Opioid substitution treatment (OST) is a successful pharmacological and psychosocial harm reduction intervention where opioids, methadone and buprenorphine (suboxone), are prescribed to people with problematic opioid use to reduce consumption of illicit drug use, risky behaviours and health harms, such as Hepatitis C. In this paper, OST is recognised as a social determinant of health as it contributes to positive health outcomes for people receiving OST, and by association their families and communities.

Social determinants of health, such as the context that people are born into and live, impact on the prospects people have and the risk factors people are exposed to and endure. Determinants include healthcare, income, education, employment, housing and access to critical services and infrastructure. Social determinants of health also encompass social practices of gender, culture, ethnicity and discrimination. Various social-political conditions dictate how resources, wealth and power are allocated (Davidson, 2015; World Health Organisation, 2017a), therefore people with fewer resources, financial means, social power and agency experience more unjust and needless health disparities (Marmot, 2005; Raphael, 2006; World Health Organisation, 2017a). The World Health Organisation (2017b) recognised that healthcare systems themselves act as powerful health determinants. In this sense, the design and function of a healthcare system can enable or constrain health equity for disadvantaged or marginalised groups (Gilson, Doherty, Loewenson, & Francis, 2007). While the social determinants of health influence psychological, social and physical health outcomes generally, they unavoidably contribute to how people fare in a disaster setting.

Being socially and politically disadvantaged produces increased vulnerability during natural hazards and disasters. These events heighten and expose already existing social inequalities; the more vulnerable, the harsher the impacts of a disaster. Without adequate resources people are constrained in their ability to prepare, respond and recover from disasters (Naser-Hall, 2013; Rodriguez, Quarantelli, & Dynes, 2007). For instance, people who are
disadvantaged can reside in high-risk hazard areas or have substandard and insecure housing that may not withstand a disaster event. People also struggle to reconstruct their lives after a disaster with limited social capital, finances, and no insurance (Wisner, Blaikie, Cannon, & Davis, 2004). A range of research exits that attest to the poorer outcomes for disadvantaged and marginalised people (Baker & Cormier, 2015; Suzuki & Kaneko, 2013; Tierney, 2014). To illustrate, Brunkard, Namulanda, and Ratard (2008) found that of the 986 Hurricane Katrina related mortalities 49% were aged 75 years and older, while 51% were male African Americans. In one area of Louisiana mortality rates for 18 years and older were between 1.7 to 4 times greater for African Americans than white Americans.

To address inequality, according to Lindsay (2003), the field of emergency management should recognise the way in which the social determinants of health are intricately intersected with disaster vulnerability. In this work, vulnerability is not viewed as a fixed state, rather social conditions that can be added or removed. People who are vulnerable do respond and cope after a disaster (Luna, 2009; Wisner et al., 2004). Valuing the relationship between emergency management and social determinants of health will enable a two-pronged, yet collaborative approach to emergency management that has multiple benefits for people and communities. The health sector can attend to the layers of vulnerability that determine community health and disaster mitigation, while emergency management can work towards ensuring that health equality in a disaster is attainable for all (Luna, 2009; Marmot, 2005).

The Sendai Framework for Disaster Risk Reduction (United Nations, 2015) calls for disaster risk reduction strategies that identify risk while attending to the economic, cultural and environmental conditions that sustain wellbeing. Adopted by Aotearoa New Zealand, this framework promotes community and health resilience, or the ability to absorb, acclimatise and recover from a hazard, through appropriate disaster preparedness, response and recovery practices (United Nations, 2015; United Nations Office for Disaster Risk Reduction (UNISDR), 2009). The Aotearoa New Zealand Ministry of Civil Defence and Emergency Management (2016a) further engages an all-hazards approach to disaster risk management that attends to four key areas: reduction, readiness, response and recovery. Reduction focuses on identifying and reducing long-term risks and their impacts, readiness ensures systems, people and communities are disaster ready, and response actions aim to protect people, save lives and support recovery. During the recovery phase, coordinated actions aim to restore communities and infrastructure. (Ministry of Civil Defence & Emergency Management, 2018; Ministry of Health, 2015; Reilly & Markenson, 2011). While comprehensive, at times this approach overlooks the specificity of marginalised groups (Blake, Marlowe, & Johnston, 2017), including people receiving OST.

To address this gap and to better understand the way in which OST healthcare, as a social determinant of health is managed in a disaster setting, this research specifically explores the preparedness practices and perspectives of OST and emergency management professionals and people receiving OST through applying a social determinate of health lens.

**OST in Aotearoa New Zealand**

OST is governed by specialist services as specified by the Aotearoa New Zealand Ministry of Health under the Misuse of Drugs Act 1975. While OST medications are highly controlled and regulated (Ministry of Health, 2014), people receiving OST have minimal control or autonomy over treatment protocols or takeaway dosing (a dose consumed without professional supervision). Opioid medication must be consumed daily to avoid physical and psychological withdrawals (Matua Raki National Addictions Workforce Development, 2014), with some people subjected to daily dispensing regimes that require them to consume at a pharmacy each day. Common
Withdrawal symptoms include continuous yawning, restless body movements, rhinorrhea, pounding heart, nausea, stomach cramps, aches and pains, insomnia and loss of appetite. People experience anxiety, agitation and intense drug cravings. Withdrawal symptoms are extremely uncomfortable and people can turn to street opioids, alcohol or benzodiazepines to avoid them (Wesson & Ling, 2003). In their Practice Guidelines for OST in Aotearoa New Zealand, the Ministry of Health (2014) caution against involuntary cessation from OST because it precipitates risk of overdose, physical harm, financial debt and criminal offending.

