

**Beyond City Limits:
Strategies for Preventing Overdose Deaths in
Rural British Columbia**

by
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Ethics Statement

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Abstract

Four years into the provincial overdose crisis, rural B.C. municipalities increasingly report overdose rates that meet, and often exceed, that of urban centres. In rural communities, where populations are dispersed and healthcare services limited, the overdose prevention strategies that have succeeded in urban centres may not apply. This report examines the geographical variations of British Columbia's overdose crisis through an analysis of overdose rates across urban and rural municipalities.

Socioeconomic factors are then assessed for a subset of rural communities that, year-over-year, report the highest overdose rates in the province. This section of the report is supplemented by interviews with public health, addiction, harm reduction, and drug policy experts on the challenges in delivering overdose prevention services in rural settings. Findings from the research component of this report are used to develop a framework of analysis and recommendations for intervention. Due to the demographic complexities and urgent nature of the overdose crisis, this report recommends a short and long term strategy for increasing access to treatment for opioid use disorder in rural settings. First, by streamlining the requirements for becoming a methadone prescriber, and second, through targeted opioid substitution programs designed for rural settings.

Keywords: rural; overdose crisis; opioids; opioid agonist treatment; primary care

For Jared.

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List of Acronyms

BCCDC	BC Centre for Disease Control
BCCSU	BC Centre on Substance Use
iOAT	Injectable opioid agonist treatment
OAT	Opioid agonist treatment
POATSP	Provincial Opioid Addiction Treatment Support Program
RACE	Rapid Access to Consultative Expertise

Glossary

Drug diversion	A medical concept involving the transfer of a legally prescribed substance from the individual to whom it was prescribed to another person for illicit use
Hydromorphone	An opioid used to treat moderate to severe pain and opioid use disorder
Opioid agonist treatment	A medication based treatment that prevents withdrawal and reduces cravings for opioids. Methadone and buprenorphine/naloxone are commonly used opioid agonist treatments
Primary care provider	A health care practitioner who treats common medical conditions. Typically, a physician but also includes nurse practitioners
Rural	Communities with populations of 3,500 – 20,000 with limited general inpatient care capacity ¹
Safe supply	The legal and regulated supply of drugs that have traditionally only been available through the illicit drug market
Stigma	A negative stereotype that results in discrimination against a person, or group of people, based on a perceived characteristic or behavior
Substance use disorder	A substance use disorder is a condition that results in a dependency on a licit or illicit substance

¹ Definition adapted from the BC Ministry of Health' Community and Hospital Classification Framework

Chapter 1. Introduction

Three years after British Columbia’s Provincial Health Officer declared rising overdose deaths to be a public health emergency, illicit substance deaths remain high across the province. The public health response to the crisis has been most comprehensive in large urban centres where an existing infrastructure of harm reduction and overdose prevention programs were expanded to combat rising overdose deaths. The high concentration of relatively visible injection drug use in urban municipalities, along with higher numbers of overdose deaths focused attention and resources on these urban centres. However, overdose rates in rural B.C. are often *above* the provincial average and at levels comparable to urban centres. The response to the crisis in rural municipalities is often hindered by limited healthcare infrastructure, geographical constraints, dispersed populations, and a lack of addiction medicine specialists.

Increasingly, evidence suggests that adjusted for population, the rate of hospitalization due to opioid poisoning in Canada is highest in small to medium-sized communities (Canadian Institute for Health Information, 2018). While urban centres such as Vancouver, Surrey, and Victoria continue to report the highest overall number of overdose deaths, the municipalities with the highest *rates* of overdose are a subset of geographically concentrated rural communities with populations under 10,000 (BC Coroners Service, 2018).

