe. The most commonly reported methods of decreasing infection were putting their own mouth piece on the crack pipe (44.2%) and wiping the end of the pipe on clothing (36.5%). Interestingly, females who borrowed used crack pipes were more likely to report putting their own mouth piece on the pipe than were males

[9] We would have liked to construct two logistic regression models – one for regular NEP users and one for occasional NEP users – however, the small sample size did not allow for this.

(p=0.001). Other methods listed included: burning the end, inhaling quickly, using lip balm, washing with vinegar and water, and wiping with a paper towel.

Notably, 28.9% of those who borrowed a used crack pipe reported doing nothing to decrease the spread of infection. When asked why they did nothing, 26.7% of those who did nothing reported not being aware of the infection risk, whereas others reported not wanting to offend others, not being concerned with risks when high or drunk, and sharing with trusted people.

Table 9: Non-injection drug use risk behaviour, Whitehorse I-Track Survey, Whitehorse, Yukon (n=96, 2011-2012 data).

Non-Injection Drug Use Risk Behaviour	All Participants* (n=96) N (%)	Males (n=59) N (%)	Females (n=37) N (%)
Frequency of smoking crack in the past 6 months			
Once in a while, not every week	46 (47.9)	29 (49.2)	17 (46.0)
Regularly, once or twice a week	15 (15.6)	9 (15.3)	6 (16.2)
Regularly, three or more times a week	22 (22.9)	14 (23.7)	8 (21.6)
Every day	13 (13.5)	7 (11.9)	6 (16.2)
Lent or sold a used crack pipe to other people to use in the past 6 months	56 (58.3)	33 (55.9)	23 (62.1)
Borrowed or bought a crack pipe from other people that they had already used in the past 6 months	52 (54.2)	33 (55.9)	19 (51.4)
When smoking used crack pipe, methods of decreasing infection used (n=52):			
Put own mouth piece on it	23 (44.2)	9 (27.3)†	14 (73.7)†
Wipe end of pipe with an alcohol swab	1 (1.9)	0 (0.0)	1 (5.3)
Wipe end of pipe on clothing	19 (36.5)	14 (42.4)	5 (26.3)
Use the other end of the pipe	2 (3.9)	1 (3.0)	1 (5.3)
Nothing	15 (28.9)	11 (33.3)	4 (21.1)
Other	8 (15.4)	6 (18.2)	2 (10.5)
Reason for doing nothing (n=15):			
Not aware of infection risk	4 (26.7)	4 (36.4)	0 (0.0)
Other:	12 (80.0)	8 (72.7)	4 (100.0)
Don't want to offend others, sensitive to stigma	1 (8.3)	1 (12.5)	0 (0.0)
Not concerned with risks when getting high	5 (41.7)	3 (37.5)	2 (50.0)
Not concerned with risks when drunk	2 (16.7)	2 (25.0)	0 (0.0)
Share with trusted people	2 (16.7)	1 (12.5)	1 (25.0)
Trust people smoking with; don't want to carry drug paraphernalia	1 (8.3)	0 (0.0)	1 (25.0)
Wanted to get high very badly	1 (8.3)	1 (12.5)	0 (0.0)

*This analysis was restricted to participants who used non-injection drugs in the 6 months prior to the interview.
†Significantly different since p<0.05.

3.6. Preference for Injection or Inhalation

Participants who both injected and inhaled (n=48) were surveyed about their preferences for injection or inhalation and reasons for this. 62.5% (n=30) reported preferring injection but sometimes inhaled. 37.5% (n=18) preferred inhalation but sometimes injected. There were no differences between males and females. For those who preferred injecting, reasons for sometimes inhaling included drug availability (73.3%), opportunity to use for free (40.0%) and inhaling if partner or peers were doing it (23.3%) (Figure 3). For those who preferred inhaling, reasons for sometimes injecting included if partner or peers were doing it (44.4%), drug availability (38.9%) and "depending on mood" (22.2%). Preference for injection or inhalation did not differ by ethnicity, age group, time since first injection or age at first injection.

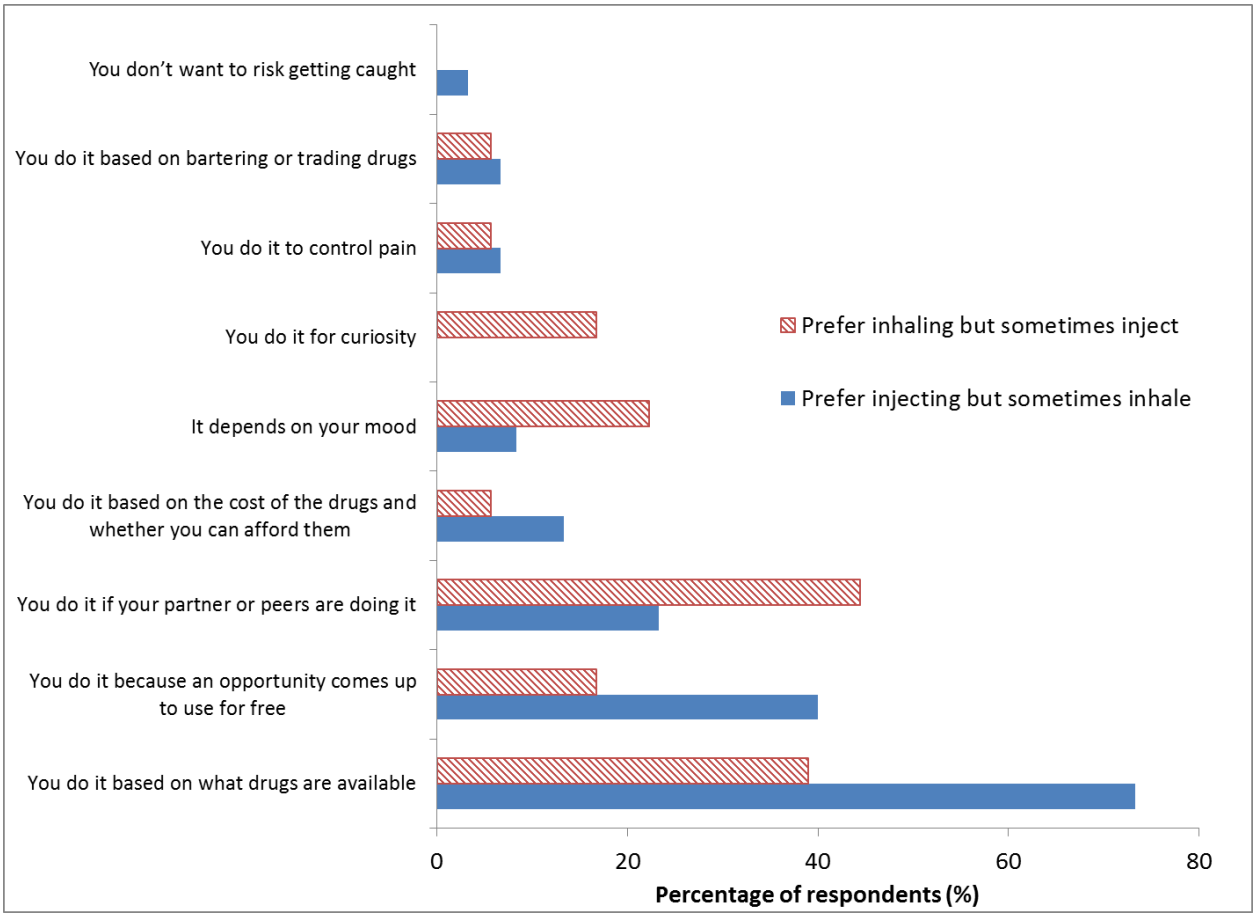

Figure 3. Percentage of respondents who both injected and inhaled drugs (n=48) and reasons for preferring inhaling but sometimes injecting (n=18) and preferring injecting but sometimes inhaling (n=30), Whitehorse I-Track Survey, Whitehorse, Yukon (2011-2012 data).

3.7 Sexual Risk Behaviour

Overall, 37.9% of participants reported two or more sex partners in the 6 months prior to the interview (Table 10). 28.7% reported condom use at last sex, and of those who reported having sex in the past month, 17.7% reported using a condom at last sex. Of those who had multiple sex partners, 30.8% used a condom the last time they had sex; those with multiple sex partners were equally likely to use condoms as those without multiple sex partners (p=0.717). 41.8% of respondents had sex with a casual sex partner in the past six months. Of those who had vaginal sex with a casual sex partner in the past six months, approximately half (52.5%) always used a condom, and 40.5% never used a condom. Of those who had anal sex with a casual sex partner in the past six months, 71.4% reported never using a condom. 8.7% of respondents had sex with a client sex partner (not defined in the survey instrument, but presumed to mean partner who paid participant for sex) in the past six months, and of these, 66.7% used a condom the last time they had sex with a client sex partner. Females were more likely to report having sex with a client sex partner (p=0.002). 51.5% of all respondents reported a history of a diagnosis with a sexually transmitted infection (STI), and females were more likely to report having been diagnosed with an STI than were males (p=0.016).

Table 10. Sexual risk behaviour, Whitehorse I-Track Survey, Whitehorse, Yukon (n=103, 2011-2012 data).

