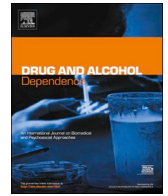




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Barriers and facilitators to a novel low-barrier hydromorphone distribution program in Vancouver, Canada: a qualitative study



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ARTICLE INFO

Keywords:
Overdose
Opioid
Safe supply

ABSTRACT

Background: North America is experiencing an overdose crisis driven by illicitly-manufactured fentanyl, related analogues, and fentanyl-adulterated drugs. The concept of ‘safe supply’ has been suggested as a potential measure to address the overdose crisis by providing a regulated alternative to illicit opioids to people at high risk of fatal overdose. In January 2019, a novel hydromorphone tablet distribution program was implemented within an overdose prevention site in Vancouver, Canada’s Downtown Eastside neighbourhood. This study explored barriers and facilitators to engagement with this program.

Methods: In-depth interviews were conducted with 42 participants enrolled in the hydromorphone tablet distribution program, and over 100 h of ethnographic observation were conducted in and around the study site. Thematic analysis of the interviews and ethnographic observation focused on program operation, including barriers and facilitators to program uptake, access, and engagement.

Results: Barriers to program engagement identified include: limited operating hours and dose schedule, co-location within the overdose prevention site (e.g., wait times), and receiving the generic formulation of hydromorphone. Facilitators identified include: having access to a reliable source of opioids, co-location within the overdose prevention site (e.g., low-barrier design), experiences of agency, and program flexibility.

Conclusion: Our findings demonstrate key implementation and operational considerations of safe supply programs. In particular, lower-barrier design and operational features should be considered to improve uptake and engagement. Safe opioid supply programs are a promising intervention to address North America’s ongoing overdose crisis by providing people at high risk of fatal overdose an alternative to the toxic drug supply.

1. Introduction

Overdose has become North America’s leading cause of accidental death and has contributed to a decline in life expectancy (Government of Canada, 2019a; Hedegaard et al., 2020; King et al., 2014). The overdose crisis is now driven by a toxic illicit supply of fentanyl and fentanyl-adulterated drugs (Government of Canada, 2019b; Jones et al., 2018), primarily impacting people who use opioids (Government of Canada, 2019b). This has been compounded by structural factors (e.g., poverty, racism, lack of access to health care and harm reduction services) that increase vulnerability to drug use-related risk, including

overdose (Perlmán and Jordan, 2018). In 2018, 67,367 overdose deaths occurred in the United States, with 67 % involving synthetic opioids other than methadone (e.g., fentanyl, fentanyl-analogues) (Wilson et al., 2020). Since 2016, there have been more than 14,700 opioid-related overdose deaths in Canada, with 76 % in 2018 involving fentanyl (Government of Canada, 2019b).

Efforts have been undertaken in Canada and the US to address the overdose crisis by expanding access to treatments for opioid use disorder (OUD), including increasing prescribing limits of oral opioid agonist treatments (OAT) (e.g., buprenorphine) for US physicians, and expanding access to oral and injectable OAT in Canada (Fairbairn et al.,

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<https://doi.org/10.1016/j.drugalcdep.2020.108202>

Received 16 April 2020; Received in revised form 17 July 2020; Accepted 20 July 2020

Available online 15 September 2020

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Fig. 1. The Molson OPS injection room and hydromorphone program distribution window.

2019; Mojtabai et al., 2019), though these continue to be underutilized (Donroe et al., 2018; Huhn and Dunn, 2017; Jones et al., 2015; Priest et al., 2019). Increasing access to naloxone has also been enacted through state laws, though distribution and use remains restricted (Bakhireva et al., 2018; Freeman et al., 2018; Puzantian and Gasper, 2018), and several US cities are aiming to implement supervised consumption sites (SCS) (Allyn, 2018; Levenson and del Valle, 2020). Public health and harm reduction measures implemented in Canada have been more diverse and robust and include the establishment of SCS and overdose prevention sites (OPS) (i.e., low-threshold drug consumption sites implemented as a temporary public health measure to address the overdose crisis), novel approaches to opioid agonist treatment, and wide distribution of naloxone (Fairbairn et al., 2017; Karamouziyan et al., 2018; Strike and Watson, 2019; Wallace et al., 2019). It is estimated that implementation of such measures in British Columbia (BC), Canada prevented 3000 potential overdose deaths between April 2016 and December 2017 (Irvine et al., 2019). However, these initiatives only partly address the overdose crisis as they are responses to overdose events rather than overdose prevention interventions.

