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Ontario Integrated Supervised Injection  
Services Feasibility Study

## Study Report: Thunder Bay, ON

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### Contributors

**Thomas Kerr**

Director, Urban Health Research Initiative, British Columbia Centre for Excellence in HIV/AIDS

**Sanjana Mitra**

Research Coordinator, Ontario HIV Treatment Network

**Bonnie Kryswaty**

Research Coordinator, Ontario Integrated Supervised Injection Services Feasibility Study

**Zack Marshall**

Lecturer, Department of Social Development Studies & School of Social Work, Renison University College, University of Waterloo

**Cynthia Olsen**

Coordinator, Thunder Bay Drug Strategy

**Beth Rachlis**

Researcher-in-Residence, Ontario HIV Treatment Network

**Jean Bacon**

Director, Health Policy and Knowledge Translation & Exchange, Ontario HIV Treatment Network

**Katherine Murray**

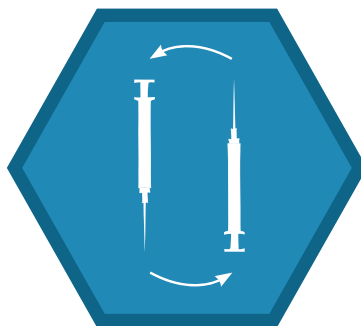
Manager, Knowledge Translation & Exchange, Ontario HIV Treatment Network

**Sean Rourke**

Scientific and Executive Director, Ontario HIV Treatment Network

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## Executive Summary

Injection drug use continues to be associated with severe health and social harms. This is true of Thunder Bay, Ontario, which has a disproportionately large population of people who inject drugs (PWID) and is contending with ongoing challenges associated with injection drug use. Thunder Bay is a setting where both cocaine and non-prescription opioid use are highly prevalent alongside use of other illicit drugs (e.g., crack, amphetamines). Data from the Public Health Agency of Canada I-Track survey of PWID in Thunder Bay in 2008 indicate high rates of injection drug use in public places (35% of PWID in the previous six months) and borrowing of used syringes (19% of PWID in the previous six months). Further, HCV incidence rates in Thunder Bay are deemed to be among the highest in Ontario.

In response to the growing concerns regarding the harms associated with injection drug use, supervised injection services (SIS), where PWID can inject pre-obtained illicit drugs under the supervision of healthcare staff, have been implemented in various settings. Currently, more than 90 SIS exist in at least eight countries, and two sanctioned SIS exist in Vancouver. Results from evaluation studies have demonstrated that SIS are effective in: reducing public disorder; reducing risk for infectious disease transmission; reducing injecting-associated morbidity; reducing morbidity and mortality associated with overdose; and facilitating referrals to various health and social programs, including addiction treatment and housing. SIS

have also been found to be highly cost-effective, and they offer additional benefits for police and emergency services. While SIS have been found to be effective in large urban centres where sizable drug scenes exist and where substantial concentrations of PWID live, there have been no evaluations focused on the impacts of SIS in smaller cities or towns – or on the most effective way to deliver supervised injection services in communities where PWID are not concentrated in one geographic area. Herein, we report on SIS feasibility research undertaken in Thunder Bay, Ontario, which explored potential willingness to use SIS and SIS design preferences among local PWID, in addition to acceptability and feasibility of SIS from community stakeholder perspectives.

A mixed-method community-based research approach was employed to meet the study objectives. In the first study phase, a quantitative survey was conducted to investigate drug-using behaviour and related harms, health care access, willingness to use SIS, and SIS design preferences among PWID in Thunder Bay. In brief, between June 2016 and October 2016, the research team worked with a team of 2 peer research associates who administered surveys to 200 local PWID who had injected drugs within the past six months. In the second phase of the study, we interviewed seventeen community stakeholders from five sectors: healthcare (n=5); police and emergency services (n=5); social services (n=4); government and municipal services (n=2); and the business and community sector (n=1).

Among 200 survey participants, 87 (44%) were women and the median age was 36 (range:

18 to 63). The majority of participants (n=133, 67%) reported being homeless or living in unstable housing. In the 6 months prior to their interview, 45 (23%) participants reported daily opioid injection, 37 (19%) reported daily cocaine injection, while 21 (11%) reported daily crack/rock cocaine injection. Further, 128 (64%) participants stated that they had injected in a public or semi-public space in the previous six months. Risk for infectious disease transmission was also evident, with 23 (12%) of participants noting that they had shared used syringes in the previous six months. Non-fatal overdose was also common, with 77 (39%) reporting a history of overdose and 16 (8%) also reporting an overdose in the previous six months.

In total, 137 (69%) of participants reported willingness to use SIS if one were available, 22 (11%) said they might be willing, while another 41 (21%) said they would not be willing to use such services. The most common reasons for using SIS included: access to sterile injection equipment, overdoses can be prevented, injecting responsibly, overdoses can be treated and injecting in an indoor space. Reasons for not wanting to use SIS included: already having a place to inject, not wanting to be seen, not using drugs at the time, being afraid one's name will not remain confidential and fear of being caught by the police. Most participants selected Thunder Bay South core (Fort William) and Thunder Bay North core (Port Arthur), in addition to Intercity as the best locations for SIS.

Almost all key informants agreed that for SIS to work well in Thunder Bay, at least two sites are needed, one in Thunder Bay South core and one in Thunder Bay North core. A number of respondents suggested that three or more sites including Intercity, Westfort, County Park, or the Windsor/Picton/Blucher area, would be advantageous, and some identified a mobile van as a potential option. These respondents also described the importance of SIS as more than a place to inject drugs. Stakeholders shared a vision of an integrated hub with health and social services provided alongside SIS as part of a continuum of care for PWID. This included

education, information, and direct referrals to treatment, housing, social services, and food support. Multiple stakeholders suggested the following services be provided on site: brokerage case management, drop-in counselling and more intensive trauma and mental health support, healthcare from interdisciplinary teams, overdose prevention, testing for HIV, hepatitis C, and STIs, needle distribution, and access to showers and a place to cook and eat food. These last points highlight the desire for a place to connect, more than a clinically focused facility.

In conclusion, we observed a high rate of unaddressed and preventable harm among PWID in Thunder Bay, as well as a high rate of willingness to use SIS in this setting if one were available. To address the observed geographical distribution of both public and private injection drug use, and preferences of PWID and community stakeholders, implementation of SIS in Thunder Bay South core and in Thunder Bay North core is recommended, and be integrated within existing services that can provide enhanced wrap-around care for PWID (e.g., addictions treatment, primary health care, housing supports). However, opportunities to establish additional SIS to meet local needs should be explored, and the various affected communities should be involved in the planning and operation of any future SIS. Given the ongoing challenges associated with injection drug use in this setting, as well the evidence indicating that SIS prevent harms and promote health among PWID, it appears clear that implementing SIS in Thunder Bay would have high potential to improve health and public order, while also saving precious health system resources.



