The impact of supervised consumption sites on acute care health services: A literature review

Carly Mastromonaco, MPAS Candidate, BSc
7764266
mastromc@myumanitoba.ca

Mentor: Dr. Em Pijl PhD, RN
Program Director: Rebecca Mueller, PA-C, MSc

A capstone project submitted to the Faculty of Graduate Studies of the University of Manitoba in partial fulfillment of the requirements for the degree of

MASTER OF PHYSICIAN ASSISTANT STUDIES

Department of Physician Assistant Studies
Max Rady College of Medicine and Faculty of Graduate Studies
University of Manitoba
Winnipeg, Canada
May 15, 2023

Table of Contents

Abstract

People who use illicit drugs (PWUD) have higher rates of health care utilization compared to the general population. Additionally, PWUD are more than four times as likely to leave hospital against medical advice, contributing to costly readmissions for incompletely treated medical issues. Addressing this issue and providing efficacious care to PWUD requires the integration of adequate harm reduction strategies in the community and in acute care facilities. Supervised consumption sites are legally sanctioned facilities with trained staff that supervise the use of pre-obtained drugs and provide clean and safe drug equipment to PWUD. The aim of these sites is to prevent accidental overdose and reduce the spread of infectious diseases, while providing a safe environment and community for PWUD to have access to addictions resources, health services and other social supports. The purpose of this literature review is to identify the degree to which supervised consumption sites can impact health care utilization amongst PWUD. Specifically, this review aims to identify the impact that community-based SCS have on overdose-related ambulance attendance, emergency department visits, and hospitalization, as well as the impact that hospital-based SCS have on reducing patient-directed discharges for PWUD and contributing to medical retention of patients. This literature review identifies that the implementation of community-based SCS significantly reduces the use of emergency medical services for PWUD and is associated with decreased healthcare costs. The literature identifies a clear demand for access to SCS for hospitalized PWUD, however more research is needed to understand the efficacy of hospital-based SCS at reducing harm and decreasing the rates of patient-directed discharge and costly readmissions in this population.

Introduction

People who use illicit drugs (PWUD) have higher rates of health care utilization as compared to the general population, including emergency department use and increased rates of hospital admission in acute care facilities (1). This increased health service utilization is associated with elevated health system costs for this population. A meta-analysis that included ninety-two studies from North America and Australia identified PWUD as 4.8 times as likely to visit the emergency room and 7.1 times as likely to be admitted to hospital when compared to the general population (2). The most common reasons for medical service use in this population include soft-tissue or other injection related illnesses, and overdose (1). Increased rates of hospitalization among this population are often a result of later presentation in course of illness (1). Many social factors contribute to late presentation and increased service use, including unstable housing and limited access to primary care (3). Stigma and judgment among health care providers has also been shown to keep PWUD away from the health services they need (4, 5). Once admitted to hospital, PWUD are more than four times as likely to leave hospital against medical advice (AMA), often receiving incomplete and insufficient medical treatment causing more frequent and costly readmissions (6). Addressing this issue and providing efficacious healthcare to PWUD requires the integration of adequate harm reduction strategies in the community and in acute care facilities.

One evidence-based harm reduction initiative being implemented in Canada and globally is supervised consumption sites (SCS), also commonly referred to as safe injection facilities (SIF) or drug consumption rooms (DCR). Supervised consumption sites are legally sanctioned facilities with trained staff that supervise the use of pre-

obtained drugs and provide clean and safe drug equipment to PWUD (7). The aim of these sites is to prevent accidental overdose and reduce the spread of infectious diseases, while providing a safe environment and community for PWUD to have access to addictions resources and other health and social supports. Additional benefits of these sites include reduced public drug use and discarded drug equipment (7). Practice guidelines for the management of opioid use disorders published in the Canadian Medical Association Journal (8) have identified access to supervised consumption sites as standard of care across the treatment continuum for drug-related harm reduction. Despite these guidelines and the extensive research base that identifies the efficacy of SCS in harm reduction, many personal and political concerns surrounding these sites threaten implementation efforts in Canada. For example, Manitoba is the only province west of Atlantic Canada lacking dedicated supervised consumption services, despite a record number of deaths from illicit substances in the province in 2020 and 2021 (9, 10). The number of illicit substance related deaths in 2020 in Manitoba increased an astonishing 87% from 2019 (11). Additionally, paramedics in the province saw a dramatic increase in the number of patients needing administration of naloxone, an opioid antagonist used in emergency treatment of acute opioid overdose (12, 13).

