

## **DRAFT KNOWLEDGE SYNTHESIS**

**Title:** A rapid review of opioid substitution therapy during major disruptions to medical care

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## **BACKGROUND**

The recent months have seen a collision of two complex health crises: the novel COVID-19 pandemic and the persistent epidemic of opioid related harms. People living with opioid use disorder (OUD) are exceptionally vulnerable to the impacts of the pandemic (Alexander, 2020; Khatri, 2020; Peavy, 2020; Sun, 2020; Vecchio, 2020; Volkow, 2020). The most effective and widely used therapy for people with OUD is opioid substitution treatment (OST), usually provided in the form of methadone or buprenorphine (CRISM, 2018; Korownyk, 2019). OST typically requires frequent contact between people with OUD and health care providers, along with close monitoring and supervision of consumption. The pandemic has severely disrupted OST as physical distancing regulations have limited access to OST programs and clinics (D'Amore, 2020; Sternlicht, 2020), and providers have needed to prescribe medications in larger quantities, increasing risks of overdose and diversion (Alexander, 2020; Becker, 2020; Marsden, 2020; Peavy, 2020; Priest, 2020; Sun, 2020; Volkow, 2020). Furthermore, OST has also been compromised by shortages of methadone, buprenorphine, and naloxone (used to treat overdoses) (Polewski, 2020; Sternlicht, 2020; Wong, 2020).

People with OUD are avoiding seeking vital medical services because of their concern about infection (D'Amore, 2020; McDede, 2020) and the pandemic has undermined their access to emergency services and overdose prevention sites (Priest, 2020). It has also increased the risk of overdose due to anxiety and loneliness resulting from social isolation, unemployment, and homelessness (Alexander, 2020; Cheung, 2020; Crawford, 2020; Grinspoon, 2020; Kang, 2020; Khatri, 2020; Marsden, 2020; McDede, 2020; Parshley, 2020; Sternlicht, 2020; Sun, 2020; Tait, 2020; Volkow, 2020). The upheaval of illegal drug markets has forced people with OUD to turn to unfamiliar, potent, and dangerous opioids (Cheung, 2020; DiMatteo, 2020; Parshley, 2020; Tait, 2020).

Initial guidance on OST adaptations to the COVID-19 pandemic has been driven by expert opinion (Alexander, 2020; British Columbia Centre on Substance Use, 2020; Green, 2020; Khatri, 2020; Lam, 2020; Peavy, 2020; SAMHSA, 2020; Sun, 2020; Vecchio, 2020; Volkow, 2020). Building on this appropriate initial response, our project will use rapid evidence synthesis to examine the views, perspectives, and experiences of people with OUD and of providers on OST in the context of major disruptions to medical care to identify immediately modifiable structural challenges that prevent opioid users from accessing OST and providers from offering this treatment; factors that motivate or deter users to seek treatment; and new risks and fears perceived by users and providers, including concerns about withdrawal, overdosing, diversion, and stigmatization. Knowledge of this experience will help to inform decision makers to implement patient-centred responses to OST provision during the pandemic. Likewise, a synthesis of studies of disaster preparedness and disaster response will provide a summary of effective means for modifying OST programs during times of real disruptions to routine care. Given the likely extended nature of the pandemic, this knowledge is critical to mitigating harms from opioids and further exacerbating another major public health crisis.

Our findings will provide guidance to embedded government and health care decision makers about the best ways to modify and adapt OST to the current pandemic context, offer

quality treatment to a vulnerable population, and consider strategies for building more resilient systems of care for people who use opioids.

## **METHODS**

We conducted a rapid synthesis on the impact of major medical disruptions such as natural disasters or human conflicts on OST. For this initial phase of our project, we examined records from a systematic search of the qualitative literature on opioid substitution therapy for an ongoing qualitative evidence synthesis. A professional librarian ran a search in the following databases: MEDLINE, Medline-in-Process, Medline Epubs Ahead of Print, Embase Classic+Embase and PsycINFO (OvidSP); CINAHL EBSCOHost; Cochrane (Wiley) and Web of Science (Clarivate Analytics), on October 8, 2019. We used both subject headings and textword terms for (opiate substitution therapy or dependence) AND (qualitative research or interviews or focus groups). Search results were not limited to language or publication dates. We retrieved a total of 11794 records. Of these records, 3720 duplicates were removed, leaving a total of 8057 unique records. Of these 8057 records, 7610 were deemed irrelevant for the original review and 447 were included for full text screening. In light of the one-month timeline for completion of this phase, and of the comprehensiveness and recency of the existing database, we did not launch a new search for studies.

### ***Eligibility Criteria***

Eligibility criteria were developed in close collaboration with integrated knowledge users (KUs). We included studies that: 1) examined OST in the context of major disruptions to medical care, including but not limited to reflections on care provision, evaluations of response, examinations of disaster preparedness, or innovations in OST (e.g. use of extended release formulations, virtual care); 2) were primary, empirical qualitative research studies (we also examined the qualitative portions of mixed-methods studies); and 3) were peer-reviewed and available in full-text. We included studies regardless of date of language, publication, setting, or country.

### ***Study selection***

We used a two-phase screening process to identify eligible studies. Records that had already been selected for the full-text screening phase of the pre-existing qualitative evidence synthesis were moved directly to the screening phase. We conducted a simultaneous keyword search of the 7610 remaining studies in our existing database to identify potentially relevant studies. Keywords were developed in consultation with our integrated KUs. Using the keywords, we developed appropriate search terms and variants (see Appendix 1) to conduct a search of titles and abstract records in Excel.