## 1.0 Introduction

### 1.1. Injection drug use in Canada

Injection drug use continues to be associated with severe health and social harms. At the individual level, injection drug use is strongly associated with high rates of infectious disease acquisition,<sup>1</sup> cutaneous injection-related infections,<sup>2</sup> and fatal and non-fatal overdose,<sup>3</sup> and people who inject drugs (PWID) often experience significant barriers to primary and acute care systems.<sup>4,5</sup> At the community level, injection in public spaces and associated injection-related litter (e.g., discarded syringes) constitute a source of public disorder and community concern.<sup>6,7</sup>

### 1.2. Supervised injection services (SIS)

In response to the growing concerns regarding the harms associated with injection drug use, supervised injection services (SIS), where PWID can inject pre-obtained illicit drugs under the supervision of healthcare staff, have been implemented in various settings.<sup>8</sup> Currently, more than 90 SIS exist in at least eight countries.<sup>9</sup> However, in Canada today, only two sanctioned SIS exist in Vancouver.<sup>10,11</sup>

Results from evaluation studies have demonstrated that SIS have largely met their stated objectives, which include: reducing public disorder;<sup>12,13</sup> reducing risk for infectious disease transmission;<sup>14–16</sup> reducing the morbidity associated with injecting;<sup>17,18</sup> reducing morbidity and mortality associated with overdose;<sup>19,20</sup> and facilitating referrals to various health and social programs, including addiction treatment and housing.<sup>21–23</sup> SIS have also been found to attract a subset of very high-risk PWID, including those at high risk for HIV and hepatitis C infection and overdose, and those who engage in public injecting.<sup>24,25</sup> SIS have also been found to be highly cost-effective,<sup>14,26</sup> and they offer additional benefits for police and emergency services. SIS can serve as a place to refer PWID who are found injecting in public and who may be disconnected from conventional public health programs,<sup>27</sup> and they can also reduce the need for ambulance call-outs for overdoses.<sup>28</sup>

While SIS have been found to be effective in large urban centres where sizable drug scenes exist and where substantial concentrations of PWID live, there have been no evaluations focused on the impacts of SIS in smaller cities or towns – or on the most effective way to deliver SIS in communities where PWID are not concentrated in one geographic area. SIS feasibility work has been undertaken in various settings to inform the implementation of SIS,<sup>29–33</sup> and research conducted in Vancouver has shown that assessments of future intentions to use SIS among PWID do predict future use of such facilities.<sup>34</sup> Feasibility work has also been useful for identifying SIS design preference and barriers to SIS use among PWID.<sup>29,30</sup> An assessment and feasibility study conducted in Toronto and Ottawa found that SIS integrated into other harm reduction and healthcare services—rather than a stand-alone SIS facility— would be more effective, efficient, and acceptable to PWID.<sup>35</sup> Accordingly, SIS feasibility studies could serve to inform decision makers about the potential of SIS to reduce the harms associated with injection drug use in smaller cities and towns, and could also provide valuable information that could be used to shape the development of future SIS in such settings. Herein, we report on SIS feasibility research undertaken in Thunder Bay, Ontario, which explored potential willingness to use SIS and SIS design preferences among local PWID, in addition to acceptability and feasibility of SIS from community stakeholder perspectives.

## 2.0. Study Setting: Thunder Bay, Ontario

Thunder Bay is the most populous municipality in Northwestern Ontario, with a population of 108,359 (according to the Canada 2011 Census), and the second most populous in Northern Ontario after Sudbury. Thunder Bay and District has a population of 146,057 and consists of the City of Thunder Bay, including over 100,000 km<sup>2</sup>.

Although limited information is available on illicit drug use in Thunder Bay, existing data suggest that the municipality has a disproportionately

large population of PWID<sup>36</sup> and is contending with ongoing health and social harms associated with injection drug use. Thunder Bay is a setting where both cocaine and non-prescription opioid use are highly prevalent alongside use of other illicit drugs (e.g., crack, amphetamines).<sup>37</sup> A 2013 needs assessment indicated that the rate of non-prescription opioid use in Thunder Bay was higher than the provincial average, although rates of cocaine and crack use were also deemed to be high.<sup>38</sup> Prescription opioid use recently accounted for 33% of all admissions to one local addiction treatment centre.<sup>39</sup> Data from the Centre for Addiction and Mental Health and the Ontario Students Drugs Use and Health Survey also point to higher overall rates of substance abuse in Northern Ontario compared to the rest of the province.<sup>40,41</sup> The Public Health Agency of Canada administered its I-Track survey of PWID in Thunder Bay in 2008 and again in 2012, although only data from 2008 are currently available. These data indicated high rates of injection drug use in public places (35% of PWID in the previous six months) and borrowing of used syringes (19% of PWID in the previous six months).<sup>37</sup> However, Thunder Bay's local needle exchange continues to distribute large volumes of syringes annually, and rates of syringe sharing may have declined since the last I-Track survey was administered. Hepatitis C incidence rates in Thunder Bay are deemed to be among the highest in Ontario,<sup>36</sup> and among those living with HIV/AIDS in Thunder Bay, approximately 50% have a history of injection drug use.<sup>42</sup>

Thunder Bay also operates various programs for PWID, including syringe exchange, housing programs and treatment facilities, and has in place a drug strategy that calls for further development of harm reduction strategies. At the same time, there continues to be a range of concerns within the local community about health-related harms and public disorder arising from injection drug use locally, including issues related to discarded syringes in public places.<sup>43</sup> Accordingly, questions remain about the potential role that SIS could play in promoting health and public order within Thunder Bay.

### 3.0 Methods

A mixed-method community-based research approach was employed to meet the study objectives. In the first study phase, a quantitative survey was conducted to investigate drug-using behaviour and related harms, health care access, willingness to use SIS, and SIS design preferences among PWID in Thunder Bay. In brief, between June 2016 and October 2016, the research team worked with a team of 2 peer research associates who administered surveys to 200 local PWID who had injected drugs within the past six months. Potential participants were recruited through peer outreach efforts and word-of-mouth, and were invited for drop-in interviews at Shelter House, People Advocating for Change through Empowerment (PACE), and ElevateNWO in order to be part of the study. All participants gave informed consent and were provided a \$25 honorarium. In the second phase of the study, we interviewed seventeen community stakeholders from five sectors: healthcare (n=5); police and emergency services (n=5); social services (n=4); government and municipal services (n=2); and the business and community sector (n=1). Research ethics boards at the University of Toronto and the University of British Columbia approved the study.

In the sections that follow we report on data describing the socio-demographic characteristics of the study population, their drug use and related harms, their willingness to use SIS, and their preferences regarding SIS design. In section 5.0, we report on findings from the key informant interviews.