Amidst the continuing fentanyl-driven overdose crisis, there has been growing debate regarding the merits of providing a safe supply of pharmaceutical grade opioids to people at high risk of fatal overdose and who are not enrolled, or interested, in treatment (Canadian Association of People Who Use Drugs, 2019; Ivsins et al., 2020; Tyndall, 2018). The concept of safe supply is premised on the belief that offering a safer alternative (i.e., pharmaceutical opioids of known quality/quantity) to a toxic illicit drug supply will enable people who use drugs (PWUD) to eliminate or decrease their consumption of potentially toxic illicit drugs, thereby leading to reductions in overdoses (Canadian Association of People Who Use Drugs, 2019; Fleming et al., 2020). The feasibility and effectiveness of reducing illicit drug use by providing pharmaceutical-grade alternatives (i.e., diacetylmorphine and

hydromorphone) was demonstrated by the former North American Opiate Medication Initiative (NAOMI) and Study to Assess Longer-term Opioid Medication Effectiveness (SALOME) trials in Vancouver (Oviedo-Joekes et al., 2016, 2009). A number of physicians in Canada have been prescribing hydromorphone tablets “off-label” to reduce patients’ use of illicit opioids (Izenberg and Marwaha, 2019), and guidelines for safer supply prescribing (or “pandemic prescribing” in BC) have been produced by organizations in BC and Ontario (British Columbia Centre on Substance Use, 2020; Hales et al., 2019).

We examine barriers and facilitators to uptake of, and engagement with, a novel opioid distribution program operating in Vancouver, Canada’s Downtown Eastside neighborhood involving the distribution of physician-prescribed hydromorphone (HDM) tablets to people at high fatal overdose risk through an integrated harm reduction site (Olding et al., 2020).

1.1. Intervention & study setting

In January 2019, a HDM tablet distribution program was implemented in the Downtown Eastside by the Portland Hotel Society (PHS), a non-profit organization providing supportive housing, harm reduction, overdose prevention, and related social services in Vancouver and Victoria, BC. Located in the Molson Overdose Prevention Site and Learning Lab (‘the Molson’) – a provincially-sanctioned harm reduction site that includes an OPS, drug checking services, and an injectable OAT program – this novel program distributes physician-prescribed pharmaceutical HDM tablets for onsite oral, nasal, or injectable use (Olding et al., 2020). The program was initially designed to provide individuals an alternative to the injectable OAT program, and taking into consideration the preference of potential program participants for HDM tablets. The program is linked to a PHS primary care clinic and HDM is stored in secured cabinets and dispensed to program participants by nurses through a sliding window

Table 1
Participant demographics.

		N (total = 42)
Age: median (range)		44 (26–72)
Race/ethnicity	Indigenous	8
	White	33
	Other	1
Gender	Female	10
	Male	32
Housing	Apartment	10
	Single room accommodation	18
	Shelter	5
	Unhoused/outside	9
Income generation (past 30 days, multiple responses permitted)	Full-time work	5
	Part-time work	6
Drug use (past 30 days, multiple responses permitted)	Drug selling	12
	Sex work	1
	Recycling/binning	17
	Panhandling	17
	Reselling goods	24
	Social assistance	39
	Cocaine (powder)	10
	Crack	7
Number of overdoses (past year)	Heroin	30
	Fentanyl	38
	Other opiates	27
	Crystal meth	32
	Marijuana	15
	0	22
1	7	
2	5	
3 or more	8	

from a nursing station opening onto the OPS (Fig. 1).

Participants are enrolled in the program through clinic physicians and prescribed a weekly amount of HDM (up to 80 mg/day). Participants can receive two 8 mg tablets for a maximum of five 16 mg doses/day, with a minimum one-hour waiting period between doses. The program operates 1:30pm–10:30pm daily (within the operating hours of the OPS), and participants can receive HDM as many times as they choose within the prescribed parameters. Take-home use is currently permitted under the pandemic prescribing guidelines (as of April 2020), however prior to the COVID-19 pandemic, to prevent diversion oral and intranasal use were nurse-witnessed, while those injecting within the OPS were required to return used injection equipment to the nursing station. A subset of clients receives an equivalent amount of HDM in injectable formulation, which must be injected as outlined above. As of February 2020, 69 participants were enrolled in the program (59 receiving tablets, 10 liquid HDM).