In a disaster context, access to opioid medications can be difficult if critical health services are closed, especially for people who are denied takeaway doses and must consume daily at a pharmacy. While investigating impairment and disability during Hurricane Katrina, Bloodworth, Kevorkian, Rumbaut, and Chiou-Tan (2007) found that people on methadone presented immediately to the Houston Astrodome, a welfare centre, seeking treatment. However, much like Aotearoa New Zealand, federal regulations demanded Drug Enforcement Administration registration to dispense narcotic drugs, therefore OST could not be provided without official sanctions. Astrodome officials also decided that opioids should not be stocked at the on-site pharmacy because of security concerns. Further, medical records for evacuees were lost in the floods, phone services were intermittent and hospitals and health services unreachable making attempts to determine methadone doses difficult. Psychiatric teams were eventually used to refer and transport people to methadone programmes.

With a scarcity of research exploring OST and emergency management specifically in Aotearoa New Zealand, Blake and Lyons (2016) undertook research to understand the perspectives of OST and emergency management professionals, a subset of participants in this study. The findings represented social determinants of health at a systemic and social level, which mattered to the health and wellbeing of people receiving OST. Without fit for purpose disaster preparedness planning, key problems for service continuity included communication, transport and infrastructure breakdown, inability to access client information and OST stock, and service inaccessibility.

All of the participants in the Blake and Lyon’s (2016) study were concerned about technological failures causing communication problems, especially when notifying clients of alternative dispensing plans. Some people receiving OST can be transient meaning that OST services rely on dispensing pharmacies to relay messages. With dispensing pharmacies closed, contact with clients could be constrained. Other potential issues included transport and infrastructure problems, with road closures or limited public transport hindering access to OST clinics or pharmacies. There were concerns that replenishing opioid supplies could be problematic if drug warehouses or pharmacies were inaccessible. Participants were also worried that they could not access online treatment records or up-to-date physical records. All participants reported that without OST in the immediate aftermath of a disaster, clients’ ability to respond and care for families and wider communities would be compromised.

Understandably, participants described disaster planning as tenuous because of the uncertainty surrounding disaster scenarios (Blake & Lyons, 2016). Service continuity in a disaster context is dependent on the type, time and location of the disaster. Interviews with the Christchurch Opioid Recovery Service clinical staff, who were working during the Aotearoa New Zealand Canterbury earthquake event of 2011, reported little disruption to service delivery because the earthquake occurred at midday and many clients had already consumed their daily dose. They also reported that no one went without an OST dose in the time following the event. The 2011 Canterbury magnitude 6.3 earthquake killed 185 people, harmed many more and caused severe infrastructure and building damage (New Zealand Police Nga Pirihimana o Aotearoa, 2012). Many of the health professionals in
this study acknowledged the Christchurch Opioid Recovery Service’s collaborative and collegial approach to sharing experiences from the Canterbury earthquakes and emergency management strategies.

At the time of conducting the first study, of the OST services interviewed, emergency management plans were at various stages of completion even though it was approximately six years post the Canterbury earthquakes. Compounding this was the challenge of aligning emergency management plans across the health services involved in OST. For instance, OST services needed to align emergency management plans with District Health Board plans and pharmacy plans. Participants argued that Aotearoa New Zealand needed a nationally driven emergency management plan that is fit for purpose, contextual and covered the diverse emergency scenarios (Blake & Lyons, 2016).

The Current Project
As part of the larger in-depth qualitative project investigating OST disaster management, this work explores the specificity of social determinants of health as represented by participants. The first stage of the overall project gathered the views and perceptions of emergency managers and OST health professionals. The second stage interviewed a small subset of OST health professionals from the Christchurch Opioid Recovery Service, a pharmacist and a needle exchange worker living and working in Christchurch at the time of the 2011 Canterbury earthquake. The third stage involved talking to people receiving OST in Aotearoa New Zealand. Funding was provided by the Massey University Research Fund.

Participants
To emphasise the way in which OST healthcare, as a social determinant of health, is implicated in disaster settings, this paper drew on the data from the entire project by exploring the views, opinions and experiences of 22 Aotearoa New Zealand emergency management and health professionals and 21 OST clients. The professionals group was comprised of two emergency managers from District Health Boards, one community emergency manager, three community pharmacists and one pharmacist from an OST service. There were eight OST health professionals, one OST administrator/health and safety staff officer and one OST client advisor, one Alcohol and Drugs (AoD) professional, one needle exchange staff member, two Ministry of Health professionals working within the OST sector and one Ministry of Health emergency manager. Participants were based in Christchurch, Nelson, Wellington and Auckland. Of the 21 OST clients all were currently receiving OST. They had been on OST from between one to 30 years; there was a mixture of methadone and suboxone clients. These participants were on OST programmes in Auckland, Wellington, Palmerston North and Christchurch.