Sexual Risk Behaviour	All Participants (n=103) N (%)	Males (n=64) N (%)	Females (n=39) N (%)
Two or more partners in the past 6 months	39 (37.9)	22 (34.4)	17 (43.6)
Condom use at last sex	29 (28.7)	19 (30.7)	10 (25.6)
Condom use at last sex (among participants who reported sex in the previous month, n=68)	12 (17.7)	7 (18.0)	5 (17.2)
Condom use at last sex (among participants who reported two or more partners, n=39)	12 (30.8)	7 (31.8)	5 (29.4)
Had sex with a casual sex partner in past 6 months	43 (41.8)	28 (43.8)	15 (38.5)
Condom use during vaginal sex with casual sex partner in past 6 months (among participants who had vaginal sex with a casual partner in the past 6 months, n=42)			
Never (0%)	17 (40.5)	12 (44.4)	5 (33.3)
Sometimes (<50%)	2 (4.8)	1 (3.7)	1 (6.7)
Frequently (51-99%)	1 (2.4)	0 (0.0)	1 (6.7)
Always (100%)	22 (52.5)	14 (51.9)	8 (53.3)
Condom use during anal sex with casual sex partner in past 6 months (among participants who had anal sex with a casual sex partner in the past 6 months, n=7)			
Never (0%)	5 (71.4)	4 (66.7)	1 (100.0)
Sometimes (<50%)	1 (14.3)	1 (16.7)	0 (0.0)
Frequently (51-99%)	0 (0.0)	0 (0.0)	0 (0.0)
Always (100%)	1 (14.3)	1 (16.7)	0 (0.0)
Had sex with a client sex partner in past 6 months	9 (8.7)	1 (1.6)†	8 (20.5)†
Condom use at last sex with a client sex partner (among participants who had sex with a client sex partner, n=9)	6 (66.7)	1 (100.0)	5 (62.5)
History of diagnosis of STI*	53 (51.5)	27 (42.2)†	26 (66.7)†

†Significantly different since p<0.05.

*STI was defined as being diagnosed with either of chlamydia, gonorrhea, syphilis, HPV, genital herpes, oral herpes, or other STI.

3.8 Prevalence of HIV and Hepatitis C

Of all respondents who had given a sufficient blood sample, 5.9% (95% CI=2.2%-12.5%) were HIV positive and 45.0% (95% CI=35.0%-55.3%) had a lifetime prevalence of hepatitis C (Table 11). 2.0% were seropositive for HIV only, 41.0% were seropositive for hepatitis C only, 4.0% were seropositive for both HIV and hepatitis C, and 53.0% were seronegative for both hepatitis C and HIV. There were no differences in HIV or hepatitis C seropositivity between males and females (data not shown).

Among current injectors, 7.4% (95% CI=2.1%-17.9%) were HIV positive and 57.4% (95% CI=43.2%-70.8%) were hepatitis C positive. 1.9% of current injectors were seropositive for HIV only, 51.9% of current injectors were seropositive for hepatitis C only, and 5.6% were seropositive for both HIV and hepatitis C. Among previous injectors, 7.7% (95% CI=0.95%-25.1%) were HIV positive and 48.0% (95% CI=27.8%-68.7%) were hepatitis C positive. Importantly, those who never injected drugs and were crack smokers only were all HIV negative. Among those who never injected, 9.5% (95% CI=1.2%-30.4%) were hepatitis C positive. 40.7% of current injectors were seronegative for HIV and hepatitis C, compared to 48.0% of previous injectors and 90.5% of those who never injected drugs (p=0.003).

Table 11. HIV and hepatitis C seropositivity, Whitehorse I-Track Survey, Whitehorse, Yukon (n=103, 2011-2012 data).

Laboratory Results	All Participants (n=103) N (%)	Current Injectors (n=55) N (%)	Previous Injectors (n=26) N (%)	Never Injectors (n=22) N (%)
HIV seroprevalence*	6 (5.9)	4 (7.4)	2 (7.7)	0 (0.0)
Lifetime prevalence of Hepatitis C**	45 (45.0)	31 (57.4)†	12 (48.0)†	2 (9.5)†
HIV and Hepatitis C Serostatus* **				
Seropositive for HIV only	2 (2.0)	1 (1.9)	1 (4.0)	0 (0.0)
Seropositive for Hepatitis C only	41 (41.0)	28 (51.9)†	11 (44.0)†	2 (9.5)†
Seropositive for both HIV & Hepatitis C	4 (4.0)	3 (5.6)	1 (4.0)	0 (0.0)
Seronegative for both HIV & Hepatitis C	53 (53.0)	22 (40.7)†	12 (48.0)†	19 (90.5)†
HIV Awareness				
Proportion of participants aware of HIV positive status (among participants laboratory-tested HIV positive)	6 (100.0)	4 (100.0)	2 (100.0)	N/A
Hepatitis C Awareness** **				
Proportion of participants aware of ever having HCV (among participants laboratory-tested HCV positive)	38 (84.4)	27 (87.1)	10 (83.3)	1 (50.0)

*Among participants who provided a biological sample of sufficient quantity for testing. HIV screening was performed using the Bio-Rad GS rLAV HIV-1 EIA assay. Confirmatory testing was subsequently performed using the Bio-Rad Genetic Systems HIV-1 Western Blot assay. A positive result indicates a current HIV infection. Both the HIV screening (EIA) and confirmatory assay (Western Blot) used are approved by Health Canada as diagnostic assays for use with dried blood specimens.

**Among participants who provided a biological sample of sufficient quantity for testing. Hepatitis C (HCV) testing was performed using the Ortho HCV version 3.0 EIA. Confirmatory testing is not performed for samples that test positive. A positive result indicates past or present hepatitis C infection, and does not discriminate acute from chronic or resolved infection.

***Among participants who provided a biological sample of sufficient quantity for both HIV and hepatitis C testing.

****Hepatitis C awareness was based on the variable "Have you ever been told by a health professional (e.g. doctor, nurse) that you have or had a hepatitis C infection?"

†Significantly different since p<0.05.

Current injectors were equally likely to have an HIV positive lab result as previous injectors and those who never injected drugs (p=0.623)[10], but were more likely to have a hepatitis C positive lab result than previous injectors and those who never injected drugs (p<0.001).

All those with HIV were aware of their infection; there were no differences in HIV awareness between males and females and between current IDUs and previous-IDUs.

84.4% of those who had a positive hepatitis C lab result (indicating acute, chronic or resolved infection) were aware of their infection (i.e. were ever told by a health professional that they have or had a hepatitis C infection)[11]. Please note that this does not indicate awareness of current hepatitis C infection, as the lab test did not distinguish between current and resolved hepatitis C infection. However, males were more likely to be aware of ever having hepatitis C compared to females: 96.1% of males were aware compared to 68.4% of females who were aware of ever having had hepatitis C (p=0.031). In other words, only 3.9% of males with a hepatitis C positive result were unaware of ever having had hepatitis C, compared to 31.6% of females with a hepatitis C positive result that were unaware. Current and previous injectors as well as those who had never injected drugs were equally likely to be aware of having had hepatitis C (p=0.406).

3.9 Characteristics Associated with HIV and Hepatitis C

We looked at demographic and behavioural characteristics associated with an HIV positive and HCV positive lab result. We found that those who were HIV positive were less likely to lend or sell a used crack pipe; in fact, no HIV positive respondents reported lending or selling used crack pipes, compared to 62.9% of HIV negative respondents who did (p=0.009) (Table 12). HIV positive result was not associated with any other demographic or behavioural characteristics that we assessed, such as gender, age, ethnicity, sexual orientation, income, education, incarceration, time since first injection, borrowing used needles, lending used needles, borrowing used injection equipment, lending used injection equipment, sharing used needles, sharing used needles and equipment, most common drug partner, use of needle exchange program, and condom use (data not shown).

While HIV positive status was not associated with borrowing or lending used needles or injection equipment, we found that of those who were HIV positive and injected drugs in the 6 months prior to the interview, 25.0% reported borrowing used needles, but no HIV positive respondents reported lending used needles (Table 13). 40.0% of HIV positive respondents also reported borrowing or buying used crack pipes (Table 12).

[10] This is despite the fact that all those who never injected drugs were HIV negative. The lack of statistical significance is likely due to the small sample size of HIV positive respondents in this survey.

[11] Please note that in an information pamphlet distributed to Whitehorse I-Track participants in March 2013 with preliminary findings from the Whitehorse I-Track survey, the hepatitis C awareness statistic reported was lower (we reported that at least 40% of participants were *unaware* of being infected with HCV; data showed 51.1% were aware of being infected with HCV) than the one reported in this report (84.4%). The reason for this is that at the time of writing the pamphlet we incorrectly assumed that a positive hepatitis C result indicated current infection, whereas it in fact indicates current or past infection. We thus revised the estimate upwards for this report.

Of those who were HCV positive, 63.4% reported lending or selling used crack pipes and 56.1% reported borrowing or buying used crack pipes (Table 12). 16.7% of HCV positive respondents reported lending used needles and 12.9% reported borrowing used needles (Table 13). A significant proportion of HCV aware respondents – 64.7% – reported lending or selling their used crack pipes. 19.2% of HCV aware respondents reported lending used needles. Those who were HCV aware were equally likely to lend/sell (p=0.693) and borrow/buy (p=0.679) used crack pipes as those who were HCV unaware (Table 12).

Table 12: Crack pipe sharing behaviour by HIV and HCV (hepatitis C) status and by HIV and HCV awareness, Whitehorse I-Track Survey, Whitehorse, Yukon (n=96, 2011-2012 data).

HIV or HCV status	Receiving (Borrowing or Buying) Used Crack Pipes %	Passing (Lending or Selling) Used Crack Pipes %
% of all respondents (n=96)	54.2	58.3
HIV Status (lab-confirmed)		
% of HIV positive respondents	40.0	0.0†
% of HIV negative respondents	56.2	62.9†
HCV Status (lab-confirmed)		
% of HCV positive respondents	56.1	63.4
% of HCV negative respondents	55.8	57.7
HIV and HCV Awareness		
% of HIV aware respondents	40.0	0.0
% of HCV aware respondents	58.8	64.7

†Significantly different since p<0.05.

Table 13: Needle sharing behaviour by HIV and HCV (hepatitis C) status and by HIV and HCV awareness, Whitehorse I-Track Survey, Whitehorse, Yukon (n=55, 2011-2012 data).