2. Methods

Data include semi-structured, in-depth interviews with 42 participants enrolled in the program (Table 1) and over 100 h of ethnographic observation conducted between February to December 2019. Data collection was conducted by authors with extensive experience in qualitative and ethnographic methods (AI, SM, AC, JB, RM). Observation sessions were conducted in the Molson, including within the nursing station and OPS room to observe program operation, and the laneway abutting the Molson to observe participant engagement with the program and the site, and lasted 2–4 h. Baseline interviews were conducted with participants shortly after enrollment (2–4 weeks on average), and a first set of follow-up interviews after 3–5 months (n = 21). Interviews were facilitated by an interview guide that included questions exploring current drug use patterns, drug treatment and overdose histories, experiences with program enrollment and

engagement, and program impacts on a range of outcomes (e.g., fentanyl use, overdose). Interviews lasted between 45–60 min, were digitally recorded, and transcribed verbatim by professional transcriptionists. Interviews were conducted in private spaces at the Molson, a nearby PHS building, or dedicated interview rooms at the study office located in the Downtown Eastside. Participants provided written consent and were given a \$30 CAD honorarium for their time. Ethical approval was received from the University of British Columbia/Providence Health Care Research Ethics Board.

Data were coded and analyzed using NVivo12. An initial coding framework was developed by the study team after approximately 15 interviews. Codes were developed based on *a priori* themes contained in the interview guide (e.g., housing, treatment experiences) and preliminary themes emerging from initial interviews. This framework was refined during data collection as new themes and subthemes emerged, and existing themes were revised to account for participant experiences. This manuscript focuses on findings related to program access, uptake, and engagement, including program design and operation that facilitate or impede program engagement. A draft of the paper was discussed with a Community Advisory Board comprising participants in medication-based OUD treatment programs in the Downtown Eastside, including participants in the HDM distribution program, for feedback and to enhance the validity of results.

3. Results

3.1. Facilitators to program engagement

3.1.1. A reliable source of opioids

Within the context of a fentanyl-driven overdose crisis, extreme poverty, and drug criminalization, participants reported that the ability to access a consistent and safer supply of pharmaceutical opioids (i.e., known purity and strength, free of adulterants) motivated them to access the program. Participant accounts were framed by their structural vulnerability, with participants emphasizing how the program lessened their need to engage in illicit or high-risk income generation (e.g., drug selling, outdoor sex work). Participants often recounted the daily “hustle” necessary prior to their enrolment in the program – that is, the daily reality of having to engage in illicit or high-risk income generation to purchase small amounts of drugs, often multiple times a day and from unreliable sources. Participants expressed relief about having easy access to a safe supply that minimized their overdose risk while also insulating them from forms of structural and everyday violence (e.g., encounters with police, drug scene violence) associated with having to purchase and use drugs on the street:

It’s a way out from having to... wanting to get high and do drugs and have to buy street drugs, when there’s pharmaceutical-grade free drugs. Nobody has to steal anymore. Nobody has to do that. You can... you can satisfy your needs and do what you need to do without having to do anything illegal. I don’t have to steal. I don’t have to sell dope. I don’t have to... you know, I just... and that’s a really big thing for me. I never was really a criminal anyways, but I was... you know, I don’t have to sell dope. (Participant 13, 47-year-old white man)

For some participants, access to a reliable and consistent supply of opioids enabled them to regulate and exert more control over their drug use. For these participants, prescribed doses consumed over measured intervals allowed them better control over the opioid’s effects in comparison to an illicit opioid supply with highly variable potency due to fentanyl and fentanyl-related analogs. This meant that they had regular access to enough HDM to stave off opioid withdrawal symptoms and also manage chronic pain without getting “*too high*,” “*losing control*,” or risk “*going down*” (overdosing). As one participant explained:

I can rely on the pills. They help me through the day. I don’t have to

be... I don't have to worry about I'm not going to get better today. Because it does... there's enough drug in it to... it's a high enough... it's a high enough low dose. [Laughter] There's a high enough low dose that you can get better for the day if I use it as laid out. (Participant 27, 47-year-old white man)