This increase in drug-related harm for PWUD poses a significant burden on the healthcare system. The Manitoba Centre for Health Policy recently reported that methamphetamine ("meth") users had higher rates of health care system use compared with all other Manitobans (14). The year following a person's first documented experience using meth, they visited the emergency department an average of six times in one year, compared to the average Manitoban who visits the emergency department once

every three years on average. This report also identified that from 2013 to 2018, the number of Manitobans with health care contacts related to first-time meth use rose sevenfold (14). This increase in drug use and health care utilization amongst PWUD contributes to an already over-burdened system in Canada in a post-pandemic publicly funded system. The Canadian Institute for Health Information identified Manitoba as having the longest emergency room waits in the country, with an average wait time of 5.2 hours, and 10% of patients waiting 20.6 hours to be seen (15). In the hospital setting, Canada has the second-lowest number of acute care beds per capita among nations in the Organisation for Economic Co-operation and Development (OECD) with an occupancy rate for these beds at over 90% (16). Identifying ways to relieve this system burden is crucial to ensuring the sustainability of Canada's healthcare system, and implementing community-based services like supervised consumption sites is one way to address the burden imposed on the system due to increased usage by PWUD. Additionally, implementing SCS into acute care facilities may contribute to a decreased likelihood of PWUD to leave against medical advice by meeting the needs of in-patients who use drugs and contributing to fewer patient directed discharges.

The purpose of this literature review is to identify if implementation of supervised consumption sites has an impact on health care utilization amongst PWUD. This review aims to identify if literature suggests that SCS implementation can decrease acute care health service use amongst PWUD, therefore decreasing overall strain on emergency medical services and acute care hospitals. The goal is to assess whether community-based SCS can keep PWUD out of hospital by identifying and treating overdoses early and providing sterile drug equipment, and if hospital-based SCS can keep PWUD in hospital

to address their health concerns fully and decrease the need for costly readmissions due to premature patient-directed discharges. While SCS have already been proven to be cost effective (17, 18), this review will aim to identify potential cost impacts related to emergency medical services and acute care facility use specifically. Understanding the ways in which SCS implementation benefits PWUD as well as the overall healthcare system is crucial to advocacy efforts and implementation and maintenance of these sites in Canada.

Methods

This literature review was conducted using the search engines PubMed and SCOPUS through the University of Manitoba's library to find peer-reviewed articles. The following key-words were used: supervised consumption sites, safe injection, ambulance, emergency department, cost savings, acute care, and hospitals. Inclusion criteria included studies that were published in a peer-reviewed journal in the past 20 years that analyzed the impact of SCS implementation on ambulance services, emergency department visits, and rates of hospitalization. Studies that analyzed the implementation of hospital-based SCS were included. Studies addressing the impact of SCS on overdose mortality and HIV and other infectious diseases but did not directly relate this to acute care health service utilization were not included in this review. In addition, prospective studies that estimated cost savings and health care utilization in cities without an already established SCS were not included.

Literature Review

Community-based SCS

The Government of Canada identifies reducing strain on emergency medical services as a key goal of supervised consumption sites (19). These sites present a unique opportunity to identify and intervene in potential overdose situations early and in a location acceptable to clients. This early intervention should lead to fewer emergency medical services calls and a lower overdose mortality rate. A study in Australia (20) aimed to identify if supervised consumption sites help to ease the strain of overdose related calls on ambulance services by analyzing overdose related ambulance attendances before and after the opening of a supervised injection facility in Sydney, New South Wales. The researchers classified an opioid related overdose as one in which naloxone was administered, and defined ambulance attendance within a certain vicinity of the site compared to the rest of the state. The "immediate area" was defined as an area 2.1 km^2 surrounding the site, where the drug scene in New South Wales (NSW) was most concentrated, and the "neighbouring area" was an additional 1.5 km^2. Additional ambulance attendances outside of the immediate and neighbouring areas were considered the "rest" of NSW. The results of the study indicated a 68% reduction in overdose related ambulance calls in the vicinity of the site during operational hours as compared to the rest of NSW (20). The immediate vicinity saw the largest decrease of 80%, while the neighbouring area saw a decrease of 45%. These declines were the greatest during the operational hours of the site. Researchers concluded that the early intervention and care provided at the Sydney site for PWUD reduced the need for ambulance services, which in turn could allow these emergency services to tend to other emergencies in the

community. Additionally, the significant decline in the immediate vicinity of the site highlights that SCS may be most beneficial when located in areas of concentrated drug use.

An important consideration in this study was that nurses and staff at this particular site are adequately trained in the administration of naloxone and appropriate supportive overdose management that did not require emergency services to be utilized as often. A significant limitation to this study was the coinciding time of the introduction of the site in 2001 with an overall reduction in heroin supply availability in Australia in 2001. The researchers attempted to mitigate this limitation with the inclusion of control areas, including the neighbouring area, and the rest of NSW in the study (20).