Titles and abstracts identified from the key words search as potentially relevant were uploaded to Covidence. We carried out a title and abstract screening, with studies classified as “relevant”, “possibly relevant”, or “irrelevant”. The full text of “relevant” and “possibly relevant” studies was reviewed to determine record eligibility. Both screening phases were completed independently and in duplicate by two authors (FS-B, DC) and conflicts were resolved through discussion with the involvement of a third reviewer with subject area expertise (AS). Studies that examined programs and/or strategies with potential relevance to major disruptions, but did not investigate these contexts, were excluded, but flagged for later review.

Similarly, studies that did not explicitly report on OST, but provided insights into perspectives surrounding substance use and treatment were flagged for later review.

Included articles were read in full by all members of the team and key themes were summarized for this draft knowledge synthesis. These summarized themes were presented via multiple meetings with integrated KUs for feedback and for the purposes of initial knowledge mobilization planning.

## RESULTS

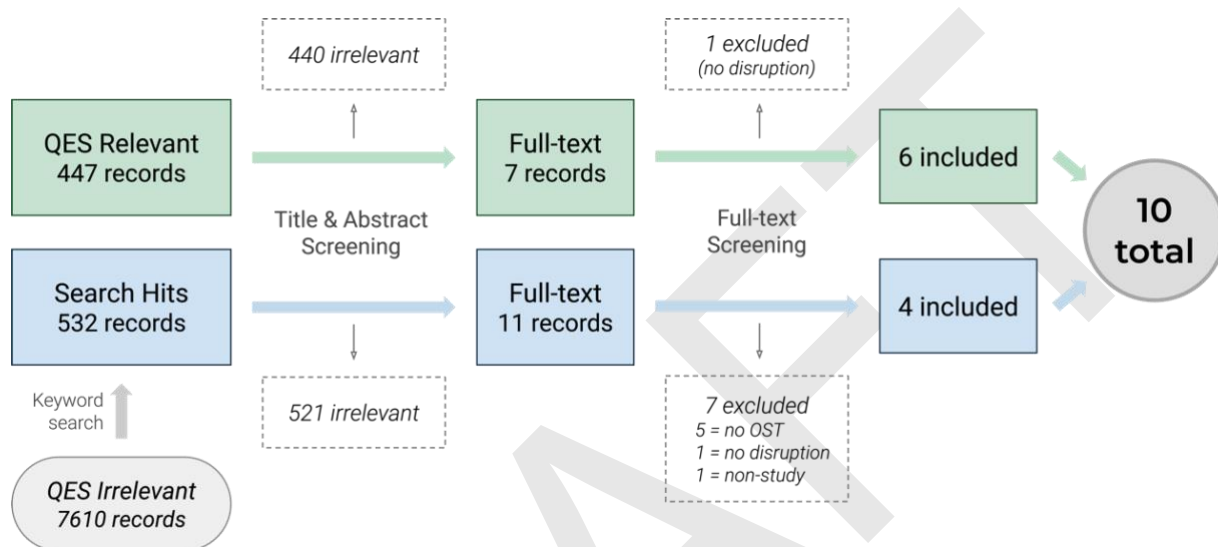
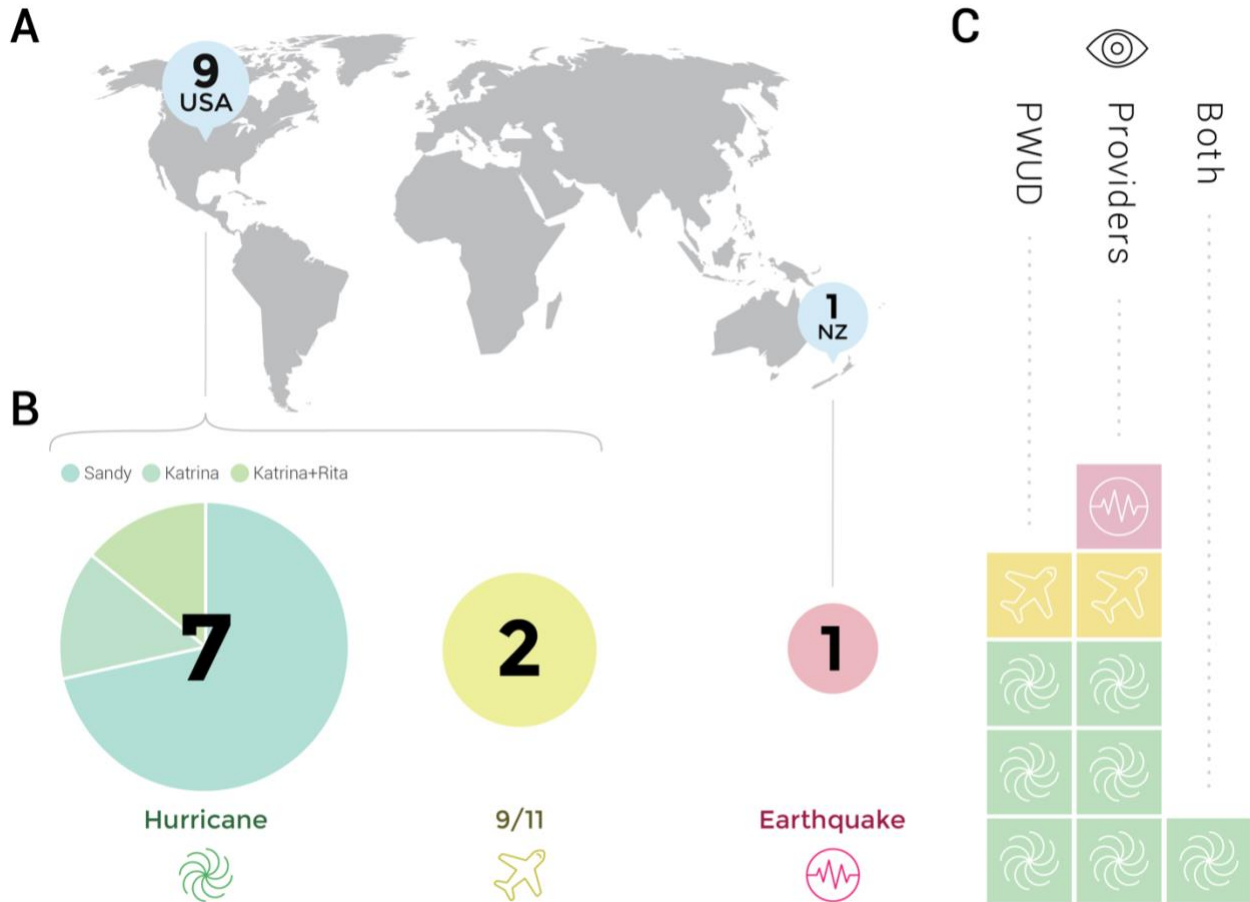