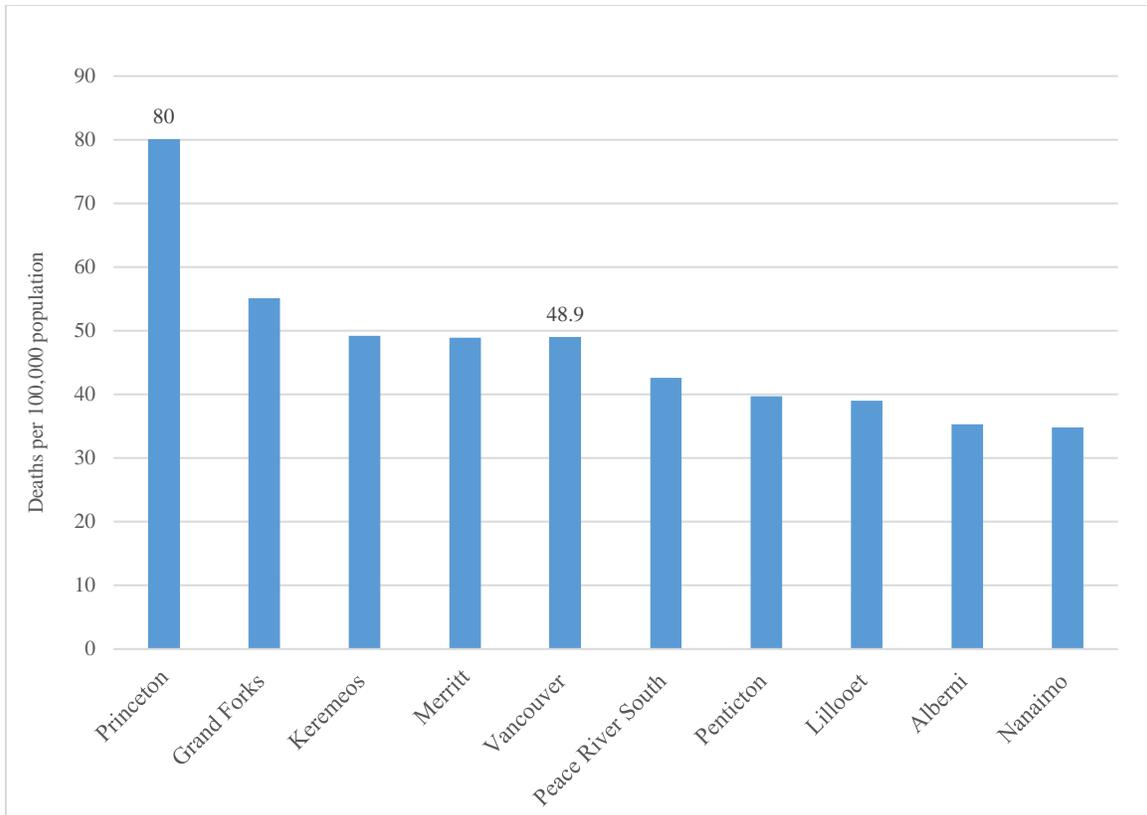


Figure 1.1. Overdose Rates by Local Health Authority, 2017-2019

In the context of rural communities, overdose prevention comes with additional challenges. At the time of writing, a number of rural communities in B.C. reported difficulties in managing an increasing number of overdose events (Charlebois, 2019; Koch, 2019; Vescera, 2019). Access to services, demographic considerations, and stigma towards people who use substances may contribute to elevated overdose rates in these settings, however, less is known about the specific geographical variations of the crisis.

Through a review of the literature, sociodemographic conditions, and interviews with experts this study explores factors that contribute to elevated overdose rates in rural settings. A review of the current policy response provides additional context to the public health tools available for addressing elevated overdose rates. This section of the report is followed by an analysis of three options for increasing access to overdose prevention services in rural communities and concludes with a final recommendation for policy change.

Chapter 2. The Opioid Crisis

The current opioid crisis is widely thought to have stemmed from the widespread overprescribing of prescription opioids for the management of chronic pain in the 1990s and early 2000s. This rise in opioid prescribing is largely attributed to the introduction and aggressive marketing of the prescription opioid OxyContin by Purdue Pharma. The company advertised the opioid directly to physicians as a highly effective antidote for chronic pain, with a low potential for addiction (Donroe et al., 2018). As a result, overprescribing sky-rocked and Canadian's consumption of opioids more than doubled between 1999 and 2010 (King et al. 2014).