HIV or HCV status	Receiving/Borrowing Used Needles %	Passing/Lending Used Needles %
% of all respondents (n=55)	20.0	19.2
HIV Status (lab-confirmed)		
% of HIV positive respondents	25.0	0.0
% of HIV negative respondents	20.0	20.8
HCV Status (lab-confirmed)		
% of HCV positive respondents	12.9	16.7
% of HCV negative respondents	30.4	22.7
HIV and HCV Awareness		
% of HIV aware respondents	25.0	0.0
% of HCV aware respondents	14.8	19.2

We found that being incarcerated in the 6 months prior to the interview was associated with a positive HCV lab result (Table 14) – 33.3% of those with a positive HCV lab result (indicating ever being infected: current or resolved infection) had been incarcerated in the past six months, compared to 16.4% of those who were HCV negative (p=0.048). The odds of being incarcerated in the past 6 months among HCV positive respondents were 2.6 times higher (95% CI=1.0-6.6, p=0.052[12]) than the odds of being incarcerated among HCV negative respondents. In other words, those who had been incarcerated were 2.6 times as likely to be HCV positive as those who had not been incarcerated, and those who were HCV positive were 2.6 times as likely to have been incarcerated as those who were HCV negative. Moreover, 62.5% of all of those who had been incarcerated in the past 6 months had an HCV positive lab result.

Table 14. Characteristics associated with HCV seropositivity among Whitehorse I-Track Phase 3 participants.

Characteristic	All Participants (n=103) N (%)	HCV Positive (n=45) N (%)	HCV Negative (n=55) N (%)	OR* (95% CI*)	AOR* (95% CI)**
Incarcerated in the past 6 months					
Yes	24 (23.3)	15 (33.3)†	9 (16.4)†	2.6 (1.0-6.6)	4.4 (0.73-26.5)
No	79 (76.7)	30 (66.7)	46 (83.6)		
I-Track Group/Injection Status					
Current IDU and Crack Smoker	48 (46.6)	27 (60.0)†	20 (36.4)†	12.8 (2.7-61.5)	5.2 (0.50-54.1)
Current IDU and not Crack Smoker	7 (6.8)	4 (8.9)	3 (5.5)	12.7 (1.6-102.3)	1.0
Previous IDU and Crack Smoker	26 (25.2)	12 (26.7)	13 (23.6)	8.8 (1.7-45.9)	N/A
Never an IDU and Crack Smoker	22 (21.4)	2(4.4)	19 (34.6)	1.0	N/A
Current Injector					
Yes	55 (53.4)	31 (68.9)†	23 (41.8)†	3.1	≠
No	48 (46.6)	14 (31.1)	32 (58.2)	(1.3-7.1)	
Time since first injection[1]					
Less than or equal to 2 years	10 (12.3)	1 (2.3)†	9 (25.0)†	0.08 (0.01-0.71)	0.13 (0.01-1.5)
3-10 years	20 (24.7)	14 (32.6)	6 (16.7)	1.8 (0.58-5.3)	9.9 (0.92-106.0)
11+ years	51 (63.0)	28 (65.1)	21 (58.3)	1.0	1.0
Receiving/Borrowing used injection equipment[2]					
Yes	23 (41.8)	8 (25.8)†	14 (60.9)†	0.22 (0.07-0.71)	0.11 (0.01-1.1)
No	32 (58.2)	23 (74.2)	9 (39.1)		

*OR: Odds Ratio, 95% CI: 95% confidence interval, AOR: Adjusted Odds Ratio

**Adjusted for age, gender, sharing used needles and/or equipment and the variables featured in the table. Adjusted odds ratios are based on a model which only included data for current injectors.

†Significantly different since p<0.05.

[1]Numbers and percentages are for current or previous IDUs only.

[2]Numbers and percentages are for current IDUs only.

≠The variable "Current Injector" was collinear with "I-Track Group/Injection Status" and was not included in the multivariate logistic regression analyses.

[12] The p-value associated with the odds ratio is p=0.052; hence, this is technically not statistically significant (the p-value for this association using the chi-square test was p=0.048; the logistic regression procedure is more conservative and hence the p-value was larger). However, the value is close to significance, is consistent with other reports, and in our estimation is well worth noting.

Current injectors were more likely to have a positive HCV laboratory result than those who currently did not inject (p=0.007) (Table 14). The odds of currently injecting among those who were HCV positive were 3.1 times higher (95% CI=1.3-7.1) than the odds of currently injecting among those who were HCV negative. In other words, those who currently injected were 3.1 times as likely to be HCV positive as those who currently did not inject. In addition, those who never injected drugs were less likely to be HCV positive than those who were current or previous injectors (p=0.001). Current injectors and crack smokers were 12.8 times as likely as those who were crack smokers only and never injected drugs to be HCV positive. Current injectors and not crack smokers were 12.7 times as likely as those who were crack smokers only and never injected drugs to be HCV positive. Previous IDUs and crack smokers were 8.8 times as likely as those who were crack smokers and never injected drugs to be HCV positive.

Among previous and current injectors, time since first injection was associated with a positive hepatitis C result (p=0.007) (Table 14). Those who started injecting drugs 2 years ago or less were 92% less likely as those who started injecting drugs 11 years ago or more to be HCV positive (OR=0.08, 95% CI=0.01-0.71). Only 2.3% of those who were HCV positive started injecting 2 years ago or less.

Equipment: Among current injectors, an HCV positive result was inversely associated with borrowing used injection equipment (p=0.010) (Table 14). 25.8% of HCV positive IDUs borrowed used injection equipment in the past 6 months compared to 60.9% of HCV negative IDUs. The odds of borrowing used injection equipment among those who were HCV positive were 78% lower than the odds of borrowing used injection equipment among those who were HCV negative (OR=0.22, 95% CI=0.07-0.71). In other words, HCV positive respondents were 78% less likely to borrow used injection equipment as HCV negative respondents.

Needles or Syringes: We also found that HCV positive IDUs were equally likely as HCV negative IDUs to borrow or lend used needles or syringes (data not shown). Of those respondents who were HCV positive and injected drugs in the past 6 months, 12.9% borrowed used needles, and 16.7% lent used needles (Table 13). 19.2% of those who were aware of ever having had hepatitis C reported lending used needles, and 14.8% of those aware of ever having had hepatitis C borrowed used needles (Table 13).

HCV positive IDUs were marginally less likely to pass/lend their used injection equipment to others (p=0.075), and were also marginally less likely[13] to share (either borrow or lend) used needles and/or syringes and/or equipment (p=0.074) (data not shown). However, this was not statistically significant since p>0.05.

A positive HCV result was not associated with any other demographic or behavioural factors that we examined.

[13] With small sample sizes, a large difference is required to demonstrate a statistically significant result. As such, we have included some results in this report that were not statistically significant at the 95% confidence level (p>0.05), but that we felt were important to highlight and had practical significance.

In multivariate analyses[14] (which were based on a model of current injectors only), where we adjusted for age, sex, sharing used needles, syringes or equipment and the variables in Table 14, none of the variables remained significantly associated with HCV positive lab result (Table 14).

[14] Multivariate analyses are statistical methods that analyze the effects of more than one independent variable (also known as risk factor variables, exposure variables, etc.) on a dependent variable (also known as the outcome variable or variable of interest). An example of multivariate analyses is multiple logistic regression, which was used in this study to assess the effects of a number of exposure variables (time since first injection, most common drug partner, age, sex, etc.) on HCV positive lab result (the dependent variable). Adjusted odds ratios for each of the independent variables/risk factors of interest were calculated by taking into account the effects of all variables in the model on the outcome. As a result of taking into account the effects of all variables rather than just one variable (which is the case in univariate analyses), results between univariate and multivariate analyses may differ, as was the case in this study.

3.10 HIV and Hepatitis C Testing Behaviour, Care and Treatment

The majority of survey respondents had ever been tested for HIV (91.1%) and HCV (86.9%) (Table 15). Of those who had ever been tested for HIV, the average number of HIV tests in the past two years was 2.2 tests (SD ± 1.9) with a range of 0 to 8 tests in the past two years. Of those who had ever been tested for HCV, the average number of HCV tests in the past two years was 2.1 tests (SD ± 1.9), with a range of 0 to 8 tests in the past two years. There were no differences between the number of HIV and HCV tests done in the past two years for male and female respondents.

With regards to location of most recent HIV test, 25.3% of participants reported most recently getting tested for HIV in an STI/STD clinic (presumed to refer to Yukon Communicable Disease Control). Other locations of testing included hospital/emergency (14.3%), jail or corrections facility (13.2%), needle exchange program (12.1%) and doctor's office (11.0%).

Of those that self-reported being HIV positive, all were under the care of a doctor for HIV and 85.7% had ever taken prescribed drugs for HIV. Of those who had ever taken prescribed drugs for HIV, all (100%) were currently taking prescribed drugs for HIV. Of those that self-reported being HCV positive, 50.0% were under the care of a doctor for hepatitis C and only 7.7% reported ever taking prescribed drugs for HCV. Half (50.0%) of those who had ever taken prescribed drugs for HCV reported currently taking prescribed drugs for HCV (although note the very small number of those who reported ever taking prescribed drugs for HCV).

Table 15: HIV and hepatitis C testing behaviour, care and treatment, Whitehorse I-Track Survey, Whitehorse, Yukon (n=103, 2011-2012 data).