Figure 1. PRISMA flow diagram

### Included articles

For stage 1 of this knowledge synthesis, 8057 unique records were retrieved from the qualitative evidence synthesis. 447 records were moved immediately to screening, while the remaining 7610 records were keyword searched to provide 532 relevant records for screening. 18 records were found relevant and reviewed in full-text, of which 10 met inclusion criteria. A PRISMA flow diagram is provided in Figure 1.

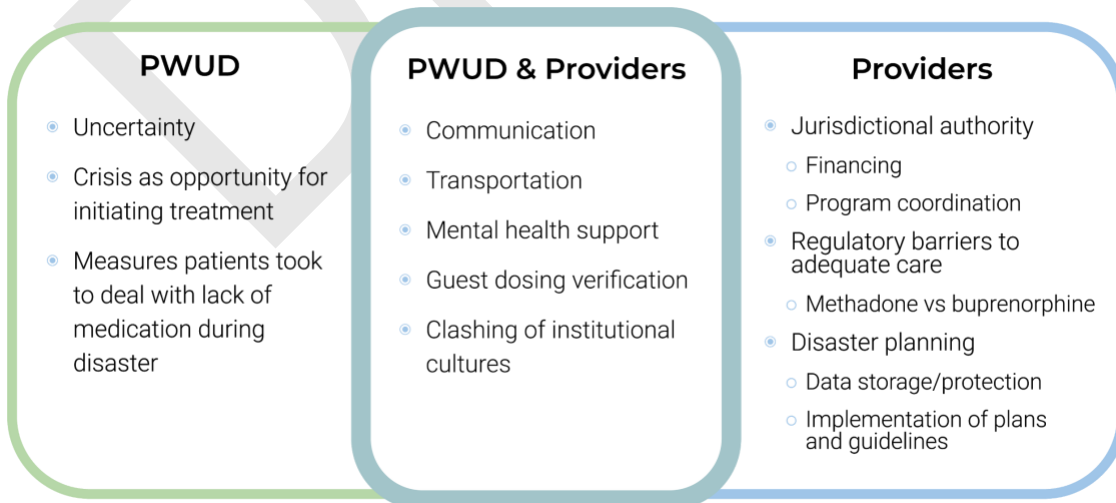
Included studies were published from 2002 to 2018, with nine from the USA and one from New Zealand. Of the nine US articles, 7 examined OST in the context of hurricanes and 2 evaluated the effects of the World Trade Centre attacks on 9/11. The single New Zealand article focuses on disaster planning, but refers to the strategies and lessons learned from the Christchurch Earthquake in 2011. There were no records describing perspectives or adaptations of OST in the context of infectious disease pandemics. Across the 10 articles, 5 investigated provider perspectives (Blake, 2007; Frank, 2006; Gupta, 2017; Maxwell, 2009; McClure, 2014), 4 investigated users (Dunlap, 2009; Tofighi, 2014; Weiss, 2002; Williams, 2014), and 1 investigated both (Matusow, 2018). All articles employed qualitative methods, largely conducting semi-structured interviews, while 2 papers were mixed methods studies that also included quantitative (survey) methods. This draft synthesis focuses on the qualitative data only. A visual summary of included articles is provided in Figure 2.



**Figure 2.** Visual summary of included articles: *A – country of origin, B – nature of disruption, C – perspective(s) investigated*

### Key themes

We have organized the themes from our initial review of the 10 included studies into three categories: those related to PWUDs, those related to providers, and those related to both groups. These categories, along with the sub-themes under each category, are shown in Figure 3. The themes touched upon by each study appear in Table 2.



