

September | 18

McMaster Medical School Municipal Lobby Day

Safe Consumption and Overdose Prevention

PREPARED BY:

Danielle Arje
Holly Breton
Anthea Ho
Emma van Reekum
Ashley Warnock

EDITED BY:

Debbie Brace
Emma van Reekum

WITH THANKS TO:

Hamilton AIDS Network
Hamilton Urban Core Community Health Centre
Hamilton Public Health and Dr. Elizabeth Richardson
Hamilton Public Health Healthy and Safe Communities Department
Shelter Health Network and Dr. Tim O'Shea
Canadian Medical Association
Aboriginal Health Centre and Dick Passmore

McMASTER MEDICAL STUDENT LOBBY DAY COMMITTEE

Danielle Arje
Debbie Brace
Shannon Brent
Holly Breton
Anthea Ho
Victoria Liu
Michael Parvizian
Emma van Reekum
Ashley Warnock

DEFINITIONS

Carfentanil: Opioid medication used by veterinarians for very large animals. It is not intended for human use and can be 100 times stronger than fentanyl and 10,000 times stronger than morphine. Carfentanil has been found in recreational drugs.

Fentanyl: Opioid medication, that is similar to morphine and codeine, but can be up to 100 times stronger than morphine. It is most often prescribed as a slow-release patch to people with chronic, severe pain. Most illegal fentanyl is produced as a powder and can be mixed into other recreational drugs, such as heroin or cocaine.

Harm Reduction: A strategy aimed at reducing the negative consequences and sequelae associated with drug use and risky behaviours. It is a philosophy built on social justice and advocates for the rights of people who use drugs.

Opioid Agonist Treatment: An effective treatment for addiction to opioid drugs. Medications, such as methadone or buprenorphine (Suboxone), are taken to prevent withdrawal symptoms and reduce cravings for opioid drugs. These drugs are long-acting opioids which allows them to prevent withdrawal for 24-36 hours without causing the drug related high.

OPS: Overdose Prevention Site: a temporary site where people can come and use drugs under medical supervision. These sites require federal exemptions so that drug users and employees are not criminalized. These sites are generally provincially funded by the Ministry of Health and Long Term Care, and function under renewable 3 or 6 month contracts.

Naloxone: A medication that can temporarily reverse the effects of an opioid overdose. It was made freely available in pharmacies, community organizations and provincial correctional facilities in 2016. Naloxone can be taken either as a nasal spray or as an injectable.

Narcan: Trade name for Naloxone.

SIS: Safe Injection Site: a permanent site where people can use drugs, specifically injectables, under medical supervision. These sites require federal exemptions so that drug users and employees are not criminalized. SISs are generally provincially funded by the Ministry of Health and Long Term Care.

SCS: Safe Consumption Site: a permanent site where people can use any desired drug. Special ventilation is required if people are smoking drugs. These sites require federal exemptions so that drug users and employees are not criminalized. SCSs are generally provincially funded by the Ministry of Health and Long Term Care.

LINKS

The AIDS Network

<https://www.aidsnetwork.ca/>

140 King St. E., Suite 101
Hamilton, ON L8N 1B2
905-528-0854

Hamilton Street Health Clinics

<https://www.hamilton.ca/public-health/clinics-services/street-health-clinics>

The Wesley Centre

195 Ferguson Avenue North
Hamilton, ON L8L 8J1
905-777-7852

Notre Dame House

14 Cannon Street West
Hamilton, ON L8R 2B3
905-308-8090

Hamilton Opioid Information System

<https://www.hamilton.ca/public-health/reporting/hamilton-opioid-information-system>

Overdose Prevention Site (OPS)

http://shelterhealthnetwork.ca/?page_id=983

Hamilton Urban Core Community Health Centre

71 Rebecca Street
Hamilton, ON L8R 1B6
Overdose Prevention Site FAQs: <http://shelterhealthnetwork.ca/wp-content/uploads/2018/04/Overdose-Prevention-Sites-FAQ.pdf>

"We know that we have to address this. This is getting to be more and more of a problem. We have always put this at the top of our preoccupations as we deal with this public health crisis here in Hamilton and right across the country" – Justin Trudeau

INTRODUCTION TO THE OPIOID CRISIS

The term '**opioid**' refers to substances derived either naturally or synthetically from the opium poppy.¹ Opioids are commonly prescribed as a medication for **pain relief**; producing their analgesic properties by binding to, and inhibiting opioid receptors in the body. The binding of exogenous opioids leads to the release of endogenous opioids, and a dramatic, effectual pain-relieving outcome. Indeed, they are our most powerful tool for mitigating pain. Besides pain control, opioids are implemented for use in anesthesia, as well as in the management of common ailments, such as cough and diarrhea.¹

Canadian physicians use and prescribe many types of medications in the opioid class, such as: codeine, fentanyl, morphine, oxycodone, hydromorphone, and medical heroin.² Opioids can also be **accessed illegally**, often in the form of either fentanyl (and its derivatives) or heroin. A common, or desired, side effect of opioids is '**euphoria**', an intensely powerful feeling that can contribute to its **problematic use and/or addiction**.²