Testing Behaviour, Care and Treatment	N (%)
Ever tested for HIV	92 (91.1)
Average number of HIV tests in past 2 years (±SD)	2.2 (1.9)
Location of most recent HIV test	
Doctor's office	10 (11.0)
Hospital/emergency	13 (14.3)
As a research participant (where you received the result)	1 (1.1)
Jail or corrections facility	12 (13.2)
Needle exchange program	11 (12.1)
Community health facility (e.g. Native Health Centre)	7 (7.7)
Anonymous testing site	1 (1.1)
STI/STD clinic	23 (25.3)
Drug treatment facility/organization (e.g. Methadone clinic, detox facility)	3 (3.3)
Other (e.g. out of territory, Yukon Communicable Disease Control)	10 (11.0)
Under the care of a doctor for HIV (among participants who self-reported being HIV positive)	7 (100.0)
Ever taken prescribed drugs for HIV (among participants who self-reported being HIV positive)	6 (85.7)
Currently taking prescribed drugs for HIV (among participants who self-reported being HIV positive and have ever taken prescribed drugs for HIV)	6 (100.0)
Ever tested for Hepatitis C	86 (86.9)
Average number of Hepatitis C tests in past 2 years (±SD)	2.1 (1.9)
Under the care of a doctor for Hepatitis C (among participants who reported being currently infected with Hepatitis C)	13 (50.0)
Ever taken prescribed drugs for HCV (among participants who reported being currently infected with Hepatitis C)	2 (7.7)
Currently taking prescribed drugs for Hepatitis C (among participants who reported being currently infected with hepatitis C and who had ever taken prescribed drugs for Hepatitis C)	1 (50.0)

3.11 Use of Services

Table 16 displays use of needle exchange programs (NEPs) and related information.

Table 16. Use of needle exchange program (NEP) and obtaining and disposing of needles, Whitehorse I-Track Survey, Whitehorse, Yukon (n=103, 2011-2012 data).

Use of Needle Exchange Program	All Participants (n=103) N (%)	Males (n=64) N (%)	Females (n=39) N (%)
Ever used services of a NEP	93 (90.3)	55 (85.9)	38 (97.4)
Frequency of NEP use in the past 6 months			
Occasionally, not every week	46 (57.5)	25 (55.6)	21 (60.0)
Regularly, once or twice a week	25 (31.3)	14 (31.1)	11 (31.4)
Regularly, but not every day	6 (7.5)	4 (8.9)	2 (5.7)
Every day	3 (3.8)	2 (4.4)	1 (2.9)
Most common place to obtain new needles in the past 6 months			
Needle exchange – fixed site	28 (51.9)	20 (60.6)	8 (38.1)
Needle exchange – mobile vehicle	8 (14.8)	5 (15.2)	3 (14.3)
Outreach worker	1 (1.9)	0 (0.0)	1 (4.8)
Pharmacy or drugstore	7 (13.0)	4 (12.1)	3 (14.3)
Friends/family/partners	10 (18.5)	4 (12.1)	6 (28.6)
Most common place to obtain clean crack kits in the past 6 months			
Needle exchange – fixed site	16 (34.0)	11 (37.9)	5 (27.8)
Needle exchange – mobile vehicle	13 (27.7)	4 (13.8)	9 (50.0)
Friends/family/partners	8 (17.0)	5 (17.2)	3 (16.7)
Dealer	1 (2.1)	1 (3.5)	0 (0.0)
Bought/found on street	2 (4.3)	2 (6.9)	0 (0.0)
Other	7 (14.9)	6 (20.7)	1 (5.6)
Level of difficulty accessing new needles			
Very easy	42 (79.3)	27 (81.8)	15 (75.0)
Somewhat easy	7 (13.2)	4 (12.1)	3 (15.0)
Somewhat difficult	3 (5.7)	1 (3.0)	2 (10.0)
Very difficult	1 (1.9)	1 (3.0)	0 (0.0)
Level of difficulty accessing new crack kits			
Very easy	27 (61.4)	12 (46.2)	15 (83.3)
Somewhat easy	8 (18.2)	6 (23.1)	2 (11.1)
Somewhat difficult	6 (13.6)	5 (19.2)	1 (5.6)
Very difficult	3 (6.8)	3 (11.5)	0 (0.0)
Most common place to dispose of used needles and/or syringes			
Put in secure container and throw in garbage	10 (18.5)	5 (15.2)	5 (23.8)
Return to needle exchange program	15 (27.8)	9 (27.3)	6 (28.6)
Return to health care facility or pharmacy	0 (0.0)	0 (0.0)	0 (0.0)
Give them to others to discard	3 (5.6)	1 (3.0)	2 (9.5)
Put in a drop box	5 (9.3)	4 (12.1)	1 (4.8)
Put in the garbage	16 (29.6)	10 (30.3)	6 (28.6)
Dispose of them on the streets/parks/alleys or in the sewer	0 (0.0)	0 (0.0)	0 (0.0)
Other: burn them, flush down toilet, steripacks, wrapped in garbage	10 (18.5)	8 (24.2)	2 (9.5)

The majority (90.3%) of respondents reported ever using a NEP, and 57.5% used a NEP occasionally in the past six months (Table 16). The most common place to obtain new needles was a fixed site NEP (51.9% of respondents), and the most common place to obtain new crack kits was both a fixed site NEP and a mobile vehicle NEP, 34.0% and 27.7%, respectively. The majority (79.3%) of participants found it very easy to access new needles, and the majority (61.4%) also found it very easy to access a new crack kit.

The most commonly reported place to dispose of used needles and/or syringes was to return them to the NEP (27.8% of respondents) or to put them in the garbage (29.6% of respondents). There were no statistically significant differences between male and female respondents related to ever using NEPs or the frequency of their use.

Use of health care services in the past 12 months by survey participants is detailed in Table 17, and specific use of Yukon services is included in the Appendix. A greater proportion of females reported accessing a hospital (p=0.035) and a needle exchange program (p=0.019) in the past 12 months than males.

Table 17: Use of health care services in the 12 months prior to the interview, Whitehorse I-Track Survey, Whitehorse, Yukon (n=103, 2011-2012 data).

Type of Health Care Service	Total (n=103) N (%)	Males (n=64) N (%)	Females (n=39) N (%)
Hospital	69 (67.0)	38 (59.4)†	31 (79.5)†
Medical clinic	73 (70.9)	44 (68.6)	29 (74.4)
Community health centre	28 (27.2)	16 (25.0)	12 (30.8)
Community drop-in centre	38 (36.9)	28 (43.8)	10 (25.6)
Detox or drug treatment facility	47 (45.6)	29 (45.3)	18 (46.2)
Needle exchange or harm reduction facility	83 (80.6)	47 (73.4)†	36 (92.3)†
Mental health and addictions centre	17 (16.5)	11 (17.2)	6 (15.4)
Sexual health centre*	24 (23.3)	14 (21.9)	10 (25.6)
Culturally-based services	19 (18.5)	10 (15.6)	9 (23.1)

†Significantly different since p<0.05.

*For 95.8% of respondents, this was Yukon Communicable Disease Control.

3.12 Knowledge of HIV and HIV Transmission

The majority of participants who answered yes or no to the questions accurately identified the responses for HIV knowledge and transmission questions (Table 18). No significant differences were observed between male and female participants except a marginally significant difference for a lower proportion of females reporting that using condoms reduces the risk of HIV transmission (p=0.051).

Importantly, there were a high proportion of all respondents of the survey who answered “don’t know” to some of the questions, including 18.5% of respondents who didn’t know whether a person can get HIV from mosquito bites, 10.7% of respondents who didn’t know whether a person can get HIV by sharing a meal with someone who is infected, and 13.6% of respondents who didn’t know whether there is a cure for HIV/AIDS.

Table 18: Knowledge of HIV and HIV transmission, Whitehorse I-Track Survey, Whitehorse, Yukon (n=103, 2011-2012 data).

Proportion Who Correctly Identified Whether:	Total N (%)* (n=103)	Males N (%)* (n=64)	Females N (%)* (n=39)
Having sex with only one, faithful, uninfected partner reduces the risk of HIV transmission	82 (83.7)	52 (85.3)	30 (81.1)
Using condoms reduces the risk of HIV transmission	95 (92.2)	62 (96.9)	33 (84.6)
A healthy-looking person can have HIV	99 (98.0)	62 (98.4)	37 (97.4)
A person cannot get HIV from mosquito bites**	66 (78.6)	44 (80.0)	22 (75.9)
A person cannot get HIV by sharing a meal with someone who is infected**	73 (79.4)	45 (76.3)	28 (84.9)
Currently, there is no cure for HIV/AIDS**	83 (93.3)	49 (92.5)	34 (94.4)

*Those who answered don't know to these questions were excluded from this analysis.

**A high proportion of all respondents (n=103) answered "don't know" to this question (18.5% for mosquito bites, 10.7% for meal, 13.6% for cure for HIV).

3.13 Comparisons to National Data

Findings from the Whitehorse I-Track Survey were compared to national findings from the same survey cycle (9). Please note that the Whitehorse survey included participants who both injected drugs and those who inhaled drugs, whereas the national sample only included those who currently injected drugs (i.e. injected in the 6 months prior to the interview). In addition, Whitehorse analyses comparing males and females were based on gender, whereas the national analyses were based on sex at birth. Please note that data comparisons were not tested for statistical significance. As such, please interpret comparisons with caution.

Demographic Characteristics

A comparison of select demographic characteristics from national data to Whitehorse data can be seen in Table 19. Similar to the national sample, a greater proportion of the respondents were male than female, although Whitehorse had a higher proportion of females than the national sample (37.9% females in Whitehorse compared to 31.8% females in Canada). Mean age of respondents was similar in Whitehorse (39.3 years) to the national sample (39.4 years). Whitehorse had a greater proportion of Aboriginal respondents (73.8%) than the national sample (36.1%). Whitehorse participants were slightly less educated (65.0% did not complete high school in Whitehorse compared to 55.7% among Canadian participants). A greater proportion of Whitehorse participants lived in unstable housing (47.6%) compared to the national sample (38.7%). A greater proportion of Whitehorse respondents had been incarcerated in the 6 months prior to the interview (23.3% in Whitehorse, and 27.3% among Whitehorse IDUs, compared to 11.5% nationally). The national sample observed differences in all of these characteristics among males and females, however, in Whitehorse, only age, income and Aboriginal ethnicity were different among males and females.