**Figure 3.** Key themes

## ***Themes related to PWUD***

### Uncertainty

PWUDs interviewed in several of the studies expressed fear, anxiety, and frustration about lack of medication and health care (including mental health care) as a consequence of a disaster; loss of carries due to administrative “red tape” or relapse; the risks of both withdrawal and relapse; and the general upheaval in their lives related to shelter, childcare, jobs, food, and finances (Frank, 2006; Matusow, 2018; Tofighi, 2014; Weiss, 2002; Williams, 2014). One of the most common complaints was the risk of being “demoted” to a more controlled prescription regime involving daily pick-up and frequent drug testing despite a long-lasting “clean record” (Matusow, 2018).

Disasters severely disrupted the daily routines of PWUDs (Matusow, 2018). The closure of home OST clinics due to hurricanes, earthquakes, or terrorist attacks forced PWUDs to seek alternative means of obtaining their opioid medication. Often, this meant long commutes to new locations where they had to interact with unfamiliar staff who might enforce restrictive policies. Moreover, many PWUDs whose OST clinics closed complained that not having an official identification or proof of their prescriptions for OST medication led to a loss of credibility (Matusow, 2018).

### Crisis as opportunity for initiating treatment

Some PWUDs viewed disasters as opportunities to start anew and move away from drug use (Dunlap, 2009; Maxwell, 2009; Weiss, 2002). Several opioid-dependent individuals who attended new clinics as “guests” for several weeks were then formally inducted into treatment as new patients.

### Measures PWUDs took to deal with lack of medication during disaster

The studies report measures that PWUDs took when faced with the prospect of suffering withdrawal symptoms due to the lack of OST medication (Matusow, 2018; Tofighi, 2014).

Some PWUDs requested extra doses pre-disaster by, for example, obtaining extra refills from their program physicians. Others reduced their daily doses to “stretch” their medication (Matusow, 2018; Tofighi, 2014). Given the challenges of verifying previous prescriptions and dosages, many PWUDs made efforts to find old medication bottles with prescription information to take to alternative institutions and emergency departments. PWUDs also opted to obtain OST medication from family, friends, or drug dealers, or they relapsed and took drugs such as heroin (Tofighi, 2014). Some individuals resigned themselves to enduring withdrawal symptoms until their clinics reopened.

**Table 2.** Key themes by article and nature of disruption

👁️	Themes	Hurricane 🌀						9/11 ✈️		🏠
		Dunlap 2009	Maxwell 2009	McClure 2014	Tofight 2014	Williams 2014	Gupta 2017	Matusow 2018	Weiss 2002	Frank 2006
PWUD	Uncertainty									
	Crisis initiating treatment									
	Measures for lack of medication									
BOTH	Communication									
	Transportation									
	Mental health support									
	Guest dosing verification									
	Clashing of institutional cultures									
PROVIDERS	Jurisdictional authority									
	Financing									
	Program coordination									
	Regulatory barriers to care									
	Methadone vs. Buprenorphine									
	Disaster planning									
	Data storage / protection									
	Implementing plans/guidelines									

**Themes related to providers**

Jurisdictional authority

A common complaint among providers was the lack of collaboration and cooperation among independent OST clinics, and between the clinics and different levels of government (Matusow, 2018). Political considerations created numerous obstacles for treatment delivery. We categorized two sub-themes under jurisdictional authority: financing and program coordination.

*Financing*

As a consequence of a disaster, OST clinics faced sudden loss of income resulting from the cancellation of services. Financial problems were exacerbated by the need to continue paying staff members regardless of their ability to make it to work, to pay overtime to front-line staff, and to cover accommodation expenses in hotels for staff who did not or could not return home (Matusow, 2018). Clinic staff complained about the confusion regarding emergency funding sources and the complicated process of paying unpaid claims, and expressed anxiety over the uncertain continued funding for patients (Maxwell, 2009). In some jurisdictions in the US, there may be no government funding for substance use and misuse programs in case of an emergency, as these programs are excluded from mental health care (Maxwell, 2009).

*Program coordination*

Providers noted that, in addition to the lack of coordination among authorities in different levels of government, OST clinics were issued conflicting instructions from these authorities (Matusow, 2018). Moreover, they emphasized the need for enhanced cross-coverage among OST clinics in different jurisdictions during emergencies (McClure, 2014).

Regulatory barriers to adequate care

OST clinics can be immersed in rigid and inconsistent regulatory meshworks. Rules and regulations governing different clinics may be incompatible, which causes confusion and frustration in both providers and PWUDs relocated to alternative institutions in emergency

situations (Blake, 2007; Maxwell, 2009). Providers questioned the advisability of “demoting” PWUDs who arrive from other clinics and who are forced to undergo a reinstatement process consisting of a probationary period of daily pick-up and frequent testing for drugs despite verifiable histories of medication compliance and longer dosing schedules (Matusow, 2018). In some studies, providers reported that patients without identification or credible prescription information were compelled to undergo withdrawal to demonstrate that they legitimately needed OST medication (Maxwell, 2009). Moreover, authorization of insurance coverage was convoluted and inefficient (Tofighi, 2014).

Potentially useful measures such as the use of mobile clinics to distribute OST medications to PWUDs at their homes or in shelters were thwarted by the inability to obtain rapid certification. Similarly, physicians, especially residents and fellows, suddenly tasked with the need to prescribe OST medication, were unable to obtain fast-track accreditation and thus could not provide PWUDs with adequate treatment (McClure, 2014).

