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Vancouver's INSITE service and other Supervised injection sites: What has been learned from research?

Final report of the Expert Advisory Committee

Prepared for the Hon. Tony Clement
Minister of Health
Government of Canada

March 31, 2008

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Executive Summary

The Ministry of Health appointed an Expert Advisory Committee (EAC) to report to a Federal Coordinating Committee and the Minister of Health on research on the supervised injection site (INSITE) in the Downtown Eastside (DTE) of Vancouver. The EAC included experts on blood-borne diseases, substance abuse, program evaluation, and crime.

Supervised injection sites (SISs) are controlled health care settings where drug users can inject their own personally acquired illicit drugs under supervision and receive health care, counseling and referral to social, health and drug use treatment services. There are 70 SISs spread across 6 countries. However, the majority of the research reviewed and discussed in this report relates to INSITE and an SIS in Sydney, Australia.

INSITE was established as a pilot project in 2003, when permission was given to the Vancouver Coastal Health Authority (VCH) under section 56 of the *Controlled Drugs and Substances Act*. Health Canada provided the VCH with funds to evaluate the service, and VCH contracted with the BC Centre for Excellence on HIV/AIDS to undertake the evaluation. The Centre completed parts of the original evaluation, but indicated that they required more time to complete the evaluation in a second application for another exemption. While Health Canada granted the exemption for an additional period of time, it did not provide funding for the proposed evaluation. This funding was sought and received from alternative sources.

The EAC organized the available research into tables around key questions and the stated objectives of INSITE (see appendix B). Each table contains highlights from: (i) published and unpublished research on INSITE, data on use provided by (VCH), and three pieces of additional research requested by the EAC; (ii) research on the Sydney, Australia SIS; and (iii) research on other SISs in other countries.

The research reviewed relates to the formally stated objectives of INSITE, namely to: i) increase access to health and addiction care; ii) reduce overdose fatalities; iii) reduce transmission of blood-borne viral infections and other injection related infections; and iv) improve public order.

EAC reached consensus on the following:

1. INSITE Utilization and User Characteristics

- Over 8,000 people have visited INSITE to inject drugs. Eighteen percent or 1506 of these 8,000 people account for 86% of the overall visits to INSITE. Less than 10% used INSITE for all injections. The median number of visits is approximately eight. An average of more than 600 visits a day shows that INSITE operates near capacity. Approximately 80% of the 600 daily visits are for injecting, the remaining 20% for other support services such as counseling.
- Based upon two surveys of a sample of approximately 1,000 users, the following key user characteristics have been identified: have been injecting drugs for an average of 15 years; majority (51%) inject heroin and 32% cocaine; 87% are infected with Hepatitis C virus (HCV) and 17% with human immunodeficiency virus (HIV); 18% are aboriginal; 20% are homeless and many more live in single resident rooms; 80% have been incarcerated; 38% are involved in the sex trade; 21% were using methadone; and 59% reported a non-fatal overdose in their lifetime.
- The injections at INSITE account for less than 5% of injections in the DTE. This limits the likelihood of

significant direct impact from INSITE in the DTE. However, INSITE accounts for more than 220,000 clean injections which is significant.

2. Services Provided

- Similar to SISs in other countries, INSITE provides clean, supervised environments for injection drug use, clean syringes, needles and swabs, and ensures safe disposal of used needles. The sharing of drugs and needles is not permitted. Condoms are supplied to promote safer sexual practices away from INSITE. INSITE staff also provides safer injection education
- INSITE provides nursing services, including for skin abscesses, to large numbers of users.
- Similar to the findings associated with SISs in other countries, users of INSITE rate the services as highly satisfactory. They view the staff as helpful, trustworthy and respectful and they appreciate having a safe place to inject drugs and pick up injecting equipment.
- Letters of support and surveys show that health professionals, local police, the local community and the general public have positive or neutral views of INSITE services and the majority wish to see the service continue. Some local police are neutral, but not antagonistic. Opposition to the service tends to decrease over time.

3. Increasing Access to Health and Addiction Care

- INSITE encourages users to seek counseling, detoxification and treatment. Such activities have contributed to an increased use of detoxification services and increased engagement in treatment. VCH has now increased access to detoxification by opening a number of beds for detoxification in rooms above INSITE.
- The existence of INSITE facilitated the immunization of injection drug users in the DTE during an outbreak of pneumococcal pneumonia in 2006.

4. Impact on Overdose Fatalities

- INSITE staff have successfully intervened in over 336 overdose events since 2006 and no overdose deaths have occurred at the service. Mathematical modelling (see caution about validity below) suggests that INSITE saves about one life a year as a result of intervening in overdose events.

5. Reducing the Transmission of Blood-Borne Viral Infections & Other Injection Related Infections

- Self-reports from users of the INSITE service and from users of SIS services in other countries indicate that needle sharing decreases with increased use of SISs. Mathematical modeling, based on assumptions about baseline rates of needle sharing, the risks of HIV transmission and other variables, generated very wide ranging estimates for the number of HIV cases that might have been prevented. The EAC were not convinced that these assumptions were entirely valid.

6. Impact on Public Order

- Observations taken 6 weeks before and 12 weeks after the opening of INSITE indicated a reduction in the number of people injecting in public. Self-reports of SIS users (INSITE) and informal observations (INSITE, Sydney and some European SISs) suggest that SISs can reduce rates

- of public self-injection. However, SISs do not typically have the capacity to accommodate all, or even most injections that might otherwise take place in public.
- There was no evidence of increases in drug-related loitering, drug dealing or petty crime in areas around INSITE. Generally, European SISs have had similar experiences though some took additional security measures and one was closed due to littering and loitering.
 - Though a private security company contracted by the Chinese Business Association reported reductions in crime in the Chinese business district in a surrounding area outside the DTE, our analysis of police data for the DTE and surrounding areas showed no changes in rates of crime recorded by police. The majority of local residents, service providers, business owners and police did not notice any increases.
 - There is no evidence that SISs influence rates of drug use in the community or increase relapse rates among injection drug users.

7. Cost-Benefit/Effectiveness

- The annual operating cost of the INSITE service is \$3,000,000 or \$14.00 per visit in the year ending August 2007. The cost per individual who used INSITE for injections was approximately \$1,380. The 500 most frequent users went over 400 times at an average cost per person of \$13,100.
- Mathematical models (see caution about validity below) showed cost to benefit ratios for the INSITE service of one dollar spent on INSITE providing 0.97 to 2.90 in benefits. That is, the total cost of preventing each HIV infection is between \$52,000 and \$155,000. When these mathematical models included estimates of the number of overdose deaths prevented (1.08/year), they showed cost-benefits ratios that ranged from 1.5 to 4.02. While these cost-benefit ratios are not as high as the ratios found in other studies exploring the cost-benefits of needle exchange or treatment programs, these studies are not directly comparable given that they did not involve the drug using population in the DTE.

Several limitations to existing research were identified including:

- Caution should be exercised in using mathematical modelling for assessing cost benefit/effectiveness of INSITE, given that:
 - There was limited local data available regarding baseline frequency of injection, frequency of needle sharing and other key variables used in the analysis;
 - While some longitudinal studies have been conducted, the results have yet to be published and may never be published given the overlapping design of the cohorts;
 - No studies have compared INSITE with other methods that might be used to increase referrals to detoxification and treatment services, such as outreach, enhanced needle exchange service, or drug treatment courts.
- Some user characteristics relevant to understanding their needs and monitoring change have not been reported including details of

baseline treatment histories, frequency of injection and frequency of needle sharing.

- User characteristics and reported changes in injection practices are based on self-reports and have not been validated in other ways. More objective evidence of sustained changes in risk behaviours and a comparison or control group study would be needed to confidently state that INSITE and SISs have a significant impact on needle sharing and other risk behaviours outside of the site where the vast majority of drug injections still take place.
- There are a number of issues where future research could inform policy decisions, including research on the social determinants of injection drug users.

Acknowledgements

Members of the EAC wish to express their appreciation to the Minister for the opportunity to be involved in this important project and for the help and support received from officials at Health Canada, especially from Tracey Donaldson, Colleen Ryan, and Anique Montambault. The welcome given to the committee during its site visits to the INSITE and other services in the Downtown Eastside and the presentations made by supporters of the service were also very much appreciated. We also thank Chris Buchner and his colleagues at Vancouver Coastal Health for providing us with additional information on the INSITE service and Dr. Thomas Kerr and his colleagues at the B.C. Centre for excellence in HIV/AIDS for sharing unpublished reports.

Background

Supervised injection sites (SISs) are controlled health care settings where drug users can inject their own personally acquired illicit drugs under supervision and receive health care, counselling and referral to social, health and drug use treatment services. SISs have been established in cities with significant "open" drug scenes where large numbers of drug users tend to congregate and inject in public. SISs now exist in over 70 cities in six European countries, in Sydney, Australia and in the Downtown Eastside of Vancouver. They are typically "low threshold" services in that entry rules and restrictions are kept to a bare minimum. Typically SISs have both public health and public order objectives.