# 4.0 Results of Survey with People who Inject Drugs

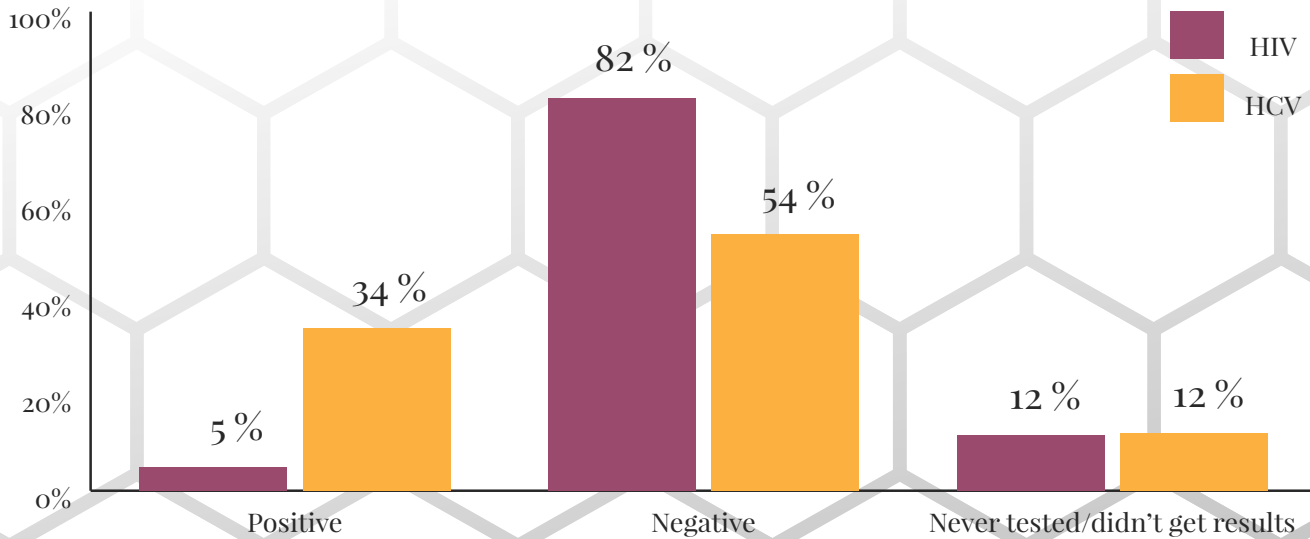
## 4.1 Sociodemographic characteristics, healthcare and social-structural exposures

The sociodemographic characteristics, healthcare and social-structural exposures of study participants are presented in Table 1. Among 200 survey participants, 87 (44%) were women and the median age was 36 (range: 18 to 63). The majority of participants (n=133, 67%) reported being homeless or living in unstable housing, while 13 (7%) had been incarcerated in the past six months, and 35 (18%) reported engaging in sex work or exchanging sex for resources in the past six months. Participants were also asked to report their experience with addiction treatment, with 144 (72%) reporting any history of addiction treatment, 46 (23%) reporting addiction treatment use in the previous six months, and 51 (26%) reporting difficulties accessing addiction treatment in the previous six months. Health challenges were common, with 11 (5%) self-reporting that they were HIV positive and 68 (34%) reporting that they were hepatitis C positive (Figure 1). Other common health problems included: withdrawal (n=148, 75%); depression (n=130, 65%), and scarring (n=120, 60%) (Figure 2).

Table 1: Sociodemographic characteristics, healthcare and social-structural exposures of SIS feasibility study participants in Thunder Bay, Canada

Characteristic	n (%)
Median age (range)	36 (18 to 63)
Gender identity	
Female	87 (44)
Male	113 (56)
Sexual orientation identity	
Heterosexual	179 (89)
Gay, lesbian, bisexual or other	21 (11)
Homeless or unstably housed in past 6 months	133 (67)
Incarceration in past 6 months	13 (7)
Sex work in past 6 months	35 (18)
Access to addictions treatment	
Never	57 (28)
Yes, more than 6 months ago	98 (49)
Yes, in the past 6 months	46 (23)
Tried but unable to access addictions treatment in past 6 months	51 (26)

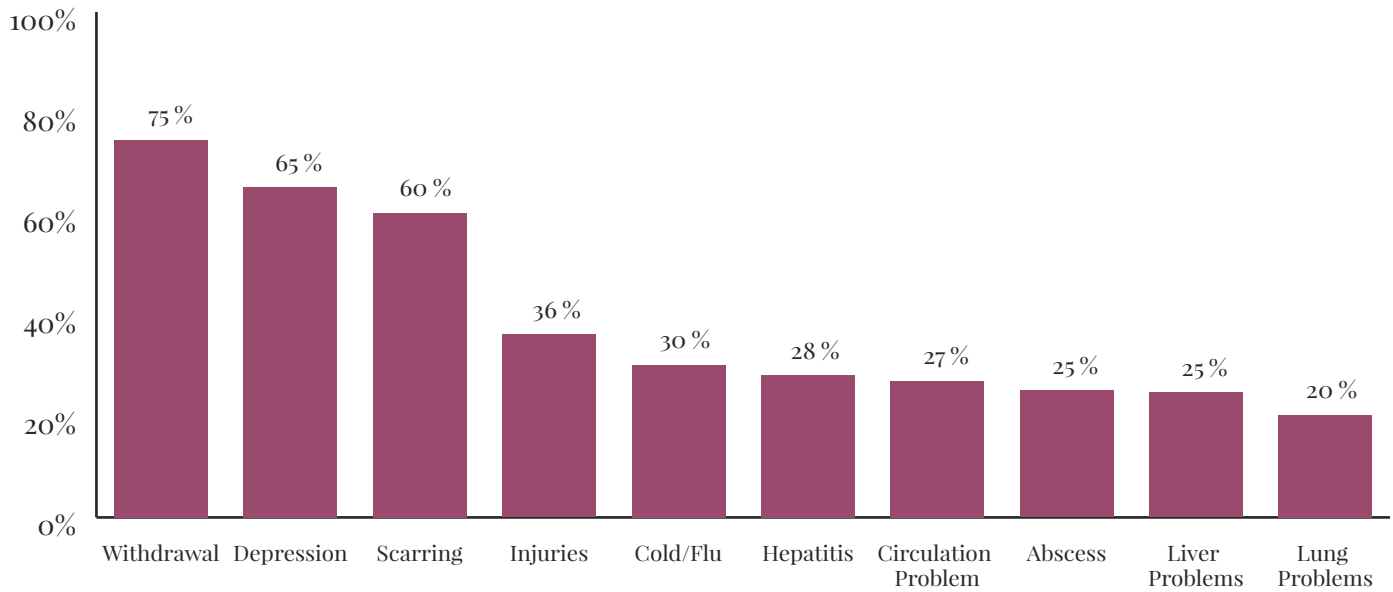
Figure 1: Self-reported HIV and hepatitis C status