Procedure
Participants in stage one and two of the wider study included any health professional that had or currently worked in OST and emergency managers that did or did not have knowledge of OST in Aotearoa New Zealand. Participants were recruited by cold-call emails or through snowballing techniques, whereby existing participants suggested future interviewees. Interviews were conducted individually except for two groups of two colleagues interviewed together. Interviews were semi-structured and conversational in nature as it allowed the participants to direct their interviews, while also keeping the interviews focused on the research aims. Interview topics covered emergency management planning for OST, issues that emergency responders might need to know, client preparedness, opioid withdrawal processes, and why OST is important in a disaster context. Interviews were approximately one hour in length and were conducted at OST services, participants’ workplaces, or Massey University. This stage went through Massey University’s Human Ethics process and was peer-reviewed.

Participants for stage three were necessarily purposeful and included anyone who was currently on OST in Aotearoa New Zealand.
Zealand. They were recruited via information sheets distributed at Needle Exchange Services or through OST Consumer Liaison staff. Snowballing techniques were used. Interviews were conversational and covered topics ranging from the importance of OST to health and wellbeing, what OST clients would do if they could not access a dose, emergency management planning for dispensing, information provided by OST services on emergency management planning, the relevance of stigma in emergency responses, and information that emergency responders need to know about people receiving OST. Interviews ranged in length from 25 to 60 minutes. All participants, barring two groups of two couples were interviewed individually at Needle Exchange rooms, an OST service or Massey University.

All interviews were audio-recorded and transcribed verbatim. Content was organised for readability, redundant words such as “ums”, “arrhs” and “you know” were removed. Participants were given the option to review their transcripts before analysis. All names and identifying information were removed. Participants on OST were given a voucher for their time. Ethical approval was granted by the Massey University Human Ethics Committee (SOA 16/56).

Analysis

The overall project can be positioned within an interpretive framework in that research is understood as a moral practice that positions people in relation to one another and impacts on how we make sense of ourselves and each other. It also values research as a practical activity that produces knowledge about social lives and the type of communities people reside in (Smith, 1992, 2008). Thematic analysis was engaged to classify patterns across the participant’s conversations. While OST and emergency management is an under-researched subject in Aotearoa New Zealand, identifying central themes was vital to the exploratory aims of determining how OST is addressed and endorsed within emergency management. This involved a rigorous inductive data coding and theme development process. Data was initially grouped into detailed codes, using NVivo 11 software. The codes were then conceptually grouped into larger categories and considered relative to one other and the research aims, in a recursive process. Further analysis identified key themes and one central theme contributing to social determinants of health.

Findings

In the following sections the key themes of *experiencing psychological distress without OST*, *fear of withdrawals*, *lack of agency over takeaway doses*, *doing whatever it took to access drugs*, and *not being prepared for a disaster* represent the ways in which health can be constrained in the lives of people receiving OST following a disaster. These themes were conceptualised under one central theme demonstrating the importance of *access to healthcare*, a vital social determinant of health. Each theme is necessarily interconnected but described discretely below.

Access to Healthcare

*Experiencing psychological distress without OST*. Participants expressed strong psychological reactions when contemplating a lack of access to OST after a disaster because it is vital to the health and wellbeing of people, and by association their families and communities. Yet in a disaster context, critical infrastructure and lifeline utilities can become inoperable making access to OST difficult. The psychological reactions included panic and anxiety, as the following quotes represent:

I’m always panicking about what would happen if there was a disaster … and how I’d get my medication … and once something bad happens it boils down to, there’s a good chance they’ll close down the main street, which means you can’t get into the chemist. And it’s always been a paranoia… . (OST client)

It’s the not knowing that creates anxiety for people … people freak at the thought of going without their medication for 24 hours, let alone what could be who knows,
three days... (OST client)
I'm sure there would be massive anxiety about where I'm going to get my next dose and how am I going to avoid withdrawal ... added to everything else. (OST staff)

For the participants receiving OST merely thinking about a disaster constraining access to daily OST was distressing. Having an intense psychological reaction to accessing OST was understood by OST health professionals as exaggerating the trauma of “everything else” in a disaster. It is common knowledge that the aftermath of a disaster is chaotic with injury, death and destruction of the built environment (Coppola, 2015). Some participants described the post disaster environment as dire, and the inability to access OST as a precursor to behaving in unsafe ways:

… in a crisis, or in an emergency, you're screwed because of what's happened, and I don't think you need something extra that could make you do something particularly silly or risky because of that (not accessing OST). (OST client)

This participant implied that risky behaviour would be triggered by the additional stress of not getting OST, not necessarily the effects of the disaster. As argued by Hser, Evans, Grella, Ling, and Anglin (2015) opioid dependents can suffer from psychopathologies, such as traumatic disorders which affect drug use and OST trajectories. Many of the OST staff, pharmacists and people receiving OST in this study discussed coexisting mental health disorders as an important determinant of health in a disaster setting. Any psychopathology will impact on how people receiving OST cope with the disaster and drug seeking. All participants discussed the impact of not being able to access OST on behaviour and the fear of withdrawal, which is elaborated in the next section.