The Vancouver SIS, INSITE, was established in 2003 to serve injection drug users living in or frequenting the neighbourhood known as the Downtown Eastside (DTE). The DTE is one of North America's most impoverished areas and is known as "skid row" to many of the locals. The majority of housing in the area is small, undesirable single person dwellings. Public self-injection, open drug dealing and prostitution are common. Many buildings are covered in graffiti and alleys tend to be used to discard needles and condoms.

In 2000 the number of injection drug users (IDUs) living in Downtown Eastside was estimated at 4,700 with 12,000 in the Greater Vancouver region ¹. Prevalence rates for human immunodeficiency virus (HIV) and hepatitis C virus (HCV) infection are among the highest for injection drug users in Canada (17%-31% and 63%-92% respectively) and high rates of primary care and emergency room use have been reported (Kerr et al., 2004).

It has been estimated that injection drug users inject an average six injections a day of cocaine and four injections a day of heroin. The street costs of this use are estimated at around \$100 a day or \$35,000 a year. Few injection drug users have sufficient income to pay for the habit out through employment. Some, mainly females get this money through prostitution and others through theft, break-ins and auto theft. If the theft is of property rather than cash, it is estimated that they must steal close to \$350,000 in property a year to get \$35,000 cash. Still others get the money they need by selling drugs.

INSITE is one component of the city's "four pillars" approach to drug use which includes prevention, treatment, harm reduction, and law enforcement². Similar to other SISs in other countries, the INSITE service has both public health and public order objectives that are consistent with the broader goals of harm reduction, treatment and law enforcement. It does not, however, have specific prevention objectives. INSITE's stated objectives are:

- Increasing access to health and addiction care;
- Reducing overdose fatalities;
- Reducing the transmission of blood-borne viral infections like HIV and hepatitis C;
- Reducing other injection-related infections such as skin abscesses; and
- Improving public order.

The core services offered at the Vancouver site are also similar to those offered by SISs in other jurisdictions including:

- Supervision of injections including emergency response to drug overdoses;
- Injection-related first aid (wound dressing and skin abscess care);
- Assessment and referral to primary health care and service providers;
- Harm reduction teaching and counseling; and
- Exchange of needles and other drug use paraphernalia and provision of condoms.

The sponsoring agency for the INSITE service is Vancouver Coastal Health Authority (VCH). VCH and other local stakeholders³ view INSITE as one component of a comprehensive approach to addressing drug use in the Downtown Eastside and not simply as a place to inject. It is regarded as a primary health care delivery site, a connection point for the public health system, and the first step in moving the most difficult-to-reach drug users from the streets into the health and social service delivery systems, including detoxification and addictions treatment. To these ends the staff report strong linkages with local primary care facilities and supportive transitional housing facilities. Onsite beds for detoxification have recently been added.

In order to operate legally the INSITE service was granted a three-year exemption under section 56 of the *Controlled Drug and Substances Act*. This exemption protected staff and clients from prosecution during the three-year pilot project that was deemed necessary for medical and scientific purposes. To this end, VCH contracted researchers from the British Columbia Centre for Excellence in HIV/AIDS to evaluate the service with funds provided to VCH by Health Canada.

Following the three-year pilot phase, VCH applied for a second exemption for an additional three and a half years to complete the initially proposed evaluation. While a new exemption for the requested period was not granted, in September 2006 the Federal Health Minister, Hon. Tony Clement, announced an 18-month extension to the original exemption. The Minister indicated that the additional time was needed to conduct further research on the impact of SISs on prevention, treatment and crime and that a decision on the continuance of the site would be deferred until December 31, 2007⁴ to allow the research to be undertaken.

A Federal Coordinating Committee (FCC) comprised of senior federal government officials was established to guide the research process. To ensure that the FCC had access to a broad range of relevant expertise, an Expert Advisory Committee on Supervised Injection Sites Research (EAC on SIS Research) was also formed. The task of the EAC was to solicit evidence-based scientific and ethical data to ensure that the information needs of the Health Minister's Office were met. The primary role of the EAC was to help guide the development and implementation of the SIS research plan and then to distil and synthesize the key research findings into a final report for

the Minister. The EAC had no decision-making authority and were not responsible for making formal recommendations.

Mandate of the Expert Advisory Committee

The mandate given to the EAC by Health Canada was as follows:

- Recommending if additional members covering other areas of expertise are needed for the Expert Advisory Committee;
- Reviewing draft research descriptions and modifying the descriptions to ensure sufficient detail and clarity so that the research studies will address the questions posed by the Minister's Office and be conducted in a timely and quality manner;
- Reviewing research proposals submitted in response to Requests for Proposals and recommending to the Director General of the Drug Strategy and Controlled Substances Programme who would be the suitable experts to undertake research;
- Reviewing and providing feedback on all deliverables provided by the researchers to ensure the highest quality research possible;
- Conferring with the Director General who will communicate to the FCC when issues or concerns emerge that may have implications for specific research studies and the overall research plan; and
- Providing to the FCC a written synthesis report on major findings from all research reports.

EAC Membership

The members and the committee chair were as follows⁵:

- Chair - Alan Ogborne, Ph.D. - Private practice and former Senior Scientist with Centre for Addiction and Mental Health (CAMH),
- Bryce Larke, M.D., D.Ci.Sc. - Medical Health Officer , Yukon Territorial Government,
- Darryl Plecas, Ed. D. - Professor, RCMP Chair in Crime Reduction, Director, ICURS - UCFV Research Lab, University College of the Fraser Valley.
- Irvin Waller, Ph.D. - Professor of Criminology and Director, Institute for the Prevention of Crime, University of Ottawa.
- Jürgen Rehm, Ph.D. - Addiction Specialist and Senior Scientist at Centre for Addiction and Mental with cross appointment at the University of Toronto (Professor and Chair Addiction Policy) and the World Health Organization.
- The Office of the Drug Strategy Secretariat and Strategic Policy (ODSSSP) and the Office of the Chief Scientist, Health Canada, provided secretariat support to the EAC.

Research issues identified by the EAC

At its first meeting, the EAC reviewed a set of research questions developed by the FCC. These encompassed a variety of specific and more general issues concerning the INSITE services and supervised injection sites in other countries. A broader question about injection drug use was also included. The committee recommended that these questions should be expanded and reframed in ways that invited empirical research across the range of issues of concern to key stakeholders.

Three streams of questions (see [appendix A](#)) were recommended by the EAC and approved by the FCC. These were included in a request for proposals (RFP) that was widely distributed to Canadian researchers.

Outcome of the RFP process

Nine proposals were submitted in response to the RFP. These were each reviewed by at least three members of the EAC. Following discussions involving all Committee members, three proposals were recommended for funding⁶. Two proposals were eventually funded and completed⁷.

Other evaluative research on supervised injection sites

As noted the INSITE service was evaluated during its first three years of operations by researchers with the BC Center for Excellence in HIV/AIDS. The Committee reviewed all published reports from this Centre and also abstracts for a number of "in press" and unpublished papers that were made available to the Committee by researchers at the BC center. VCH also provided the EAC with some statistical information on utilization patterns. In addition, the EAC examined evaluation reports of supervised injection sites in other countries. Special attention was paid to a report on the evaluation of the SIS in Sydney, Australia as this was the most comprehensive evaluation to date.

The EAC summarized the available research into tables around key questions and the stated objectives of INSITE (see [appendix B](#)). Each table contains the highlights from (i) published and unpublished research on INSITE, data provided by VCH, and three pieces of additional research conducted as requested by the EAC, (ii) research on the Sydney, Australia SIS and (iii) research on other SISs in other countries.

Research Conclusions and Limitations

1. INSITE Utilization and User Characteristics

The results in tables A1 and A2 support the following conclusions on utilization, user characteristics and context of INSITE in the Downtown Eastside:

i) Utilization patterns

Conclusions

Over 8,000 people have visited INSITE to inject drugs. Eighteen percent, or 1506 of these 8,000 people, account for 80% of the overall visits to INSITE. Less than 10% used INSITE for all injections. The median number of visits is approximately eight. An average of more than 600 visits a day shows that INSITE operates at close to capacity. Approximately 86% of the 600 daily visits are for injecting, the remaining 20% for other support services such as counseling.

Limitation of research

- Changes in use patterns over time have not been reported.
- Durations of involvement have not been reported (i.e. distribution of times from first to last visit)

ii) User Characteristics

Conclusions

Based upon two surveys of a sample of approximately 1,000 users, the following key user characteristics have been identified: have been injecting drugs for an average of 15 years; majority (51%) inject heroin and 32% cocaine; 87% are infected with Hepatitis C virus (HCV) and 17% with human immunodeficiency virus (HIV); 18% are aboriginal; 20% are homeless and many more live in single resident rooms; 80% have been incarcerated; 38% are involved in the sex trade; 21% were using methadone; and 59% reported a non-fatal overdose in their lifetime.

Limitations of research

- User characteristics are based on self-reports and have not been validated.
 - Some user characteristics relevant to understanding their needs and monitoring change have not been reported including details of baseline treatment histories, frequency of injection and frequency of needle sharing.

iii) INSITE Use in the Context of DTE

Conclusions

Injections at INSITE account for less than 5% of the overall injections in the DTE. This limits the likelihood of significant direct impact from INSITE in the DTE. However, more than 220,000 clean injections have taken place at INSITE and for a population with these characteristics this is a significant achievement.