**Figure 2: Top 10 self-reported health problems experienced in the past 6 months\***

\* Respondents could select all that apply



#### 4.2 Drug use and risk characteristics

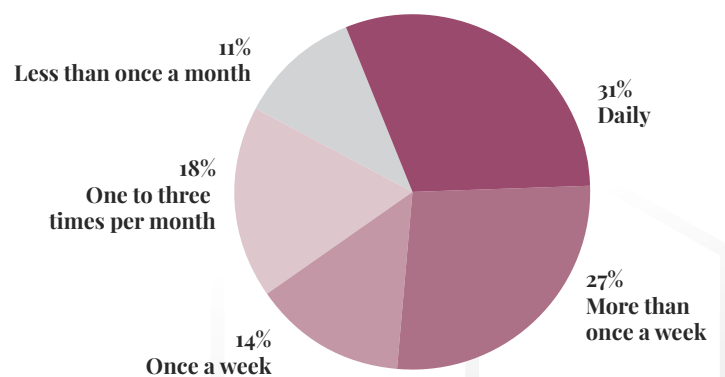
The drug use and risk characteristics of participants are reported in Figures 3 - 10. As shown in Figure 4, the most commonly used drugs were cocaine, morphine, hydromorphone and crack/rock cocaine. In the last 6 months, 45 (23%) participants reported daily opioid injection, 37 (19%) reported daily cocaine injection, while 21 (11%) reported daily crack/rock cocaine injection (Figure 5).

As shown in Figure 6, participants also reported high rates of injecting in public spaces, with 128 (64%) participants stating that they had injected in a public or semi-public space in the previous six months. Participants were also asked to indicate which neighbourhoods they injected in (Figure 9). Respondents most often injected in either Thunder Bay South core (Fort William, n=149, 75%) or Thunder Bay North core (Port Arthur, n=34, 17%).

Risk for infectious disease transmission was also evident, with 23 (12%) of participants noting that they had shared used syringes in the previous six months. Non-fatal overdose was common, with 77 (39%) reporting a history of overdose and 16 (8%)

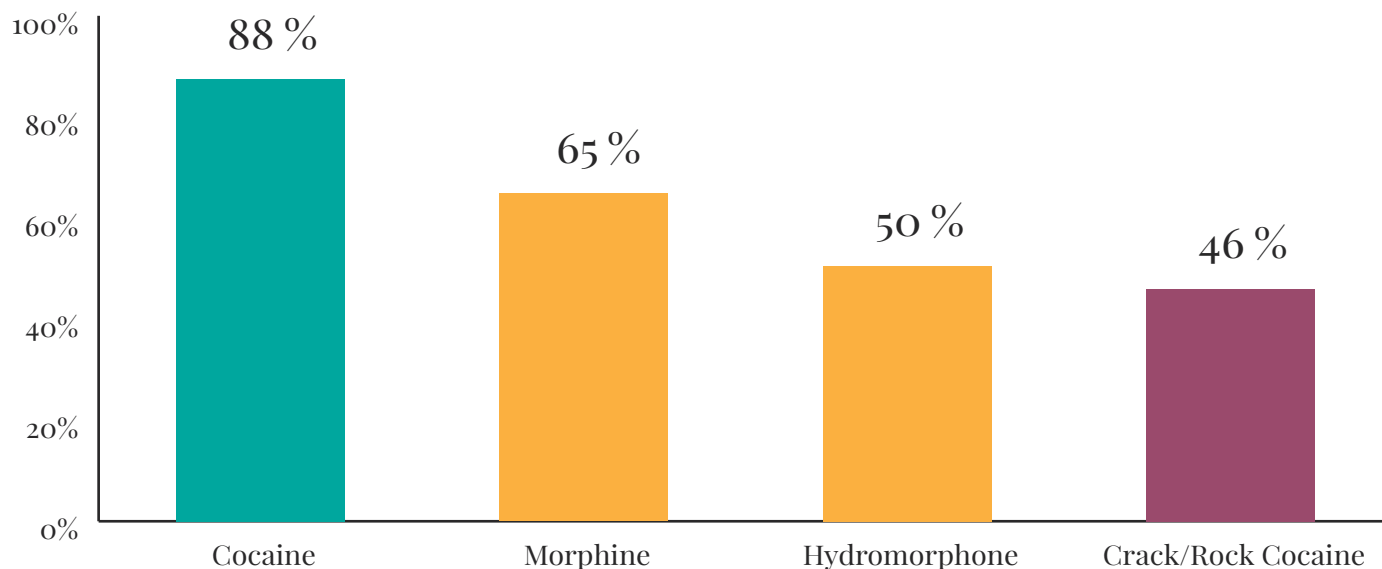
reporting an overdose in the previous six months (Figure 10). Among those who had ever overdosed, 9 (12%) were alone in their most recent overdose, and 31 (40%) were attended to by ambulance personnel, and 24 (31%) were transported to an emergency department.