Table 19: Comparison of demographic characteristics of Whitehorse I-Track Phase 3 participants (n=103, 2011-2012 data) to all I-Track Phase 3 participants (n=2687, 2010-2012 data).

Demographic Characteristic	All Participants* % (n=2687)	Whitehorse Participants % (n=103)	Whitehorse Current IDUs only % (n=55)
Female	31.8	37.9	38.2
Average age in years (± SD)	39.4 (10.5)	39.3 (10.0)	38.9 (11.1)
Aboriginal**	36.1	73.8	69.1
Did not complete high school	55.7	65.0	67.3
Unstable housing***	38.7	47.6	47.3
Incarcerated in past 6 months	11.5	23.3	27.3

*Data taken from Reference (9) and used with permission from lead author. Data for all participants of I-Track Phase 3 are based on IDUs (people who inject drugs) only, whereas the Whitehorse full sample features both IDUs and non-IDUs.

**The survey instrument specifically asked participants "Are you an Aboriginal person?" However, the term "Indigenous" is now preferred. Therefore, in this report, "Aboriginal" is used as it reflects the survey instrument, and "Indigenous" is used in the discussion section.

***Unstable housing included: living in a friend's place, hotel or motel room, rooming or boarding house, shelter or hostel, transition or halfway house, drug treatment facility, correctional facility, public place (i.e. street, squats), psychiatric institution, or any other response that was considered unstable (i.e. vehicle, tent, anywhere outdoors) at the time of the interview. Participants whose housing status was unknown were not included in this analysis.

Injection Drug Use Risk Behaviour

Average age at first injection for current injectors was similar in Whitehorse (24.0 years) to Canada (23.4 years) (Table 20). The greatest proportion of participants in both Whitehorse (74.1%) and Canada (64.3%) reported injecting cocaine in the 6 months prior to the interview. Similarly, in both Whitehorse and Canada the greatest proportion of injectors injected alone (40.7% in Whitehorse compared to 40.1% in Canada). In Whitehorse, a slightly lower proportion of injectors injected with a sterile needle and syringe at last injection (85.2%) than in Canada (94.5%). 20.0% of injectors in Whitehorse borrowed used needles, whereas 15.5% of Canadian injectors did the same. 19.2% of injectors in Whitehorse lent used needles, whereas 15.5% of injectors in Canada did the same. 41.8% and 43.6% of Whitehorse injectors injected with borrowed used equipment or their used equipment was subsequently used by someone else, respectively, compared to 34.5% and 33.1% of Canadian injectors who did the same.

Table 20: Comparison of injection drug use risk behaviour of Whitehorse I-Track Phase 3 participants who were current injectors (n=55, 2011-2012 data) to all I-Track Phase 3 participants (n=2687, 2010-2012 data).

Injection Drug Use Risk Behaviour	All Participants* % (n=2687)	Whitehorse Current IDUs only % (n=55)
Average age at first injection (years) (±SD)	23.4 (8.9)	24.0 (9.0)
Drugs injected in the past 6 months		
Cocaine	64.3	74.1
Morphine (non-prescribed)	47.0	55.6
Oxycodone/Oxycontin	37.7	33.3
Heroin	26.7	24.1
Crack	24.8	29.6
People injected with most often		
No one (i.e. injected alone)	40.1	40.7
Friends or people know well	25.5	24.1
Regular sex partner	24.4	25.9
Family member	3.2	3.7
People don't know well	4.6	3.7
Sex partners of whom you were a client	0.2	1.9
Injected with sterile needle and/or syringe at last injection	94.5	85.2
Injected with used needles and/or syringes in the 6 months prior to the interview	15.5	20.0
Used needles and/or syringes had been subsequently used by someone else for injection in the 6 months prior to the interview	15.5	19.2
Injected with other used injection equipment in the 6 months prior to the interview**	34.5	41.8
Other used injection equipment had been subsequently used by someone else in the 6 months prior to the interview**	33.1	43.6

*Data taken from Reference (9) and used with permission from lead author. Data for all participants of I-Track Phase 3 are based on IDUs (people who inject drugs) only, whereas the Whitehorse full sample features both IDUs and non-IDUs.

**Other injection equipment included water, cooker, spoons, tourniquets, ties, swabs and acidifiers.

Sexual Risk Behaviour

34.4% of Canadian injectors reported two or more sexual partners in the 6 months prior to the interview, compared to 37.9% of Whitehorse respondents who reported the same (Table 21). Condom use at last sex among those who reported sex in the previous month was lower in Whitehorse than among all participants – 17.7% in Whitehorse compared to 36.6% in Canada. Condom use at last sex with a client sex partner was reported as 77.1% in Canada compared to 66.7% in Whitehorse. 51.5% of Whitehorse participants had a history of diagnosis of an STI compared to 39.3% of Canadian respondents. Females were more likely to have been diagnosed with an STI in both Whitehorse and in Canada.

Table 21: Comparison of sexual risk behaviour of Whitehorse I-Track Phase 3 participants (n=103, 2011-2012 data) to all I-Track Phase 3 participants (n=2687, 2010-2012 data).

Sexual Risk Behaviour	All Participants* % (n=2687)	Whitehorse Participants % (n=103)
Two or more sex partners in the past 6 months	34.4	37.9
Condom use at last sex (among participants who reported sex in the previous month)	36.6	17.7
Condom use at last sex with a client sex partner	77.1	66.7
History of a diagnosis of an STBBI**	39.3	51.5

*Data taken from Reference (9) and used with permission from lead author. Data for all participants of I-Track Phase 3 are based on IDUs (people who inject drugs) only, whereas the Whitehorse full sample features both IDUs and non-IDUs.

**STBBI: Sexually transmitted blood-borne infection; included being diagnosed with either: chlamydia, gonorrhea, syphilis, HPV, genital warts, oral herpes, or other STI; this information was not collected in the SurUDI network that was part of the national sample.

HIV and Hepatitis C Laboratory Results and HIV Awareness

A comparison of HIV seroprevalence and lifetime prevalence of hepatitis C between Whitehorse and Canadian I-Track participants is shown in Table 22.

HIV seroprevalence and lifetime prevalence of hepatitis C among Whitehorse I-Track participants appear to be lower or on par with Canadian participants, when taking into account the wide confidence intervals around point estimates for Whitehorse data. HIV seroprevalence in Whitehorse was 5.9% (95% CI=2.2%-12.5%) among all participants and 7.4% (95% CI=2.1%-17.9%) among IDUs compared to 10.9% among IDUs in Canada. Hepatitis C lifetime prevalence was 45.0% (95% CI=35.0%-55.3%) among Whitehorse participants and 57.4% (95% CI=43.2%-70.8%) among Whitehorse IDUs compared to 68.0% among IDUs in Canada. Seropositivity for both HIV and hepatitis C also appears to be lower or on par with Canadian data – 9.2% among Canadian IDUs compared to 5.6% among Whitehorse IDUs. A greater proportion of respondents in Whitehorse were seronegative for both HIV and hepatitis C than in Canada – 53.0% in Whitehorse (40.7% among IDUs in Whitehorse) compared to 30.3% in Canada. Lastly, 21.4% of participants in Canada were unaware of their HIV infection, compared to no participants in Whitehorse who were unaware of their HIV infection (that is, all participants in Whitehorse were aware of their HIV infection). Please use caution when interpreting the data due to small numbers; as mentioned above, due to wide confidence intervals around point estimates, any differences are likely not statistically significant.

Table 22: Comparison of HIV and hepatitis C (HCV) seropositivity of Whitehorse I-Track Phase 3 participants (n=103, 2011-2012 data) to all I-Track Phase 3 participants (n=2687, 2010-2012 data).

Laboratory Results	All Participants* % (n=2687)	Whitehorse Participants % (n=103)	Whitehorse Current IDUs only % (n=55)
HIV seroprevalence**	10.9	5.9	7.4
Lifetime prevalence of HCV***	68.0	45.0	57.4
HIV and HCV Serostatus**			
Seropositive for HIV only	1.7	2.0	1.9
Seropositive for HCV only	58.8	41.0	51.9
Seropositive for HIV & HCV	9.2	4.0	5.6
Seronegative for HIV & HCV	30.3	53.0	40.7
HIV Awareness***			
Proportion of participants who were unaware of their HIV positive status	21.4	0.0	0.0

*Data taken from Reference (9) and used with permission from lead author. Data for all participants of I-Track Phase 3 are based on IDUs (people who inject drugs) only, whereas the Whitehorse full sample features both IDUs and non-IDUs.

**Among participants who provided a biological sample of sufficient quantity for testing. HIV screening was performed using the Bio-Rad GS rLAV HIV-1 EIA assay. Confirmatory testing was subsequently performed using the Bio-Rad Genetic Systems HIV-1 Western Blot assay. A positive result indicates a current HIV infection. Both the HIV screening (EIA) and confirmatory assay (Western Blot) used are approved by Health Canada as diagnostic assays for use with dried blood specimens.

***Among participants who provided a biological sample of sufficient quantity for testing. Hepatitis C (HCV) testing was performed using the Ortho HCV version 3.0 EIA. Confirmatory testing is not performed for samples that test positive. A positive result indicates past or present hepatitis C infection, and does not discriminate acute from chronic or resolved infection.