Limitation of research

- The precise number of injection drug users in the DTE and the number of injections that take place in the DTE are not known and the most recent estimates were made over six years ago (refer to footnote 1).

Services Provided

The results in tables A3, A12, and A13 support the following conclusions:

Conclusions

Similar to SISs in other countries, INSITE provides clean, supervised environments for injection drug use, clean syringes, needles and swabs, and ensures safe disposal of used needles. The sharing of drugs and needles is not permitted. Condoms are supplied to promote safer sexual practices away from INSITE. INSITE staff also provide safer injection education.

Similar to the findings associated with SISs in other countries, users of INSITE rate the services as highly satisfactory. They view the staff as helpful, trustworthy and respectful and they appreciate having a safe place to inject drugs and pick up injecting equipment.

Letters of support and surveys show that health professionals, local police, the local community and the general public have positive or neutral views of INSITE services and the majority wish to

see the service continue. Some local police are neutral, but not antagonistic. Opposition to the service tends to decrease over time.

Limitations of research

- No specific concerns with self-reports as they have face validity.
- Most members of the general public have little direct experience with SISs and would not be able to assess their effectiveness.
- Direct experience with SISs among local professionals, residents and business owners are also likely to be variable and it is not known how these experiences influence their opinions.

Increasing Access to Health and Addiction Care

The evidence from table A4 supports the following conclusions:

Conclusions

INSITE encourages users to seek counseling, detoxification and treatment. Such activities have contributed to an increased use of detoxification services and increased engagement in treatment. VCH has now increased access to detoxification by opening a number of beds for detoxification in rooms above INSITE.

The existence of INSITE facilitated the immunization of injection drug users in the DTE during an outbreak of pneumococcal pneumonia in 2006.

Limitations of research

- The detoxification beds above the INSITE service have only recently been opened and it is too early to assess their value.
- A controlled study in which referral outcomes for INSITE are compared with alternative methods for increasing access to service would be needed to show that INSITE is a cost-effective means for increasing access to health and addiction services.
- There is no direct evidence that SIS influence rates of other infections.
- It is not known if the health needs of INSITE users' change over time.

Impact on Overdose Fatalities

The evidence from table A5 supports the following conclusions:

Conclusions

INSITE staff have successfully intervened in over 336 overdose events since 2006 and no overdose deaths have occurred at the service. Mathematical modelling (see caution about validity below) suggests that INSITE saves about one life a year as a result of intervening in overdose events.

Limitations of research

- There is no direct evidence that SIS influence overdose death rates and large scale and long-term, case-controlled studies⁸ would be needed to show that SISs influence overdose death

rates among those who use INSITE. Mathematical modelling is based on assumptions that may not be valid.

Reducing the Transmission of Blood-Borne Viral Infections Like HIV and HCV and Other Injection-Related Infections

The evidence from table A6 supports the following conclusions:

Conclusions

Self-reports from users of the INSITE service and from users of SIS services in other countries indicate that needle sharing decreases with increased use of SISs. Mathematical Modeling, based on assumptions about baseline rates of needle sharing, the risks of HIV transmission and other variables, generated very wide ranging estimates for the number of HIV cases that might have been prevented. The EAC were not convinced that these assumptions were entirely valid.

Limitations of research

- There is no direct evidence that SISs reduce rates of HIV infection, and the mathematical models used are based on assumption that may not be valid.
- Baseline rates of needle sharing have not been reported for SIS users.
- Self-reports of changes in needle sharing beyond the walls of SISs have not been validated.
- More objective evidence of sustained changes in risk behaviours and a comparison or control group study would be needed to confidently state that SISs have a significant impact on these behaviours.

Impact on Public Order

The results in tables A1, A4, A7, A8, A11, and A13 support the following conclusions on impact of SIS on public order:

i) Public injection

Conclusions

Observations taken 6 weeks before and 12 weeks after the opening of INSITE indicated a reduction in the number of people injecting in public. Self-reports of SIS users (INSITE) and informal observations (INSITE, Sydney and some European SISs) suggest that SISs can reduce rates of public self-injection. However, SISs do not typically have the capacity to accommodate all, or even most injections that might otherwise take place in public.

Limitations of research

- For the INSITE service the objective evidence concerning public injection was only obtained for only a short period of time before and after the service opened.
- Research has not controlled for other factors that may influence public self-injection (weather, police activity, availability of drugs, increasing popularity of cocaine for smoking).

ii) Littering and loitering

Conclusions

There was no evidence of increases in drug-related loitering, drug dealing or petty crime in areas around INSITE. Generally, European SISs have had similar experiences though some took additional security measures and one was closed due to littering and loitering.

Limitations of research

- For the INSITE service the objective evidence concerning littering obtained for only a short period of time before and after the service opened.
- Research has not controlled for other factors that may influence littering and loitering (weather, police activity, availability of drugs, availability of syringe drop-off boxes and clean-up campaigns⁹).
- It may be unrealistic to expect the INSITE service to have a major impact on publicly discarded syringes because most injections that take place in the Downtown Eastside do not take place at INSITE.

iii) Drug-related crime

Conclusions

Though a private security company contracted by the Chinese Business Association reported reductions in crime in the Chinese business district in a surrounding area outside the DTE, our analysis of police data for the DTE and surrounding areas showed no changes in rates of crime recorded by police. The majority of local residents, service providers, business owners and police did not notice any increases.

Limitations of research

- The limitations that go with the findings of the Boyd et al. (2008) research, as pointed out by the researchers themselves, are those that must always go with using reported and official crime statistics. Specifically, violent and property crime statistics do not account for unreported victimization and public tolerance, or the extent to which that might have changed over the period under study. Further, we do not know the extent to which non-reporting of crime and public tolerance is any higher for the population living in and around the INSITE facility and in the Downtown Eastside, than it might be for the City of Vancouver overall.
- We also need to be extremely skeptical of drug crime statistics as they are driven by continually changing enforcement capacity and practices. Further, for the most part these crimes, like other so-called victimless crimes, are almost never reported by anyone other than the police. With this in mind, it is perhaps safest to assume that drug crime statistics tell us very little about the nature and extent of drug crime anywhere.
- The number of police, residents, police, and local business people interviewed was relatively small, and the sampling was not (understandably) random. Accordingly, it cannot be confirmed that the information provided by interviewees provides a representative perspective of significant stakeholders.

iv) Drug use in the community

Conclusions

There is no evidence that SISs influence rates of drug use in the community or increase relapse rates among injection drug users.

Limitations of research

- Concerns that SISs "send the wrong message" to non-users by suggesting that drug use can be safe cannot be addressed with the existing data¹⁰.

Cost-Effectiveness and Cost-Benefit

Conclusions

The annual operating cost of the INSITE service is \$3,000,000 or \$14.00 per visit in the year ending August 2007. The cost per individual who used INSITE for injections was approximately \$1,380. The 500 most frequent users went over 400 times at an average cost per person of \$13,100.

Mathematical models (see caution about validity below) showed cost to benefit ratios for the INSITE service of one dollar spent on INSITE providing 0.97 to 2.90 in benefits. That is, the total cost of preventing each HIV infection is between \$52,000 and \$155,000. When these mathematical models included estimates of the number of overdose deaths prevented (1.08/year), they showed cost-benefits ratios that ranged from 1.5 to 4.02. While these cost-benefit ratios are not as high as the ratios found in other studies exploring the cost-benefits of needle exchange or treatment programs, these studies are not directly comparable given that they did not involve the drug using population in the DTE.

Limitations of research

- While some longitudinal studies have been conducted, the results have yet to be published and may never be published given the overlapping design of the cohorts. Until these studies have been undertaken it will not be possible to show with any certainty that INSITE is cost-effective or to show that the economic benefits exceed the costs.
- Mathematical models used to estimate benefit-cost ratios use estimates of the frequency of needle sharing involving HIV positive and HIV negative injection drug users and estimates of HIV transmission rates have not been locally validated.
- Mathematical models used to estimate benefit-cost ratios with respect to lives saved have incorporated an assumption about the economic value of the lives of injection drug users that has not been validated.

Appendix A: Research questions developed by the EAC

Stream #1

1. To what extent do SISs in general, and especially the INSITE service in Vancouver, contribute to, or detract from, the attainment of public health and public order objectives in the short and longer term?
2. If SISs in general, and especially the INSITE service in Vancouver, contribute to specific public health and public order objectives, are they cost-effective relative to other reasonable methods that are, or might be, used to achieve these objectives?