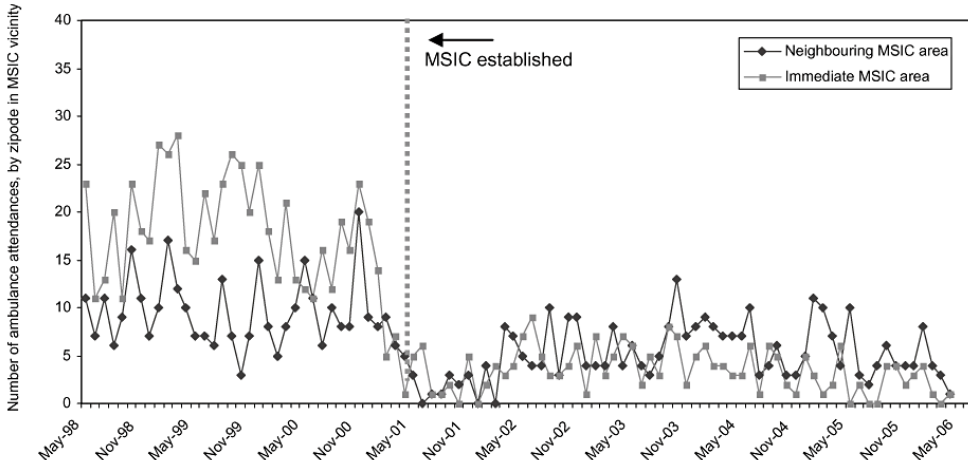

Figure 1: Number of ambulance attendances at opioid-related overdoses in immediate and neighbouring Medically Supervised Injecting Centre (MSIC) areas in Sydney, Australia within opening hours: May 1998–April 2006. (20).

In Canada, the first legally sanctioned supervised injection facility was established in Vancouver, BC in 2003 in response to the province's overdose crisis (21). In 2016, the overdose crisis in BC was declared a public health emergency. In addition to two pre-existing supervised injection facilities, the province implemented SCS and

overdose prevention sites (OPS) in response to this crisis (21). OPS in BC differ from SCS in that OPS do not require legal exemption from Health Canada to operate and tend to operate as peer-run with less operational resources (22). Researchers examined the population effects of OPS and SCS implementation on acute health service use from January 2015 to December 2017 (23). They used a controlled interrupted time series study using public health records to analyze mortality rates, ambulance attendances, emergency department visits, and hospitalizations in local health areas (LHA) in BC. LHA that had implemented OPS and SCS were matched via propensity scores to LHA that did not have these services available over the study period to create control LHAs. The results indicated that the rate of paramedic-attended events actually increased initially by 30.1%, but then declined 3.0% per month following initial implementation. This indicates a 23.5% relative decrease in paramedic-attended events twelve months after site implementation. Similarly, emergency department visits initially increased by 22.8% with a 3.6% decline per month for a relative decrease of 39% twelve months post-implementation (23). This analysis found no significant change in rates of hospitalizations. Researchers concluded that the initial spike in ambulance and emergency department visits that preceded the decline could be attributed to initial guidelines that suggested staff call emergency services for any overdose reversed with the use of naloxone on site. More discretion was allowed for staff over time to decide whether to involve emergency services and protocols were adapted accordingly. One limitation to this study would be that the use of different LHA included geographically dispersed clients, which may dilute the impact of SCS in LHA that have a more concentrated population of drug use in a closer physical range to the site. Additionally,

certain confounding variables were unable to be accounted for in propensity-matching of LHA, such as the local drug toxicity or political leadership and culture that may contribute to successful implementation and management of sites in different health areas.

A study in the United States from 2018 to 2020 (24) found similar results to the previous Vancouver study (23) in regard to decreased emergency department use by PWUD accessing SCS. Researchers used longitudinal survey data from PWUD in an undisclosed area where an unsanctioned SCS was established in 2014 to identify whether the use of the unsanctioned SCS had an impact on medical outcomes. Due to the unsanctioned nature of the site, visits were acquired by invitation only so as to not draw unnecessary attention to the site in the community, as well as due to capacity limitations of the site. On-site staff are community health workers trained in overdose prevention, identification, and treatment strategies, and can provide necessary referrals to other health and social services for clients as necessary, although these services are not directly available on site. PWUD in the surrounding area were recruited to participate in the study, and had to meet the following criteria to be eligible: be 18 years of age or older, have injected illicit drugs within the last 30 days, and provide informed consent (24).

Using the survey data to compare participants who used the SCS to those who did not, researchers found that people who used the SCS were 27% less likely to visit the emergency department and had 54% fewer emergency department visits overall (24). In contrast to the Vancouver study (23), this study also noted an impact on hospitalization rates, with people using the SCS being 32% less likely to be hospitalized. They also found that people using the SCS spent 50% fewer nights in hospital during admission (7).

One limitation for this study was that emergency use visits and hospitalizations were self-reported which may lead to response biases and that no hospital records or administrative data were able to verify these self-reported figures. Additionally, only 12% of participants used the SCS for a small number of injections. Larger cohort studies would be beneficial to measure a dose-response effect that is statistically significant.