### *Methadone vs buprenorphine*

Providers called attention to the markedly different regulatory requirements and institutional procedures governing methadone and buprenorphine treatments (McClure, 2014). Methadone programs were encumbered by more regulatory barriers, faced more difficulties regarding dose verification, and exposed an over reliance on emergency room dosing leading to unsafe or suboptimal treatments. While providers prescribing buprenorphine had few cross-coverage options compared against those prescribing methadone, buprenorphine treatment presented fewer regulatory barriers. Furthermore, buprenorphine was able to be refilled remotely compared against the daily / frequent in-person dosing requirements common among methadone clinics. As a result, providers emphasized the advantages of having patients on buprenorphine rather than on methadone during a disaster (McClure, 2014).

### Disaster planning

In general, providers expressed concern for the way in which OST clinics could operate with and manage sudden and dramatic reductions in human and other resources. We categorized two sub-themes under disaster planning: data storage and protection, and implementation of plans and guidelines.

### *Data storage / protection*

Providers underscored the need for detailed protocols for the management, access, protection, storage, and removal of patient records and program data, with a particular focus on privacy and confidentiality issues (Blake, 2007; Matusow, 2018; McClure, 2014). A common concern was the inability of providers to retrieve essential patient information, including medication and dosages, for PWUDs whose clinics were forced to close due to an emergency. In consequence, several providers endorsed the creation of centralized, web-based databases that include up-to-date contact information, dosage, and take-home privileges for PWUDs in all OST programs within a jurisdiction (Blake, 2007; Gupta, 2017; Matusow, 2018). Such a database would facilitate sharing electronic health records and provide updated patient information to health care workers regardless of their location. Providers acknowledged that access to electronic databases could be compromised due to power outages (Gupta, 2017). Also, OST clinic staff highlighted the need to frequently back-up patients’ records with multiple electronic copies and with hard copies stored offsite (Matusow, 2018).

One study reported the proposal of using personal dosage information cards with the photo of the user or patient and encrypted information of dosage and takeaways (Blake, 2007). Providers, however, pointed out several disadvantages: PWUDs may lose cards, it may be difficult to access encrypted information during an emergency, cards can be tampered with, and PWUDs may be concerned about stigma and judgment from others if they are found carrying such cards.

### *Implementation of plans and guidelines*

Providers complained that there was too much variability among emergency manuals and that many not only presented ambiguous mandates but also failed to consider the need to communicate with, transport, or guest-dose patients (Gupta, 2017; Matusow, 2018; Maxwell, 2009; McClure, 2014). In some OST clinics, staff could not locate manuals during an emergency. Thus, providers advocated for the development and wide distribution of a standardized, uniform template for emergency guidelines that was still flexible and context-sensitive, and that prepared people for a variety of disaster scenarios (Blake, 2007; Gupta, 2017; Matusow, 2018). Guidelines should specifically address issues related to communication, transportation, guest provisions, and take-home plans (McClure, 2014). According to providers, the most useful plans were comprehensive in scope and provided a degree of specificity that enabled providers and consumers to feel confident that a mutually agreed-upon plan of action would meet treatment challenges as they occurred (Matusow, 2018). Such plans were frequently updated and acknowledged that not all disruptions could be foreseen and offered considerable flexibility and redundancy (Frank, 2006). Policy and regulatory flexibility were deemed necessary by providers to prevent barriers to access to treatment and to allow patients to maintain dosing schedules, continue to take medications for mental health, and honour job or child-care responsibilities (Blake, 2007; Gupta, 2017; Matusow, 2018; McClure, 2014).

Providers also emphasized the need to establish close links among OST clinics, between the clinics and local hospitals and pharmacies, and between clinics and relevant local, state, and federal agencies (Matusow, 2018). It was similarly felt that pharmacists also needed to have an emergency plan in place, a list of OST clients, a temporary backup location, a list of alternative pharmacies to which clients can be sent, and a backup stock (Blake, 2007; Tofighi, 2014). One study noted that a multidisciplinary system approach to OST in a disaster context requires multidisciplinary emergency planning that includes consultation with key stakeholders such as community pharmacists and consumer representatives (Blake, 2007).

Regarding emergency take-home doses, it was emphasized that guidelines must ensure clarity about the ways in which determinations are made about whether and how many take-home doses would be sufficient and about making distinctions between high- and low-risk patients when providing extra medication (Matusow, 2018). Clinic staff expressed concern that protocol changes such as increased take-home dosing and decreased urine toxicology testing could result in a greater rate of relapse (Gupta, 2017).

On a related note, one study noted an urgent need for regulations on pre-pouring medication in anticipation of emergencies (Matusow, 2018). Providers expressed their concerns about the risks and benefits of prescribing extra medication, such as overdose and diversion, and contrasted the risks against the potential consequences of abruptly suspending the medication (Frank, 2006). OST clinic staff also noted the advisability of planning for remote telephone refill support and of ensuring the availability of temporary back-up locations to provide written prescription refills and medication dispensing for uninsured patients.



OST clinic staff articulated the need for clear evacuation procedures and frequent emergency drills. They also advocated in favour of having emergency kits with communication and transportation plans, essential contact information, and extra opioid medication (Matusow, 2018). Providers also expressed the importance of providing OST clinic staff with identifications that attested to their status as emergency personnel during disasters (Matusow, 2018).