Fear of withdrawals. Opioid medications are clinically managed to ensure the safety and wellbeing of the people taking them (Blake & Lyons, 2016). This includes planned and involuntary withdrawals from OST because it is necessary to taper people off OST to minimise the negative effects of withdrawals and drug cravings (Berry et al., 2010). Involuntary withdrawals are when a client is withdrawn from OST because they have been judged to have breached safety requirements, or have not reduced harmful behaviour (Berry et al., 2010; Matua Raki National Addictions Workforce Development, 2014). In a disaster context, managing withdrawals might not be possible, however the pharmacology of opioids means sudden withdrawals are not life-threatening (Berry et al., 2010). This point was important to some of the OST staff when they considered withdrawals in a disaster scenario:

The worst thing that would happen [in a disaster] is they would go into withdrawal and nobody is going to die of that. (OST staff)

A person will not die if they don’t get their medication for three or four days but they’ll feel uncomfortable. (Pharmacist)

These statements demonstrate how some staff were not overly concerned about the experience of withdrawals for people receiving OST after a disaster, which could have implications for how disaster risk management is applied in service delivery. However, all participants, except the two emergency managers, recognised that withdrawal symptoms are “uncomfortable” and have a negative impact on physical and psychological wellbeing. For all of the participants on OST the effects of the withdrawals were significant:

I couldn’t concentrate enough to be able to read, like, a paragraph. And then the physical would be like, aches and pains all over … probably vomiting, probably just lose control of bodily functions. And you can’t eat properly and have no appetite.

… withdrawals, pretty unpleasant. I mean admittedly, they might not happen the very next day, but
psychologically they’re probably worse sooner than the physical effects, which might take more like a couple of days to start happening. (OST client)

… there’s a horrible feeling in my stomach that doesn’t go away, anxiety, and pain. Physical and mental pain, yeah, mental as well. (OST client)

It was also recognised that opioid withdrawals could hinder coping and survival for people receiving OST and ultimately their families and the people around them:

... if there’s a massive earthquake and a landslide which cuts off arterial routes into the city and there is no food in the supermarkets and I have to walk to a food and water place and take my family and maybe its 10 kilometres and I haven’t been able to get methadone and can no longer function, sure I might not die of methadone withdrawal but I might die from basically drinking water that is unsafe because I can’t get to a clean water source, my children are going to be affected, the children may have to drink unclean water or go without food... . (AoD worker)

Imagining himself in this situation, this participant recognised that although withdrawals are not life-threatening they severely reduce a person’s ability to respond, cope and recover after a disaster. Going without OST can precipitate family members going without essential survival items, like food and water. Participants on OST were also concerned about protecting people they are responsible for:

I have two young children and a wife, and in a disaster, I’d feel like I’d need to operate a bit better than having to try and deal with withdrawal symptoms, and that’s only on a very low dose. (OST client)

They would not be functioning very well if they didn’t have their drugs and that’s going to be problematic for their wellbeing and that of those around them that they may be responsible for. If they’ve got kids, or family or neighbours that usually they’d be in a position to help, but if they’re like throwing up in a toilet or curled up in bed or whatever [they can’t help]… . (OST client)

As this client expressed, being unable to function could impact on the ability to help others in the community during a disaster. According to Hawkins and Katherine (2010) resiliency and the ability to cope following a disaster requires social capital, the resources that are enabled through social networks and support systems. Social support enables people to endure the post disaster environment and assist one another to survive.

Fear of withdrawals also extended to medications other than OST. Some participants talked about other medications, like benzodiazepines or alcohol, having life threatening withdrawal symptoms. For example:

… you might die if you don’t get your benzos, you might die if you don’t get your insulin … you might become really very unwell if you don’t get your anti-psychotic medication. (Pharmacist)

There are other medicines that people take that people can die from. Like alcohol withdrawal or benzodiazepine withdrawal can kill people. They have seizures, and it’s just not nice. (OST client)

A report exploring illegal drug trends in Aotearoa New Zealand found that 46% of people who frequently inject drugs also used benzodiazepines, suggesting that people receiving OST might have unrecognised benzodiazepine problems (Wilkins, Prasad, Wong, & Rychert, 2014). Unplanned withdrawals from benzodiazepines or alcohol do have serious health consequences, including seizures and psychosis, therefore withdrawals need to be managed carefully (Pétursson, 1994). Some of these participants
downplayed the importance of sudden withdrawals in a disaster, while others were very concerned. As was expected, the community emergency managers did not understand the significance of OST withdrawals, and the following excerpt demonstrates the belief that managing health during a disaster will be the responsibility of health professionals:

… we know about the earth moving and what the impacts of that will look like but the experts on people who inject or people who live rough on the street, or people with a mental health disability, or whatever it might be, are the people that look after those [groups of people]. (Community emergency manager)

Conversely health emergency managers recognised the importance of maintaining clinical services to patients more generally, and ensuring services carry on as normal to minimise the effects of withdrawals:

Well in our sphere of interest, what we're trying to do is make sure that right across the health sector we've got plans in place to carry on providing services as much as we possibly can. (Health emergency manager)

Having disaster management plans is critical to response, recovery and access to healthcare to avoid unnecessary withdrawal process for people receiving OST. The intensity of worry and fear about access to OST and withdrawals for people was dependent on take-away privileges and dose amounts. These factors, as determinants of health, are explored in the next section.