While these studies (23, 24) indicate a decrease in usage of emergency department services, they do not identify whether there is a relative cost savings for the healthcare system as a result. One study in Calgary (25) assessed the 'Safeworks Harm Reduction Program,' a nurse-led service established in 2017 that provides access to 24/7 supervised consumption services. The researchers used population level data to complete a cost analysis from a payer's perspective, assessing the potential cost savings of overdose management at the site from November 2017 to January 2020. This data included the monthly operational costs of the SCS, costs of ambulance provided care for overdoses for which the client could not be revived at the facility, cost of initial emergency department treatment, and the benefit of costs averted from overdoses that were successfully managed at the facility. Efficacy of overdose management at the SCS was supported by the fact that the site has not experienced any overdose-related deaths since it's inception in 2017, and that 98% of overdoses are managed on-site. The findings of this study revealed that each overdose that is managed at the site produced a benefit of $1622. The study concluded that from the time of inception of the site in November 2017 to January 2020, over $2.3 million in cost savings occurred due to successful management of overdoses on site (25). These cost savings were directly related to avoiding the need for ambulance and emergency department savings. Interestingly, this

study did not include the cost of overdose patients who required subsequent hospital admission following initial emergency department assessment. This would indicate that the final costs savings identified in this study actually underestimates total cost savings when accounting for the extensive costs of hospital admissions that were not included (25).

This study contributes to the literature that had previously identified Insite, the first SCS established in Vancouver, to be cost effective due to reduction of costly HIV infections amongst PWUD. The study identified that preventing 83.5 HIV infections leads to a total cost savings of $17.6 million, in relation to Insite's operating costs of $3 million per year (17).

Hospital-based SCS

In hospitals, abstinence-based approaches appear to be the most common harm reduction strategies, despite evidence that these strategies are ineffective at addressing the needs of hospitalized PWUD and do not prohibit drug use (26). One prospective cohort study in Vancouver identified that 44% of PWUD report illicit drug use while admitted at an acute care facility (27). Ineffective harm reduction strategies lead to high-risk drug seeking and use behaviours in hospital which cause poor health outcomes, increased rates of patient-directed discharges and more frequent hospital readmissions (1). Accommodating active drug use in hospitals through a harm reduction approach instead of an abstinence-based approach would likely lead to a decline in patient-directed discharge and increase patient retention for medical treatment (1).

The Dr. Peter Centre in Vancouver was the first health care facility in North America to implement supervised consumption services for patients in their facility in

2002 (28). The Director of Nursing at the site provided anecdotal nursing evidence of the success of the program, noting less injection-related harm such as abscesses and cellulitis with implementation of supervised injection services (28). As well, these supervised injection practices allow for a unique education opportunity on safe injection practices, with one patient remarking, “I’ve been using for over 30 years and I had no idea a needle had an upside and a downside.” Additionally, the director notes multiple instances of patients who have received resources for further addiction management and detoxification after discussions with the nursing staff. Supervised consumption sites provide a unique opportunity for safe injection education and additional resource access for high-risk populations in hospital (29).

While the Dr. Peter Centre was the first to provide supervised injections services in hospital, the first legally sanctioned in-patient SCS in North America opened in 2018 in Edmonton, Alberta at the Royal Alexandra Hospital (30). Patients wishing to consume their pre-obtained substances at the site are initially assessed for medical stability and are provided with safe use education and sterile drug equipment. Patients are monitored for adverse reactions for 20 minutes following drug use, and are provided with access to addiction medicine treatment as well as other psychosocial supports and resources. There were 7856 visits to the site between April 2018 and November 2019, with 27 emergency situations tended to and no deaths (30).

St. Paul’s Hospital located in downtown Vancouver opened an overdose prevention site (OPS) in 2018 (31). This site allows access for both hospital in-patients and community members and is located in an area of concentrated substance use. The site consists of four booths and is staffed by peer support specialists. Researchers in B.C.

used a retrospective chart review method to analyze and characterize program utilization, and assess overdose events. Between May 2018 and July 2019, the number of visits monthly to the OPS more than tripled from 306 to 1196 visits, with a total of 11 673 visits recorded (31). 20% of the visits were hospital in-patients, with an increase of 13% in May 2018 to 24% in July 2019. 5% of visits involved the use of a hospital issued intravenous line to self-administer drugs. 0.3% of visits resulted in overdose, with 82% of these requiring the administration of Narcan and 28% requiring transfer to the hospital's emergency department. There were no fatal overdoses recorded in the study period. Interestingly, hospital in-patients had a higher rate of overdose at 2.2 per 1000 visits compared to community clients at 6.6 per 1000 visits. Researchers hypothesize that this may be due to a multitude of factors including patients being in a state of acute illness, decreased tolerance due to hospitalization, and concurrent opioid prescribing in hospital for pain or withdrawal. Employing nurses with access to hospitalization records including current medications for in-patients may help to mitigate this risk. Limitations to this study include generalizability to other acute care settings, self-reported data, and data being collected per visit and not per person, limiting result interpretation on an individual level.