**Figure 3: Frequency of injection drug use in the past 6 months**

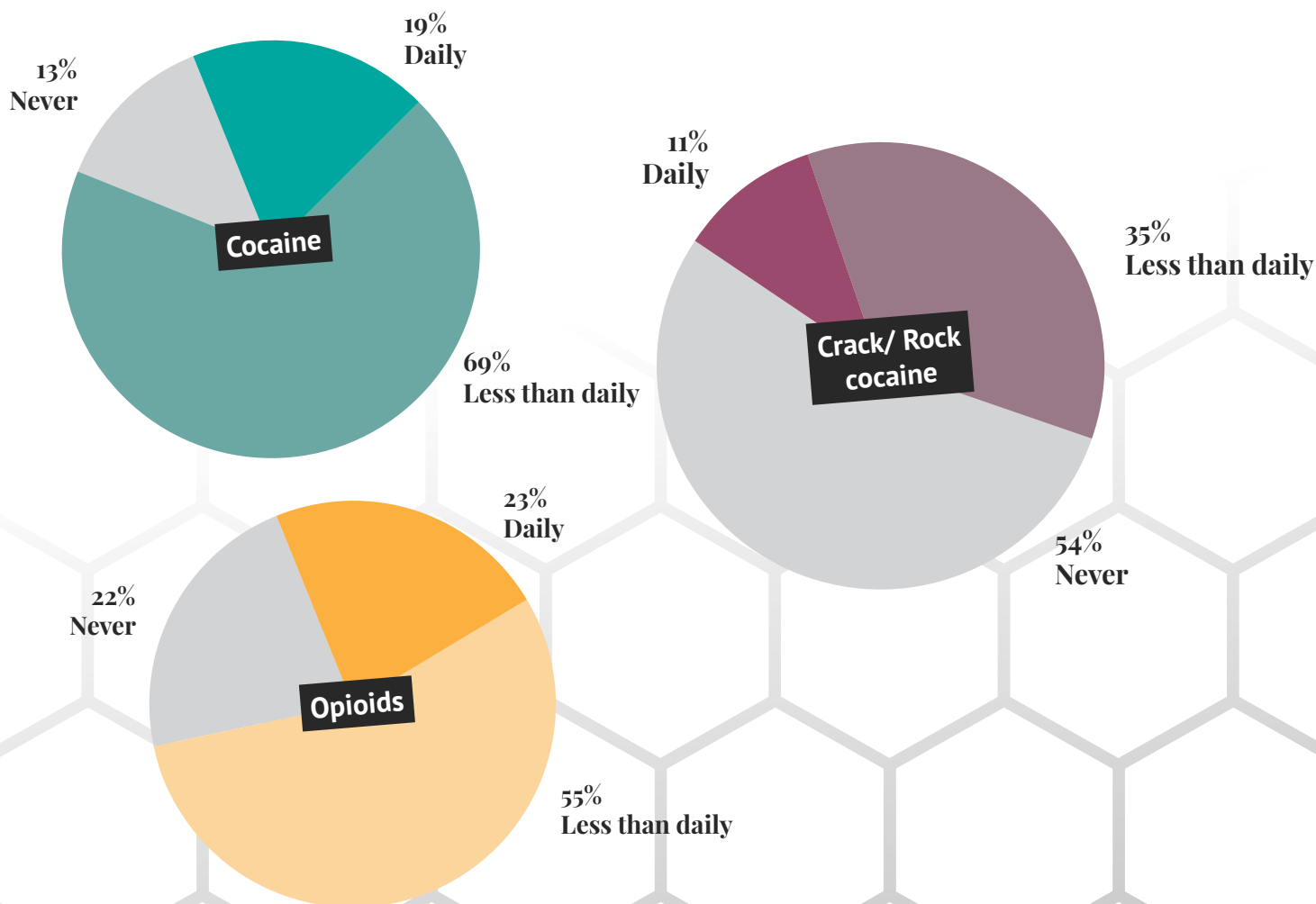


**Figure 4: Top 4 drugs injected in the past 6 months\***

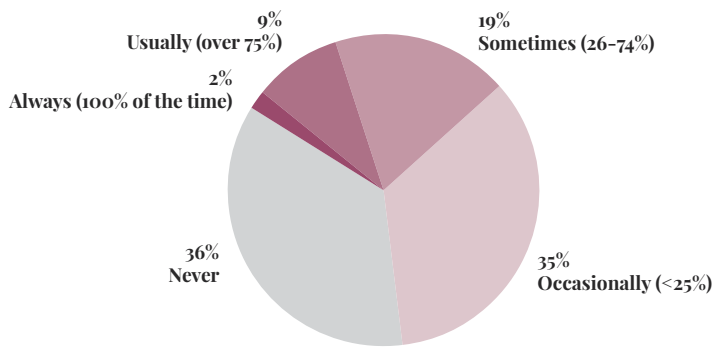
\* Respondents could select all that apply



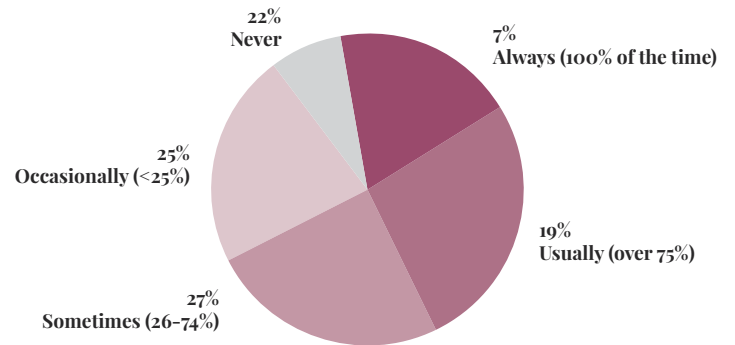
**Figure 5: Frequency of injecting top drugs injected in the past 6 months**



**Figure 6: Frequency of injecting in public or semi-public places in the past 6 months**

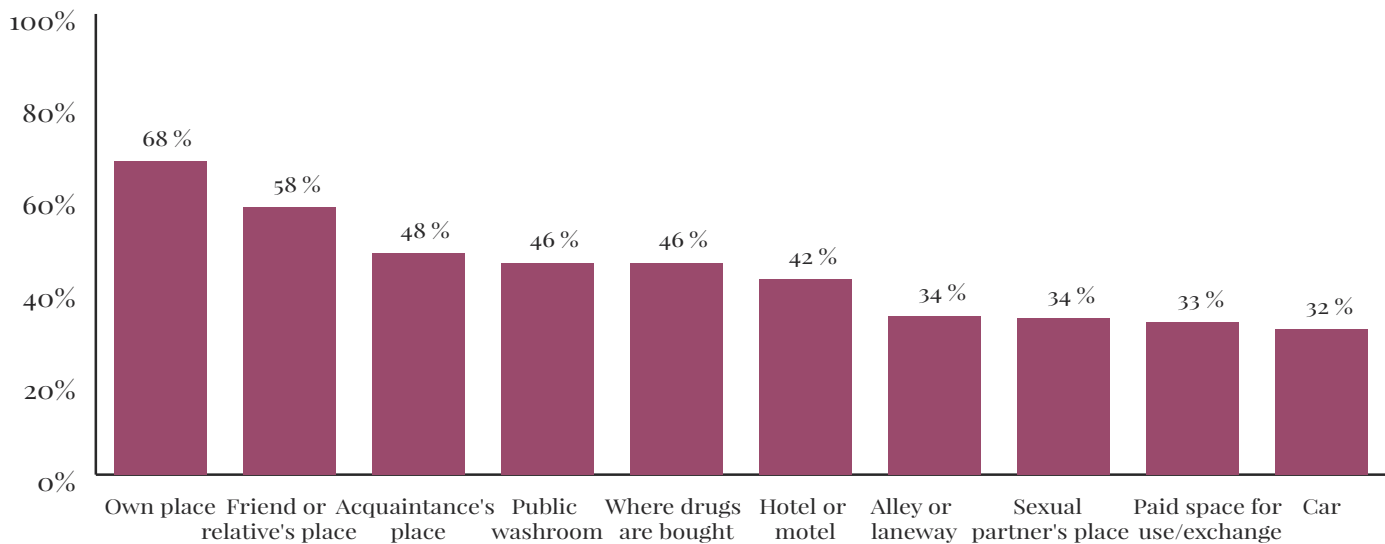


**Figure 7: Frequency injected alone in the past 6 months**

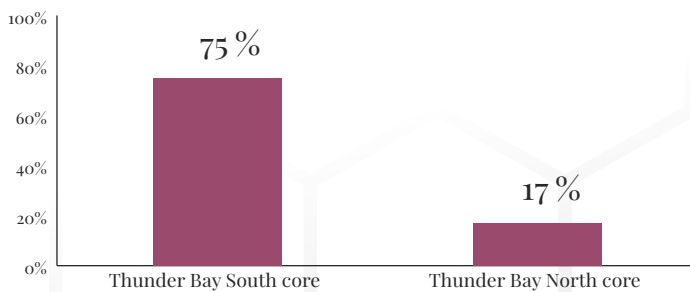


**Figure 8: Top ten places injected in the past 6 months\***

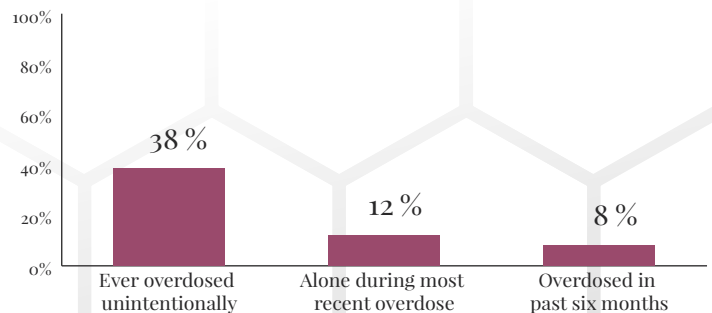
\* Respondents could select all that apply