Opioid use is widespread in Canada; in 2012, **1 in every 6 Canadians used opioids**.³ Recently, however, Canada and other countries have seen a dramatic, serious **rise** in illicit and prescribed opioid use, as well as opioid-related harms. Indeed, there was a **30% increase in hospitalizations** due to opioid intoxication over the last decade⁴ and a devastating **45% increase in deaths** (up to almost 3000 deaths in 2017), since 2016.⁵ In 2017, the national death rate was 10.6 per 100,000, with Ontario being the second-most impacted province (See figure 1). These observations are often colloquially referred to as '**the opioid crisis**'; a term that captures the severity of the present opioid climate in Canada.⁶

Unfortunately, problematic opioid use and opioid dependence are associated with a myriad of other harms beyond overdose and mortality, including: increased transmission of disease such as **HIV and Hepatitis C**,⁷ **risky behaviour** (e.g., driving under influence),⁸ **economic burden**,^{9,10} **comorbid mental disorders**,¹¹ and impaired **social functioning**.¹² The harms of opioids use are numerous, and **bidirectional** in nature. Opioids can negatively impact a person in all areas of functioning and contribute to their vulnerability and marginalization in society. Conversely, a person's vulnerability and marginalization may contribute to their opioid use and addiction.¹³

Fortunately, effective prevention, harm reduction, and treatment tools exist for those with opioid use problems. **OAT** is the most efficacious treatment approach for opioid addiction.¹⁴ In OAT, long-acting opioid agonists, such as methadone or buprenorphine are administered to mitigate withdrawal and craving and allow the affected individual to avoid harms associated with illicit opioids such as communicable disease and relational distress.¹⁴ The benefits of OAT are well

established in the literature, including: **reduced criminality**,¹⁵ **mortality**,¹⁶ and **illicit opioid use**,¹⁷ as well as improved **quality of life**.¹⁸

The need, and desire for treatment is great; in fact, the number of Ontarians receiving OAT increased from 6000 to 40,000 between the years 2000 and 2016.¹⁹ Despite available evidenced-based management options, and a considerable number of Canadians in need, **stigma and fear remain rampant in Canadian society**. These negative perceptions of substance use/abuse and its treatment have allowed for underdeveloped and underfunded treatment programmes, and as a result, a **climate of suffering** for vulnerable Canadians, to pervade our country.¹⁹

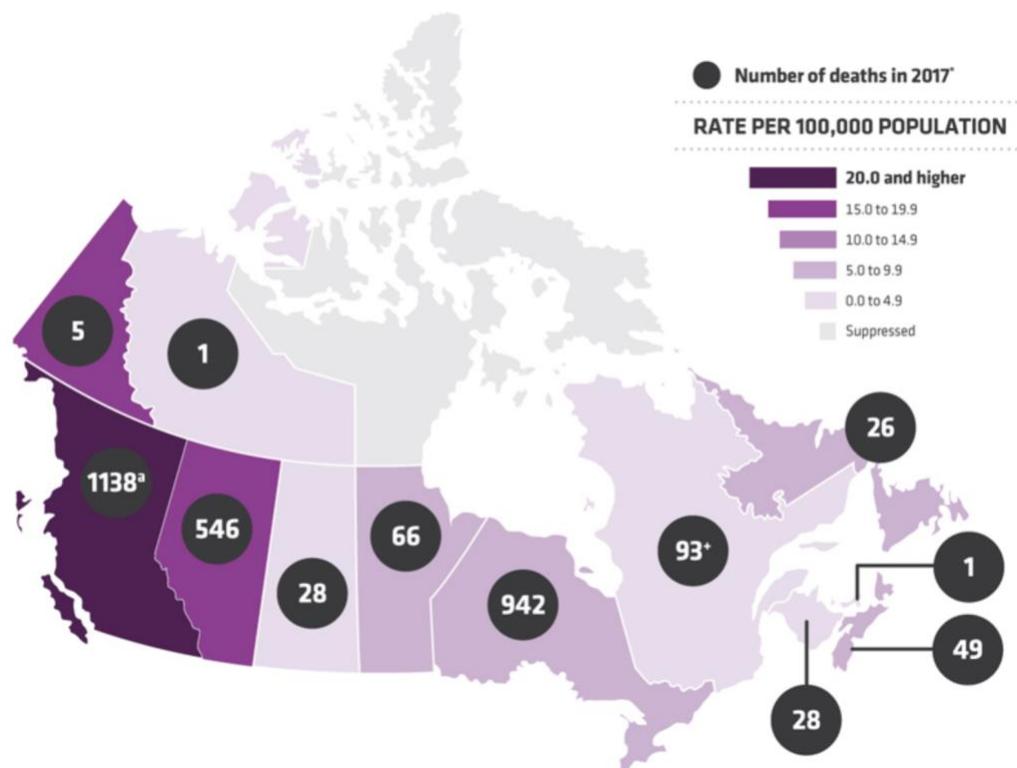


Figure 1. Opioid related deaths across Canada in 2017⁵

OPIOID USE IN HAMILTON

Hamilton is not immune to the repercussions of opioid over-prescribing and use. According to the CBC, opioid-related emergency department visits have been rising dramatically in Hamilton since 2003.²⁰ Indeed, paramedic involvement spiked in 2017, averaging **37 opioid-related events** that required paramedics per month.²¹ Remarkably, the majority of these events took place in just two neighbourhoods (see Figure 2). Specifically, ward 2 (the **Downtown area**) and ward 3 (**Hamilton Centre**) were responsible for 38.6% and 25.8% of paramedic incidents, respectively.²¹ This finding is concerning given that the downtown area is Hamilton's smallest ward, comprising just 7.3% of the total population²², while Hamilton's centre is just 7.5% of the total population.²³ Furthermore, in 2017 there was an average of **42 emergency department visits** and **10 hospitalizations** per month related to opioid use in Hamilton.²⁴