Specific issues of concern

- a. Influence of SISs on the prevalence of public self-injection in the short and longer term (2-3 years) and, if appropriate, evidence for the cost-effectiveness of SISs relative to alternative means of reducing the prevalence of public self-injection.
- b. Influence of SISs on rates of high-risk behaviours such as needle sharing in the short and longer term (2-3 years) and, if appropriate, evidence for the cost-effectiveness of SISs relative to alternative means of reducing the prevalence of reducing these rates.
- c. Influence of SISs on rates of local hospital admissions and, in particular, ER admissions related to self-injection in the short and longer term (2-3 years) and, if appropriate, evidence of the cost-effectiveness of SISs relative to alternative means of reducing these rates.
- d. Influence of SISs on overdose death rates among local injection drug users in the short and longer term (2-3 years) and, if appropriate, evidence for the cost-effectiveness of SISs relative to alternative means of reducing these rates.
- e. Influence of SISs on the quantity and types of drug-related litter in the vicinity in the short and longer term (2-3 years) and, if appropriate, evidence for the cost-effectiveness of SISs relative to alternative means of reducing drug-related litter.
- f. Influence of SISs on rates of drug-related crime in the vicinity in short and longer term (2-3 years) and, if appropriate, evidence for the cost-effectiveness of SISs relative to alternative means of reducing these crime rates.
- g. Influence of SISs on rates of referral for treatment among those who use the services in the short and longer term (2-3 years) and, if appropriate, evidence for the cost-effectiveness of SISs relative to alternative means of increasing referrals for treatment
- h. Influence of SISs on issues of concern to local stakeholders and, if appropriate, evidence for the cost-effectiveness of SISs relative to alternative means of addressing these concerns:
 - Local residents (safety, property values, loitering etc)

- Local businesses (safety, amount and type of business, etc)
 - Local service providers (attitudes of clients, consistency with service providers' values, etc)
 - Local police (reported crimes, public nuisance issues, etc)
- i. Trends in the characteristics of SISs users and in utilization patterns in the short and longer term (2-3 years).

Stream #2

1. What factors contribute to, or limit the influence of SISs in general, and especially the INSITE service in Vancouver, on the attainment of public health and public order objectives?

Specific issues of concern

- a. Capacity, policies and operations of SISs
- b. Staffing and staff training
- c. Characteristics and attitudes of local injection drug users (including reasons for using/not using SISs)
- d. Availability of other related services
- e. Attitudes of local service providers
- f. Police policies and behaviours
- g. Changes in the availability of street drugs in the Lower East Side district.

Stream #3

1. How does the injection drug scene in Vancouver differ from other drug scenes in other Canadian cities, and what can be learned with respect to polices with respect to prevention harm reduction, treatment and enforcement.

Specific issues of concern

- a. What is the frequency/prevalence of injecting behaviour in Vancouver relative to other cities?
- b. What were the trends in levels and patterns of injecting behaviour in Vancouver over the past 20 years, and how do these differ from trends in other Canadian cities?
- c. Can patterns and trends in injection drug use in Vancouver be linked to local policies and practices including welfare, housing, policing and the availability of different treatment modalities?

Appendix B: Summary of research findings and other evidence¹¹ concerning SIS

A1: Characteristics of service users

INSITE service

Between December 2003 and July 2004 a random sample of 904 of those coming to the service for their second or subsequent time were invited to participate in research. Only 5%¹² declined participation and 713 (78%) were eventually enrolled in research. Figures calculated from data in tables presented by Wood et al (2006a) and are summarized in the following table, This table also summarizes information on the same and additional variables for a larger sample of 1,035 INSITE users recruited for the cohort study between December 2003 and April 2005 (Tyndall et al., 2006b). Figures computed from tables in this paper are shown in bold and brackets¹³. Variables that are only reported by Tyndall et al. are also bolded.

- Median age (about 38)
- Female 30% **(28%)**
- Aboriginal 18% **(19%)**
- Involved in sex trade 38%
- Sex trade ever (22%)
- HIV positive 18%
- HCV positive 87%
- Currently on methadone 21% **(21%)**
- Ever had addiction treatment (45%)
- Currently homeless 17%
- Living within 2 blocks of INSITE 32%
- Lives in DTE (68%)
- History of incarceration (80%)
- Daily heroin use 51% **(51%)**
- Daily cocaine use 33% **(32%)**
- Daily crystal meth. Use (3%)
- Ever used a shooting gallery 89%
- Difficulty accessing syringes 10%
- Borrowed syringes in past 6 months 11%
- Ever borrowed syringes (57%)
- Ever borrowed injection equipment 24%
- Share other equipment (58%)
- Usually injects in street/bathroom/park/parking lot 12%¹⁴
- Ever injected in public (73%)
- Ever need help with injecting 74% **(75%)**
- Binge drug use (63%)
- Binge drinking in past 6 months 61%

Milloy (undated) reported that in a cohort of 1,090 users of INSITE 638 (58.59%) reported a life-time history of non-fatal overdose and 97 (8.83%) reported at least one non-fatal overdose in the last six months

Among members of the cohort used by Wood et al (2006a), frequent visits to INSITE (43.2% of sample)¹⁵ were associated with an increased likelihood of using heroin or cocaine on a daily basis, being on methadone, being homeless, and ever needing help with injections. However, Stoltz et al (2007) found few differences between those who used the service more or less frequently over a six month period except with respect to daily heroin injection and involvement in the sex trade - both behaviours were more common among frequent users of the service¹⁶.

Blood samples taken from 1,035 cohort members recruited between December 2003 to April 2005 showed that 17% were found to be HIV positive and this was associated with Aboriginal self identity, previous incarceration (a history of borrowing used needles and daily cocaine use (Tyndall et al., 2006b).

Blood samples taken from 691 cohort members recruited between December 2003 and July 2004 showed that 87.6% were HCV positive and that this was associated with involvement in the sex trade, a history of borrowing used syringes and a history of incarceration. However daily heroin users were less likely to be HCV positive than others (Wood et al., 2005a)

Kerr et al (2007) reported that in a cohort sample of 1065 INSITE users the median number of years injecting was 15.99.

Among injection drugs users involved in a community cohort study¹⁷ those who reported that they had ever used the service tended to be younger, and more likely to: (1) inject in public (2) to be homeless or in unstable housing (3) to use cocaine on a daily basis and (4) to have recently had a non-fatal overdose when compared with those who reported that they had not used the service. There were no statistically significant differences between self-reported users and others with respect to gender, HIV status, involvement in the sex trade, being on methadone, difficulty accessing rigs, borrowing used needles, or unstable housing (Wood et al., 2005d).

Sydney Service¹⁸

During the 18-month trial, 3,810 individuals registered to use the service and 73% were male. On average, their age was 31 years, they started injecting at 19 years, and had been injecting for 12 years. Almost half (44%) reported a previous non-fatal heroin overdose and two thirds (66%) had been in drug treatment. Heroin was the drug most frequently injected at the MSIC (61% of visits) followed by cocaine (30% of visits). Frequent attendance was associated with being a client of a local health service targeting injection drug users, sex-trade workers and at-risk youth, public drug use and homelessness.

Other Services¹⁹

"While the gender and ethnic composition of the clientele varies according to location, SISs²⁰ cater in large part to older (i.e., 30 years +) users, having initiated injection drug use before age 20 and with a history of drug use of at least 10 years. Furthermore, SIS users are disproportionately described by characteristics of: public injection; intensive drug use; low education; unstable housing and income (many reporting crime and/or social assistance as main source of income); and a history of injection-related health problems, non-fatal overdose or previous incarceration (Wood et al 2006; MSIC Evaluation Committee, 2003) In the European facilities surveyed, between 15 and 50% of SIS clients have never been in treatment, and it is estimated that 60 to 90% of clients are local residents: however, utilization by non-locals increases where drug markets are highly centralized, for example in Frankfurt and Barcelona, attracting users from large geographical areas (Hedrich, 2004) . SISs are successful at attracting high risk populations - SIS clients in Germany are mostly long-term, daily, high frequency IDUs, (Zurhold, 2003) of which, a disproportionate number are inadequately housed and characterized by poor health status (Schmidt and Vogt, 2005)."

"Heroin and cocaine are the most commonly used drugs in SISs, and injection is the main mode of administration (Independent Working Group, 2006), with the exception of facilities targeting smokers in the Netherlands (Wolf, 2003)"

"Most clients make use of ancillary services offered onsite, depending on availability. Ninety percent of clients surveyed in Berlin reported using ancillary services, however there is no data on the actual uptake of these services (Schu, et al., 2005). Advice is often given through informal conversations and therefore not recorded. Only a minority of clients used the

consumption room only, as opposed to utilizing any of the other services offered (Kimber et al. 2003; Henrich, 2004)."

A2: Utilization patterns

INSITE service

Tyndall et al, 2006a report the following:

- From March 10 2004 to April 30, 2005 there were 4764 unique visitors to INSITE
- During approximately the same period there were 243,701 visits to the site (average 17,874/month). Number
- The number of injections per day at INSITE was consistently over 600
- Frequency of attendance for any reason:
 - Once/month only 27.5%
 - 2-5 times/month 31.5%
 - 6-25 times/month 28.5%
 - 26-50 times/month 7.5%
 - 51-100 times/month 4%
 - Over 100 times/month 1%
- The median time spent in the injection room was 20 minutes.
- 79.2% visits were to inject. Others were to see counsellors or other staff (9.3%) or to pick up clean injection equipment (6.4%). A few who came to inject left before injecting due to waiting times.

Among 400 injection drug users involved in the community cohort²¹ study 178 (45% reported using the service at least once. However, only 11 (2.7%) reported using the service for all of their injections. Another 19 (4.7%) reported using the service for more than 75% of their injections while 46 (11.5%) reported using the service for 25%-75% of their injection and 102 (25%) reported using the service for less than 25% of their injections.