**Figure 9: Neighbourhood most often injected in in the past 6 months**



**Figure 10: Overdose history**



4.3 Willingness to use SIS and SIS design preferences

As shown in Figure 11, 137 (69%) of participants reported willingness to use SIS if one were available, 22 (11%) said they might be willing, while another 41 (21%) said they would not be willing to use such services. Table 2 illustrates the top 5 reasons for wanting and not wanting to use SIS. The most common reasons for using SIS included: access to sterile injection equipment, overdoses can be prevented, injecting responsibly, overdoses can be treated and injecting in an indoor space. Reasons for not wanting to use SIS included: already having a place to inject, not wanting to be seen, not using drugs at the time, being afraid one’s name will not remain confidential and fear of being caught by the police. Participants were also asked to indicate their first and second choices for where to implement SIS. Similar to the locations in which they reported injecting most often, most participants selected Thunder Bay South core (Fort William) and Thunder Bay North core (Port Arthur), in addition to Intercity (Figure 12). Most (n=165, 83%) said they would walk and 147 (74%) said they would take a bus to get to SIS. The majority of participants (n= 156, 78%) preferred that SIS be set up with private cubicles, and over half listed the day-time as their first choice for using SIS (n=101, 56%).

Table 2: Top 5 reasons for wanting and not wanting to use SIS\*

	n (%)
Top 5 reasons for wanting to use SIS, among those willing or maybe willing	
I would be able to get sterile injection equipment	89 (56)
Overdoses can be prevented	72 (45)
I would be injecting responsibly	46 (30)
Overdoses can be treated	25 (16)
I would be able to inject indoors and not in a public space	22 (15)
Top 5 reasons for not wanting to use SIS, among those unwilling or maybe unwilling	
I have a place to inject	20 (32)
I do not want to be seen	18 (29)
If I quit or was not using	10 (16)
I am afraid my name will not remain confidential	7 (11)
I fear being caught with drugs by police	7 (11)

\* Respondents could select all that apply

Figure 11: Willingness to use SIS

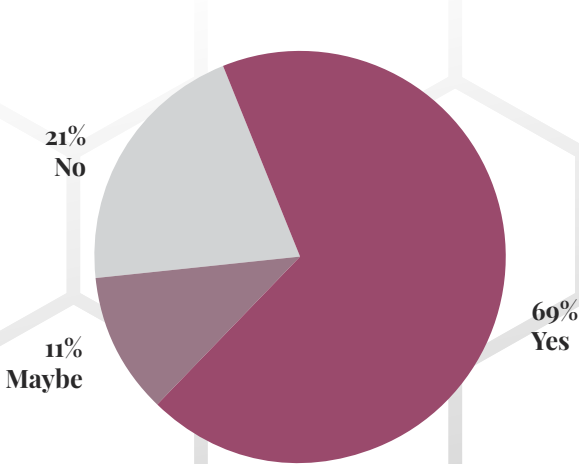
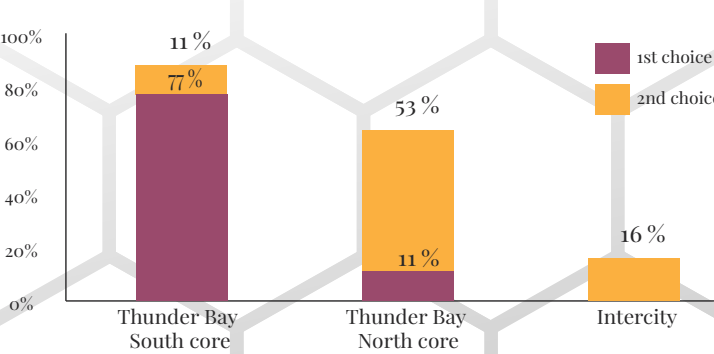


Figure 12: First and second choice neighbourhood for SIS



## 5.0 Results of Key Informant Interviews

Key informants were stakeholders from five sectors impacted by injection drug use in Thunder Bay: healthcare (n=5), police and emergency services (n=5), social services (n=4), government and municipal services (n=2), and the business and community sector (n=1). They were diverse in terms of their previous knowledge related to SIS. The majority of stakeholders are seeing the impact of injection drug use on individuals and the broader community, and they support SIS.

Key informants identified the following factors that drive drug-related problems in Thunder Bay: poverty, homelessness and difficulties accessing affordable housing, mental health concerns, violence and trauma, and effects of colonization, and residential schools. Respondents also expressed frustration with long treatment waitlists and service fragmentation, and described the ways limited access to services, at times when people want to make change, impacts drug use in local communities.

Geographic pull factors related to employment, drug access and drug prices also play a part in sustaining drug-related problems in Thunder Bay. The city was identified as a hub for surrounding rural communities, drawing people in who bring their own hopes and expectations often related to employment or education.

In considering where to locate supervised injection services, geography is an important element to consider. Thunder Bay is a city with two downtown cores, Thunder Bay South core (Fort William) and Thunder Bay North core (Port Arthur). Respondents identified that travelling back and forth between different parts of the city is often complicated by long distances, challenges with public transportation, and cold temperatures during fall and winter.

Almost all respondents agreed that for SIS to work well in Thunder Bay, at least two sites are needed, one in Thunder Bay South core and one in Thunder Bay North core. If there could only

be one site, Thunder Bay South core is the top priority, however stakeholders agreed that people in Thunder Bay North core or other parts of the city would not travel across town to access a SIS. A number of respondents suggested that three or more sites including Intercity, Westfort, County Park, or the Windsor/Picton/Blucher area, would be advantageous, and some identified a mobile van as a potential option.

All community stakeholders shared the perspective that SIS should be open beyond typical service hours of 8:30am - 4:30pm. Everyone agreed that afternoon and evening hours were needed, with over one third suggesting that SIS should be accessible 24 hours, 7 days a week.