Lack of agency over takeaway doses.

Client dispensing regimes and dose amounts are dictated by the health system and based on strict policies and guidelines. People receiving OST are expected to have supervised urine screening for illicit drug use and regular treatment reviews to continue treatment. If deemed unstable, a person is not eligible for take-away doses (Ministry of Health, 2014). However, strict protocols can be difficult especially when living a chaotic life. Access to medication during a disaster was particularly significant for people on daily supervised consumption because health and wellbeing is contingent on getting to a pharmacy, or OST service, which might be inoperable or inaccessible. The excerpt below highlights how this mattered to one participant:

… if you’re on daily pickups you’ve got less leeway … if [a disaster] happens on a Saturday, at least I can get through a couple of days [have a Sunday takeaway because pharmacy is closed], until we have to do something, until I have to go back to the chemist or something like that…. (OST client)

The following OST participant also described experiences of powerlessness over treatment in the mental health system, which is where OST is situated:

Some of the mental health [staff] that I've met, I don’t know what it is, they just come … into my life and they made decisions about my life, about my health and the medication that I was on … made major decisions about my health, and I told them what I needed, and they didn’t believe me or they didn’t care. (OST client)

This quote suggests discriminatory practices, also a negative social determinant of health. A plethora of research exists evidencing that OST and people who inject drugs experience stigma (for example see Barry, McGinty, Pescosolido, & Goldman, 2014; Conner & Rosen, 2008; Luty, Kumar, & Stagias, 2010). Such negative judgments become internalised and can impact on ongoing drug use and treatment outcomes. To experience stigma and lack agency over treatment decisions was frustrating for OST participants. This lack of agency was concerning for people receiving OST when thinking about a disaster situation. Drawing on examples of everyday life, the participants on OST describe how the lack of agency over dosing regimes affects their ability to
travel and work:

They call [methadone] liquid handcuffs. Sometimes things just come up where you go out of town, and unless you’ve got a glowing report at the clinic … you can’t just ring up the day before and say look, can I have a takeaway for tomorrow? (OST client)

I struggle so much just to keep my job as it is, because I have to go in everyday to pick [opioids] up. So I can’t say ok I’m going to work on Saturday, because, I’d have to try and get into city to pick up. (OST client)

In a disaster scenario, being “handcuffed” and experiencing a lack of agency is amplified:

The dispensing of your methadone, so, you have little control and then in disaster you have even less control. (OST client)

When discussing the impact of having no control over access to opioids in everyday life, and the implications of that in a disaster, the people receiving OST also talked about feeling a lack of control over their bodily experiences of withdrawal. This lack was felt as “terror”:

If we don’t have [opioids] we’re sitting there shivering, and a blithering mess. I hate the thought of not being able to be in control of my own body. Terrifies me. (OST client)

[In withdrawal] you’ve got diarrhoea, and your body’s going out of control, you’re going to do anything to make that better. (OST client)

To not have control over legitimately prescribed opioid medications that prevent uncomfortable withdrawals and support functional wellbeing can precipitate seeking alternative medications to control symptoms of withdrawal. Although people will not die from withdrawals, OST certainly constrains health and inhibits the ability to respond adequately in a disaster. In this sense, OST clients reported that they would access drugs in whatever way necessary as discussed in the next section.

Doing whatever it took to access drugs.

OST is a valid intervention that increases safety by reducing the negative effects of illicit opioid use and the associated harms, such as blood borne diseases and criminal activity (Ministry of Health, 2014). It is argued that safety and security are strong predictors of health (Australian Psychological Society, 2017). However, without access to OST in a disaster, clients in this study reported that they would do “whatever” it took to find drugs to prevent withdrawals, including breaking the law:

And if the person’s resourceful or ruthless, they’re going to go and do whatever…. (OST client)

[To get drugs] I’d probably break the law and break into the building … sounds bad but that’s probably what I’d do. (OST client)

If someone’s feeling crap, and they have a great desire, then they might go out and burgle, or hit pharmacies during that time. (OST client)

Even though I don’t want to [smash into a pharmacy], but that’s pretty much what it’d drive me to do. (OST client)

If you’re on daily pickups, then it’s a real crisis [laughs] situation [post-disaster] pretty much straight away. If your pharmacy isn’t open or that sort of thing … if that means waving a baseball bat around at a pharmacy that happens to be open, then, so be it. (OST client)