As opioid prescribing increased, rates of addiction and overdose rose in parallel. In response to public concerns, a tamper resistant form of OxyContin was introduced, prescription guidelines were instituted, and prescribers were pressured to reduce the quantity and dosage of opioid prescriptions (Alpert et al. 2017). By 2016, opioid dispensing had decreased by 15 percent nationally and 30 percent in British Columbia (Gomes et al., 2017). The supply-side intervention of replacing OxyContin with a slow-acting, tamper resistant formula and imposing limits on prescriptions were initially thought to be effective measures for addressing rising opioid use and overdose rates. However, changes in the prescription opioid supply resulted in what has been deemed a 'substitution effect' that led to the well-documented increase in the consumption of other forms of opioids, including heroin (Alpert et.al, 2018; Fischer et al., 2017).

The impact of the substitution effect cannot be overstated in the context of the current opioid crisis. For most goods, the rules that govern the law of supply and demand indicate that a decrease in the supply of a good should lead to an increase in its price which results in a corresponding decrease in demand. However, in the context of illicit substances this relationship often does not hold. Instead an increase in drug prices often quickly attracts new suppliers resulting in a swift correction in prices. In addition, rather than reducing one's consumption of a more expensive drug, a person addicted to substances will often substitute one drug for another based on the accessibility of alternatives (Alpert et al., 2018). This behavior is informative when looking at the

relationship between the reduction in the supply of prescription opioids and increase in demand for illicit opioids, including heroin and fentanyl. This caveat of the supply and demand for illicit substances is also thought to be one of the reasons why increases to national expenditures on enforcement have not prevented the growth of the illicit drug market (Wood et al, 2009; Werb et al, 2013).

An analysis conducted by the BC Centre for Disease Control (2018), on the prescription drug histories of people who overdosed between 2015 and 2016 found that the majority had been chronic users of prescription opioids for pain management but did not have an active prescription at the time of their death. Further, more than half did not have an active prescription for the five preceding years. These findings support the notion that many fatal overdose deaths can be traced back to the over prescription of opioids and subsequent change in prescribing patterns. A factor that in effect would have pushed a person dependent on opioids off of their prescription medications and into the illicit, and frequently toxic, market for street opioids.

The rise in demand for heroin was compounded by the introduction of fentanyl into the street drug market. A significantly stronger form of opioid, fentanyl can be synthesized relatively cheaply, and distributed more readily than other forms of opioids. With a low-cost of production and high potency, the drug can be shipped in small packages that have minimal risk of seizure through Canada Post from producers in China and Mexico, before being pressed into pills and distributed through the illicit drug market (Bracken, 2016). As depicted in *Figure 2.1*, the introduction of fentanyl into the street drug market in 2012 caused overdose rates to rapidly increase. Fentanyl, which had previously been detected in less than 5 percent of illicit drug overdoses, by 2019 was detected in 85 percent of overdose deaths (BC Coroners Service, 2019).