### ***Themes related to both PWUDs and providers***

#### **Communication**

One of the more common concerns from both PWUDs and providers was the absence of information about emergency measures and the lack of ways to communicate to OST clinics during a disaster (Frank, 2006; Gupta, 2017; Matusow, 2018; Tofighi, 2014). Downed phone lines and a lack of cellular phone signals made communication problematic between PWUDs and their clinics, among PWUDs, clinics, and pharmacies, and between the clinics and regulatory agencies (Blake, 2007; Gupta, 2017; McClure, 2014; Tofighi, 2014). Even when phone lines at clinics were working, PWUDs rarely could access staff, and voicemail messages were not updated with essential information (Matusow, 2018).

In light of the above, PWUDs and providers emphasized the need for PWUDs to have contact information of clinic staff (including cellphone numbers of physicians and nurses) and of alternative OST programs (Gupta, 2017; Matusow, 2018; Tofighi, 2014). Having cellphone numbers of providers has been shown to improve care and follow-up of PWUDs during a disaster (Tofighi, 2014). Similarly, clinic staff proposed sharing phone and email information in a common directory. Establishing a hotline with backup is not only useful for PWUDs and clinic staff, but also to providers external to the clinic who may need to verify medication and dosage information for PWUDs in guest clinics or in emergency rooms (Tofighi, 2014). It was suggested that the hotline phone number should be posted in visible areas such as waiting rooms.

Several clinic administrators advocated for the designation of a staff member as a Disaster Preparedness Deputy who would be responsible for updating clinic voicemail messages, websites, and social media; keeping an up-to-date database of contact information of PWUDs and staff; and establishing links to news media such as newspapers and radio stations that can convey essential information about OST scheduling and guest services to staff and PWUDs in the event of an emergency (Matusow, 2018). This person could also post flyers with essential information in the neighbourhoods surrounding the clinic where, presumably, many of its patients live and work.

Keeping track of PWUDs can be quite challenging for OST clinic staff. However, after some disasters, home clinic staff made extraordinary efforts to deliver opioid medication to PWUDs at their homes, or in congregate settings like shelters (Matusow, 2018). The use of mobile dispensing units has been welcomed by numerous OST clinics (Blake, 2007; Frank, 2006), but these services may require lengthy certification procedures difficult or impossible to complete during an emergency.

Not all initiatives to improve communication during a disaster have originated with providers. PWUDs have created “buddy systems” that link patients with similar needs so that they can help each other obtain relevant information and resources as quickly as possible before, during, and immediately after a disaster (Matusow, 2018).

#### **Transportation**

PWUDs and providers, especially those with physical disabilities or special needs, reported having faced considerable transportation challenges to get to and from home or guest clinics (Frank, 2006; Gupta, 2017; Matusow, 2018). Thus, some clinic administrators have proposed promoting relationships with public and private transportation companies with whom OST programs can develop strategic plans in the event of emergencies. For example, bus companies can transport PWUDs and providers at no cost to alternative clinics if the home clinic must close (Matusow, 2018). Also, OST clinics would greatly benefit from a priority list of particularly vulnerable PWUDs such as pregnant, disabled, or medically compromised patients (Matusow, 2018). One aspect that needs special attention is the need to avoid stigmatizing or criminalizing individuals who use these services; after some disasters, police escorted buses carrying patients to and from OST clinics (Maxwell, 2009).

### Mental Health Support

It is well-known that rates of depression, anxiety, post-traumatic stress disorder, and other mental health conditions tend to increase after a disaster. Unsurprisingly, both PWUDs and providers highlighted the need for psychological and emotional support (Matusow, 2018; Maxwell, 2009; Weiss, 2002). Moreover, it is necessary to take into account, for disaster planning, the frequent comorbidities between opioid use disorder and other mental health conditions that require adequate treatment (Blake, 2007; Maxwell, 2009; Williams, 2014).

PWUDs and OST clinic staff reassigned to guest clinics found that group counselling helped ease intra- and inter-group tensions and provided a safe space to share grievances (Matusow, 2018). In this vein, Project Liberty, a mental health initiative implemented after the 2001 terrorist attacks in New York, integrated a group of social workers and psychologists to provide disaster, trauma, and critical incident counselling and mental health training to OST clinic staff (Frank, 2006). Similarly, phone therapy sessions after the disasters proved useful for PWUDs.

### Guest dosing verification

Three major concerns in a disaster context are access to OST medication stock, problems with prescribing, and dose verification (Blake, 2007; McClure, 2014). To avoid medication shortages, providers suggested keeping an offsite stock of OST medications in a location known to clinic staff (Blake, 2007). Stockpiling could be shared among allied services, or the stock could be distributed to hospitals. In terms of prescribing and dose verification issues, providers in guest clinics and emergency room services expressed discomfort at taking patients at their word regarding medications and doses (McClure, 2014). Some emergency room physicians either refused to provide OST medication to patients or gave higher doses than their usual dose, risking overdoses (Maxwell, 2009; McClure, 2014).

Hence the reiteration for the need for centralized databases that provide updated patient information, including verification of identification, dosing histories, treatment plans, and level of control and surveillance over patients depending on treatment phase (Gupta, 2017; McClure, 2014). One recommendation was that OST clinics could cultivate guest relationships with similar institutions and with local hospital emergency departments located closest to patient's homes to honour dosing, scheduling, and medication regimens that have been previously established (Matusow, 2018; McClure, 2014). All clinics in this network would benefit from having a directory with information of alternative institutions with which they have partnered in the event of a disaster and where treatment can continue.