Lastly, respondents described the importance of SIS as more than a place to inject drugs. Stakeholders shared a vision of an integrated hub with health and social services provided alongside SIS as part of a continuum of care for PWID. This included education, information, and direct referrals to treatment, housing, social services, and food support. Multiple stakeholders suggested the following services be provided on site: brokerage case management, drop-in counselling and more intensive trauma and mental health support, healthcare from interdisciplinary teams, overdose prevention, testing for HIV, hepatitis C, and STIs, needle distribution, and access to showers and a place to cook and eat food. These last points highlight the desire for a place to connect, more than a clinically focused facility.

## 6.0 Conclusions & Recommendations

Thunder Bay continues to experience significant preventable harm among PWID. As indicated by the data presented herein, high rates of injection drug use persist in this setting, with many PWID injecting in public spaces, which in turn exposes them to considerable risks to health and personal safety. PWID continue to experience risks for infectious disease transmission, overdose, soft-tissue infections and criminal justice system involvement. Further, given the high rates of



public injecting, local communities, police, ambulance personnel, and hospitals are left to contend with the fall out from under-addressed issues from injection drug use.

Importantly, a majority of PWID (69%) in this setting reported that they would use SIS if one were available. Past evaluations have indicated that expressed willingness is strongly correlated with future uptake of such services, and therefore the findings reported herein suggest that PWID in Thunder Bay and the local community would likely benefit from the implementation of SIS in this setting.<sup>34</sup> Although several services for PWID exist in Thunder Bay, none are able to address the problem of public injecting and the individual and community-level harms arising from this behaviour, and limited interventions exist to address injection-related infections and overdose. As has been found in other settings in Europe, Australia, and Canada, SIS in Thunder Bay have high potential to improve public order, reduce infectious disease transmission and overdose, and promote access to addiction treatment and other services. Further, although some have suggested that SIS may exacerbate public disorder, crime, and exacerbate community drug use patterns, rigorous evaluation of SIS elsewhere has shown that negative impacts of this kind have not occurred.<sup>12,44-46</sup> Given the results of our key stakeholder interviews and our surveys with local PWID, it is recommended that one SIS be established in downtown Thunder Bay South core (Fort William) and one be established in downtown Thunder Bay North core (Port Arthur). Further, opportunities to extend SIS services to others areas should be further explored in an effort to meet local need. Such action has high potential to reduce the unaddressed harms associated with injection drug use locally for individuals, local communities, police, ambulance and other healthcare staff. In order to maximize the potential of local SIS programming and ensure cultural safety, effort should also be made to involve all local affected communities in the planning and operation of any future SIS.

This research presented has limitations that should be noted. First, the sample recruited

was not randomly sampled and may not be representative of the population of PWID in Thunder Bay. Although extensive efforts were made to recruit PWID from a range of settings in the city, we relied on peer research associates for recruitment, and this may have resulted in some group or social networks being over represented. Second, we relied on self-reported information, which may subject to response biases, including socially-desirable responding and problems with recall. However, past research has found the self-reports of PWID to be valid and reliable.

In conclusion, we observed a high rate of unaddressed and preventable harm among PWID in Thunder Bay, as well as a high rate of willingness to use SIS in this setting if one were available. Given the ongoing challenges associated with injection drug use in this setting, as well the evidence indicating that SIS prevent harms and promote health among PWID, it appears clear that implementing SIS in Thunder Bay would have high potential to improve health and public order, while also saving precious health system resources.

## Acknowledgements

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## References

1. Strathdee SA, Hallett TB, Bobrova N, et al. HIV and risk environment for injecting drug users: The past, present, and future. *Lancet*. 2010;376(9737):268–284.
2. Lloyd-Smith E, Wood E, Zhang R, Tyndall MW, Montaner JS, Kerr T. Risk factors for developing a cutaneous injection-related infection among injection drug users: A cohort study. *BMC Public Health*. 2008;8:405.
3. Kerr T, Fairbairn N, Tyndall M, et al. Predictors of non-fatal overdose among a cohort of polysubstance-using injection drug users. *Drug & Alcohol Dependence*. 2007;87(1):39–45.
4. Palepu A, Tyndall MW, Leon H, et al. Hospital utilization and costs in a cohort of injection drug users. *Canadian Medical Association Journal*. 2001;165(4):415–420.
5. McCoy CB, Metsch L, Chitwood DD, Miles C. Drug use and barriers to use of health care services. *Substance Use & Misuse*. 2001;36(6–7):789–806.
6. Small W, Rhodes T, Wood E, Kerr T. Public injection settings in Vancouver: Physical environment, social context and risk. *International Journal on Drug Policy*. 2007;18(1):27–36.
7. CBC News. Melting snow reveals discarded needles. <http://www.cbc.ca/news/canada/thunder-bay/melting-snow-reveals-discarded-needles-1.1222947> (accessed November 16, 2016). 2012.
8. Kimber J, Dolan K, Wodak A. Survey of drug consumption rooms: Service delivery and perceived public health and amenity impact. *Drug & Alcohol Review*. 2005;24(1):21–24.
9. Hedrich D, Kerr T, Dubois-Arber F. Drug consumption facilities in Europe and beyond. In: Rhodes T, Hedrich D, eds. *Harm reduction: Evidence, impacts, and challenges*. Luxembourg: European Monitoring Centre for Drug and Drug Addiction; 2010.
10. Krusi A, Small W, Wood E, Kerr T. An integrated supervised injecting program within a care facility for HIV-positive individuals: A qualitative evaluation. *AIDS Care*. 2009;21(5):638–644.
11. Wood E, Kerr T, Lloyd-Smith E, et al. Methodology for evaluating Insite: Canada's first medically supervised safer injection facility for injection drug users. *Harm Reduction Journal*. 2004;1(1):9.
12. Wood E, Kerr T, Small W, et al. Changes in public order after the opening of a medically supervised safer injecting facility for illicit injection drug users. *Canadian Medical Association Journal*. 2004;171(7):731–734.
13. McKnight I, Maas B, Wood E, et al. Factors associated with public injecting among users of Vancouver's supervised injection facility. *American Journal of Drug & Alcohol Abuse*. 2007;33(2):319–325.
14. Bayoumi AM, Zaric GS. The cost-effectiveness of Vancouver's supervised injection facility. *Canadian Medical Association Journal*. 2008;179(11):1143–1151.
15. Kerr T, Tyndall M, Li K, Montaner JS, Wood E. Safer injection facility use and syringe sharing in injection drug users. *Lancet*. 2005;366(9482):316–318.
16. Marshall BD, Wood E, Zhang R, Tyndall MW, Montaner JS, Kerr T. Condom use among injection drug users accessing a supervised injecting facility. *Sexually Transmitted Infections*. 2009;85(2):121–126.
17. Stoltz JA, Wood E, Small W, et al. Changes in injecting practices associated with the use of a medically supervised safer injection facility. *Journal of Public Health*. 2007;29(1):35–39.
18. Lloyd-Smith E, Wood E, Zhang R, et al. Determinants of hospitalization for a cutaneous injection-related infection among individuals who inject drugs: A cohort study. *BMC Public Health*. 2010;10(1):327.
19. Milloy MJ, Kerr T, Mathias R, et al. Non-fatal overdose among a cohort of active injection drug users recruited from a supervised injection facility. *American Journal of Drug & Alcohol Abuse*. 2008;34(4):499–509.
20. Marshall BD, Milloy MJ, Wood E, Montaner JS, Kerr T. Reduction in overdose mortality after the opening of North America's first medically supervised safer injecting facility: A retrospective population-based study. *Lancet*. 2011;377(9775):1429–1437.
21. Kimber J, Mattick RP, Kaldor J, van Beek I, Gilmour S, Rance JA. Process and predictors of drug treatment referral and referral uptake at the Sydney Medically Supervised Injecting Centre. *Drug & Alcohol Review*. 2008;27(6):602–612.
22. Wood E, Tyndall MW, Zhang R, Montaner JS, Kerr T. Rate of detoxification service use and its impact among a cohort of supervised injecting facility users. *Addiction*. 2007;102(6):916–919.
23. Small W, Van Borek N, Fairbairn N, Wood E, Kerr T. Access to health and social services for IDU: The impact of a medically supervised injection facility. *Drug & Alcohol Review*. 2009;28(4):341–346.