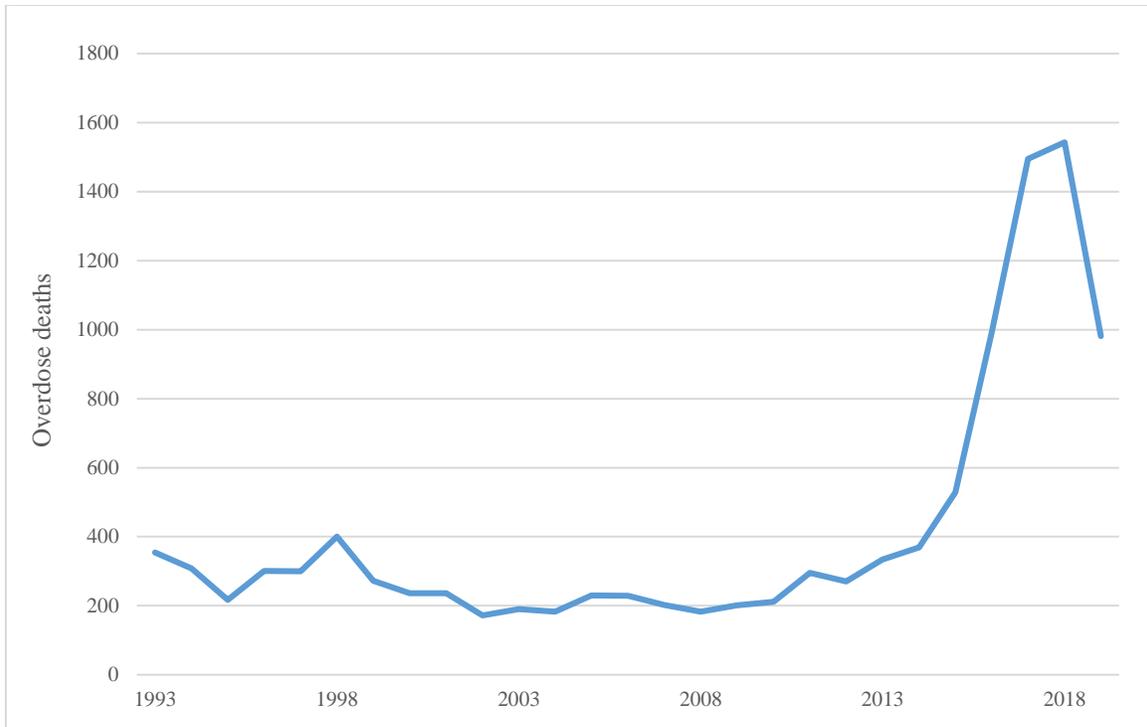


Figure 2.1. Illicit Drug Toxicity Deaths in B.C., 1993 - 2019
 Source: BC Coroners Service 2020

2.1. Demographics of the Crisis

In 2018, the BC Coroners Service released an inquiry into overdose deaths in British Columbia. The report found that the majority of those who had overdosed during the observed period were men, many unmarried, and of those employed, 55 percent worked in the trades or transport industries (*Table 2.1*). These findings mirror those of other jurisdictions which have noted a similar overrepresentation of men working in trades, transport or construction (Public Health Ontario, 2019; Alberta Health, 2019).

Findings from the BC Coroners Service
<ul style="list-style-type: none"> • 81 percent of people were male • 65 percent had never been married • 44 percent were employed at the time of death, of those employed 55 percent worked in trades or transport • 72 percent resided in a private residence

Table 2.1. Demographics of the Overdose Crisis

Source: BC Coroners Service, 2018

The relationship between specific industries and substance use has not been explored fully as a variable in the overdose crisis but has important ramifications for rural communities. In British Columbia, the rural economy is heavily dependent on primary industries including forestry, mining, and oil and gas. The boom-and-bust cycles of primary industries are often associated with an increase in drug and alcohol consumption (Booth and Skelton, 2011; Czyzewski et al., 2016). Additionally, these industries often involve labour intensive shift work that is associated with injuries and chronic pain, conditions that are often treated with prescription opioids (Goldenberg, 2010).

An additional consideration in the demographic makeup of the overdose crisis is the disproportionate impact it has had on Indigenous people, of which approximately 30 percent live in rural and remote communities with limited healthcare access (Statistics Canada, 2016). Recent statistics released by the First Nation Health Authority (2017) indicate that an Indigenous person in B.C. is five times more likely to overdose and three times more likely to die of an overdose than a non-Indigenous person. Some of the contributing factors noted in the First Nation Health Authority report are the intergenerational trauma Indigenous people experience as a result of residential schools, experiences of racism and stigma in the healthcare system, and limited access to culturally appropriate substance use treatment services.

Chapter 3. Addiction in a Rural Context

Opioid use disorder is a multifaceted issue that impacts people from all walks of life. The causal factors that influence substance use are often rooted in socioeconomic conditions, mental health, trauma, chronic pain, and access to illicit substances. Extensive research has demonstrated that people dependent on opioids are more likely to report a personal history of familial substance abuse or traumatic events such as physical, emotional or sexual abuse (Fischer et al. 2012; Mills et al. 2006; Pergolizzi et al. 2012; Sansone et al. 2009). Chronic pain is also significantly more common amongst people who use drugs and is thought to be an entry point to prescription opioid use (Clark et al. 2008; Heimer et al. 2015). Environmental and socioeconomic conditions such as unemployment, lower income or educational attainment, and limited access to illicit drugs are also thought to contribute to elevated rates of prescription opioid dependency (Rigg et al. 2015).