In a cohort sample of 760 INSITE users 57% reported that they used the service for some or most of all of their injections (Stoltz et al 2007). However, in an earlier study involving 536²² cohort members only 49 (9%) appear to have reported that they used the service for all injections (Wood et al 2005b).

Wood et al (2006a) compared 'daily'²³ visitors to INSITE with others who had visited the site daily at the time of their baseline interview. Daily users tended to be younger than others, to be more likely to use cocaine and heroin, less likely to use methadone, and more likely to be homeless

Additional information provided by Vancouver Coastal Health shows the following:

- From June 2004 to August 2007 8,333 different individuals have used the service at least once for injection purposes
- 86% of all visits were accumulated by 18% of all visitors
- The median number of visits was between 6 and 10
- 506 people had visited the service over 401 times and had accumulated 47,2261 visits (60% of all visits)
- The same pattern of visits was evident for the month of December 2007 when 78.8% of all visits were accumulated by 26% of visitors and the median number of visits was between 2 and 5.

- March 2004 to June 2007 the total number of visits per month for injection ranged for 10,260 - 18,935 and had generally increased over time.
- During the same time period the number of distinct individuals using the service for injection ranged from 1129 - 1788/month and this has also steadily increased over time.
- During the same time period the number of new visitors for injection ranged from 94- 385/month.
- During the year ending June 2007 the number of new visitors per month averaged 116 (range 94-123).
- During the month of June 2007 1788 different individuals had used the service for injection at least once
- During the month of June 2007 the average number of visits for injection was 10.4 (range 1 -206; 50th percentile 4; 95% percentile 48).

Andresen and Boyd (2008) estimated that are 4,562,500 injections per year (380,208 per month) in Vancouver's Downtown Eastside. The data provide by Vancouver Coastal Health suggests that between 2.6% and 4.9% of all these injection take place at INSITE. If the service was operating at full capacity (648)²⁴ injection per day it would still only be possible to accommodate 5% of all Downtown Eastside injections²⁵

Sydney Service

During the 18-month trial period 3,810 clients made 56,861 visits to the MSIC. An average of 15 visits per client (range 1 to 646 visits).

The mean time spent in the injection room was 28 minutes.

A3: Services delivered to the target population

INSITE service

Injection facilities and equipment

The site has 12 injection bays and all injections are observed by a staff member

All injections that take place at the site involve the use of new needles and clean water and fresh swabs. Sharing of needles is not permitted.

Education

Between May 2003 and October 2004, 293 individuals in a cohort study²⁶ (33.5% of total) were provided with safer injection education. Previous need for help with injection and involvement in the sex trade were independently associated with the provision of safer injection education (Wood et al 2005c).

Overdose interventions

Between March '04 and April '05 staff reacted to 336 overdose events at the center - a rate of 1.33 overdose events per 1000 visits. The most common intervention involved the administration of oxygen. An ambulance was called in 39% of cases but only 28 cases (8.3%) were taken to hospital. No overdose deaths were recorded at the facility (Kerr et al., 2006b).

Nursing services

During a two year period ending in March 2006 there were 6,227 nursing interventions involving users of the service. Of these 2,005 were for the [treatment of abscesses](#).

Other health-related interventions

The existence of the service greatly facilitated the immunization of injection drug users in the Downtown Eastside during an outbreak of pneumococcal pneumonia in 2006. The public health department used the service as a vehicle for communicating with highest risk drug users about the importance of receiving immunization. Approximately 300 immunizations were administered at INSITE, and largely through the communications network that INSITE provided to public health officials, a total of 6,000 immunizations were administered in the Downtown Eastside in a period of four weeks²⁷. Local health officials consider this an unprecedented success in the prevention of a communicable disease.

Referrals to other services

From March '04 to April '05 there were 2,171 referrals (involving 804 individuals) to in-house or other counsellors (37% of all referrals) to community health clinics (16% of referrals), hospital emergency rooms (11.3%), detoxification beds (11.7%), other community services (9.4%), housing service (9%), methadone treatment (3.7%), long-term abstinence programs (2.7%) (Tyndall et al., 2006a).

Information provided by Vancouver Coastal Health showed that from April 2004 to March 2006 there were 4,084 referrals of which 40% were for addiction counselling, and 368 referrals for detoxification. There were also an average of 2 referrals for methadone every week.

Sydney Service

Nursing and education services

Approximately one in every four visits, health care services in addition to the supervision of injecting were provided to clients. Over half of the occasions of service were injecting and vein-care advice.

Overdose interventions

Four hundred and nine drug-overdose incidents required clinical management. A rate of 7.2 overdoses per 1000 visits. No overdose deaths were recorded at the centre.

Referrals to other services

Approximately 15% of all clients were referred for further assistance. Of these 43% were for the treatment of drug dependence, 32% were to primary health-care facilities and 25% were to social welfare services.

Around half of these referrals were made in writing and of these, 20% were confirmed to have resulted in the client making contact with the specified agency.

Eleven percent (11%) of clients were referred for drug treatment and frequent visitors were more likely to be referred for treatment and take up the referral.

Other Services

Referrals to other services

The reported referral rates to other services from SISs in Spain, Switzerland and Germany are 10%, 5% and over 50% respectively. However, no data on the uptake of these referrals have been reported.

In Switzerland, most of the users of SIS are already in therapy, and SIS use was not shown to have any impact on therapy uptake or continuation (Zobel and Dubois-Arber, 2004).

A4: Influence on access to health and addiction care

INSITE service

A number of beds for detoxification have recently been opened in rooms above the injection room in order to facilitate access to detoxification.

Among a sample of 1031 service users recruited between Dec '03 and March '05, 185 (18%) reported that they began a detoxification program during a follow-up period with a median duration of 344 days. More rapid entry into detoxification programs was associated with at least weekly use of the service and contact with the facilities addiction counsellors (Wood et al., 2006c). Further analysis using retrospective and prospective database linkages with local detoxification services and residential programs indicated that the opening of INSITE was associated with a 30% increase in detoxification service use and a subsequent increase in rates of initiation of long-term addiction treatment and a decreased injecting at INSITE (Wood et al., 2007)

A5: Influence reducing overdose fatalities

INSITE service

However, as noted above, the staff of the INSITE service successfully managed all overdose events that have occurred at the service and no deaths at the service have been recorded.

From 1996 to 2005 the number of drug-related deaths in the Downtown Eastside was highest in 1998 when the BC coroners office recorded 191 such deaths. The number of deaths reported then dropped substantially until 2002 when 49 deaths were recorded. Fifty-one deaths were recorded for 2003, the year in which the INSITE service was opened and Andresen and Boyd (2008) reported that there have been about 50 deaths per year since the opening of INSITE.

Mathematical modeling based on assumptions about the risks of overdose deaths and the proportion of all injections in the Downtown Eastside that take place at INSITE suggested that INSITE may have prevented 1.08 lives (Andresen and Boyd, 2008).

Milloy et al (2008) examined *non-fatal* overdose experiences in a prospective study of a cohort of 1,090 INSITE users. At baseline, 638 (58.59%) reported a history of non-fatal overdose and 97 (8.83%) reported at least one non-fatal overdose in the last six months. This proportion remained approximately constant throughout the study period. Factors associated with recent non-fatal overdose included: recent incarceration, sex-trade involvement and public drug use. Using the SIF for > 75% of injections was not associated with recent non-fatal overdose.

Sydney Service

On the basis of clinical and epidemiological data on heroin overdose outcomes it was estimated that at least four deaths per year were prevented by clinical intervention of the staff at the centre. However, there was no evidence that the operation of the MSIC affected the number of heroin overdose deaths in the local area.

In the months preceding the opening of the centre the number of opioid-overdose ambulance attendances and deaths decreased dramatically in the local area and across New South Wales. This was attributed to the substantial reduction in the supply of heroin in Australia that occurred at the same time. Subsequent to the opening of the center there were further reductions in the number of opioid overdose ambulance attendances and these also associated with the ongoing fall in heroin availability. It was thus not possible to assess the influence of the center on the demand for ambulance services.

Other Services

To date only one overdose death has been reported worldwide, in an SIS in Germany (Kimber et al., 2003a).

The causality of the contribution of SIS to overdose deaths relies on associations, and is not well established.

A Frankfurt study showed that the likelihood of hospital admission was 10 times greater for overdoses occurring in the street compared to overdoses occurring in SISs, and that a lower level of intervention was required (often oxygen alone) (Kimber et al., 2005). Therefore, it is likely that many deaths have been averted as a result of the emergency interventions offered in SISs. It is estimated that SISs may have contributed to the prevention of 10 deaths per year in Germany and 4 in Sydney (MSIC Evaluation Committee, 2003; Hedrich, 2004). As an important piece of population level data, between 1993 and 2001, a time-series analysis across 4 German cities (Saarbrücken, Hamburg, Frankfurt and Hannover) concluded that the operation of SISs was statistically significantly related to the reduction of overdose fatalities in these cities over the period assessed (Poschadel et al., 2002). Overdose deaths declined from 147 in 1991 to 22 in 1997 in Frankfurt - a noticeable decline occurred the year following the establishment of the Frankfurt SIS, while overdose rates remained stable in other parts of Germany (Bollinger et al., 1995 cited in Wood et al., 2004b).