This study confirms the demand for in-patients to have access to safe consumption services. Evidence of the demand is also supported by studies showing that 68.2% of PWUD would be willing to access an SCS in hospital (32). In 2021, a feasibility study for implementation of supervised injection services at a specialty HIV hospital in Toronto identified that 76% of patients were accepting and supportive of these services for inpatients (33). In addition to patient support, 82% of philanthropic donors

were in favor of implementing supervised consumption services at this facility (34). Researchers also noted that successful implementation of these services in hospital involves overcoming regulatory and other barriers (30). Barriers to accessing in-patient SCS for PWUD include fear of criminalization and stigmatization that may affect patient care by healthcare workers (35). This is important for healthcare providers to be aware of, and providing harm-reduction and trauma-informed care education for health providers to address biases and stigma is crucial to the success of SCS implementation.

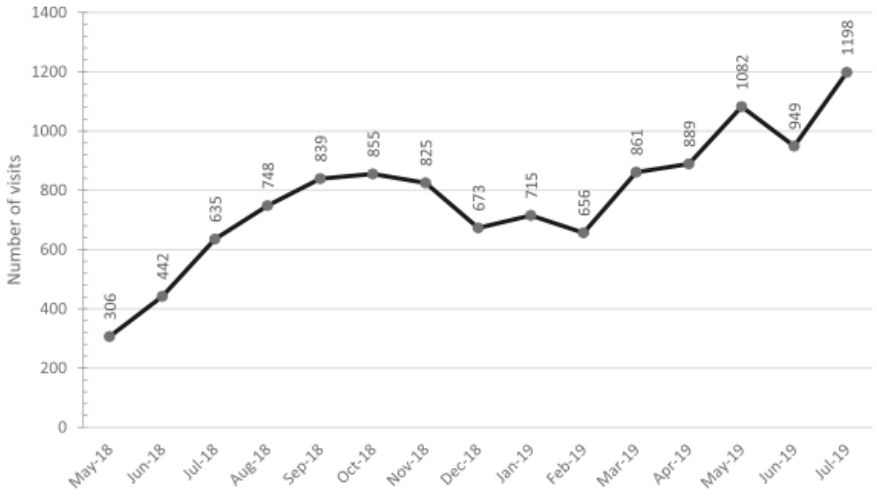

Figure 2. Total number of visits per month to the St. Paul's Hospital's Overdose Prevention Site (SPH OPS), Vancouver, Canada (May 2018 – July 2019). (31)

Discussion

This literature review identifies that the implementation of SCS in the community significantly reduces the use of emergency medical services for PWUD and is associated with decreased healthcare costs. Research in Australia (20) clearly identifies that implementation of SCS can lead to a reduction in overdose-related ambulance attendance in the community and therefore free ambulance services to attend to other emergencies.

This requires that staff at SCS are adequately trained in early overdose identification and management to work on site, which is an important consideration for implementation. This finding was supported by Canadian and U.S. studies (23, 24).

In Vancouver, researchers were able to identify a 23.5% decrease in overdose related ambulance calls and a 39% decrease in emergency department visits twelve months following implementation of SCS (20). There was no statistically significant effect on hospitalization rates. In the US, researchers found that participants who used SCS were 32% less likely to be hospitalized and spent 50% fewer nights in hospital during admission (24). The methodology of these studies was significantly different, with researchers in Vancouver examining population effects of implementation of multiple sites in multiple different health areas, and researchers in the US using survey reports to examine a localized effect at one unsanctioned site. Future research in Canada should address more localized effects, similar to the design of the US study, given the described limitation of the Canadian study in accounting for geographical confounders such as local politics and areas of drug use and supply toxicity. Major limitations to the US study include self-reported data by participants. For example, it was reported that participants who used SCS had 50% fewer days hospitalized than patients who did not. However, no medical or hospital data was used to support these findings, and fewer nights in hospital does not mean completed treatment. As clearly described in this literature review, PWUD have significantly higher rates of patient-directed discharge without receiving full medical treatment. It would be important to address whether the participants had fewer nights in hospital because they simply required less medical attention due to safe

injecting practices, or if they had fewer nights because there were more patient-directed discharges. Future research should address the impact of SCS on hospitalization rates.

Not only does the reduction in health care utilization of acute care services lessen the burden on our system, the literature supports that it also reduces overall costs. This was confirmed by the cost savings of site overdose management shown in the study in Calgary (25). This adds to the already existing body of literature that identifies that SCS are cost effective (17), and is an important advocacy point for implementation efforts.

The research clearly illustrates the demand for hospital-based SCS in acute care settings (31), as well as PWUD willingness to use these services (32), however there is a significant gap in the literature in regard to understanding the impact of implementation of SCS on decreasing rates of patient-directed discharge. Future research should identify if hospital-based SCS can reduce patient-directed discharge and therefore decrease costly readmissions for this population. Research could then identify if completion of medical treatment results in ultimate health cost savings due to reduction of representation in this population. Fewer readmissions in this population also contributes to more available hospital beds for other acute care patients.

Significant anecdotal nursing evidence supports implementation of SCS in hospitals (28). Although the Director of Nursing from the Dr. Peter Centre identified that supervised injections at the facility did reduce the amount of drug use related infections, this has not yet been substantiated with evidence. Research to confirm this by assessing the rates of infections in patients using these services would be beneficial to substantiate these claims and strengthen the argument for hospital-based supervised consumption services.