****Among participants who provided a biological sample of sufficient quantity for both HIV and hepatitis C testing.

*****Among participants laboratory-tested HIV positive.

Use of Health Care Services and Level of Difficulty Accessing New Needles

Similar proportions of Canadian participants (92.9%, 91.4%) as Whitehorse participants (91.1%, 86.9%) were tested for HIV and HCV, respectively (Table 23). 89.0% of Canadian participants used a needle exchange program (NEP) in the past year compared to 80.6% of Whitehorse participants. Similarly to Canadian data, most participants in Whitehorse found it very easy to obtain new needles. Interestingly, in Whitehorse, females were more likely to have accessed a hospital than males, whereas this relationship was not observed in Canada. Both Whitehorse and Canadian females were more likely to use a NEP than males.

Table 23: Comparison of HIV and hepatitis C (HCV) testing behaviour and use of services of Whitehorse I-Track Phase 3 participants (n=103, 2011-2012 data) to all I-Track Phase 3 participants (n=2687, 2010-2012 data).

Use of Services	All Participants* % (n=2687)	Whitehorse Participants % (n=103)
Ever tested for HIV	92.9	91.1
Ever tested for HCV	91.4	86.9
Use of needle exchange program or harm reduction facility in the past 12 months	89.0	80.6
Level of difficulty accessing new needles		
Very easy	81.0	79.3
Somewhat easy	15.5	13.2
Somewhat difficult	3.1	5.7
Very difficult	0.3	1.9

*Data taken from Reference (9) and used with permission from lead author. Data for all participants of I-Track Phase 3 are based on IDUs (people who inject drugs) only, whereas the Whitehorse full sample features both IDUs and non-IDUs.

Knowledge of HIV and HIV Transmission

Knowledge of HIV and HIV transmission was on par with Canadian data.

4.0 DISCUSSION

To our knowledge, this is the first study to document rates of HIV, hepatitis C and associated risk behaviour in the population of people who use injection or inhalation drugs in Whitehorse, Yukon. Results of this survey indicate that prevalence of HIV and hepatitis C among people who inject or inhale drugs in Whitehorse is high in comparison to the general population: 5.9% for HIV and 45.0% for hepatitis C among people who use drugs in this survey compared to a prevalence of 0.2% for HIV in the general Canadian population and 0.8% for HCV in the general Canadian population (1,3). Rates of HIV were not significantly different for IDUs and those who inhaled drugs in Whitehorse: 7.4% for current IDUs, 7.7% for previous IDUs and 0% for those who never injected ($p=0.623$); lack of statistical significance was likely due to the small sample size of those HIV positive. However, rates of HCV were significantly higher for IDUs than for those who inhaled drugs: 57.4% for current IDUs compared to 48.0% for previous injectors and 9.5% for those who never injected ($p<0.001$). The evidence from the Whitehorse I-Track survey confirms that injection-drug use is a risk factor for HIV and, particularly, HCV.

Comparisons of Whitehorse data to the national I-Track findings indicate that HIV and HCV rates among IDUs in Whitehorse appear to be either slightly lower than or on par with HIV and HCV rates among IDUs in Canada: HIV seroprevalence was 7.4% for IDUs in Whitehorse (95% CI=2.1%-17.9%) compared to 10.9% for IDUs in Canada, and hepatitis C prevalence (ever infected) was 57.4% for Whitehorse IDUs (95% CI=43.2%-70.8%) compared to 68.0% for Canadian IDUs (9).

What is important and encouraging, is that all Whitehorse respondents with HIV were aware of their HIV infection, whereas the national data indicates that 21.4% of Canadians who use drugs with HIV don't know they have it (9). Since 91.1% of respondents reported ever testing for HIV, which is a similar proportion to the national findings, there may be unique factors associated with the HIV positive population of individuals who inject drugs in Whitehorse that this survey did not address which may be contributing to the higher awareness of HIV status in this population rather than testing accessibility.

While we were not able to calculate the percentage of respondents who were aware of currently being infected with hepatitis C since lab data did not discriminate between acute, chronic or resolved infection, we found that 84.4% of those who had a positive hepatitis C lab result (indicating acute, chronic or resolved infection) were ever told by a health professional that they have or had a hepatitis C infection, i.e. were aware of ever being infected. Interestingly, we found that males were more likely to be aware of ever having hepatitis C compared to females: only 3.9% of males with a hepatitis C positive result were *unaware* of ever having had hepatitis C compared to 31.6% of females with a hepatitis C positive result who were *unaware* ($p=0.031$). Since males and females were equally likely to be tested for HCV and had a similar number of HCV tests in the past two years, reasons for this currently remain unknown. To gain more accurate estimates of hepatitis C prevalence, future studies in Whitehorse among people who inject drugs would ideally include testing for current HCV infection.

We found that 91.1% of respondents were ever tested for HIV and 86.9% of respondents were ever tested for hepatitis C. HIV and HCV testing for this population should continue to be a priority. Minimizing barriers to accessing testing as well as encouraging

frequent testing (recommended by the Public Health Agency of Canada as at least annually for individuals with continued risk factors for HIV) could be priority areas for this population (10).

Characteristics Associated with HIV and Hepatitis C Positive Result

We found that those who were HIV positive were less likely to lend a used crack pipe (Table 12). Studies have shown crack smoking as an independent predictor for HIV (11-13). HIV positive respondents were less likely to lend their used crack pipes, possibly indicating some risk reduction strategies that HIV positive individuals who use drugs may be practicing in order to decrease transmission risk.

Due to our small sample size of HIV positive respondents, we were not able to detect statistically significant differences between HIV prevalence among the different drug user groups (current injectors, previous injectors and never injectors/crack smokers only). However, all of the study participants who smoked crack only and never injected drugs were HIV negative. This supports other research and surveillance data which suggest that, after sexual contact, injection drug use is the predominant method of transmission of HIV (2,3).

When we looked at characteristics associated with a hepatitis C positive results (Table 14), we found that being incarcerated was associated with a positive HCV lab result – 33.3% of those with a positive HCV lab result had been incarcerated in the six months prior to the interview, compared to 16.4% of those who were HCV negative (p=0.048). Moreover, 62.5% of all those incarcerated in the past 6 months reported an HCV positive lab result. The relationship between incarceration and positive HCV infection has been well-established; prevalence estimates of HCV in incarcerated populations range from 17% to 40.5% (14,15). Studies have found that prisoners who injected drugs had a much higher prevalence of HCV than those who did not, ranging from 53.3% to 63.3%; incarcerated IDUs were found to be up to 24 times more likely to be HCV positive than incarcerated non-IDUs (16-18). Our HCV prevalence estimate of 62.5% among incarcerated populations is in line with this research. The lab result in our study did not discriminate between acute, chronic or resolved infection; as a result, our study findings may overestimate the actual prevalence of HCV among Whitehorse respondents who experienced incarceration in the previous 6 months. Nevertheless, the association between ever having HCV (lifetime prevalence) and incarceration was confirmed by our study.

HCV positive result was associated with injection drug use in our study: those who currently injected were 3.1 times as likely to be HCV positive as those who currently did not inject (p=0.007). In addition, those who never injected drugs were less likely to be HCV positive than those who either currently or previously injected (p<0.001). Our findings are in line with previous research which has indicated that injection drug use and crack smoking are both independent and dual risk factors for HCV (12,13). Despite the increased odds of HCV positivity among current or previous injectors, a small proportion of HCV positive respondents (4.4%) never injected drugs and were crack smokers only. Moreover, of all those who never injected drugs and were crack smokers only, 9.5% were HCV positive. Other studies have independently linked crack smoking to HCV positivity (11-13).

Time since first injection was also associated with a positive hepatitis C result (p=0.007). Our study findings are in line with previous research which indicates that longer time of injection is linked to HCV positivity (19,20). In other words, there is a certain “inevitability” of acquiring hepatitis C the longer a person injects.

Our study also found that HCV positive respondents were 78% less likely to borrow used injection equipment (excluding needles or syringes) as HCV negative respondents (OR=0.22, 95% CI=0.07-0.71). These interesting results may indicate that those who are HCV positive are aware of their infection and may be practicing risk reduction strategies. However the same association was not found in terms of borrowing or lending used needles or syringes specifically; here we found that HCV positive IDUs were equally likely as HCV negative IDUs to borrow or lend used needles or syringes. Research using a prospective study design could help us better tease out these associations.

It is important to note that multivariate analyses did not find a statistically significant association between HCV positivity and any of the factors that we studied. This could possibly be due to our small sample size and the inability to detect statistically significant results.

Injection Drug Use Risk Behaviour

Study results indicate a significant proportion of people who inject drugs in Whitehorse share used needles, syringes or equipment (Table 6). Needle and equipment sharing behaviour among Whitehorse I-Track participants appears to be more risky than Canadian I-Track participants, although statistical significance tests were not performed (Table 20). Even though differences appear small, Whitehorse participants were always either comparable or more risk-taking than the Canadian average. This may indicate a need to scale up education efforts in the IDU population in Whitehorse.

Individuals who inject drugs most commonly shared used needles, syringes or equipment with their regular sex partner. This may be due to a perception that risk is lower if sharing with a regular sex partner or person whom one knows well.

Average age of first injection did not differ between males and females (Table 4); however, males had a wider range of age at first injection (12 to 57 years) compared to females (14 to 36 years). Research indicates that most IDUs start injecting between the ages of 20 and 39 years, which held true for the Whitehorse group; research also shows that women are typically initiated into injection use from their male partner (22).

About 12% of injectors first started injecting 2 years ago or less; the figure is higher for female injectors, where almost 20% of female injectors first started injecting 2 years ago or less (Table 5). Targeted prevention and education strategies for this group can potentially reduce risk of HIV/HCV infection, reduce injecting overall and increase uptake of treatment interventions.