A6: Transmission of blood-borne diseases and injection-related infections

INSITE service

The rate of positive HIV testing in Vancouver reached a peak in 1992, and declined until 2003 (the last year for which data are available) while the rate in the rest of BC remained fairly constant. Rates for HCV infection declined substantially from a peak in 1996 until 2004²⁸.

There is no direct evidence that the INSITE service impacted rates of blood-borne diseases or injection related infections in the target population. However, there is evidence that the service had a positive impact on needle sharing and other risk behaviours

- A. None of the injections that take place at the site (500+ per day) involve needle sharing.
- B. In a cohort of INSITE users no subjects who reported exclusive use of the service over a one-month period said that they had borrowed or loaned syringes, Among cohort members who were

- not exclusive users of INSITE 12% reported that they had borrow or loaned syringes in the past six months. (Wood et al 2005b)²⁹.
- C. In a cohort sample of 700 INSITE users consistent use³⁰ of the service over a six month period was associated with self reported reduced frequency of 1) reuse of syringes 2) rushed injections 3) outdoor injecting and an increased frequency of 1) use of clean water for injecting 2) cooking/filtering drugs prior to injection 3) Tie off prior to injection 4) safe syringe disposal 5) ease of find veins 6) injecting in a clean place (Stoltz et al 2007).
 - D. Among 431 injection drug users involved in a community cohort study 90 (21%) reported using the service at least once in a six month period and 49 (11%) reported sharing syringes in the same period. In a multivariate analysis use of the service was positively associated with not sharing a needle/syringe (Kerr et al., 2005)³¹.
 - E. In a sample of 1089 service users 80% reported that the service had resulted in less rushed injections (Petrar, 2006).
 - F. Among 1090 INSITE users followed for two years, consistent condom use with regular or casual partners increased by 30% and 13%, respectively (Marshall et al. undated)
 - G. Mathematical modeling (Andresen and Boyd, 2008), based on assumptions about baseline rates of needle sharing, the risks of HIV transmission and other variables, generated very wide ranging estimates for the number of HIV cases that might have been prevented. The EAC were not convinced that these assumptions were entirely valid.

Sydney Service

About half of all those who used the service reported that their injection practices had since improved and over time a small decrease in the frequency of injection-related problems was observed among clients, specifically, less bruising, scarring and abscesses.

There was a trend of increased notifications of cases of newly diagnosed sexually transmitted HIV infection in the Kings Cross postcode area during the time period when the MSIC was established, but no change in the small number of injecting-related infections.

Notifications of HBV infection remained stable in the Kings Cross and Darlinghurst/Surry Hills postcode areas during the time period when the MSIC was established but increased annually in the rest of Sydney.

Notifications of newly diagnosed HCV infection increased in the Darlinghurst/Surry Hills postcode area and the rest of Sydney during the time period when the MSIC was established but remained stable in the Kings Cross postcode area.

HCV incidence was stable among injecting drug users tested at Kirkeaton Road Centre during the time period when the MSIC was established.

Prevalence of HIV infection among injecting drug users in the Kings Cross NSP/MSIC survey was very low during the time period when the MSIC was established, except among male respondents reporting homosexual identity.

There was a trend of increased HCV prevalence among injecting drug users surveyed in Kings Cross during the time period when the MSIC was established, consistent with national trends among this population.

Injecting drug users in the Kings Cross area had a high level of injecting-related health problems, with those attending the MSIC more likely to report abscesses/skin infections or thrombosis of the vein than those who did not attend.

Over time there was a small decrease in the frequency of injecting-related problems among MSIC clients.

Other Services

A reduction in health risk behaviours (syringe sharing, public injection) known to increase risk of infectious disease transmission has been associated with use of SISs in Germany where there has been a strong relationship between the frequency of visits to SISs and the degree of reduced risk behaviour and utilization of other services. (Zurhold et al., 2003). For instance, 1 in 5 German clients stated they had altered their hygienic behaviours because of increased awareness since attending an SIS (Stoever, 2002). Further 58.9% of a non-representative clients in Rotterdam and Hamburg reported decreases in public drug use, improved hygiene and consumed less hurriedly since visiting the SIS (Zurhold et al., 2001). Overall, the evaluation of EMCDDA concluded, that *Consumption rooms achieve the immediate objective of providing a safe place for lower risk, more hygienic drug consumption without increasing the levels of drug use or risky patterns of consumption* (Hedrich, 2004).

A7: Influence on public order - 1 (public injection)

INSITE service

By definition none of the injections that take place at the SIS (550+ per day) are 'in public'. The percentage of these injections that would have otherwise been in public is not known. Wood et al. (2006a) provided data that showed only 12% of admissions from December 2003- July 2004 reported that they usually inject in the street, bathroom, park, and/or parking lot. However data abstracted from a report by Tyndall et al (2006b) showed that 73% of a cohort recruited between December 2003 and April 2005 reported having ever injected in public.

A trained observer counted the number of people injecting in public in the vicinity of the INSITE service during fixed times on three days/week for six weeks before the service opened and for 12 weeks afterwards. Visual inspection of the data and statistical analyses suggested that the opening of the service was associated with a reduction in the number of people injecting in public (Wood et al., 2004b)

In a sample of 1089 of service users 71% reported that service use had resulted in less out-door injecting (PetRAR et al., 2006).

Among 714 members of a cohort sample of INSITE users self-reported public injection was related to reports that waiting times affected use of the service (Mcknight et al., 2006).

The Vancouver Chinatown Merchants Association also indicated "some positive street optics" associated with the opening of the service³².

Sydney Service

Loitering for public injection was not distinguished from loitering for other reasons in most analyses. These showed the opening of the service was not associated with an increase in drug-related loitering. However, other factors such as changes in the availability of heroin and policing practices make it difficult to interpret the results.

A telephone survey of local resident and business respondents indicated that there were fewer observed episodes of public injection and fewer syringes discarded in public places in 2002 compared to 2000.

Other Services

Evidence for the impact of SISs on public order (including public injection) is very limited and the results are mixed (Fischer and Allard, 2007). The capacity of services to admit all those who might wish to use them is a critical concern. However, admission policies, and the use of security guards to prevent drug users and dealers congregating outside the service also influence rates of public injection. In a review of Swiss literature on SIS, it was found, that SIS helped reduce open drug scenes (Zobel and Dubois-Arber, 2004). However, the rates of public injection were not found to be impacted by SIS. These rates decreased in Switzerland overall, independently if the respective city had an SIS (Zobel and Dubois-Arber, 2004).

A8: Influence on public order - 2 (drug-related litter and loitering)

INSITE service

Litter

All syringes and swabs used at the site are safely disposed (500+ per day). However it is not known how many of these would otherwise be discarded in the street.

Measures were taken in the 6 weeks before and the 12 weeks after the opening of the service of publicly discarded syringes and injection-related litter. Visual inspection of the results and statistical analyses suggest that the opening of the service was associated reductions public publicly discarded syringes and injection-related litter. Externally compiled statistics from the city of Vancouver on the number of syringes discarded in outdoor safe disposal boxes were consistent with this finding. (Wood et al, 2004b).

In a sample of 1089 of service users 56% reported that the service had resulted in less unsafe syringe disposal (Petrar et al., 2006).

Loitering

There is no objective evidence that the opening of the service increased drug-related loitering or attracted drug users and dealers to the area.

Sydney Service

Litter

Syringe counts in immediate local area were generally lower after the centre opened than before. However, later there was an increase in syringe counts that may have reflected an increase in the availability of heroin.

Loitering

Drug-related loitering at the front of the service began to decline after it opened. There was a very small but sustained increase in drug-related loitering at the back of the MSIC after it opened. Overall, however, the likelihood of observing a drug-related loiterer at the back of the MSIC was low.

Qualitative interviews with community key-informants and police focus groups confirmed that the MSIC had minimal effect on drug-related activity in the local area. There was some indication of an increase in drug-related activity and loitering at a local train station, which was attributed by some informants to the Supervised injection site.

Other Services

Public order problems including loitering and littering have led to the closure or relocation of some SISs in Europe (Poschade et al, 2002).

"The evidence relating to whether or not SISs lead to the congregation of drug users or drug-related activities in the immediate vicinity of SIS facilities ('honey-pot effect') is mixed. A review of European SISs has found that between 63 and 93% of clients are local residents (Hedrich, 2004), and there have been no reports of crowds gathering outside the Hannover site (Stoever, 2002). However, a number of European facilities reported increases in drug dealing around the facility, with several of these also reporting aggressive incidents outside the premises, increases in petty crime and resentment from local residents (Poschadel et al, 2002; Kimber et al., 2005). Nuisance is more likely when capacity or location of the facility does not meet local needs, and, for example, lengthy wait times for facility use occur. In some instances, these problems may be addressed to a certain degree by an adjustment of service capacity as well as aided by police cooperation and the active involvement of the SIS in local order maintenance (Hedrich, 2004). For example, Sydney and Zurich employ security guards (Kimber et al., 2001), and some German facilities rely on 'facility runners' to prevent congregations or drug dealing outside the premises and help maintain public order (Poschadel et al., 2002). In some instances, SIS clients are called upon to help clean the areas surrounding the facilities, or to keep fellow clients in line (Schu et al., 2005)" (1).