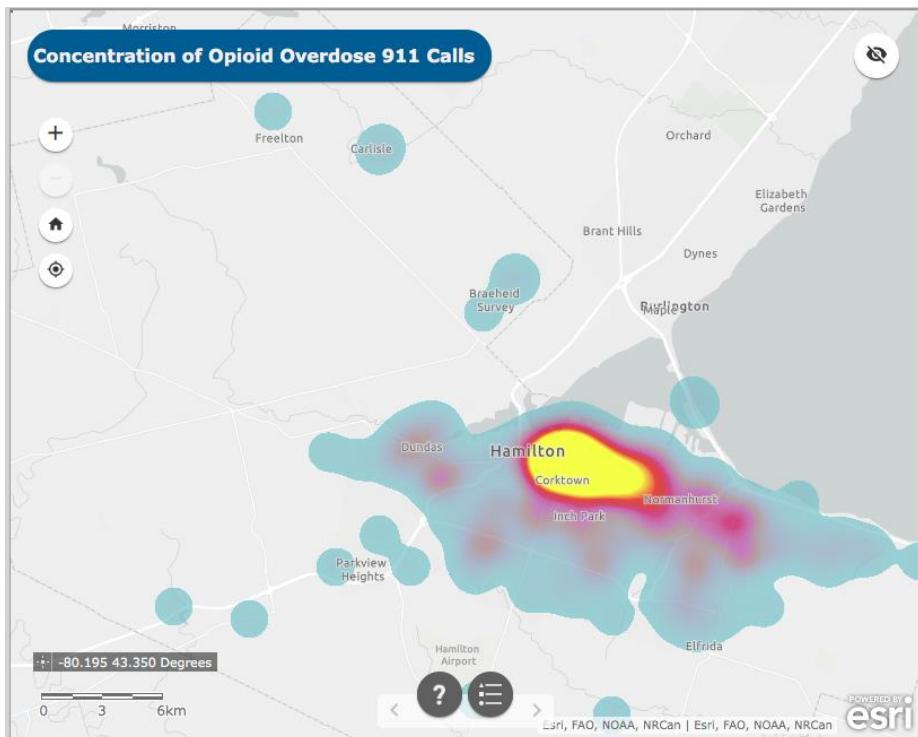


Figure 2: Heat Map Showing Concentration of Opioid Overdose 911 Calls in Hamilton.²¹

Furthermore, the data also shows that Hamilton has been **more severely impacted** by the opioid crisis than other regions in Ontario. In 2017, Hamilton experienced **87 opioid-related deaths**; a rate **72% greater** than the provincial average (see Figure 3).²⁵

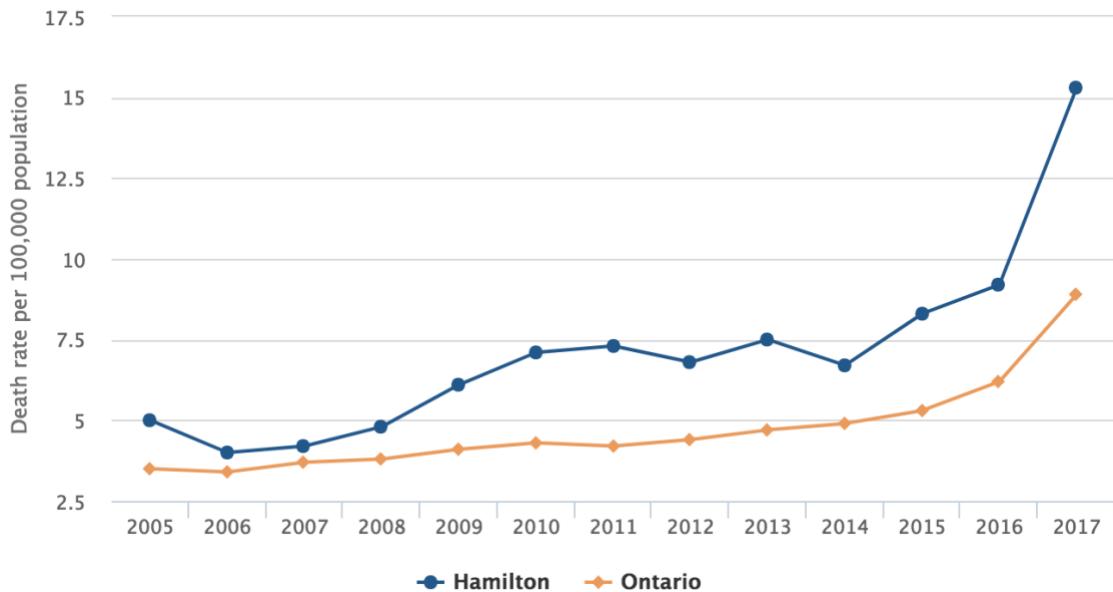


Figure 3 Opioid Related Death Rates in Hamilton and Ontario 2005-2017.²⁵

Further exacerbating the opioid crisis is the increasing amount of potent, illicit opioids pervading Hamilton. Since 2016, the City of Hamilton has warned the public of multiple **accidental overdoses** occurring due to recreational drugs, such as cocaine and heroine, being **laced** with opioids (e.g., carfentanil, methamphetamine). Most recently, alerts have been issued for “blue” and “purple” heroine; which is heroine that has been laced with fentanyl.²⁶ Fentanyl, a substance **50-100 times more potent** than morphine, has the potential to increase risk of overdose and death when laced with other street drugs.²⁷ Indeed, 72% of opioid-related deaths in Canada involved fentanyl or fentanyl analogues in 2017.²⁸

In sum, Hamilton is experiencing an **opioid crisis**. Rates of hospitalizations and overdoses are at an all-time high and are significantly higher than the provincial average. It is imperative that **action be taken** in order to reduce the harm of opioid use in the city.