Concerns of stigmatization by PWUD provide a barrier to using SCS in hospital (35). Understanding this dynamic is essential for health providers when treating PWUD. While advocacy for implementation of these sites is crucial to effective harm reduction, so is effective harm-reduction based practices by healthcare workers to ensure these environments remain a safe place for PWUD to utilize them. As well, improved patient-provider relationships will lead to increased willingness to accept further addiction supports in this population, and have overall positive effects on treatment adherence and overall health outcomes (36).

As described in the methods section, this review did not include studies that showed reduction in overdose mortality and HIV and other infectious diseases but did not show a subsequent result on health care utilization as a result. However, many articles showing a reduction in mortality and infectious disease spread conclude that there is an assumed reduction on health care utilization as a result (37, 38). Additionally, creating a safe environment on site with trusted staff creates more opportunity for PWUD to address their medical issues before the point of requiring ED use or hospitalization. Future research should address the impact of early health interventions by staff at SCS, and the willingness of PWUD to address their health issues proactively as a result.

It is important to consider that the majority of the studies included in this literature review address health care utilization by PWUD until the year 2020. However, the COVID-19 pandemic significantly increased drug use and overdose rates (39). This highlights the importance of implementation of effective harm-reduction strategies such as SCS, and further research should identify the impact that the pandemic had on existing SCS usage. It is likely that isolation requirements during the pandemic led to decreased

use of these sites, which could in turn be related to an increase in overdose rates. Future research is needed to explore the impact of the COVID-19 pandemic on SCS utilization.

Conclusions

This literature review identifies that the implementation of community-based SCS significantly reduces the usage of emergency medical services for PWUD and is associated with decreased healthcare costs. Provinces such as Manitoba that do not currently offer supervised consumption services may benefit from SCS implementation not only for harm-reduction purposes, but to help decrease the strain on medical services including ambulances, emergency departments and acute care hospitals.

There is a clear demand for in-hospital supervised consumption services. Further research is needed in this area to identify if these services contribute to better care and health outcomes for PWUD. Research should identify if these services can reduce patient-directed discharge and therefore reduce the rate of costly readmissions in this population. Further education for healthcare workers on adequate harm-reduction based practices is key to the success of supervised consumption sites in reducing drug-related harm and improving health outcomes for PWUD.

Identifying the impact of SCS on acute care health services is crucial to continuing the global understanding of implementation of these sites as effective harm reduction measures. As personal and political concerns continue to threaten implementation efforts, reinforcing and identifying additional benefits of SCS for PWUD as well as the overall healthcare system in Canada, such as reducing the burden on emergency medical services and acute care facilities, is imperative for effective advocacy.

References

(1) Rachlis BS, Kerr T, Montaner JS, Wood E. Harm reduction in hospitals: is it time? Harm Reduct J. 2009 Jul 29;6:19. doi: 10.1186/1477-7517-6-19. PMID: 19638238; PMCID: PMC2731094.

(2) Lewer D, Freer J, King E, Larney S, Degenhardt L, Tweed EJ, et al. Frequency of health‐care utilization by adults who use illicit drugs: a systematic review and meta‐analysis. Addiction. 2020 Feb 10;115(6):1011–23.

(3) Fairbairn N, Milloy MJ, Zhang R, Lai C, Grafstein E, Kerr T, Wood E. Emergency department utilization among a cohort of HIV-positive injecting drug users in a Canadian setting. J Emerg Med. 2012 Aug;43(2):236-43. doi: 10.1016/j.jemermed.2011.05.020. Epub 2011 Jun 29. PMID: 21719229; PMCID: PMC3189422.

(4) Martin M, Snyder HR, Otway G, Holpit L, Day LW, Seidman D. In-hospital Substance Use Policies: An Opportunity to Advance Equity, Reduce Stigma, and Offer Evidence-based Addiction Care. J Addict Med. 2023 Jan-Feb 01;17(1):10-12. doi: 10.1097/ADM.0000000000001046.

(5) Mayer S, Langheimer V, Nolan S, Boyd J, Small W, McNeil R. Emergency department experiences of people who use drugs who left or were discharged from hospital against medical advice. PLoS One. 2023 Feb 23;18(2):e0282215. doi: 10.1371/journal.pone.0282215. PMID: 36821576; PMCID: PMC9949621.

(6) Anis AH, Sun H, Guh DP, Palepu A, Schechter MT, O'Shaughnessy MV. Leaving hospital against medical advice among HIV-positive patients. CMAJ 2002, 167:633-7.

(7) Supervised Consumption Services [Internet]. National Harm Reduction Coalition. Available from: https://harmreduction.org/issues/supervised-consumption-services/

(8) Bruneau J, Ahamad K, Goyer M, et al. Management of opioid use disorders: a national clinical practice guideline. CMAJ 2018;190:E24757.