In Switzerland, in some SIS, staff is regularly involved in cleaning the environment in order to maintain good relationship with residents. SIS and other low threshold institutions consider keeping a clean environment around their institutions as one of their objectives (Benninghoff et al., 2003; Zobel and Dubois-Arber, 2004).

A9: Influence on public order - 3 (drug-related crime)

INSITE service

Rates of arrests for drug trafficking and for assaults /robbery in the vicinity of the service were similar in the year after the service opened when compared with the previous year. However, there was a decrease in the rates of arrests for vehicle break-ins following the opening of the service (Wood et al., 2006b).

Information provided by a private security firm hired by the Chinatown Business Association show that between 2003 and 2006 there was a *decrease* in sex trade activity (by 19%), thefts (by 32%), shop lifting (20%), sexual assault (66%) and squeegee activity (95%) on the Chinatown area. Car thefts dropped in 2003 and 2004 and increased slightly in 2006 but still 10% below the 2003 level. Break and entry showed similar trends and in 2006 they were 20% below the 2003 level. The number of unspecified disturbance, mischief and other unspecified 'drug-related' events were largely unchanged between 2003 and 2006.

A geographic analysis of Vancouver City Police crime dispatch data for the seven year period 2000-2006 (by Boyd et al., 2008) found no increase in either the major categories of violent crime or property crime following the opening of INSITE in 2003 - with respect to either the immediate neighbourhood where the INSITE facility is located, in the Downtown Eastside generally, or in the City of Vancouver overall.

An analysis of Statistics Canada data (again by Boyd et al., 2008) suggests that the rates of violent crime in Vancouver for the ten year period from 1997 through 2006 has generally mirrored the generally stable pattern of violent crime for the province of British Columbia overall. The same analysis suggests that the property crime rate for the City of Vancouver dropped significantly for the first half of the ten-year period, and then leveled off to mirror the stable rate in British Columbia for the entire 1997-2006 period.

An analysis of Vancouver City Police crime dispatch data for the seven year period 2000-2006 (again by Boyd et al., 2008) suggested no increase in drug crimes following the opening of INSITE in 2003 - with respect to both the immediate area where INSITE is located, and the Downtown Eastside overall.

The research of Boyd et al. (2008) is consistent with published research from both the Australian and Vancouver SIS evaluation teams which have reported that the opening of SIS facilities in their respective jurisdictions did not result in increases in crime in the surrounding neighbourhoods to which those SIS facilities were located (Wood et al., 2006; Freeman et al., 2005; Donnelly and Snowball, 2006).

Seventy-six interviews conducted through the research of Boyd et al. (2008) suggest that a minority of local residents, service providers, business owners, and police feel that property crime in the area around INSITE has increased. Specifically, 10% of police, 21% of service providers, 24% of residents, and 30% of business owners felt property crime had increased since the opening of INSITE. Similarly, a slightly larger minority of local residents, service providers, business owners, and police feel that violent crime in the area around INSITE has increased. Specifically, 18% of residents, 25% of police, 35% of business owners, and 42% of service providers felt that violent crime had increased. Notably though, hardly any interviewees from any of the groups interviewed felt the increase in crime was attributable to the opening of INSITE.

Sydney Service

There was a downward trend in of local theft and robbery incidents from early in 2001 that was likely to be due to the reduction in heroin availability in Australia. There was no evidence that the opening of the center influenced this trend in either direction.

Other Services

" A number of European facilities reported increases in drug dealing around the facility, with several of these also reporting aggressive incidents outside the premises, increases in petty crime and resentment from local residents (Poschadel et al, 2002; Kimber et al., 2005)".

A10: Influence on public order - 4 (drug use in the community)³³

INSITE service

There is little direct evidence that the establishment of the service influenced drug use in the wider community.

Kerr et al (2007) reported that members of a cohort sample of 1065 INSITE users were almost all long- term injectors (median number of years injecting was 15.9). However one person reported that he injected for the first time during a visit to INSITE

In a community-recruited sample of injection drug users rates of self-reported relapse to injection drug and rates of stopping injection drug use were the same during comparable periods before and after the opening of the service (Kerr et al., 2006a).

No surveys of drug use among school pupils or the general public have been reported since the opening of the INSITE service.

Sydney Service

No relevant research reports located

Other Services

No relevant research reports located

A11: Costs, cost-effectiveness and related issues

INSITE service

The annual operating cost of the INSITE service is \$3,000,000

In the year ending August 2007 the cost per visit for injection was thus \$14.0³⁴.

From the time of opening to the Mid February 2008 the cost per individual who used the service at least once for injection purposes was approximately \$1380³⁵

The average cost of service clients who injected at the used the service more than 401 times (n=506) is estimated to be \$13,103.8³⁶.

Andreson and Boyd (2008) used mathematical models to estimate the cost-effectiveness and cost-benefits of INSITE with respect to HIV prevention. These models used estimates of rates of needle sharing in the community, risks HIV transmission and the costs of treating people with HIV. The models showed benefits to cost ratios that range from .97 to 2.90 and cost-effectiveness estimates, ranging from approximately \$52,000 to \$155,000 (meaning that it costs between 52k and 155k to prevent each case of HIV infection). However, these estimated economic benefits were less impressive than those estimated for needle exchanges.

When these models also included estimates of the number of overdose deaths prevented (1.08/year) and estimates of the economic value of these lives (\$660,000) of these lives showed cost-benefits ratios that ranged from 1.5 to 4.02.

Sydney Service

Financial cost evaluation of current operation of the Kings Cross Medically Supervised Injecting Centre (MSIC) shows that the set-up costs were \$1,334,041; the initial year's operating costs were \$1,995,784; and the budgeted costs for 12 months until 30.06.03 were \$2,420,214.

The cost per client visit was \$63.01 in the initial year of operation, and the cost per client visit was projected to be \$37.23 assuming increased client throughout and efficiencies in the 2002/2003 year.

An economic evaluation that was based on a number of assumptions about deaths averted suggested that the benefit/cost ratio was 0.72 (lower estimate) and could range up to 1.19 (higher estimate).

A12: User satisfaction ratings and motives for using

INSITE service

When a sample of users were asked to rate the overall quality of service, 95% said it was excellent or good compared to 5% rating it as fair or poor. Furthermore, an overwhelming majority reported that staff were always or usually courteous and respectful (97%), trustworthy to provide care (97%), reliable and dependable (96%), and trustworthy to maintain privacy (95%) (Petrar et al., 2006).

The following reasons for wanting to use the service have been cited by surveyed street drug users: for safety reasons; to get off the streets; to get help injecting (Kerr et al., 2003); to obtain sterile equipment; to consume drugs without having to hurry; to avoid police (Petrar et al. 2006); to get treatment and health care referrals; to be in the presence of others; to have a clean, comfortable and warm place (VIHA, 2006).

In the INSITE service users cohort study three most commonly reported reasons limiting use of the service were: distance from home, (12%); limited hours of operation (7%); and waiting times (5%). Suggestions about how the service could be improved included: longer hours of operation (53%); access to washrooms (51%); and shorter waiting times (46%) (Petrar et al. 2006).

"The perspectives of participants suggest that the Vancouver SIS plays an important role in mediating various risks associated with overdose. In particular, the SIS addresses many of the unique contextual risks associated with injection in public spaces, including the need to rush injections due to fear of arrest. Further, SIS use appears to enable overdose prevention by simultaneously offsetting potential social risks associated with injecting alone and injecting in the presence of strangers. The immediate emergency response offered by nurses at the SIS was also valued highly, especially when injecting adulterated drugs and drugs of unknown purity and composition" (Kerr et al. 2007).

Semi-structured qualitative interviews with 22 women who used INSITE showed that these women saw use of the service as being associated with the avoidance of interpersonal violence on the street, improved control of resources, and greater control in intimate partner relationships. (Fairbairn et al, 2007).

Sydney Service

"Approximately 75% of surveyed clients in Sydney report that care is good and relationships with staff are honest and respectful of privacy and confidentiality. The majority of clients rated the MSIC as a 'good' or 'ok' place to inject. In addition, most clients agreed that the location accommodated them, and while there was less consensus about the opening hours, few reported that they had to wait too long. Most MSIC clients agreed with the registration process, entry criteria and restrictions on physical injecting sites, however there was less support for rules limiting clients to one injection per visit and not being able to share drugs" (MSIC Evaluation Committee, 2003).

The most frequently reported reasons for not using the service was a preference for injecting at home or in private (26% and 51%), and that the entry to the service was too public.

Other Services

Clients of German and Swiss SISs expressed satisfaction with the contact with SIS staff and praised their high level of competence in social and legal matters (Hedrich, 2004). For example, the survey of clients of 18 German facilities found that 95% were happy or very happy with

services, and that 70% were satisfied with the opening hours (despite many German facilities being open only part of the day) (Poschadel et al., 2002).