EVIDENCE BASED SAFE INJECTION

The first legally sanctioned SIS, '**Insite**', opened in Vancouver in 2003 as a pilot project, which aimed to tackle the rising health consequences of opioid overdoses and injection drug use.²⁹ In Canada, SISs and SCSs fall under **federal jurisdiction**. Accordingly, the federal Minister of Health granted Insite a temporary legal exemption to protect both the clients and the staff from any criminal charges associated with illicit drug use. The exemption was grounded on Section 56 of the Controlled Drugs and Substances Act, which allows the Federal Minister of Health to provide an exemption to Canada's illicit drug laws for a specific medical or scientific purpose. Thus, Insite was opened under the condition that it operate as a scientific pilot and be continuously evaluated.²⁹

Despite its legal backbone, Insite provoked **political and legal backlash** across Canada. For instance, the newly elected 2006 Conservative federal government threatened to repeal Insite's legal exemption.²⁹ The Conservative government argued that the harms of injection outweighed the possible benefits and that the site would bolster addictive behaviour and undermine proper treatment. This threat was succeeded by the 2011 landmark **Supreme Court of Canada** (SCC) ruling, which ordered the federal Minister of Health to extend the Insite's exemption. The ruling was grounded upon the SCC's belief that Insite provided a **life-preserving service** that promotes public health and does not increase public disorder.²⁹

Since the inaugural SIS opening, many cities across Canada have applied for exemptions from the Controlled Drugs and Substances Act. The application process, however, was deemed arduous, providing a barrier to many cities who applied for a SIS exemption. As such, Bill C-37 was passed in 2017 to reduce the application burden and improve access to SISs in Canada. In addition, Health Canada recently began to provide **temporary class exemptions** to provinces and territories for OPSs. These temporary sites that are approved by the province to address urgent societal requirements, such as providing harm reduction supplies and supervised injection.²⁹

Best Practices in Harm Reduction Techniques Tackling the Opioid Crisis

Vancouver pioneered the practice of **harm reduction** in an effort to mitigate their provincial opioid overdose crisis. The province opened Insite in 2003, the first legally sanctioned SIS in North America.²⁹

About SISs

SISs are legally sanctioned environments where people who inject drugs (PWID) are able to use pre-obtained drugs in a medically supervised and hygienic fashion.³⁰ These sites provide a host of **support** to their clients, including: safe and clean instruments and substances, as well as access to trained healthcare professionals, allied service providers, and peer support. Clients are able to use the sites whenever

necessary without the risk of criminal involvement for illicit drug possession and use. Research has shown that those who attend SISs are typically the most socially marginalized members of the PWID community (i.e., homeless or housing insecure) and are more likely to engage in high-risk behaviours, such as frequent episodes of overdose and daily drug injection.³⁰ As such, SISs target one of **Canada's most vulnerable**, and often difficult to reach, populations.

Benefits of Safe Consumption Sites

Since the founding of Insite, there has been a large amount of research conducted evaluating the effectiveness of SISs. Evidence suggests benefits including: (1) **decreased morbidity and mortality**; (2) **cost benefit and cost effectiveness**; (3) **reduced public nuisances**; and (4) **access to addiction treatment/program**.

1. Decreased morbidity and mortality

A systematic review of 75 peer-reviewed journal articles on SISs found no report of any overdose-related death within a SIS.³⁰ A study of Insite showed a **35% reduction** in the number of lethal opioid overdoses within 500 meters of the SIS compared to the rest of Vancouver.³¹ It has been estimated that between **2 to 12 cases of fatal overdoses are avoided** each year due to SISs.³¹

SISs have also been shown to reduce the risks associated with injection drug use. For instance, those who use SISs are **70% less likely to share used syringes**³², thereby **reducing HIV transmission**.^{33,34} Additionally, SIS attendance is associated with more hygienic drug practices (e.g., safe disposal of syringes, better care for injected-related infections)^{35,36}, and safer sexual practices.³²

2. Cost benefit/ cost effectiveness

According to cost-efficacy studies, SISs in Canada are projected to **save the healthcare \$14 million** over 10 years³³ and prevent 1191 new HIV infections and 54 new hepatitis C infections.³⁴ Based on 2007 costs, Vancouver's Insite was shown to **prevent 3 deaths and 35 new cases of HIV**. After the Insite program costs were covered, an annual \$6 million benefit and an average benefit-cost ratio of 5.12:1 was found.³⁷

3. Reduced Public Nuisances

In Vancouver, SISs have also shown to **decrease injections in public** places, and reduce the amount of used syringes/other garbage discarded in public.³⁸⁻⁴⁰

4. Access to addiction treatment/program

Wood et al.,³⁸ found that 57% of those who attended Insite eventually entered into an addiction treatment program, with **23% of users able to cease** their injection drug use.