### Clashing of institutional cultures

Disaster situations may catalyze intra- and inter-group conflicts among PWUDs and providers of different cultures, religions, and ethnic groups (Gupta, 2017; Matusow, 2018; Maxwell, 2009). PWUDs and OST clinic staff reassigned to guest clinics faced new ways of doing things, divergent treatment practices, and a sudden lack of structure, resources, and space, which caused considerable tension and acrimony (Gupta, 2017; Matusow, 2018; McClure, 2014; Tofighi, 2014). PWUDs from one clinic expressed resentment towards their peers from the other clinic due to perceived favouritism. Reassigned patients complained about indifferent treatment, poor planning, dismissiveness, hostility, and condescension. Local patients complained about overwhelming and unexpected numbers of guest patients, reduced availability of OST medication, and the consequent increase in the risk of not being able to obtain their methadone or buprenorphine (Matusow, 2018). Staff from home and guest clinics complained about perceived biases in resource allocation. Reassigned providers complained about feeling segregated and isolated, and felt bitterness at what they saw as a preventable series of missteps in caring for displaced patients and chagrined at the poor treatment they endured in their efforts to assist at guest clinics (Matusow, 2018). Conversely, local clinic staff complained about having to share space and resources with guest staff that had arrived suddenly and abruptly after an emergency (Gupta, 2017; Matusow, 2018).

In some contexts, conflicts between groups from different institutions were addressed by keeping each group separate in time and space so that patients from guest institutions would receive care from providers they already knew during different days and times from those assigned to local PWUDs (Gupta, 2017). This and similar reorganization strategies showed attentiveness that allowed PWUDs and providers to feel as though their discomfort was being acknowledged and responded to in the best way that could be managed at the time. These measures helped maintain provider continuity, ease tensions, and increase the sense of stability for PWUDs from external clinics (Gupta, 2017; Matusow, 2018).

One of the studies mentioned the case of African American PWUDs evacuated from New Orleans clinics after Hurricane Katrina in 2005 were reassigned to OST clinics in Texas whose patients were mostly White and Hispanic (Maxwell, 2009). Such conflicts signal the need for cultural competence training for clinic staff.

A related example of the clash of cultural practices is the unfounded alarm in shelter health care workers unfamiliar with opioid use disorder and OST when faced with PWUDs suffering from withdrawal symptoms such as severe diarrhea. These health care workers may erroneously believe that they are in the presence of an outbreak of infectious gastrointestinal disease and may then take unnecessarily radical and restrictive measures to isolate or quarantine affected PWUDs (Maxwell, 2009).

## **DISCUSSION**

Disaster planning seldom takes into account the health-care of PWUDs and, specifically, individuals suffering from opioid use disorder. Disruption of OST medication dispensing and counselling services can have severe consequences for PWUDs such as relapse, withdrawal, and resumption or increase of risky injection behaviours. PWUDs face considerable obstacles to obtaining adequate health care during a disaster due to the highly regulated and systematized nature of OST. Providers in OST clinics, emergency departments, and other health services must

overcome overwhelming challenges to provide adequate care for PWUDs, and disaster situations demand considered and empathetic understanding, planning, management, and attention.

Perhaps the greatest concern for PWUDs during a disaster is the lack of service continuity and the absence of rigorous and systematic OST preparedness planning. Service continuity is essential for reducing physical and psychological distress for OST PWUDs, their families, and their communities. OST programs face the daunting responsibility of anticipating emergency situations of a very diverse nature and planning accordingly to address these contingencies.

Our current findings highlight the concerns of both PWUDs and providers about the lack of communication at different levels as a consequence of a disaster; the sundry transportation issues preventing access to OST clinics; the absence of standardized manuals, guidelines, and plans to prepare for emergencies; the conflicts among laws and regulations governing the operation of OST clinics during a major disruption; the many regulatory and financial hurdles impeding the daily functioning of OST clinics and the acquisition of opioid medication by PWUDs; and the social and cultural conflicts derived from the relocation of PWUDs and providers to alternative institutions if their home OST clinic closes.

Potential solutions to many of these challenges derived from our analysis include the creation of centralized databases with essential information regarding PWUDs, their medical records, and their medications and dosages; the design of standardized manuals, guidelines, and plans for OST clinic operation during a disaster; the implementation of communication strategies that connect PWUDs with OST clinic staff and with alternative sources of treatment; the creation of a network of “sister” OST clinics that support each other during an emergency; the development of transportation strategies through links with public and private transport companies; the provision of mental health care to both PWUDs and providers due to increases in rates of depression, anxiety, and post-traumatic stress disorder; and the designation of an OST clinic staff member as a Disaster Preparedness Deputy.

While empirical studies are currently lacking, recent editorials, commentaries, and perspective articles have described initial emergency measures taken by OST clinics and health care administrators to address the Covid-19 pandemic. These in many ways align with adaptations outlined above in the context of other disruptions. With respect to disaster preparedness and response, health care administrators have implemented special emergency plans to ensure the continued operation of OST clinics and on-site infection control measures (Alexander, 2020; Peavy, 2020; Sun, 2020; Vecchio, 2020). In many clinics, attendance for care services on-site can only take place at pre-scheduled times with social distancing measures in place (Sun, 2020; Vecchio, 2020). Chinese health authorities in Hubei Province established comprehensive treatment plans for OST clinic patients with suspected or confirmed Covid-19 infection to address comorbidities and interactions between methadone and other medications such as anti-viral agents (Sun, 2020). They also reassigned duties of OST clinic personnel so that staff is available to deliver OST medications to patients’ homes.