In urban centers the use of illicit substances in public spaces is often geographically concentrated and relatively visible bringing the problem into public view. Drug use in rural settings is typically less visible which may contribute to the problem being an under-studied issue in addiction research. While the causal factors that drive drug use and modalities for its treatment are similar across the urban-rural divide, drug use behavior and access to treatment differ greatly between urban and rural communities.

Studies have suggested that for a variety of reasons people who use opioids in rural settings are at a higher risk of fatal overdose than their urban counterparts (Hall et al, 2008; Paulozzi and Xi, 2008). This may be a result of reduced access to harm reduction and substance use treatment services, but factors such as economic downturn, lack of opportunity, and a higher prevalence of stigma are also thought to contribute to worse outcomes for people who use substances in rural areas. The following sections will highlight some of the conditions that contribute to the geographical concentration of problematic substance use, followed by an overview of the main modalities of overdose prevention, and methods of substance use treatment.

3.1. Educational Attainment and Social Mobility

Research conducted in the United States has noted geographical patterns in the overdose crisis that reflect declining socioeconomic outcomes for specific demographic groups. Specifically, studies have highlighted that overdose deaths are occurring at the highest rate in the counties with the lowest educational attainment and social mobility (Donroe et al. 2018; Zoorob & Salemi, 2017).

In a comprehensive study of rising overdose, suicide and alcohol related deaths in the United States, authors Case & Deaton (2017) note that the marked increase in deaths has been most prevalent amongst non-Hispanic whites with less than a bachelor's degree. The study found that between 1998 and 2015, deaths due to drugs, alcohol and suicide among men between the ages of 50 and 54 increased from 762 to 867 per 100,000. While in the same period, deaths of men with a bachelor's degree or more fell from 349 to 243 per 100,000.

The authors link the phenomenon to a long-term process of declining opportunities for people with lower educational attainment and argue that rather being the sole cause of the overdose crisis, the overprescribing of opioids may have simply made an existing problem worse. The authors hypothesize that in addition to reduced educational attainment and poor economic outcomes, changes in social structures such as marriage and community have resulted in increased consumption of alcohol and illicit substances. The Case and Deaton study, found a similar, but less acute, increase in suicide, alcohol and drug related deaths in other English-speaking countries including Australia, Ireland, Canada and the United Kingdom.

3.2. Income, Labour Force Participation, and Deindustrialization

Research suggests that poor economic outcomes are associated with higher rates of alcohol use and drug dependency (Linton et al, 2016). In a study on the impact of deindustrialization on injection drug use in the Monongahela Valley of Pennsylvania - a region that experienced rapid economic decline due to the mass closure of local steel mills - participants indicated that the stagnant economy played a significant role in the

increase in illicit drug use (Mclean, 2016). Participants to the study felt that the economic downturn was the cause of the region's declining populace, poor mental health, and what was described as a fatalistic culture of drug use.

Quantitative studies on the relationship between economic decline and opioid related deaths in the U.S. affirms these findings, demonstrating that at the county level, a one percentage point increase in unemployment results in a 0.19 per 100,000 increase in overdose mortality (Hollingsworth et al, 2017). The relationship between economic decline and rising overdose rates has been most acute regions that have historically been dependent on the coal and manufacturing industries such as the Midwest, Appalachia and New England. These regions, where primary industries once employed large swathes of the population, now report the highest rates of drug-related mortality in the United States (Monnat, 2017).

3.3. Drug Use and Social Networks

In addition to socioeconomic factors, abundant supply, and inadequate treatment, chronic drug use is thought to be influenced by small social circles and associations with other people who use drugs (Passini, 2012). Qualitative research into the relationship between environment and substance use has demonstrated that environmental factors such as exposure to drug use, peer group norms, and proximity to drug trafficking can influence the drug use behaviour of others (Chami et al, 2013; Neaigus et al. 2006; Rhodes, 2009).

In a study of street-involved youth in Vancouver, B.C., participants indicated that exposure to an open-drug scene had the effect of normalizing specific kinds of drug use that had once been deemed off-limits (Fast et al. 2010). Similar findings have been cited in a U.S. based study which likened the combination of drug availability and networks of fellow users to the creation of a "vortex" that encouraged drug use within and between social groups (Draus and Carlson, 2009).