CURRENT HAMILTON RESOURCES

In recent years, the state of the opioid crisis in Hamilton has prompted **urgent implementation** of municipal and provincial initiatives aimed at reducing morbidity and mortality related to opioid use. The focus has been on strategies that address the '**Four Pillars**' harm reduction model that was developed in Vancouver:⁴¹

- *Prevention:* Prevent and/or delay the harmful effects of substance use
- *Treatment:* Improve health with effective treatment options
- *Harm reduction:* Reduce the harmful consequences associated with drug use
- *Enforcement:* Improve coordination with health services to link individuals to help and support

Integrated services that are currently available in Hamilton aim to offer individuals centralized access to harm reduction services, mental health services, health services, drugs and addictions services, and social services.

Fixed Needle Exchange Sites

Needle and syringe exchange programs are **harm reduction** initiatives that provide clean needles and associated materials to people who inject drugs, as well as collect used needles to be safely disposed of. As mentioned, access to clean needles is an **important component** of opioid misuse management.^{33,34} In 2016, approximately **1.2 million clean needles** were distributed through Hamilton's Needle and Syringe Program, and over **730,000 used needles were collected**. The number of needles distributed per year has doubled since 2012.⁴²

Hamilton's **AIDS Network Needle and Syringe Program** is a local charitable organization that is active in HIV/AIDS prevention, education, and support. The program operates Monday–Friday, from 9 am–5 pm. The organization provides confidential, free education and harm reduction materials, aimed at promoting safer drug use and safer sex. Individuals who visit this location are able to access clean equipment such as: syringes, sterile water, alcohol swabs, safe inhalation kits, condoms, and dental dams. Referral services are also provided to connect individuals to other community services (e.g., addiction treatment, housing).⁴³

Other fixed needle exchange sites currently operating in Hamilton include the **Elizabeth Fry Society** (for women only), **Hamilton Urban Core Community Health Centre**, and **Alcohol Drugs and Gambling Public Health Services**.^{44,45}

Mobile Needle Exchange Services

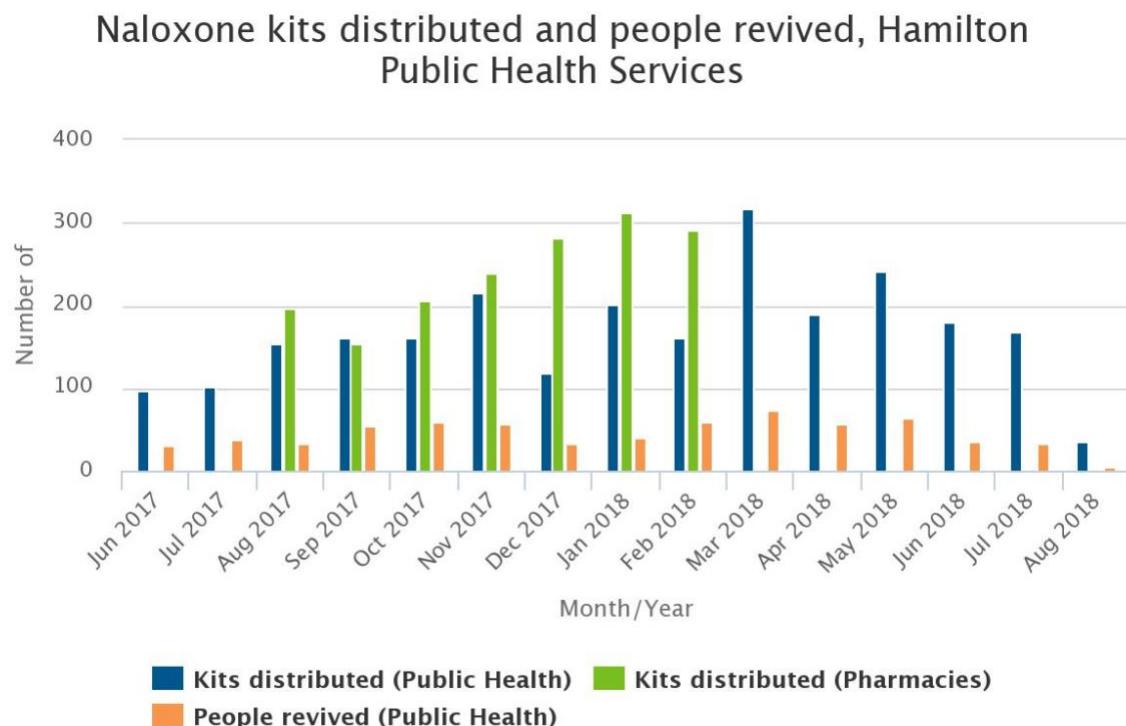
The AIDS Network also operates a **mobile van** that distributes clean drug supplies and collects used needles for safe disposal. **The van** strives to increase access to harm reduction services by operating during evening hours and providing outreach

to those unable to travel to established needle exchange sites. The van hours are: Monday to Sunday, from 7—11pm. The van is entirely confidential and can be contacted by phone or text message to arrange a meeting.⁴³

Hamilton Overdose Prevention & Education (HOPE)