In terms of prescribing, dispensing, and obtaining OST medication during the pandemic, many jurisdictions have implemented rapid regulatory changes to ensure uninterrupted access to OST medication (Khatri, 2020; Peavy, 2020), relaxing the regulations governing take-home OST medications (Alexander, 2020; Green, 2020; Peavy, 2020; Vecchio, 2020; Volkow, 2020). Some OST clinics have implemented home delivery of opioid medications (Sun, 2020; Vecchio, 2020) and have taken advantage of the possibility of dispensing medication to patient surrogates identified by the patient and vetted by OST clinic staff (Alexander, 2020). Others have initiated

remote prescription of OST medications (Alexander, 2020; Khatri, 2020) or have started using automated, secure pill dispensers that unlock daily medication doses, alerting OST clinics about missed doses or device tampering (Alexander, 2020). Yet another strategy reported has been exempting OST clinics from the requirement to perform an in-person physical examination for consideration of OST medication treatment (Green, 2020).

While some of our included studies discussed telephone assessment and communication, there was not robust consideration of evaluation of telehealth. Thus far, the reporting around the Covid-19 pandemic has been different. Many OST clinics have made use of telehealth services, as examples: offering internet and telephone emotional, psychological, and social support services (Alexander, 2020; Green, 2020; Khatri, 2020; Sun, 2020; Vecchio, 2020; Volkow, 2020); implementing video-based “directly observed therapy” in line with approaches developed for treating tuberculosis that provide a video record of medication ingestion at home for confirmatory viewing (Alexander, 2020; Khatri, 2020); and even providing cellphones to PWUDs to facilitate their communication with OST clinics (Khatri, 2020). In some locations, telemedicine kiosks have been installed in pharmacies (Khatri, 2020).

Furthermore, the current literature around Covid-19 pandemic responses to OST have had more discussion of the role of pharmacies and pharmacists that seen in the literature around other disasters. Some jurisdictions have changed regulations governing pharmacy operations and insurance coverage of OST medications (Alexander, 2020). The goal is to treat PWUDs as other patients with chronic medical conditions, allowing them to obtain all OST medication at pharmacies; this may not only free PWUDs from a constrictive regulatory framework, but may also help mitigate stigma (Green, 2020).

Our results are the beginning of a roadmap towards adequate and efficient planning for the convergence of the opioid crisis with disasters such as hurricanes, earthquakes, armed conflicts, terrorist attacks, and pandemics. We present these initial findings to stakeholders and decision-makers hoping that this information is useful to address the major disruptions caused by the ongoing Covid-19 pandemic and the disasters that we will inevitably face in the future.

### ***Limitations***

The findings presented in this report arise from a rapid synthesis of the included studies. We have not carried out yet a formal thematic analysis, which is the next step in our research process. As such our findings should be considered as preliminary. Furthermore, we did not conduct a primary search, but, given the urgency for a timely response to the Covid-19 pandemic, we instead looked for relevant studies in an already existing database that captured most of the extant qualitative studies on OST. Thus far, we have only looked at qualitative studies and at the qualitative portion of mixed-methods studies. We have yet to review the quantitative literature, or the quantitative sections of mixed-method studies. We will carry out this analysis in the coming months by examining the databases of two additional reviews from project collaborators.

With one exception, our results focused on disasters in the United States. Translating the relevance of these findings to a Canadian or other contexts will require attention to the health system and health policy particularities of that country. The remaining study was from New Zealand. This means that we are still missing the perspectives from PWUDs and providers in the developing world which may be disproportionately affected by natural disasters and human conflicts.

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## Appendix 1: Keyword Search Terms

Disruption				Diseases		
Keyword	Search term	Keyword	Search term	Keyword	Search term	
Bushfire	*bushfire*	Hyperinflation	*hyperinflation*	Pandemic	*pandemic*	
Casualty	*casualt*	Insurrection	*insurrection*	SARS	*sars*	
Catastrophe	*catastrophe*	Labor	* labor *	Ebola	*ebola*	
Civil	*civil*		* labor.*	Zika	*zika*	
Conflict	*conflict *		* labor.*	Chikungunya	*chikungunya*	
	*conflict.*		* labor.*	MERS	* MERS *	
	*conflict,*		* labor.*		* MERS.*	
	*conflict:*	Labour	*labour*		* MERS,*	
*conflict;*	Lockdown	*lockdown*	* MERS:*			
Coup	* coup *	Migration	*migration*	* MERS;*	Nile	*nile*
	* coup.*	Military	*military*	Influenza	*influenza*	
	* coup,*	Protest	*protest*	Cholera	*cholera*	
	* coup:*	Revolution	*revolution*	<b>Preparedness</b>		
	* coup;*	Shooting	*shooting*	Keyword	Search term	
	Crisis	*cris?s*	Strike	*strike*	Preparedness	*preparedness*
Cyclone	*cyclone*	Terror*	*terror*			
Disaster	*disaster*	Tsunami	*tsunami*			
Disruption	*disruption*	Typhoon	*typhoon*			
Drought	*drought*	Unrest	*unrest*			
Earthquake	*earthquake*	Volcan*	*volcan*			
Emergency	*emergency*	War	* war *			
	*emergencies*		* war.*			
Eruption	*eruption*		* war,*			
Famine	*famine*		* war:*			
Fire	*fire*		* war;*			
Flood	*flood*		Wildfire	*wildfire*		
Hurricane	*hurricane*					