Most importantly, participants described reducing their use of the highly variable and toxic street-drug supply. Participants suggested that having access to a regulated supply of opioids decreased their need to use illicit opioids containing fentanyl and fentanyl-related analogs, thereby reducing their risk of overdose:

I don't think anybody's overdosing on the [safe supply] program... you know, there's a standard of drugs that you know what you're getting when you get this. Here, if you get it on the corner, you don't know what you're getting. You might think you do, but you don't. I've been running the [drug checking] spectrometer, and I'm seeing all sorts of things in the drugs that I wouldn't want to put into my body. (Participant 13, 47-year-old white man)

3.1.2. Co-location with the supervised consumption site

Participants described several benefits to having the HDM tablet program located within a harm reduction site with an OPS. The Molson is situated in a central location within the local street-based drug scene – adjacent to key drug dealing locations and across the street from the city's first SCS (Insite). Most participants had frequented the Molson OPS prior to enrolling in the program, and associated the site with safety, comfort, and reduced exposure to forces of structural oppression and marginalization operating within the local drug scene (e.g., violence, police harassment), as one participant described:

I'm happy with that. I go there anyway. I was already going there multiple times a day, often to use... I think like, you know, for the situation it's like as good as someone could expect. I'm comfortable there. Everyone's friendly. It's good. (Participant 1, 29-year-old white man)

While the risk of overdose from prescribed HDM was minimal among participants due to high levels of opioid tolerance, especially in comparison to the high variable potency of the illicit opioid supply, risk of overdose was a permanent concern within the current crisis. When asked if he felt it was helpful having the program co-located with the OPS, one participant explained, “*Yeah, just because of the nature of the shooting drugs and the possibilities of death*” (Participant 20, 43-year-old Indigenous man).

Even in comparison to other SCS/OPS in the Downtown Eastside, the Molson is considered low-barrier and accommodating of practices not permitted elsewhere (e.g. sharing injection tables, peer-assisted injection). Assisted injection was emphasized by study participants as an important feature of the HDM program, particularly among those who often required help injecting, and vital for participants with disabilities:

Well, there is one [peer staff member] ...and she's very, very good, very straightforward but very kind, and I always like it when she's on, because she will inject me properly and not, you know, be, you know. There's no... nothing sloppy about her at all when it comes to injecting people. She's very good at it. (Participant 31, 59-year-old Indigenous woman)

For participants, table sharing was helpful during particularly busy times in the OPS to avoid having to wait to receive their HDM (if no single tables were available), and for couples who attended the program together:

And the layout is good too. Like the fact that you can share a table there. I hope that they don't change that because [Name] sometimes she can't hit herself and she'll need a doctor and like her veins in her arms are really tiny, right, so I'll have to go through her jug [jugular

vein]. (Participant 22, 34-year-old white man)

3.1.3. Experiences of agency and program flexibility

The ability to choose to some degree how and when to use their HDM was an important feature of the program for many participants. While the program operates within set hours and HDM must be consumed within program parameters, participants were free to use varied consumption methods (oral, intranasal, injection) and could access the program as few or as many times as they liked. One participant stated, “*I really like how I can just come in at whatever times, you know, it suits me*” (Participant 1, 29-year-old white man). While the time commitment that the program required was significant, having the flexibility to choose when to access the program allowed participants to establish routines and engage in other daily activities (e.g., medical appointments, work commitments). As one participant described:

I was hoping, like for me, like I was hoping when I got into it it's something... yeah, like a treatment because personally I wanted to go on it to wean myself off of it, so like you can go up to five times a day but you can go in once a day if you want. So you know, if you need to you can go in five times a day but if you know, you feel up for it, like I can challenge myself and I can go in once a day or something like that. (Participant 22, 34-year-old white man)

Participants were also permitted to stop accessing the program for a period of time and return without penalty (e.g., being put back on a waitlist) or titrating their dose as is required in iOAT/OAT programs, as explained by one participant:

I miss going for a few days sometimes. Like after three days sometime I got to kick myself and be like oh, they might kick me out or... because methadone, if you don't go for three days, they...I don't even know if I can get kicked off like that or not. (Participant 21, 26-year-old white man)