The **HOPE Program** began in 2014, with the goal of delivering **free naloxone kits** to Hamiltonians. The program also **educates the public** on how to recognize the signs of overdose, and how to use drugs and administer naloxone safely. Naloxone kits can be picked up at various locations within the city, such as the Wesley Street Health Centre, The AIDS Network, the Urban Core Community Health Centre, City of Hamilton Sexual Health Clinics, The Van, and various pharmacies throughout the city.⁴⁶

In 2016, **462 naloxone kits** were distributed through HOPE. It is estimated that this resulted in **192 life-saving events**. So far in 2018, 1495 kits have been distributed, resulting in approximately **363 lives saved** (see Figure 4).⁴⁶



*Figure 4: Naloxone kits distributed across Hamilton June 2017-August 2018.*⁴⁶

Street Health Clinics

The City of Hamilton operates **Street Health Clinics** that provide **free medical services** (e.g., sexually transmitted disease tests, vaccinations, pregnancy testing, addictions counseling) and access to needle exchange and naloxone kits. Formal appointments and health cars are not required. Street Health Clinics are currently

operating at the Wesley Centre (Mondays, Wednesdays, and Fridays; 9 am–1 pm) and Notre Dame House (Tuesdays, 3:30—5:30pm).⁴⁷

Hamilton Opioid Information System – Opioid Surveillance and Monitoring

Hamilton Public Health Services collaborates with Hamilton Paramedic Services, Hamilton Health Sciences, St. Joseph's Healthcare Hamilton, and community partners to collect and disseminate **opioid-related information** to the public. Information regarding naloxone distribution, opioid overdoses, opioid-related deaths, and emergency department visits and hospital admissions, can be found online.²⁶

Overdose Prevention Sites (OPS)

In December 2017, the City of Hamilton Public Health Services conducted a needs assessment and feasibility study on SISs in Hamilton and concluded that Hamilton would benefit from **additional strategies to decrease death and disability** due to injection drug use.⁴⁸

Hamilton's first **temporary OPS** opened on June 5, 2018 at the **Urban Core Community Centre** at 71 Rebecca St. The site was developed in collaboration with Urban Core and Hamilton's Shelter Health Network. Sufficient funding was provided by the Ministry of Health and Long-Term Care to keep the site open until **November 30, 2018**. The site is appropriately located near Wards 2 and 3: the **most high-risk zones** for opioid-related harms.¹⁹ The OPS operates on Tuesdays and Thursdays from 8—11pm, and on Mondays, Wednesdays, Fridays, and weekends, from 6—11pm. Those who use the OPS can access a volunteer physician, nurse, and support staff. Within the **first two months**, at least **400 clients** have attended the OPS.⁴⁸

As of August 2018, **De dwa da dehs nyę>s Aboriginal Health Centre** has submitted an application to Health Canada to open a **permanent site in Hamilton**; the open application is still under review.⁴⁹ Urban Core and Wesley Urban Ministries have also expressed interest in supporting a permanent site.

OUR ASK

Our ask is that the **Hamilton City Council publically support the establishment and operation of a permanent safe consumption site in the downtown Hamilton core. We ask that Councilors write a letter citing their support of a permanent injection site to Health Minister Christine Elliott.**

In June of 2018, the Province of Ontario elected a **Conservative majority**, led by Premiere **Doug Ford**. Ford has publicly stated that he does not support SISs.⁵⁰ In July of 2018, the newly elected **Health Minister Christine Elliott** stated that she will review the evidence to determine if SISs “**have merit**”.⁵¹ As mentioned throughout our backgrounder, there is **considerable evidence to support harm reduction strategies** in mitigating **negative outcomes of the opioid crisis**. Although a proclamation on the state of SISs in the province of Ontario has yet to be released, we fear that evidenced-based harm reduction strategies like SISs will **lose government support/funding**, given the current political climate.

We recognize that support of SISs is a **controversial** matter, and one that often elicits public polarity. We hope that you will recognize the **danger** that the **people of Hamilton** face due to the opioid crisis and consider the **strong evidence in support of SISs** to mitigate those harms. As **future physicians in Ontario**, we believe **strongly** that **Hamilton cannot afford to lose this important healthcare service**. Therefore, we are **asking each Ward Councilor** to publically announce their **support for SIS and SCS** by writing a **letter to Minister for Health, Christine Elliott**.