24. Wood E, Tyndall MW, Li K, et al. Do supervised injecting facilities attract higher-risk injection drug users? *American Journal of Preventative Medicine*. 2005;29(2):126-130.
25. Wood E, Tyndall MW, Qui Z, Zhang R, Montaner JS, Kerr T. Service uptake and characteristics of injection drug users utilizing North America's first medically supervised safer injecting facility. *American Journal of Public Health*. 2006;96(5):770-773.
26. Pinkerton SD. Is Vancouver Canada's supervised injection facility cost-saving? *Addiction*. 2010;105(8):1429-1436.
27. DeBeck K, Wood E, Zhang R, Tyndall M, Montaner J, Kerr T. Police and public health partnerships: Evidence from the evaluation of Vancouver's supervised injection facility. *Substance Abuse Treatment, Prevention, & Policy*. 2008;3(11).
28. Salmon AM, van Beek I, Amin J, Kaldor J, Maher L. The impact of a supervised injecting facility on ambulance call-outs in Sydney, Australia. *Addiction*. 2010;105(4):676-683.
29. Kerr T, Wood E, Small D, Palepu A, Tyndall MW. Potential use of safer injecting facilities among injection drug users in Vancouver's Downtown Eastside. *Canadian Medical Association Journal*. 2003;169(8):759-763.
30. Watson TM, Strike C, Kolla G, et al. Design considerations for supervised consumption facilities (SCFs): Preferences for facilities where people can inject and smoke drugs. *International Journal on Drug Policy*. 2013;24(2):156-163.
31. Fry C, Fox S, Rumbold G. Establishing safe injecting rooms in Australia: Attitudes of injecting drug users. *Australian & New Zealand Journal of Public Health*. 1999;23(5):501-504.
32. Broadhead RS, Borch CA, van Hulst Y, Farrell J, Villemez J, Altice FL. Safer injection sites in New York City: A utilization survey of injection drug users. *Journal of Drug Issues*. 2003;733-750.
33. Kral AH, Wenger L, Carpenter L, Wood E, Kerr T, Bourgois P. Acceptability of a safer injection facility among injection drug users in San Francisco. *Drug & Alcohol Dependence*. 2010;110(1-2):160-163.
34. DeBeck K, Kerr T, Lai C, Buxton J, Montaner J, Wood E. The validity of reporting willingness to use a supervised injecting facility on subsequent program use among people who use injection drugs. *American Journal of Drug & Alcohol Abuse*. 2012;38(1):55-62.
35. Bayoumi A, Strike C, Brandeau M, et al. Report on the Toronto and Ottawa Supervised Consumption Assessment Study. <http://canadianharmreduction.com/sites/default/files/TOSCA%20report-web.pdf> (accessed November 16, 2016). 2012.
36. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Recommendations for the Public Health Response to Hepatitis C. Toronto, ON: Queen's Printer for Ontario; 2014.
37. Public Health Agency of Canada. I-Track: Enhanced Surveillance of HIV.
38. Research CfCB. Drug Strategy Accommodation Needs Assessment. Background Research. Thunder Bay 2013.
39. Strategy TBD. Travelling the road to change. Thunder Bay Drug Strategy Community Report. Thunder Bay 2014.
40. Ialomiteanu AR, Hamilton, H.A., Adlaf, E.M., & Mann, R.E. . CAMH Monitor eReport: Substance Use, Mental Health and Well-Being Among Ontario Adults, 1977-2013 (CAMH Research Document Series No. 40). Toronto, ON: Centre for Addiction and Mental Health. Available at: [http://www.camh.ca/en/research/news\\_and\\_publications/Pages/camh\\_monitor.aspx](http://www.camh.ca/en/research/news_and_publications/Pages/camh_monitor.aspx). 2014.
41. Paglia-Boak A. AEMMRE. Centre for Addiction and Mental Health (1977 - 2011). Ontario Students Drugs Use and Health Survey. Available at: [http://www.camh.ca/en/research/news\\_and\\_publications/ontario-student-drug-use-and-health-survey/Documents/2011%20OSDUHS%20Docs/2011OSDUHS\\_Highlights\\_DrugUseReport.pdf](http://www.camh.ca/en/research/news_and_publications/ontario-student-drug-use-and-health-survey/Documents/2011%20OSDUHS%20Docs/2011OSDUHS_Highlights_DrugUseReport.pdf). 2011.
42. Bay AT. HIV/AIDS Statistics for Thunder Bay. Available at: [http://www.aidthunderbay.org/index.php?option=com\\_content&view=article&id=59&Itemid=68](http://www.aidthunderbay.org/index.php?option=com_content&view=article&id=59&Itemid=68). 2006.
43. Murray J. A Dose of Thunder Bay Reality. NNL Netnewsledger. Available at: <http://www.netnewsledger.com/2013/10/27/dose-thunder-bay-reality/>. 2013.
44. Wood E, Tyndall MW, Lai C, Montaner JS, Kerr T. Impact of a medically supervised safer injecting facility on drug dealing and other drug-related crime. *Substance Abuse Treatment, Prevention, & Policy*. 2006;1:13.
45. Kerr T, Stoltz JA, Tyndall M, et al. Impact of a medically supervised safer injection facility on community drug use patterns: A before and after study. *British Medical Journal*. 2006;332(7535):220-222.
46. Kerr T, Tyndall MW, Zhang R, Lai C, Montaner JS, Wood E. Circumstances of first injection among illicit drug users accessing a medically supervised safer injection facility. *American Journal of Public Health*. 2007;97(7):1228-1230.