For many participants, circumstances stemming from their structural vulnerability (e.g., homelessness, incarceration) impeded their ability to maintain routines, and the agency afforded by the safe supply program was crucial to ongoing engagement. Further, flexibility of dose and schedule, including knowing with certainty the strength of each dose, was helpful for participants seeking to reduce their overall drug use by having greater control over how much HDM they were using and how often. A number of participants also discussed wanting to reduce their injection drug use which was aided by being able to choose their method of HDM consumption, which is not afforded in iOAT programs:

I've been taking them orally now. Yeah, so I want to cut the needles out of my... I don't want to stick the needles in my arms any more. So that's... it's one of my... my goal right now anyways is just stop sticking needles in my arm. (Participant 23, 48-year-old white man)

3.2. Barriers to program engagement

3.2.1. Operating hours and schedule

For most participants, not having access to HDM when waking up with the onset of withdrawal impeded their engagement with the program and necessitated continued illicit opioid use to manage these symptoms. Participants explained that they often could not wait until the program opened at 1:30 pm to take opioids, and thus had to obtain illicit opioids through the street-based drug market to stave off withdrawal. One participant explained:

If I started my day with the pills instead of with heroin, that might be a better way to continue it on throughout the day, like if I didn't feel a need to be un-sick first thing in the morning and start doing heroin, then maybe I'd be able to continue without using heroin. The morning is the worst time. (Participant 10, 39-year-old white man)

Once using illicit opioids and other drugs obtained from the street-based drug market, participants explained that they were sometimes less likely to access the program, or access it less frequently, later in the day as they became entangled in the “hustle” of chasing money and drugs.

The limited operating hours, combined with the hourly dose schedule, further impaired participants’ ability to receive their full daily dose. Most participants accessed the program 2–3 times per day, and few participants ever received the full five doses. Participants reported that extending operating hours (e.g., 8 am – 10 pm) or permitting take-home doses of HDM overnight was a viable solution for addressing these program limitations. Participants with mobility issues or strict time commitments (e.g., employment, shelter attendance policies), in particular, discussed the difficulty they had attending the program for their five daily doses, positioning such programmatic changes as necessary to increase the program’s responsiveness to their structural vulnerabilities. One participant described the difficulty she had accessing the program five times in a day:

So for me to come here five times a day, that means either I come down here and I wait for the five hours, or I go home for ten minutes and then come back, go home for ten minutes and come back, go home for ten minutes and come back, right? Which is kind of foolish, because I have COPD [Chronic Obstructive Pulmonary Disease]. I can barely walk as it is. So, with my breathing problem, it’s really difficult. (Participant 26, 48-year-old white woman)

3.2.2. Co-location with the overdose prevention site

While many participants felt having the HDM program located within the OPS was beneficial, some participants discussed ways in which this also could impede program engagement. Because of its central location within the street-based drug scene, the Molson is among the busiest OPS in Vancouver – there were 128,944 visits to the Molson OPS, and staff responded to and reversed 770 overdoses there, between September 2017 and August 2019 (Olding et al., 2020). During an onsite overdose, the front doors are locked and people are not permitted to enter the OPS. Participants reported that this meant that they were sometimes unable to access the co-located HDM distribution program, resulting in missed doses:

You have to deal with people, like people in the room, with people having overdoses, so you can’t go access. I don’t blame people for having an overdose obviously, but at the same time, I can’t access my meds because someone’s having an overdose. If it was in a clinic, separately, it’d be better. (Participant 21, 26-year-old white man)

Further, participants injecting HDM reported that they had long wait times or were unable to access the HDM program during particularly peak times (e.g., OPS closing hours) or days (e.g., social assistance payment days) at the Molson. Participants explained that when they missed doses they sometimes had to turn to the purchase illicit opioids through the street-based drug market, thereby increasing their risk of overdosing on fentanyl and fentanyl-related analogs.

For some participants who were attempting to reduce their drug use and who positioned the program as a form of low-threshold treatment, sharing the space with people not in the program proved challenging. As on participant stated, “*You have to deal with people using drugs that you’re trying to get off and it’s not good*” (Participant 21, 26-year-old white man). Among these participants, some of whom had not accessed the Molson OPS prior to their enrolment in the HDM program, having to frequently be in the OPS was described as an uncomfortable experience. Participants suggested that having the program in its own space would be beneficial and mitigate these issues.