REFERENCES

1. Trevor AJ, Katzung BG, Kruidering-Hall M, ed. *Katzung & Trevor's Pharmacology: Examination & Board Review, 11e*. New York, NY: McGraw-Hill;2015. <http://accessmedicine.mhmedical.com.libaccess.lib.mcmaster.ca/content.aspx?bookid=1568§ionid=95702914>. Accessed August 13, 2018.
2. About Opioids. Government of Canada. <https://www.canada.ca/en/health-canada/services/substance-use/problematic-prescription-drug-use/opioids/about.html>. Updates August 13, 2018. Accessed August 13, 2018.
3. Canadian Alcohol and Drug Use Monitoring Survey. Government of Canada. <https://www.canada.ca/en/health-canada/services/health-concerns/drug-prevention-treatment/drug-alcohol-use-statistics/canadian-alcohol-drug-use-monitoring-survey-summary-results-2012.html#s4>. Updated April 8, 2014. Accessed April 24, 2018.
4. Prescription Opioids. Canadian Centre on Substance Use and Addiction. <http://www.ccsa.ca/Resource%20Library/CCSA-Canadian-Drug-Summary-Prescription-Opioids-2017-en.pdf>. Updated September 2017. Accessed April 24, 2018.
5. National report: Apparent opioid-related deaths in Canada (released March 2018). Government of Canada. <https://www.canada.ca/en/public-health/services/publications/healthy-living/national-report-apparent-opioid-related-deaths-released-march-2018.html>. Updated March 27, 2018. Accessed April 24, 2018.
6. Joint Statement of Action to Address the Opioid Crisis. Government of Canada. https://www.canada.ca/en/health-canada/services/substance-abuse/opioid-conference/joint-statement-action-address-opioid-crisis.html?_ga=1.164248696.693163562.1476301565. Updated November 19, 2016. Accessed April 24, 2018.
7. Dugosh K, Abraham A, Seymour B, McLoyd K, Chalk M, Festinger D. A Systematic Review on the Use of Psychosocial Interventions in Conjunction With Medications for the Treatment of Opioid Addiction. *J Addict Med.* 2016;10(2):91-101.
8. Asbridge M, Cartwright J, Langille D. Driving under the influence of opioids among high school students in Atlantic Canada: Prevalence, correlates, and the role of medical versus recreational consumption. *Accid Anal Prev.* 2015;75:184-191.

9. Baser O, Xie L, Mardekian J, Schaaf D, Wang L, Joshi AV. Prevalence of diagnosed opioid abuse and its economic burden in the veterans health administration. *Pain Pract.* 2014;14(5):437-445.
10. Wall R, Rehm J, Fischer B, Brands B, Gliksman L, Stewart J, et al. Social costs of untreated opioid dependence. *J Urban Health.* 2000;77(4):688-722.
11. Gros DF, Milanak ME, Brady KT, Back SE. Frequency and severity of comorbid mood and anxiety disorders in prescription opioid dependence. *Am J Addict.* 2013;22(3):261-265.
12. von Hippel C, Henry JD, Terett G, Mercuri K, McAlear K, Rendell PG. Stereotype threat and social function in opioid substitution therapy patients. *Br J Clin Psychol.* 2017;56(2):160-171.
13. Kreek MJ. Extreme marginalization: addiction and other mental health disorders, stigma, and imprisonment. *Ann N Y Acad Sci.* 2013;1231:65-72.
14. Schuckit MA. Treatment of Opioid-Use Disorders. *NEJM.* 2016;375:357-368.
15. Marsch LA. The efficacy of methadone maintenance interventions in reducing illicit opiate use, HIV risk behaviour and criminality: A meta-analysis. *Addiction.* 1998;93(4):515-532.
16. Fullerton CA, Kim M, Thomas CP, Lyman DR, Montejano LB, Dougherty RH, et al. Medication-assisted treatment with methadone: Assessing the evidence. *Psychiatr Serv.* 2014;65(2):146-157.
17. Mattick RP, Breen C, Kimber J, Davoli M. Methadone maintenance therapy versus no opioid replacement therapy for opioid dependence. *Cochrane Database Syst Rev.* 2009;8(3).
18. Dazord A, Mino A, Page D, Broers B. Patients on methadone maintenance treatment in Geneva. *Eur Psychiatry.* 1998;13:235-241.
19. Morin KA, Eibl JK, Franklyn AM, Marsh DC. The opioid crisis: past, present and future policy climate in Ontario, Canada. *Subst Abuse Treat Prev Policy.* 2017;12:45-51.
20. Carter, A. Opioid emergency room visits in Hamilton at highest level in 14 years. *CBC News.* July 6, 2017. <https://www.cbc.ca/news/canada/hamilton/opioids-1.4193444>. Accessed August 7, 2018.

21. Hamilton Opioid Information System - Opioid Overdoses. Hamilton Public Health. Hamilton Public Health. <https://www.hamilton.ca/public-health/reporting/hamilton-opioid-information-system-opioid-overdoses>. July 27, 2017. Accessed August 7, 2018.
22. City of Hamilton Ward Profiles: Ward Two. City of Hamilton. Planning and Economic Development Department. <https://d3fpplf1m7bbt3.cloudfront.net/sites/default/files/media/browser/2015-06-01/ward-profiles-2011-ward-2.pdf>. 2011. Accessed August 7, 2018
23. City of Hamilton Ward Profiles: Ward Three. City of Hamilton. Planning and Economic Development Department. https://d3fpplf1m7bbt3.cloudfront.net/sites/default/files/media/browse_r/2015-06-01/ward-profiles-2011-ward-3.pdf. 2011. Accessed August 7, 2018.
24. Hamilton Opioid Information System – Emergency Department Visits and Hospital Admissions. Hamilton Public Health. <https://www.hamilton.ca/public-health/reporting/hamilton-opioid-information-system-emergency-department-visits-and-hospital>. August 23, 2018. Accessed September 1, 2018.
25. Hamilton Opioid Information System - Deaths. Hamilton Public Health. <https://www.hamilton.ca/public-health/reporting/hamilton-opioid-information-system-deaths>. July 27, 2017. Accessed August 7, 2018.
26. Hamilton Opioid Information System. Hamilton Public Health. <https://www.hamilton.ca/public-health/reporting/hamilton-opioid-information-system>. February 24, 2017. Accessed August 7, 2018.
27. Edinboro, L. E., Poklis, A., Trautman, D., Lowry, S., Backer, R., & Harvey, C. M. Fatal fentanyl intoxication following excessive transdermal application. *Journal of Forensic Science*. 1997;42(4): 741-743.
28. Apparent opioid-related deaths. Government of Canada. <https://www.canada.ca/en/health-canada/services/substance-use/problematic-prescription-drug-use/opioids/apparent-opioid-related-deaths.html>. August 13, 2018. Accessed August 7, 2018.
29. Kerr, T. Mitra, S. Kennedy, MC. McNeil, R. Supervised Injection Facilities in Canada: Past, Present, and Future. *Harm Red J*. 2017;14(1).
30. Potier, C. Laprévote, V. Dubois-Arber, F. Cottencin, O. Rolland, B. Supervised Consumption Services: what has been demonstrated? A systematic literature review. *Drug and Alcohol Dependence*. 2014; 145: 48–68.