"However, a sample of drug users in Berlin who had never used SISs mentioned a lack of consumer friendliness (e.g., opening hours and regulations) and the high level of social control as the main reasons for non-use (Schu, et al. 2005). When a non-representative survey of clients of 18 SISs across Germany asked why they thought fellow drug users did not use SISs, the following reasons were cited: loss of anonymity; fear of police presence; possible wait times; distance to the facility. Clients of this same survey were also asked what they liked best about SISs (selective mentions, and not necessarily in rank order): hygienic environment (48%); opportunity to use calmly and safely and without fear of the police (47%); available medical care and emergency assistance (36%); less need to use in public (31%); use of ancillary services (22.6%); needle exchange program (22%) (Poschadel, et al. 2002)."

A13: Views of local stakeholders and the general public

INSITE service

Letters in support of the service from the Mayor of Vancouver, the Chief Constable, the Director of the BC Centre for Excellence in HIV/AIDS, the Director of the BC Centre for Disease Control, the Chief Medical Officer of Health, a Nursing Practice Consultant with the Registered Nurses Association of British Columbia and the President of the Vancouver Area Network of Drug Users were appended to the application for an extension of the service submitted to Health Canada by Vancouver Coastal Health.

Among 1090 SIF clients enrolled in SEOSI, 182 (17%) individuals reported having been referred to the SIF by local police. 22 (2%) participants at baseline reported that they first learned of the SIF via communication with police (DeBeck, 2008).

As noted above the Vancouver Chinatown Merchants Association indicated "some positive street optics" associated with the opening of the service. However, the Association believes that the service attracts drug users to the area and thus compromises commercial activity and tourism.

A recent survey of a random sample of 852 BC adults conducted between May and June 2007 by Mustel Group shows continuing support for INSITE with 63% of residents in favour of the federal government extending the license to allow the safe injection site to remain open. In contrast, only 27% were not in favour of an extension and 10% are undecided or had no opinion on the issue. Overall support for INSITE was strong across the province, with support highest in the City of Vancouver (76%). Analysis of the findings by federal party support shows that Conservative Party supporters were somewhat divided in their support but with a slightly larger proportion in favour (50%) than not in favour (41%) of an extension. Supporters of all other federal parties are clearly in favour of an extension.

Boyd et al (2008) interviewed 80 responses men and women who work and/or live in the downtown eastside neighbourhood (20 residents, 20 police officers, 20 service providers, and 20 business operators) When we asked whether, given a mandate of public order, INSITE should be expanded, retained, modified or shut down, more than eighty per cent, including a slim majority of police officers, indicated that INSITE should be either expanded, retained, or modified. More than 55 per cent of our respondents suggested that the expansion of INSITE to other locations would have a positive impact on public order.

Sydney Service

Agreement with the establishment of the MSIC

Levels of agreement with the establishment of the MSIC in Kings Cross were high among local resident and business respondents surveyed in a telephone poll before the MSIC opened (68% and 58% respectively).

Levels of agreement with the establishment of the MSIC in Kings Cross increased when the survey was repeated towards the end of the evaluation period with 78% of Kings Cross resident and 63% of NSW business respondents reporting agreement.

The proportion of local resident respondents reporting disagreement with the establishment of MSICs also decreased significantly from 2000 to 2002 for both Kings Cross (26% to 17%), and for other areas of New South Wales associated with high levels of drug use (21% to 14%).

One-third of the Kings Cross business and half the Kings Cross resident respondents did not know the location of the Sydney MSIC in 2002, suggesting that at least for those people the MSIC had a low impact.

Kings Cross business and resident respondents who knew the MSIC location were more likely to agree than disagree with the establishment of a MSIC in Kings Cross.

One-third of local residents and one-quarter of local businesses reported that they found no disadvantages with the MSIC in 2002.

Other Services

Through random dialing to residents living in the vicinity of two SISs in Berlin, two representative samples of residents were surveyed by telephone and it was found that both predominantly accepted SISs. A statistically significant positive relationship was found between education level and acceptance of the facility, while being a parent with young children was negatively associated (Schu et al., 2005). Furthermore, residents surveyed in Hamburg viewed SISs as the lesser of two evils compared to public drug use. Residents expect SISs to offer improved addiction services and relieve the drug-related burden on the community. Most agreed that the level of service had improved over the years. However, interviews with the police revealed that they were more ambivalent than residents towards SISs, expressing regret that there was a need for such a facility and suggesting that maintaining the status quo was a worse alternative given drug-related harms (Zurhold et al., 2003). Rotterdam residents attributed the reduction in public nuisance to SISs, and attitudes towards drug users and SISs improved over time (Linssen et al., 2001). Further evidence of community support is the fact that 98% and 94% of all clients of one facility in Hannover reported no negative experiences with local residents or police, respectively (Dolan et al., 2000). Some Swiss residents expressed strong resistance when SISs were located in residential areas. Generally fewer nuisance problems are reported in cities where a political consensus or co-operation between police and drug service agencies exists (Hedrich, 2004).

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Footnotes

1

 [Vancouver site report for the Canadian Community Epidemiology Network on Drug Use](#)

2

 [City of Vancouver's Four Pillars website](#)

3

These views were forcefully expressed to members of the Expert Advisory Committee by a variety of local stakeholders during the Committee's visit to INSITE in August 2007.

4

Subsequently extended to June 30th 2008.

5

Dr. Liviana Calzavara, an Associate Professor Deputy Director, HIV Social, Behavioural and Epidemiological Studies Unit, University of Toronto initially chaired the Committee. However due to other commitments Dr. Calzavara resigned from the Committee in June 2007

6

Ratings based on a rigid marking scale that considered the qualifications and experience of the proposed project team members as well as the scientific merits of the research proposal.

7

A third contract was offered but the terms were not acceptable to the research team.

8

Studies in which users of INSITE are matched with non-users on critical variables such as health status and drug use patterns.

9

The Vancouver Association of Drug Users has organized campaigns of this type in the vicinity of INSITE

10

Members of the EAC consider that these concerns are unfounded and propose that publicity surrounding SISs serves mainly to draw attention to the dangers of addiction and the miseries of addicts.

11

Most of the results included in the following tables were abstracted from published research reports. However, some data from credible unpublished reports are also noted. Information provided to the EAC by Vancouver Coastal Health has also been included in the table on utilization patterns. The opinions of some well-placed stakeholders are also included in the table on stakeholder views.

12

Evan Wood, personal communication

13

Neither paper reported results for all cohort members. Both papers presented tables in which demographic and other variables were cross-tabulated by frequency of INSITE visits (Wood et al., 2006a) or HIV status (Tyndall et al., 2006b). Figures in this table were computed by the EAC.

14

Evan Wood. Personal communication

15

Daily use was not defined. Other information on utilization (see next table) suggests that daily use of the service is very uncommon.

16

Other variables considered were age, gender, aboriginal status, living in the Downtown Eastside, daily cocaine use, borrowing or lending syringes in the past six months.

17

Beginning in 1996 snow ball sampling was used to recruit injection drug users in the Downtown Eastside for a prospective cohort study. Data for the study comparing service users with others were obtained from 400 members of this cohort who returned for a semi annual follow-up interview and who reported using drugs by injection in the past 6 months.

18

Unless otherwise stated all data concerning the Sydney service are from the final report of the evaluation of this service (MSIC Evaluation Committee, 2003).

19

Unless otherwise indicated all italicized text in these tables is taken directly from Fischer and Allard (2007). In comparing the clientele with European sites, one should take into consideration, that SIS in some

countries or cities, e.g. in Switzerland, are also open to oral cocaine consumption and crack smoking (inhalation rooms; Zobel & Dubois-Arber, 2004).

20

In these tables the acronym SIS is use in place of other acronyms used by Fisher and Allard.

21

See footnote 12

22

Number computed from tables in the Wood et al report.

23

In this study 45.9% of the sample were classed as daily users.

24

Tyndall et al (2006a).

25

Assuming each of 12 injection booths are open 18 hrs/day and that each injection takes 20 minutes.

26

Member of this cohort (N=874 in the present instance) were selected at random from INSITE users and invited to participate in research. Acceptance rates have not been reported. However there were no statistically significant differences for demographic variables between the cohort sample and the total population of INSITE users (Wood et al 2004a).

27

Reported to the EAC by Dr. Reka Gustafson, Acting Chief Medical Officer, Vancouver Coastal Health

28

Footnote 1

29

Data abstracted by the EAC from tables in the Wood et al article

30

Those who reported using the service for some or most of their injections

31

See footnote 12

32

Presentation to the EAC by Mr. Albert Fok, chairman of the Vancouver Chinatown Merchants Association

33

The concern here is that Supervised Injection Sites send the 'wrong' message and encourage drug use, discourage drug users from seeking treatment and encourage them to relapse after treatment.

34

Statistics provided by Vancouver Coastal Health indicated that there were 213,621 visits for injection in this period

35

There were 8,333 unique visitors during this 46 month period and the operating costs over the same time are assumed to be \$11,500,000 (Based on \$3 million /year).

36

These accumulated 472,261 visits (60% of all visits). Average cost = (total visits*cost per visit)/number of cases.