Time since first injection is also an important factor to consider when planning education campaigns concerning behaviour change, as this survey indicates that those who use injection drugs in Whitehorse are well established, with the majority of participants having started injecting 11 years ago or more. Prevention and education strategies should be tailored to meet the information and support requirements of an older experienced injector. Only 6.8% of respondents were under the age of 25, and almost half were over 40 years old, suggesting that the survey may not have attracted younger participants. Therefore, the survey findings may only be generalizable to “older” individuals who use drugs. It is also possible that the population of individuals who use drugs in Whitehorse is a predominantly older group. Our experience in service provision suggests the latter: statistics from the needle distribution program at BTFD have been on a steady decline since 2006, supporting the possibility of a

downward trend in injection drug use. The older age group of Whitehorse I-Track participants either suggests an aging out of people who inject drugs or a limited reach with youth who use drugs. Further research in Whitehorse should examine whether young individuals who use drugs are an underserved population or whether the population exists; there may be a need to scale up services to younger individuals who inject, as research has shown that youth do not like to use traditional NEPs (23).

We found that three factors were associated with sharing used needles and/or syringes and/or equipment: time since first injection, injecting most commonly with a regular sex partner or people known well (e.g. friends), and frequency of use of needle exchange programs. Those who injected most often with people they know well were 5.6 more likely to share used needles, syringes or equipment as those who injected most often with people they don't know well or who injected alone. This may be due to risk perception – IDUs may feel that they are at decreased risk of infection when sharing with their regular sex partner or people they know well. For example, during a knowledge exchange session with participants, it was mentioned that if the IDU was having sex with someone, which is an intimate encounter, he or she would feel even more comfortable sharing needles, syringes or equipment, a less intimate encounter. Given this situation, it is important to reiterate the increased risk of HCV transmission for injection drug use compared to sexual activity (24).

New and more-experienced injectors (those who started injecting 2 years ago or less and those who started injecting 11 years ago or more) were equally likely to share used needles, syringes or equipment, whereas those who started injecting 3-10 years ago were 89% less likely to share used needles, syringes or equipment than those who started injecting 11 years ago or more. This may be due to risk perception and habituation to risk (i.e. older group may be habituated to risk and younger group may be unaware of risk). Importantly, time since first injection was the only factor found to be significantly associated with sharing of used needles, syringes or equipment in multivariate analyses. There may be additional unique characteristics associated with those who started injecting 3-10 years ago that this survey did not address which could be contributing to lower prevalence of sharing behaviour. Regardless, this study indicates that certain groups of injectors would benefit more from educational efforts and interventions aimed at decreasing sharing behaviour among IDUs: new injectors and well-experienced injectors, the latter of which is a significant segment of Whitehorse IDU participants, comprising nearly 60% of IDUs.

Those who used a needle exchange program regularly or every day were 4.0 times more likely to share used needles, syringes or equipment as those who used a needle exchange program occasionally. However, this was confounded by time since first injection and most frequently injecting with someone known well (that is, the association was due to these two other factors, and not NEP use): those who started injecting 11 years ago or more were more likely to use a NEP regularly, and those who injected most commonly with someone known well were also more likely to use a NEP regularly, and these individuals were more likely to share used needles, syringes or equipment. This suggests that those who access NEPs in Whitehorse are individuals at greater risk. There are opportunities for NEPs in Whitehorse to target such individuals with education efforts aimed at decreasing sharing behaviour; strategies should specifically target perceptions concerning risk when sharing with intimate sex partners.

Research has shown that unavailability of new needles is a factor in sharing of injection equipment (25,26). This was not confirmed in our study, as sharing of used needles, syringes or equipment was not associated with ever use of NEP or level of difficulty accessing new needles. The vast majority (79.3%) of Whitehorse participants found it very easy to access new needles and those who found it easy were equally likely as those who found it difficult to share used needles, syringes or equipment (p=0.920; data not shown). This finding indicates that ensuring availability and accessibility of new needles and equipment, although a critical part of harm reduction, may not be enough to further decrease sharing behaviour among Whitehorse IDUs without other interventions. Our study results indicate that education efforts aimed at decreasing habituation to risk among more experienced IDUs as well as less experienced IDUs not aware of the risk, and education efforts related to risk behaviour for HIV and HCV acquisition among close emotional contacts would be most beneficial to reducing the rate of sharing behaviour among Whitehorse IDUs.

While frequency of drug injection in the past month was not associated with sharing in general[15], it was associated with sharing used needles or syringes only (p=0.002). Those who injected more frequently were more likely to share used needles or syringes than those who injected less frequently. Frequent injectors could benefit from targeted intervention.

Non-Injection Drug Use Risk Behaviour

Rates of borrowing and lending appear to be higher in the inhalation group (Table 9) than in the injecting group (Table 6) suggesting further need for information/health promotion about risks associated with smoking crack and sharing pipes. This is evident when we see that 9.5% of those respondents who never injected drugs still have a history of hepatitis C infection.

The most commonly reported methods of decreasing infection risk when smoking crack with another person were putting their own mouth piece on the crack pipe (44.2%) – generally considered to be effective at decreasing infection risk – and wiping the end of the pipe on clothing (36.5%) – not proven to be effective at decreasing infection risk. Other methods listed included: burning the end, inhaling quickly, using lip balm, washing with vinegar and water, and wiping with a paper towel (none of which are proven to be effective at decreasing infection risk). According to the CDC, bleaching, boiling, burning or using common cleaning fluids, alcohol or peroxide will not clean needles, tools and other instruments of the HCV virus (14). The misinformation about methods of decreasing infection in the community of individuals who use drugs should be addressed. Notably, 28.9% of those who borrowed a used crack pipe reported doing nothing to decrease the risk of infection. When asked why they did nothing, 26.7% of those who did nothing reported not being aware of the infection risk, whereas others reported not wanting to offend others, not being concerned with risks when high or drunk, and sharing only with trusted people. Opportunities for education and engagement with this group could focus on ways of addressing lack of knowledge concerning risks as well as motivational factors that prevent safer inhalation use.

[15]"Sharing in general" refers to sharing (either borrowing or lending) used needles and/or syringes and/or equipment.

Females were more likely to report putting a mouthpiece on a used crack pipe. Females were also more likely to report using the service of a NEP in the 12 months prior to the interview. Future research could examine possible explanations for these gender-based differences.

Preference for Injection or Inhalation

Of those respondents who both injected and inhaled, we found that 62.5% preferred injection but sometimes inhaled and 37.5% preferred inhalation but sometimes injected. Due to the risks associated with injection drug use, delaying injection as long as possible or indefinitely is an important harm reduction measure. Messaging around the greater risks associated with injection drug use – HIV, HCV, overdose – in order to prevent injection drug use could be one step to delaying or preventing injection for those that currently only inhale. For those who preferred injecting, top two reasons for sometimes inhaling included drug availability (73.3%) and opportunity to use for free (40.0%). This may be an opportunity to encourage safer alternatives, such as methadone services. For those who preferred inhaling but occasionally injected their drugs, the most common cited reasons were partner or peers engaging in the behavior and drug availability. Targeted education for this group that addresses motivational factors such as peer and partner influences may be beneficial.

Sexual Risk Behaviour

We found that 37.9% of participants reported two or more sex partners in the past 6 months, and of those who had multiple sex partners, the majority (69.2%) did not use a condom the last time they had sex. We also found that those with multiple sex partners were equally likely to use condoms as those without multiple sex partners ($p=0.717$). Significant proportions of respondents who engaged in sex with a casual or client sex partner did not use a condom. Since primary means of transmission of HIV is through sexual contact, even among IDUs, this is of great concern (27). The data from this study suggest that a considerable number of individuals who use drugs are engaging in risky sexual behaviour, as suggested by previous research (28). What is more, risky sexual behaviour appears to be more prevalent among Whitehorse IDUs than nationally: condom use at last sex appears to be lower in Whitehorse than nationally and percentage of individuals who use drugs with multiple sex partners appears to be higher in Whitehorse than nationally (Table 21). Condom education may be appropriate for this population, bearing in mind that correct and consistent use of condoms can reduce but not eliminate the risk of HIV (29,30). In addition, education about the greater risk of disease transmission with multiple partners could also be appropriate for this population (31). Since condoms are provided in drug equipment kits distributed through the NEP, this high number suggests that there may be barriers to using a condom that do not pertain to access.

51.5% of all Whitehorse respondents reported a history of a diagnosis with an STI, compared to 39.3% for Canadian respondents. Females were more likely to have been diagnosed with an STI in both Whitehorse and Canada. The greater proportion of individuals who use drugs in Whitehorse diagnosed with an STI may indicate either more risky sexual practices in Yukon compared to Canada as a whole, which has been documented elsewhere (32), and/or more frequent STI testing, which has also been documented elsewhere in the general population in Yukon (33). In addition, prevalence of STIs in the general population has

been reported as 35% in the United States (34), confirming that individuals who use drugs are at increased risk for STIs, especially taking into account our prevalence estimate of STIs among people who use drugs in Whitehorse of 51.5%. Our findings indicate that this vulnerable population has a high lifetime prevalence of STIs, high proportion of multiple partners and infrequent condom use in tandem with drug use. Sex education and outreach could be scaled up with this population (including opportunities to explore barriers to using condoms), bearing in mind that education efforts and counseling should focus not only on the use of condoms as a factor in decreasing STI transmission, but also on other risk-reduction strategies such as reducing number of partners and avoiding high-risk sexual activity (e.g. concurrent partnerships, sex work, anal sex), which carries greater risk of STI and HIV transmission (29,31,35,36).

Opportunities for Education

In addition to the opportunities for education regarding sharing of drug equipment and sexual risk behaviour, there is a continued need for education regarding HIV and HIV transmission, as 18.5% of respondents didn't know whether a person can get HIV from mosquito bites, 10.7% of respondents didn't know whether a person can get HIV by sharing a meal with someone who is infected, and 13.6% of respondents didn't know whether there is a cure for HIV/AIDS.