These quotes demonstrate just how “resourceful” people receiving OST may be in a disaster. Unable to access opioid medication would drive them to do things that they would not want to do under business as normal conditions. The quotes also alluded to risk for the general public. For instance, the safety and security of pharmacists and pharmacy patrons would be compromised by a person aggressively seeking opioids. However, some OST
participants mentioned trying other avenues to avoid withdrawal symptoms, such as buying street drugs, or taking alternative medications:

I would go to the black market for other methadone or other opiates, morphine, codeine, any, oxy- any opiate will do in a pinch. Or even people would resort to taking anti-psychotics like Seroquel or other things that just knock you out. (OST client)

[Post-disaster] if it got to lunchtime and I hadn’t heard of anything [about pharmacy opening], and I knew where to get something else, most definitely I would, without a doubt [turn to street drugs]. (OST client)

In the initial phase of a disaster, if legal OST is not available then illegal supplies of OST will also be disrupted, according to Ministry of Health staff. Not necessarily wanting to commit crime or access street drugs, most of the participants receiving OST stated they would try to access opioids from a hospital emergency department (ED), an option that OST clients discuss amongst themselves. Though they recognised that this could be problematic in a disaster context because the hospitals would be busy with injured patients and distressed people:

The other suggestion I’ve heard, which is passed around by a few people on the methadone programme to a few other people, but it’s sort of billed as something they don’t want everyone to know, is to just go to the ED, and that whoever the doctor in charge there should know something about it, or will be able to dispense, or organise dispensing in a genuine emergency, disaster situation. Whether they’d be too thrilled about seeing a bunch of methadone patients turning up and demanding medication I don’t really know… . (OST client)

… maybe I’ll go to the hospital, [laughs] … there’s a disaster but, fuck, they’re going to be really busy if there’s a disaster. I mean no one at the hospital’s going to care that I haven’t got my Suboxone. You know, they’ve probably got people everywhere…. (OST client)

This account was supported by a government based emergency manager, who also reported that people receiving OST would not be welcome at hospitals:

Health won’t want people going to the hospitals. They’ll try and push it out through primary care or somewhere. They’ll be looking to deal with the critically injured and all that sort of stuff, so you wouldn’t want to be swamped with a whole bunch of other people setting up for a few minutes to get their dose. (Ministry of Health worker)

Although busy with acute cases, that no one would care about opioid withdrawals in a disaster context signified discriminatory practices. This assumption was supported by stories from the 2011 Canterbury earthquake. A Christchurch OST staff member reported that primary response groups did not consider that missing an opioid dose as an emergency and therefore it was not a treatment priority. However, the participant also claimed that this could be founded on knowledge about the pharmacology of methadone and its long half-life (time to reach half the original concentration):

… the message that had also come through around controlled drugs was that they weren't considered emergency situations. So, an OST client presenting for their next dose, the next amount, is not an emergency. So, they were generally being triaged down the list when they turned up at the after-hours doctors. (Pharmacist)

Some advocates of OST draw on a diabetes metaphor as a way to explain the significance of OST on health and wellbeing. With moral and ethical judgements producing stigma about drug addiction and
drug replacement treatments (Earnshaw, Smith, & Copenhaver, 2013) this metaphor provides a way to engage people in the physiological justification of opioid interventions:

... the good old analogy of diabetes, if somebody didn’t have their insulin that added anxiety … except of course if you’re a diabetic you’re likely to go into a coma and die (mmm) whereas with addiction it’ll get very, very uncomfortable. (OST staff)

While the metaphor of diabetes enabled a telling of the significance of OST for people, it can overemphasise the physical health consequences and diminish the psychological aspects. To be ignored by health professionals in an disaster setting could trigger people to “do whatever it took” to score drugs and stop the uncomfortable withdrawals, even if that meant burglary, robbery or using street drugs. The participants did not consider any other strategies for reducing withdrawals, such as taking medication like Ibuprofen to lessen the symptoms, and only a small number had any disaster preparedness items in place. The next section discusses disaster preparedness practices for people receiving OST and OST healthcare services.

Not being prepared for a disaster. A range of research argues that preparedness is vital to efficient and effective recovery for people and communities after a disaster (for example see Finnis, 2004; Frumkins, 2011; Ministry of Civil Defence & Emergency Management, 2016c). However, being prepared is difficult for people who are disadvantaged because of a paucity of resources, capacity and social capital (Fraser, 1999; Wisner et al., 2004). As this research has demonstrated, for OST clients, preparedness planning is obstructed by regulations that limit access to opioid medications. Despite such restrictions, the Aotearoa New Zealand Ministry of Civil Defence and Emergency Management (2016b) implore the public to be disaster ready by storing essential medicines. Some of the OST participants reported that they had never considered disaster preparedness planning for their medication and simply accepted that storing opioids would be impossible because of the strict regulations and lack of access. The following OST clients describe this situation:

I've never really thought about, if a disaster happened. Like it’s hard enough planning with the hospital just to get one or two days’ takeaway when they’re fully staffed, let alone if there was a disaster and hospital staff were already stretched. (OST client)

... you can’t stockpile anything. So it’s purely daily. (OST client)

... no I haven’t, really [got any plans]. I mean I never, I can’t really see how I would hide my dose, I mean unless I hid some of my takeaway dose. (OST client)