(9) Hobson B. Feds back supervised consumption sites day after Manitoba introduces bill on licensing them [Internet]. CBC. 2023 [cited 2023 May 14]. Available from: https://www.cbc.ca/news/canada/manitoba/federal-health-minister-safe-consumption-sites-manitoba-1.6779670#:~:text=Manitoba

(10) Cram S. More Manitobans died of overdose deaths in 2021 than ever before: chief medical examiner's data [Internet]. CBC. 2022. Available from: https://www.cbc.ca/news/canada/manitoba/overdose-deaths-record-2021-1.6414624

(11) Report of an Evaluation of Manitoba Harm Reduction Network Services in the Context of the COVID-19 Pandemic January 2022 PREPARED BY: Prepared for the Manitoba Harm Reduction Network by The National Collaborating Centre for Infectious

Diseases [Internet]. [cited 2023 May 14]. Available from: https://nccid.ca/wp-content/uploads/sites/2/2022/02/MHRN-report_2022_Final.pdf

(12) Opioid overdose cases in Winnipeg sharply increase in first half of 2020 [Internet]. CBC. 2020 [cited 2023 May 14]. Available from: https://www.cbc.ca/news/canada/manitoba/opioid-cases-increase-first-half-of-2020-1.5697199https://www.cbc.ca/news/canada/manitoba/opioid-cases-increase-first-half-of-2020-1.5697199

(13) National Institute on Drug Abuse. Naloxone DrugFacts [Internet]. National Institute on Drug Abuse. 2022. Available from: https://nida.nih.gov/publications/drugfacts/naloxone

(14) Nickel N, Chartier M, Mcdonald N, Sarkar J, Dragan R, Ma S, et al. Methamphetamine Use in Manitoba: A Linked Administrative Data Study Manitoba Centre for Health Policy [Internet]. [cited 2023 May 13]. Available from: http://mchp-appserv.cpe.umanitoba.ca/reference/METH_Report_web.pdf

(15) Oldcorn C. ER wait times rise in Saskatchewan and Manitoba, almost back to pre-pandemic levels [Internet]. Western Standard. [cited 2023 May 13]. Available from: https://www.westernstandard.news/news/er-wait-times-rise-in-saskatchewan-and-manitoba-almost-back-to-pre-pandemic-levels/article_ff95043c-7d95-11ed-b434-d7e79204ead4.html

(16) Woolley F. Coronavirus is about to reveal how fragile our health system is [Internet]. Policy Options. [cited 2023 May 13]. Available from: https://policyoptions.irpp.org/fr/magazines/march-2020/coronavirus-is-about-to-reveal-how-fragile-our-health-system-is/

(17) Pinkerton SD. Is Vancouver Canada's supervised injection facility cost-saving? Addiction. 2010 Jul 9;105(8):1429–36. Available from: https://doi-org.uml.idm.oclc.org/10.1111/j.1360-0443.2010.02977.x

(18) Enns EA, Zaric GS, Strike CJ, Jairam JA, Kolla G, Bayoumi AM. Potential cost-effectiveness of supervised injection facilities in Toronto and Ottawa, Canada. Addiction. 2016 Mar;111(3):475-89. doi: 10.1111/add.13195. Epub 2015 Nov 30. PMID: 26616368.

(19) Government of Canada. Supervised consumption sites and services: Explained [Internet]. aem. 2018. Available from: https://www.canada.ca/en/health-canada/services/substance-use/supervised-consumption-sites/explained.html#a1

(20) Salmon AM, van Beek I, Amin J, Kaldor J, Maher L. The impact of a supervised injecting facility on ambulance call-outs in Sydney, Australia. Addiction. 2010 Apr;105(4):676-83. doi: 10.1111/j.1360-0443.2009.02837.x. Epub 2010 Feb 9. PMID: 20148794.

(21) Kerr T, Mitra S, Kennedy MC, McNeil R. Supervised injection facilities in Canada: past, present, and future. Harm Reduction Journal. 2017 May 18;14(1). https://doi.org/10.1186/s12954-017-0154-1

(22) Canada's Supervised Consumption and Overdose Prevention Sites [Internet]. Pivot Legal Society. [cited 2023 May 13]. Available from: https://www.pivotlegal.org/scs_ops_map#:~:text=What's%20the%20difference%20between%20an,Controlled%20Drugs%20and%20Substances%20Act.

(23) Panagiotoglou D. Evaluating the population-level effects of overdose prevention sites and supervised consumption sites in British Columbia, Canada: Controlled interrupted time series. Lim S, editor. PLOS ONE. 2022 Mar 22;17(3):e0265665.

(24) Lambdin BH, Davidson PJ, Browne EN, Suen LW, Wenger LD, Kral AH. Reduced Emergency Department Visits and Hospitalisation with Use of an Unsanctioned Safe Consumption Site for Injection Drug Use in the United States. Journal of General Internal Medicine [Internet]. 2022 Jan 12;37(15):1–8. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8753940/

(25) Khair S, Eastwood CA, Lu M, Jackson J. Supervised consumption site enables cost savings by avoiding emergency services: a cost analysis study. Harm Reduct J. 2022 Mar 28;19(1):32. doi: 10.1186/s12954-022-00609-5. PMID: 35346223; PMCID: PMC8959556.