Use of Services and Disposal of Used Needles

Most respondents reported that it was very easy to access new needles (79.3%) and new crack kits (61.4%). Half of all respondents (51.9%) most commonly got new needles from Blood Ties Four Directions Centre (fixed site NEP); 34.0% of respondents got their new crack kits from BTFD. According to this study, BTFD appears to be a service that is well accessed. At the same time, approximately 20% of respondents identified new crack kits as either difficult or somewhat difficult to access. This may be due to the fact that crack kits are not available in Yukon communities or in pharmacies or drug stores, unlike needle injection kits. There is some anecdotal program evidence from BTFD that more people smoke crack but a higher proportion of those people are unwilling to use NEPs like BTFD, possibly due to stigma. Limited hours of BTFD and the Outreach Van for accessing kits may also contribute to the perceived difficulty of accessing new crack kits.

We found that the two most common places to dispose of needles and/or syringes were either returning them to a NEP (27.8% of respondents) or putting them in the garbage[16] (29.6% of respondents). The fact that nearly a third of injectors most commonly dispose of used needles and syringes in the garbage is of concern, as discarded loose needles are a hazard. Messaging about safe needle disposal could be scaled up.

[16] "Putting them in the garbage" was assumed to indicate putting loose needles in the garbage, since the survey also separately asked participants about putting needles in a secure container and throwing them in the garbage (inside the secure container).

Demographic Characteristics and Social Determinants of Health

Almost two-thirds (62.1%) of participants in the Whitehorse study were male, which is consistent with other survey samples, including the national sample for this survey. While 90.3% of respondents lived in Whitehorse, 9.7% did not, suggesting that our survey sample had some representation from Yukon communities or from individuals living in Yukon communities and accessing services in Whitehorse.

Almost 40% of respondents lived in more than one city or community in the past 6 months. At the time of the interview, nearly 48% lived in unstable housing. The relationship between safe housing and safe drug use is well documented. People who use drugs and are unsafely housed are at greater risk for HIV and HCV (37). However, in our survey sample, unstable housing was not found to be associated with HCV positivity or HIV positivity.

Nearly 40% of all survey respondents reported social assistance/support as their main source of income. 21.4% also reported other sources of income, such as sex work, dealing, pan-handling, etc. It is not clear as to whether those in the other sources of income group are eligible but unaware of legitimate social support available or if there are other reasons why they do not access social assistance.

23.3% of survey respondents reported being incarcerated in the six months prior to the interview. Whitehorse Correctional Centre (WCC) could ensure appropriate support services are in place for these inmates, such as methadone services.

Compared to those that did not currently inject, current injectors were more likely to have lived in more than one city or community in the past six months (p=0.022). Important gender differences were also found. Compared to male participants, females were younger (p=0.005) – average age for females was 35.8 years compared to 41.4 years for males and 15.4% of female respondents were 25 years of age and under compared to only 1.6% of male participants in this age group (Table 3). Compared to male participants, females were more likely to report a lower personal monthly income (p=0.039), and were more likely to report social assistance as their main source of income (p=0.022). Female respondents were also marginally more likely to identify as Indigenous than males (p=0.051). Women who use drugs are generally considered more vulnerable. The Whitehorse group of women surveyed in this study was younger with lower income and higher rates of social assistance use than their male peers, which indicates particular vulnerability. Programming and services specifically targeted to women would be meaningful for this community.

A significant proportion of our survey sample identified as Indigenous (First Nations, Inuit or Métis) (Table 2). Indigenous populations have been over-represented among people who inject or inhale drugs. As is increasingly recognized and supported by research, this can be linked to trauma related to the attendance at residential schools and/or intergenerational-trauma from residential school attendance (38,39). This highlights the importance of culturally competent and culturally relevant programming and interventions for people who inject or inhale drugs in Whitehorse.

Our data suggest that social determinants of health (40)[17] (e.g. education, income, housing, etc.) play a large role in injection and inhalation drug use in Whitehorse. In addition,

[17] Social determinants of health are defined by the World Health Organization as "The conditions in which people are born, grow, live, work and age. These circumstances are shaped by the distribution of money, power and

compared to national results, a lower proportion of Whitehorse participants completed high school, a greater proportion lived in unstable housing, and a greater proportion was incarcerated in the 6 months prior to the interview (Table 19). This suggests that a determinants-based approach is needed when addressing the needs of people who inject or inhale drugs in Whitehorse. Social determinants should be at the forefront of programming for people who inject or inhale drugs in Whitehorse.

Limitations

I-Track uses non-random, convenience sampling methods to overcome some of the inherent difficulties in accessing this hard-to-reach population. As a result, the surveillance findings may not be representative of all people who inject drugs in Whitehorse. The survey findings may not be generalizable to younger individuals who use drugs in Whitehorse and to users in other jurisdictions. Findings were based on self-reported data which are subject to social desirability and recall bias. Since this was a cross-sectional study design, it has limitations in terms of causality of associations.

We were not able to reach the target sample size for this study in Whitehorse. The small sample size of respondents (n=103) and small sample size of people who injected drugs (n=55) limited our ability to make definitive conclusions due to wide confidence intervals and lack of significant results. Comparisons with Canadian data should be interpreted with particular caution, since tests of significance were not performed and due to wide confidence intervals around Whitehorse point estimates.

Confirmatory testing was not performed for HCV samples that tested positive. A positive HCV result indicated past or present hepatitis C infection, and did not discriminate acute from chronic or resolved infection. This means that Whitehorse HCV seroprevalence data are likely overestimates of current infection prevalence in the population of individuals who use drugs, as approximately 15-25% of people tend to naturally clear the infection (41,42). The lack of confirmatory testing for HCV also caused difficulties in terms of calculating an accurate estimate of awareness of HCV positivity.

The Whitehorse I-Track survey examined descriptive characteristics of the population of individuals who use drugs in Whitehorse in detail, and explored the use of harm reduction programs in detail as well. However, the survey did not explore reasons for initiation and continuation of the use of illicit drugs, and did not explore services and needs related to interventions promoting treatment of addictions and cessation of drug injection, the most reliable way to eliminate risk of transmission of HIV and HCV (43). Future studies among people who inject drugs in Whitehorse could explore such concepts and topics.

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resources at global, national and local levels"(38). For Indigenous cultures, social determinants of health may include cultural trauma due to colonialization and attendance at residential schools.

5.0 CONCLUSIONS

To our knowledge, this is the first study to document rates of HIV, hepatitis C and associated risk behaviour among people who inject and/or inhale drugs in Whitehorse, Yukon. Results of this survey indicate that HIV and hepatitis C prevalence in the population of individuals who use drugs in Whitehorse is high in comparison to the general population, albeit on par or lower than the prevalence among populations who inject drugs in Canada.

The study documented a high prevalence of injection risk behaviour and sexual risk behaviour among people who use drugs in Whitehorse, illustrating the need for increased education and outreach in this population to address this risk behaviour. Time since first injection and most frequent drug partner were associated with sharing used needles, syringes and equipment. Use of needle exchange programs interacted with both of these variables. Incarceration, injection status, time since first injection and borrowing used injection equipment were associated with HCV positivity. These associations suggest opportunities for interventions in specific sub-groups in the community in Whitehorse, particularly those who are new and long-term injectors.

As is evidenced by the data from this survey and as is reiterated in the 2013 Chief Public Health Officer's Report, addressing the prevention, control and management of infectious disease, in this case of HIV and HCV, requires an understanding of the determinants of health (44). By strengthening and investing in the determinants of health, there may be greater opportunity to prevent drug addiction and illicit drug use as well as to positively influence the overall health status of the population of individuals who use drugs in Whitehorse, and that of Yukoners and Canadians alike.

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APPENDIX

Table A: Use of Yukon health care services in the 12 months prior to the interview, Whitehorse I-Track Survey, Whitehorse, Yukon (n=103, 2011-2012 data).

Health Care Service	N (%) of Survey Respondents Accessing Service in Past Year
Hospital	
Whitehorse General Hospital	62 (60.2)
Dawson City Hospital	2 (1.9)
Watson Lake Hospital	2 (1.9)
Rural Yukon Community Nursing Centre/Station	5 (4.9)
Medical Clinics or Walk-in Clinics	
Yukon Communicable Disease Control	14 (13.6)
Marcorios Clinic	7 (6.8)
River Valley Medical Clinic	37 (35.9)
Klondike Medical Clinic	4 (3.9)
Other Medical Clinics or Walk-Ins	10 (9.7)
Community Health Centres	
Kwanlin Dun Health Centre	13 (12.6)
Whitehorse Community Health Centre	1 (1.0)
Community Health Centre (in one of the communities)	11 (10.7)
Other Community Health Centre	3 (2.9)
Community Drop-In Centres	
Blood Ties Four Directions Centre	30 (29.1)
Other Community Drop-in Centre	12 (11.7)
Detox or Drug Treatment Facility	
Alcohol and Drug Services	15 (14.6)
Detox Centre	36 (35.0)
Other Detox Centre	7 (6.8)
Needle Exchange or Harm Reduction Service	
Blood Ties Four Directions Centre	60 (58.3)
Outreach Van	58 (56.3)
Kwanlin Dun Health Centre	3 (2.9)
Nursing Station in rural Yukon Community	2 (1.9)
Methadone Maintenance Program	9 (8.7)
Other Needle Exchange Program	5 (4.9)
Mental Health and Addictions Centre	
Mental Health Services (Yukon)	6 (5.8)
Second Opinion Society	5 (4.9)
Other Mental Health and Addictions Centre	7 (6.8)
Sexual Health Centre or Facility	
Yukon Communicable Disease Control	23 (22.3)
Other Sexual Health Centre or Facility	1 (1.0)
Culturally-Based Services	
Kwanlin Dun Health Centre	11 (10.7)
Skookum Jim Friendship Centre	3 (2.9)
CAIRS Whitehorse	6 (5.8)
Other culturally-based services	1 (1.0)