31. Marshall B.DL. Milloy MJ. Wood E. Montaner JSG. Kerr T. Reduction in overdose mortality after the opening of North America's first medically supervised safer injecting facility: a retrospective population-based study. *Lancet*. 2011; 377:1429–37.
32. Kerr T. Oleson M. Tyndall M. W. Montaner J.,Wood E. A description of a peer-run supervised injection site for injection drug users. *J Urban Health*. 2005; 82:267–75.
33. Bayoumi A. M., Zaric G. S. The cost-effectiveness of Vancouver's supervised injection facility. *Can Med Assoc J*. 2008;179:1143–51.
34. Pinkerton S. D. How many HIV infections are prevented by Vancouver Canada's supervised injection facility? *Int J Drug Policy*. 2011;22:179–83.
35. Wood E, Tyndall MW, Zhang R, Montaner JS, Kerr T. Rate of detoxification service use and its impact among a cohort of supervised injecting facility users. *Addiction*. 2007;102(6):916–9.
36. Small W, Wood E, Lloyd-Smith E, Tyndall M, Kerr T. Accessing care for injection-related infections through a medically supervised injecting facility: a qualitative study. *Drug Alcohol Depend*. 2008;98:159–62.
37. Andresen MA, Boyd N. A cost-benefit and cost-effectiveness analysis of Vancouver's supervised injection facility. *Int J Drug Policy*. 2010; 21:70–6.
38. Wood E, Kerr T, Montaner JS, Strathdee SA, Wodak A., Hankins CA, Schechter MT, Tyndall MW. Rationale for evaluating North America's first medically supervised safer-injecting facility. *Lancet Infect Dis*. 2004;4(5):301–6.
39. Petrar S, Kerr T, Tyndall MW, Zhang R, Montaner JSG, Wood E. Injection drug users' perceptions regarding use of a medically supervised safer injecting facility. *Addict Behav*. 2007; 32:1088–93
40. Stoltz JA, Wood E, Small W, Li K., Tyndall M., Montaner J. Kerr T. Changes in injecting practices associated with the use of a medically supervised safer injection facility. *J Public Health (Oxf)*. 2007; 29(1): 35–9
41. Four Pillars drug strategy. City of Vancouver. <https://vancouver.ca/people-programs/four-pillars-drug-strategy.aspx>. 2018. Accessed September 2, 2018.
42. Hamilton supervised injection site: Needs assessment & feasibility study. Hamilton, ON. City of Hamilton. <https://www.hamilton.ca/city-initiatives/strategies-actions/supervised-injection-site-needs-assessment-feasibility-study>. December 2017. Accessed August 7, 2018.

43. The AIDS Network. The AIDS Network: Hamilton, Halton, Haldimand, Norfolk and Brant. <https://www.aidsnetwork.ca/>. Accessed September 1, 2018.
44. Elizabeth Fry Society – Southern Ontario Region. Elizabeth Fry Society. <https://www.efrysouthernontarioregion.org/>. Accessed September 1, 2018.
45. Hamilton Urban Core Community Health Center. Hamilton Urban Core. <http://www.hucchc.com/>. Accessed September 1, 2018.
46. Hamilton Opioid Information System – Naloxone. Hamilton Public Health. <https://www.hamilton.ca/public-health/reporting/hamilton-opioid-information-system-naloxone>. August 23, 2018. Accessed September 1, 2018.
47. Clinics & Services. City of Hamilton. <https://www.hamilton.ca/public-health/clinics-services>. Accessed September 1, 2018.
48. Hamilton Urban Core/Shelter Health Overdose Prevention Site. Shelter Health Network. http://shelterhealthnetwork.ca/?page_id=983. Accessed September 1, 2018.
49. Supervised consumption sites: Status of application. Government of Canada. <https://www.canada.ca/en/health-canada/services/substance-use/supervised-consumption-sites/status-application.html>. August 29, 2018. Accessed September 2, 2018.
50. Doug Ford says he's "dead against" supervised injection sites. *CBC News*. <https://www.cbc.ca/news/canada/windsor/doug-ford-says-he-s-dead-against-supervised-injection-sites-1.4628547>. April 20, 2018. Accessed September 1, 2018.
51. Ontario to review safe injection, overdose prevention sites, health minister says. *CBC News*. <https://www.cbc.ca/news/canada/toronto/ontario-safe-injection-sites-limbo-1.4760002>. July 24, 2018. Access September 1, 2018.