A quantitative study on the transition to injection drug use has additionally demonstrated that the shorter social and geographical distance between people in rural

communities may increase the speed at which a person transitions from oral or intranasal to injection drug use (Young & Havens, 2012). These findings help explain how, in small communities, where social networks form the fabric of daily life, substance use may become geographically concentrated and entrenched over time.

3.4. Healthcare Access in Rural Settings

Access to primary healthcare in rural communities is often limited in contrast to urban centres. In a rural setting the ability of the healthcare system to respond to an overdose crisis is impacted by geographic remoteness, distance between communities, low population densities, and the availability of healthcare providers. In turn, the ability of a person with a substance use disorder to access harm reduction or substance use treatment services is impacted by the number of physicians, pharmacists, or other healthcare services in their community.

Access to healthcare services may be particularly critical to a person who uses drugs that wishes to begin opioid agonist treatment - a form of treatment for opioid use disorder that curbs cravings for opioids and withdrawal symptoms. In the initial stages, opioid agonist treatment requires daily witnessed ingestion and frequent follow-up visits to a physician. A study that documented the barriers people who use opioids experience accessing this treatment in rural northern Ontario found that the average distance a patient was required to travel to his or her physician for treatment was 126 km (Eibl, et al, 2015). Other studies on the barriers people who use opioids experience in accessing treatment found that patients frequently report frustration with the requirements of daily witnessed doses that interfere with employment, involve unforeseen travel costs, and otherwise make it difficult to lead a normal life (Lawrinson et al. 2006; Wood et al, 2019).

In addition to limited access to healthcare, research has shown that the perception of stigma from healthcare practitioners may also prevent a person with opioid use disorder from accessing treatment (Mccutcheon et al. 2014; Wardman and Quantz, 2006). In rural communities in particular, stigma is a frequently cited reason for not seeking

medical care for mental health issues (Dew et al., 2007). Studies into the impact of stigma on drug use behavior have found that people who use opioids report obtaining harm-reduction supplies from neighboring communities in order to avoid judgement from staff at their local pharmacy (Parker et al. 2012). Similarly, in other studies on the barriers people who use opioids face when accessing treatment, participants reported feeling stigmatized by family, community members, and their prescribing physician (Wood et al, 2019).

Perceptions of judgment and limited access to healthcare resources may help explain the findings of a study conducted in New South Wales which found that people who inject drugs in rural settings are more likely to engage in riskier drug use behavior, such as sharing needles, than their urban counterparts (Lawrinson et al. 2006). In one particularly telling statement, a participant to a study on stigma in the healthcare system stated that after seeing the negative reaction of a nurse who learned of her Hepatitis C status she “...felt gross and embarrassed and wanted to leave and be around people who use so that there’s no judgement” (Hardill, 2016).

These findings are important in explaining the complexities that surround entry into, and retention in, treatment for substance use disorder. While stigma is a barrier for people who use substances everywhere, the lack of anonymity characteristic of rural communities may compound the issue and further impede a person’s access to treatment. In the current fentanyl-environment, this results in a situation where a person who uses drugs in a rural setting is at a higher risk of overdose than their urban counterpart.

Chapter 4. The Public Health Response to the Overdose Crisis

In response to the high number of fatalities in British Columbia, the Provincial Health Minister declared the overdose crisis to be a public health emergency in 2016. A ministerial order followed that allowed for a number of harm reduction services to be brought to scale. This section will provide an overview of the key evidence based measures that have been employed in B.C. to address rising overdose deaths.

4.1. Harm Reduction

A key principle of harm reduction in the context of substance use is to minimize the negative effects of drug use rather than curtail the drug use itself. Harm reduction services that have been effective in mitigating overdose deaths include supervised consumption sites, drug-testing, and the distribution of the overdose reversal drug, naloxone.

Safe injection sites have operated in Vancouver since 2003 through a federal exemption under the *Controlled Drugs and Substance Act*. Significant evidence has subsequently been compiled on the effectiveness of the sites in reducing fatal overdose events and increasing entry into treatment for opioid use disorder through co-located services (Debeck et al, 2011; Marshall et al, 2011; Wood et al, 2006; Wood et al, 2007). Research has also found that safe injection sites attract the most socially marginalized opioid users which indicates that these facilities are effective in bringing hard-to-reach populations into contact with the healthcare system (Potier et al. 2014). Due to the effectiveness of safe consumption sites, a ministerial order was enacted under the *Health Emergency Services Act*, to expand sites including mobile units to more than 25 locations across the province.