When asked about why they were not ready for a disaster reasons other reasons included denial that a disaster would occur to a lack of finances or geographical challenges:

... never with my medication. No. It’s almost like that whole natural disaster thing, it’s almost like it’s never going to happen to me. (OST client)

... probably money… I'm between homes … and just, never thought about it. You see the ads on T.V. and that, you don’t even really see that to be honest. But it’s almost like money you’re going to go out and spend that might not be used in a way [for an emergency]. And I could see myself being low on money and supplies and all that, you probably dig into it. (OST client)

I don’t have that kind of money. So no, if I was working and had money in the bank, I’d probably think about it, but even then, I've never really had money to think - I've got too much money, what can I buy? (OST client)

I guess because I live, like just across the road from the hospital, it
The following pharmacist described the social conditions that some clients endure and the importance of providing extra help to them:

… a lot of our clients are living out of cars, or garages or they’re very transient and of course transport is an issue … some of the clients are stable, they’ve got jobs and they’re easy peasy, but you get the same pot of our clientele who are still in a mess. The ones in a mess are the ones that need more help, the ones that are in a mess they stress out more “my god what am I going to do, where am I going” “what about my medication”. (Pharmacist)

OST staff also mentioned the impact of social inequality in a disaster scenario. Social inequalities are recognised as a strong predictor of health (Davidson, 2015). Following the Canterbury earthquake, it was noted that people receiving OST were worse off because of their position as “have nots”:

A lot of [clients] ended up in really horrible conditions because of the earthquake. A lot of them had substandard housing to start with, and it was made worse by the earthquake… what we found was we got homelessness not after the earthquakes so much as when landlords got their houses done up and then they upped the rent, and the [OST clients] had to move out. So we had social issues maybe twelve to twenty-four months after the earthquake. Most of our issues here have been the consequence of … the ‘haves and have nots’. (OST staff)

That social disadvantage is problematic for people following an earthquake is concerning. As well as advocating for social changes that support disadvantaged communities, assisting people to prepare could reduce some of the negative harms immediately following a disaster, such as access to water or medication and long term recovery issues, like housing. When asked if they had been given information on OST emergency plans, all participants reported that they had not received any information on preparedness planning. This was troubling as some of the OST services were well prepared and had produced information sheets for how people should prepare. One of the OST participants expressed frustration about this lack of information:

I don’t know if they’ve got anything in place. I don’t know if they’re interested in getting anything in place. I got the feeling that like, oh we go to work, we sit in our office, we go home, and we’re fine. You guys… you’ll be ‘right, go to the hospital. And I know from my experience when there is no dose, that when you go to the hospital, the hospital says piss off. (OST client)

It was claimed that most people on OST in Wellington, a city with active geological faults making it earthquake prone (GNS Science Te Pū Ao, 2016), would not have considered household preparedness planning, as the following except demonstrated:

I think on the whole … you’ve got 400-odd methadone patients in Wellington, I would expect that the majority of them are not prepared at all for, even just in terms of, at home, things like water, food, radio, batteries, whatever, that sort of stuff. Even a plan to get out of the house, or who to contact, I don’t think, I’ve certainly talked to a few people about it, and none of them have any sort of plans at all. (OST client)

OST staff also assumed that clients would not have thought about preparedness planning, however that assumption was moderated by the length of time someone had been receiving OST, stability, illicit drug use, and “sci-fi” knowledge of disasters:

… if they’re early on in their [treatment], getting on the first couple of years is probably still
living a life of kind of, gentle kind of chaos, they might even still be using. So I would think it just wouldn’t even occur to them. Because everything, it’s all about how you’re going to get high again, and over and above that – and then you’re high, so you’re not thinking about what might happen in the far off sci-fi version. But yeah it [preparedness] just wouldn’t occur to you. (OST staff)

Household disaster preparedness, such as storing water, food, and batteries had been completed by two of the participants, with one explaining that she was prepared because her family encouraged her to be. Even if people receiving OST could stockpile their medication it would be problematic because people could be tempted to consume it. The allure of the drug high is represented below:

If they say, look well what we’ll do is we’ll give you a week’s worth and that can be for in case there’s an emergency, that wouldn’t work because it’s a mind-altering substance … (OST client)

… an addict that would basically open up, it would just get used I suppose. (OST client)

One OST staff member reported that no client had ever asked about emergency planning; while another stated that she was asked about what to do to access OST after the Canterbury earthquake in 2011, but not since then:

They did after Christchurch. Recently they haven’t asked and the answer now is probably still the answer now - if the pharmacy was open they would continue to collect from them. If the pharmacy was forced to close, then we would be able to direct them to where they would be able to go, and they were quite happy with that. (OST staff)

As indicated here, the same message following the Canterbury earthquake 2011 is relevant to people OST clients today. According to one OST participant, being provided with verbal information about the

OST service preparedness plan would be enough to satisfy them, however verbal messages should be supported by written messages. OST services should provide preparedness planning information packs that are disseminated to people receiving OST on a regular basis.