(26) McNeil R, Small W, Wood E, Kerr T. Hospitals as a "risk environment": An ethno-epidemiological study of voluntary and involuntary discharge from hospital against medical advice among people who inject drugs. *Soc Sci Med.* 2014 Mar;105:59–66.

(27) Grewal HK, Ti L, Hayashi K, Dobrer S, Wood E, Kerr T. Illicit drug use in acute care settings. Drug Alcohol Rev. 2015 Sep;34(5):499-502. doi: 10.1111/dar.12270. Epub 2015 May 6. PMID: 25944526; PMCID: PMC4636467.

(28) Wood RA, Zettel P, Stewart W. Harm reduction nursing: The Dr. Peter Centre [Internet]. The Canadian Nurse, 99(5), 20-4. [cited 2023 January 6] Available from: https://uml.idm.oclc.org/login?url=https://www.proquest.com/scholarly-journals/harm-reduction-nursing-dr-peter-centre/docview/230502129/se-2

(29) Wood RA, Wood E, Lai C, Tyndall MW, Montaner JS, Kerr T. Nurse-delivered safer injection education among a cohort of injection drug users: evidence from the evaluation of Vancouver's supervised injection facility. Int J Drug Policy. 2008 Jun;19(3):183-8. doi: 10.1016/j.drugpo.2008.01.003. Epub 2008 Mar 26. PMID: 18367389.

(30) Dong KA, Brouwer J, Johnston C, Hyshka E. Supervised consumption services for acute care hospital patients. CMAJ. 2020 May 4;192(18):E476-E479. doi: 10.1503/cmaj.191365. PMID: 32366467; PMCID: PMC7207181.

(31) Nolan S, Kelian S, Kerr T, Young S, Malmgren I, Ghafari C, Harrison S, Wood E, Lysyshyn M, Holliday E. Harm reduction in the hospital: An overdose prevention site (OPS) at a Canadian hospital. Drug Alcohol Depend. 2022 Oct 1;239:109608. doi: 10.1016/j.drugalcdep.2022.109608.

(32) Ti L, Buxton J, Harrison S, Dobrer S, Montaner J, Wood E, Kerr T. Willingness to access an in-hospital supervised injection facility among hospitalized people who use illicit drugs. J Hosp Med. 2015 May;10(5):301-6. doi: 10.1002/jhm.2344.

(33) Rudzinkski K. Feasibility, acceptability, concerns, and challenges of implementing supervised injection services at a specialty HIV hospital in Toronto, Canada: perspectives of people living with HIV. BMC Public Health, vol. 21, no. 1; 2021.

(34) Rudzinski K, Chan Carusone S, Ceranto A, Ibáñez-Carrasco F, McDonald L, Valentine D, Guta A, Hyshka E, O'Leary W, Cardow A, Strike C. Philanthropic donor perspectives about providing harm reduction services for people living with HIV/AIDS in a hospital setting. Harm Reduct J. 2022 Nov 16;19(1):124. doi: 10.1186/s12954-022-00711-8.

(35) Kosteniuk B, Salvalaggio G, McNeil R, Brooks HL, Dong K, Twan S, Brouwer J, Hyshka E. "You don't have to squirrel away in a staircase": Patient motivations for attending a novel supervised drug consumption service in acute care. Int J Drug Policy. 2021 Oct;96:103275. doi: 10.1016/j.drugpo.2021.103275.

(36) Hawk M, Coulter RWS, Egan JE, Fisk S, Reuel Friedman M, Tula M, et al. Harm reduction principles for healthcare settings. Harm Reduction Journal [Internet]. 2017 Oct 24;14(1). https://doi.org/10.1186/s12954-017-0196-4

(37) Pinkerton SD. How many HIV infections are prevented by Vancouver Canada's supervised injection facility? Int J Drug Policy. 2011 May;22(3):179-83. doi: 10.1016/j.drugpo.2011.03.003. Epub 2011 Mar 29. PMID: 21450450.

(38) Andresen MA, Boyd N. A cost-benefit and cost-effectiveness analysis of Vancouver's supervised injection facility. Int J Drug Policy. 2010 Jan;21(1):70-6. doi: 10.1016/j.drugpo.2009.03.004. Epub 2009 May 6. PMID: 19423324.

(39) Imtiaz S, Nafeh F, Russell C, Ali F, Elton-Marshall T, Rehm J. The impact of the novel coronavirus disease (COVID-19) pandemic on drug overdose-related deaths in the United States and Canada: a systematic review of observational studies and analysis of public health surveillance data. Substance Abuse Treatment, Prevention, and Policy. 2021 Nov 29;16(1). https://doi.org/10.1186/s13011-021-00423-5