The BC Take Home Naloxone (THN) program is another harm reduction measure that was brought to scale in response to rising overdose rates. Naloxone is a medication that can reverse the effects of an opioid overdose through a shot administered to a major

muscle group such as the arm or leg. The program distributes kits for free to people who may witness an overdose. While the total number of overdoses reversed as a result of the THN program is not known, a study that employed a Markov chain model to determine the number of lives saved between April 2016 and December 2017 estimated that more than 1,500 deaths were averted as a result of increased access to naloxone. This was contrasted to an estimated 230 deaths prevented in the same period at overdose prevention sites and 590 through increased access to opioid agonist treatments (Irvine et al, 2019).

Drug checking is an emerging strategy for addressing overdose rates which allows for substances to be tested for fentanyl and other toxins prior to use. There are multiple forms of drug checking technology that range significantly in cost and effectiveness with the lowest cost solution being a \$2 test strip and the highest a \$250,000 portable drug checking machine (Bardwell and Kerr, 2018). A yearlong pilot study that provided drug testing strips to clients at an overdose prevention site found that only 1 percent of visits resulted in a drug test being conducted. The study also found that few who tested positive for fentanyl opted to discard their substances. However, those that tested their drugs were 10 times more likely to reduce the dose than those that didn't. Additionally, those who injected the reduced dose were 25 percent less likely to overdose (Kerr and Tupper, 2017). Drug testing kits are available at a number of overdose prevention sites across the province and the BC Centre on Substance Use currently runs a program that allows people to anonymously submit a small sample of drugs for testing.

4.2. Treating Opioid Use Disorder

The most effective, evidence based means of treating opioid use disorder is opioid agonist treatment -- a form of substitution therapy which includes a range of medications that decrease cravings for opioids and reduce withdrawal symptoms (Vancouver Coastal Health, 2018). Opioid agonist treatments minimize illicit drug use and subsequently reduce a person's risk of an overdose. The most widely used forms of opioid agonist treatment are methadone and buprenorphine/naloxone which are daily oral opioid replacements. However, other emerging forms of opioid substitution therapy are available

in a limited number of settings including sustained release oral morphine, injectable hydromorphone, and diacetylmorphine or prescription heroin (Vancouver Coastal Health, 2018)

In response to the national overdose crisis, the federal government lifted the exemption that was previously required under the *Controlled Drugs and Substances Act* to prescribe methadone or buprenorphine/naloxone which has allowed for a greater number of physicians to prescribe the medications. Both methadone and buprenorphine/naloxone are also now listed as open benefits in the BC Pharmanet and First Nations Health Benefits prescription drug formularies.

Methadone has historically been the most commonly prescribed opioid agonist treatment and thus a significant body of literature exists to support its effectiveness in treating opioid use disorder (Kerr et al, 2007; Vashishtha, et al, 2017). Treatment initially requires patients to consume a daily dose of methadone under the supervision of a healthcare professional. For a person who uses opioids this means daily visits to a clinic or pharmacy, however, once a patient is on the medication for a month or longer they may be granted a small supply to take home (College of Physicians and Surgeons of British Columbia, 2014). While effective when taken as instructed methadone is not without risk and can have adverse interactions with alcohol and other drugs. For this reason, methadone is present in about 25 percent of prescription opioid related overdose deaths in B.C. (Gladstone et al, 2016).

Buprenorphine/naloxone is another opioid substitution medication used to treat an opioid use disorder. The medication is considered to be as effective as methadone in terms of suppressing withdrawal symptoms and retaining patients in treatment (Nielsen et al, 2016). Buprenorphine/naloxone has also been found to have less adverse side effects and to be more flexible as patients can take home a larger quantity of daily doses, which reduces the number of visits to a pharmacy (BC Centre on Substance Use, 2017). This is ideal for people living in rural and remote areas where the daily witnessed ingestion required of methadone may result in considerable travel time to a pharmacy or clinic. A key downside of buprenorphine/naloxone is that it requires a person to be in partial

withdrawal prior to initiation which is not suitable for a person who finds the symptoms associated with partial withdrawal to be intolerable (BC Centre on Substance Use, 2017).