3.2.3. Generic hydromorphone and prescribed dose

Due to supply chain limitations, during its first year of operation, the program used a generic version of HDM. While generic drugs are

intended to provide the same dosage, effects, and strength of the original drug, the majority of study participants reported that the generic HDM was inferior to the non-generic version. Participants explained the generic version produced a substantial chalky residue when crushed and ‘cooked’ (mixed with water and heated to break down the tablets to liquid) that made it difficult to inject. Participants questioned whether HDM remained in this chalky residue and went unused, and therefore impacted potency, as one participant explained:

I wish that the Dilaudids© were the not the ones that have so much of the, um...the chalky stuff in them. That’s my only complaint. The other ones cook up very clear and it just seems a lot cleaner or easier. Just they seem better all around. I don’t know what it is. But like they even feel like you feel more or something. (Participant 9, 38-year-old white woman)

Most participants noted they did not feel the full effects of the medication in comparison to previous experiences with name-brand HDM, as described by one participant who occasionally still purchased name-brand Dilaudid© on the street:

Once in a while I buy a real brand name Dilaudid just because like I say, you get the whole shot. You feel the whole Dilaudid. You know. The generic ones, you don’t get half the pill, you know. (Participant 17, male, 49)

Participants suggested that not feeling the effects of the HDM, and yet being unable to receive higher or more frequent doses, were some of the main reasons for continuing to purchase illicit opioids to supplement their prescribed HDM dose:

It’s a good idea, but it’s... like they say it’s supposed to replace the fentanyl, right? That’s what it’s supposed to be, is for a clean supply, right? Whereas I’m still using fentanyl, because of the hydromorphone pills that they’re getting are shit, I think. (Participant 15, 44-year-old white man)

4. Discussion

Our findings demonstrate key barriers and facilitators to participant engagement with the HDM tablet program. Participants identified a variety of operational and programmatic features that shaped their use of, and access to, the program, highlighting the importance of including PWUD in program planning and design, and continuing to solicit participant feedback once the program is implemented. Their experiences with the program were shaped by both individual-level factors and broader social and structural inequities framing the vulnerability of study participants. For example, participants with unstable housing or mobility issues described difficulty fully engaging with the program because of its restrictive schedule and operating hours. Understanding the intersection of socio-structural forces (e.g., poverty, unstable housing) and their role in program engagement is critical to the design, implementation, and optimization of future HDM/opioid distribution programs (Collins et al., 2019), and other interventions implemented in response to the overdose crisis.

We identified a number of key facilitators to program engagement including having access to a reliable source of opioids, co-location with the OPS and significant agency (compared to other OAT/iOAT programs) regarding program access and use. Within the context of the current overdose crisis, being able to use a reliable source of opioids within a safe space and without fear of overdose was an important factor encouraging program engagement. With overdose deaths rates in BC recently increasing during the COVID-19 pandemic (British Columbia Coroners Service, 2020), and recent reports showing an increase in overdose events (British Columbia Centre for Disease Control, 2020) our study highlights the public health imperative for safe supply program development and expansion. Our findings build on previous research demonstrating the demand for, and uptake of, safe

environment interventions designed to address issues associated with the intersection of drug use and structural vulnerability (McNeil et al., 2015; McNeil and Small, 2014; Mitra et al., 2019).

Our finding that participant engagement was facilitated by co-location with the OPS demonstrates the acceptability of low-threshold public health interventions among PWUD, as well as a crucial potential setting for the expansion of these programs across Canada and, pending their implementation, the US. This is supported by studies showing the acceptance and uptake of non-traditional, community-based health programs (e.g., integrated HIV treatment) among PWUD (Altice et al., 2003; Oldfield et al., 2019). The recent ruling permitting the nation's first safe injection site to open in Philadelphia demonstrates the potential for further implementation and scale up of similar interventions in the US, though local political factors are currently impeding these interventions (Levenson and del Valle, 2020). Further, previous studies on SCS have highlighted how spatial contexts, including staff composition, shape program engagement, demonstrating the important role of low-threshold, peer-run interventions in addressing the overdose crisis (Bardwell et al., 2019; Kerr et al., 2007). That co-location with the OPS was also discussed as a barrier to engagement by some participants illustrates the need for a variety of program models, including those in dedicated stand-alone spaces that may better serve the needs of those using safe supply interventions to reduce their use of drugs.