**Discussion**

Social determinants of health govern the way in which disasters are experienced. Already existing inequalities, such as substandard housing, poor healthcare and socioeconomic conditions are exaggerated and contribute to negative outcomes after disasters (Frumkins, 2011; Hser et al., 2015; Wisner et al., 2004). By applying a social determinant of health lens, this work has delineated the way in which health systems impact on the health and wellbeing of people receiving OST, their families and communities, especially with disaster preparation planning and during a disaster response phase. A central theme of access to healthcare encompassed subthemes of experiencing psychological distress without OST, fear of withdrawals, lack of agency over takeaway doses, doing whatever it took to access drugs, and not being prepared for a disaster.

The OST participants in this study were psychologically distressed merely thinking about being without their medication following a disaster. OST staff noted that many clients had pre-existing trauma which would contribute to how they cope. The impact of opioid withdrawals was downplayed by some OST staff because, unlike benzodiazepines, they are not life-threatening. However, other OST staff and clients recognised that withdrawals are extremely uncomfortable and could compromise client and community safety in a disaster. For people who rely on medication to function, having limited agency to be prepared or access to OST produces additional disadvantages during a disaster. The OST participants in the study felt like they would have no choice but to commit crime or use street drugs to alleviate withdrawals. In an already chaotic disaster setting, criminal activity and the health risks
associated with using street drug would exaggerate harm to people receiving OST, and as a consequence the wider community, which of course is not ideal. Personal and psychological safety should be a primary focus in disaster recovery (Coppola, 2015).

The inability of OST clients to have control over their healthcare and have household disaster preparation items in order to care for families or communities in the days following a disaster, was also alarming. Some of the participants expressed concerns that they may be too sick to access clean drinking water or food. They would not be able to walk long distances or get to safety and that they could not help a neighbour or a distressed citizen while they were physically compromised. Household disaster preparedness was constrained without financial means to purchase additional food, and as a transient group with sometimes chaotic lifestyles, managing emergency stores can be a difficult task. Bloodworth et al. (2007) argued that disaster preparedness is key to managing disaster outcomes therefore discussing emergency plans with clients is vital, and as recognised by the OST clients in this study, would help to alleviate their stress.

A key determinant of health is social equality for vulnerable groups (Davidson, 2015; Naser-Hall, 2013). OST services need to ensure that appropriate fit for purpose emergency management plans are prepared and communicated to auxiliary health providers such as pharmacies and general practitioners. Emergency plans should also be communicated regularly to clients. If people receiving OST know how long it will be before they can expect a dose in an emergency, or they are informed of service continuity plans it might help alleviate emotional distress and encourage people to have strategies to manage withdrawal symptoms until they can get an opioid dose. For instance, OST clients should be provided with information on medications to reduce withdrawal symptoms, like Paracetamol and anti-nausea medications. Although one of the services had this information available, the OST participants in this study reported they had not seen it. As well as lessening withdrawal effects, this might assist clients to access their regular medications in appropriate ways and potentially prevent any criminal activity, such as robbing a pharmacy or using street drugs. Studying the impact of heat waves on people on medication with mental health and substance disorders, Cusack, de Crespigny, and Athanasos (2011) also argued that health professionals should support clients to manage health conditions during a disaster. Extra monitoring and support should be provided for those that do not have the ability to do it themselves.

The participants in this study identified other social determinants impacting on the health and wellbeing of OST clients in a disaster. For instance, the potential for discrimination by ED staff that the medical profession positions opioid withdrawals as a non-medical emergency in a disaster setting negates the wider social and health risks. Information for ED staff on how to engage with people receiving OST in this situation might be a useful strategy to prevent risky behaviour. Rather than turn people receiving OST away they could be advised of the local dispensing plan or where to find information about OST service plans. People with specific health needs should be able to communicate these needs to emergency management staff or other health professionals if they present at their services without fear of discrimination or rejection. The Aotearoa New Zealand Health and Disability Commission encourages people to carry a health booklet outlining vital health information in case of an emergency or to provide it to new health professionals. This strategy might be a sensible option for OST clients. It may help overcome any immediate communication issues and de-stress the client.

**Conclusion**

The United Nations Platform on the Social Determinants of Health (World Health Organisation, 2017a) aims to address the socioeconomic and structural conditions that improve health outcomes for all. The Sendai Framework for Disaster Risk Reduction (United Nations, 2015) also calls for disaster
risk reduction practices that strengthen the social, economic, cultural and environmental conditions to promote disaster safety for all. Emergency management should consider and understand how the social determinants of health are intricately linked to disaster risk management practices. People working in health, including community psychologists, should recognise the importance of emergency management and disaster risk reduction. Acknowledging this relationship would enable a more comprehensive and collaborative approach to addressing social inequality within a disaster setting and beyond, providing multiple benefits for all people, including people receiving OST, their families and communities.

References


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**Author biography**

Dr Blake currently works as a Lecturer for the Joint Centre for Disaster Research and the School of Psychology at Massey University in Aotearoa New Zealand. Her work in this space encompasses matters of welfare and social justice to inform her commitment to the wellbeing of people who can be vulnerable and marginalised communities, both within a disaster context.
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