Study participants identified a number of other barriers to program engagement, including the limited operating hours/schedule of the program (due to budgetary constraints), and insufficient dose/generic HDM. Participants were very clear that not feeling the effect of the HDM, and not having access to HDM earlier in the day, shaped their continued use of street-purchased illicit drugs. Based on these findings, future HDM distribution programs should directly attend to the lived experience of PWUD, namely by providing expanded program access and sufficiently high dose to address individual needs and desires. Expanded hours would potentially prevent participants from relying on illicit opioids to avoid withdrawal, and would allow greater flexibility and agency regarding dose schedule. Given that experiences of agency were discussed as facilitating program engagement, program design and operation should allow for greater agency concerning program use, including flexibility regarding when, where and how HDM is consumed. Offering take-home doses, similar to some OAT models, and as is currently being done under the pandemic prescribing guidelines, and by a number of physicians prescribing HDM 'off-label' in Ontario, might improve program engagement and reduce illicit opioid use (British Columbia Centre on Substance Use, 2020; Gutwinski et al., 2013; Izenberg and Marwaha, 2019; Peles et al., 2011). Reducing barriers to program engagement by allowing take-home doses is especially important to consider for participants who do not live near the program, and in suburban and rural settings in which services and residential areas are geographically dispersed. Further research on the implementation and impact of the pandemic prescribing guidelines will be necessary to determine their effectiveness, in particular on barriers and facilitators to program access identified in our study.

There are a number of limitations to our study. First, the study relied on data from a subset of participants enrolled in the HDM distribution program, and thus our findings may not be reflective of the experiences of other program participants. Second, our study was conducted in Vancouver's Downtown Eastside, an area with a high concentration of poverty, widespread drug use, and an open and visible street-drug market. Our findings might not be transferable to other settings. Finally, our study involved a single HDM tablet distribution program in Vancouver, and therefore may not be transferable to other similar (e.g., iOAT) programs.

While this novel HDM distribution program was designed as a medical program to treat OUD, this study provides crucial insight into potential safe supply program development and operation. Our findings demonstrate that safe supply programs are a feasible public health intervention to address the current overdose crisis. There is a critical need

to offer PWUD a safe alternative to the toxic drug supply to prevent overdose events and reduce overdose-related mortality. That many of the barriers to program engagement identified in this study are of a nature that can be practically addressed (i.e., not intrinsic to program design and operation) points to the potential for scale-up of similar programs in both urban and rural settings. That the program is so well received among program participants (given enrollment and waitlist numbers) points to the crucial need for immediate scale-up of safe supply programs across North America.

Role of funding source

This work was supported by the US National Institutes of Health under award number R01DA044181. AI is funded by a Mitacs Elevate Fellowship. SM is supported by a Canadian Institutes of Health Research (CIHR) Doctoral Award. AC was supported by a Vanier Canada Graduate Scholarship. RM was supported by a CIHR New Investigator Award and Michael Smith Foundation for Health Research Scholar Award. The funding sources were not involved in the study design, analysis, or writing of this report, or the decision to submit the paper for publication.

Contributors

Andrew Ivsins contributed to data collection and analysis, and led manuscript preparation. Jade Boyd, Samara Mayer, and Alexandra Collins contributed to data collection and analysis, and manuscript editing. Christy Sutherland and Thomas Kerr contributed to study design and manuscript editing. Ryan McNeil oversaw study design and implementation, contributed to data collection and analysis, and co-led manuscript preparation. All contributing authors have approved the final version of this article.

Declaration of Competing Interest

Through independent investments, C. Sutherland's spouse owned stock in a private company (Adamic Pharmaceuticals) involved in development of a naloxone delivery system from April to December 2019, when these were sold at a financial loss to avoid potential conflicts. No other authors have conflicts to declare.

Acknowledgements

We extend a heartfelt thank you to the study participants for their contributions to this study, without whom this research would not be possible. We would also like to thank past peer research assistants for their research and administrative assistance. We further acknowledge that this work took place on the unceded territories of the *xwm̓əθkwəy̓əm* (Musqueam), *Skwxwú7mesh* (Squamish), and *sel̓ilwitulh* (Tsleil-waututh) Nations.

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