In addition to being more flexible than other forms of opioid agonist treatment, buprenorphine/naloxone has a lower toxicity level than methadone. A six-year review of more than 19 million prescriptions found the medication was six times safer than methadone in terms of overdose risk (Maremmanni and Gerra, 2010). Studies have also noted that methadone is more likely to be tampered with or used for non-medical purposes than buprenorphine/naloxone which increases the risk of overdose and supports the need for witnessed consumption (Bell et al, 2009).

Chapter 5. Methodology

This study begins with a statistical analysis of sociodemographic factors that are associated with higher rates of substance misuse, including: poor economic outcomes and educational attainment, prior known drug use, and youth involvement in the child welfare system. These indicators are analyzed for the subset of rural communities that recorded the highest rate of overdose death in the three year period following the detection of fentanyl in the illicit drug supply. This analysis provides a framework for understanding why some rural communities, and not others, experienced exceptionally high overdose rates at the outset of the crisis.

The second methodological approach, is a qualitative analysis of eleven interviews with experts in public health, addiction medicine, drug policy, and harm reduction. Interview participants were selected based on their knowledge of the opioid crisis and overdose prevention in a rural setting. Participants represented regions from across the province and included medical health officers, physicians, epidemiologists, social workers, and representatives from rural municipal governments. The purpose of each interview was to gain insight into the problem of overdose deaths in rural British Columbia and establish areas for policy intervention.

5.1. Statistical Analysis

The statistical analysis involves an examination of data from two key sources. First, the rates of fatal overdose for B.C municipalities during the period of 2013 to 2019. This data set is used to examine variations in rural and urban overdose rates. The second source is socioeconomic indicators from BC Statistics. This data set includes variables that represent three broad categories: social mobility, economic hardship, and a history of pre-existing drug use. Additional indicators related to mental health, and children and youth at risk, are also included to assess broader community wellbeing.

5.1.1. Independent Variable – Social Mobility

Research into the demographic makeup of the overdose crisis in North America has highlighted an association between educational outcomes and elevated rates of opioid use. As noted in previous sections, the in-depth analysis of rising rates of drug, alcohol and suicide related mortality conducted by Case and Deaton (2017) found that the demographic group most impacted by increasing rates of addiction and overdose were those with the lowest educational outcomes. For this reason, a composite indicator is used to assess the general educational outcomes in each of the communities.

5.1.2. Independent Variable - Economic Hardship

Economic hardship is often associated with increased rates of substance misuse and subsequently higher overdose rates. The category of economic hardship is assessed through a composite indicator which includes short and long term income assistance rates. Additionally, census data from Statistics Canada has been included to assess average household income in the rural communities in contrast to the provincial average.

5.1.3. Independent Variable - Prevalence of Pre-existing Drug Use

Research suggests that once a market for opioids is established in a population its use can become geographically concentrated and entrenched over time (Passini, 2012). To examine the prevalence of pre-existing drug use, a series of indicators were selected to examine the degree of substance use in a community for the years preceding the crisis. These indicators include adult non-cannabis related drug offences, youth non-cannabis related drug offences, and the cumulative number of illicit drug overdose deaths in the three-year period prior to the introduction of fentanyl into the street drug supply.

5.1.4. Qualitative Interviews

The final methodological approach used in this study is a thematic analysis of 11 semi-structured interviews conducted with medical health officers, epidemiologists, social workers, physicians, and representatives from rural municipal governments.

Participants were selected for their expertise in public health, addiction treatment, harm reduction, and overdose prevention. As well as their knowledge of the geographic variations of the crisis, impact on rural communities, and the current issues and barriers shaping the public health response.

Interviews consisted of open-ended discussions between the researcher and interviewee on the problem of overdose deaths in rural communities, the challenges in responding to the problem in rural settings, and areas for policy improvement. The interviews were examined using a thematic analysis framework which included stripping content of identifying information, transcribing, and aggregating responses into themes. Themes were then assessed for the purpose of understanding similarities between interviews. This method of qualitative analysis is used to identify recurring topics.

Chapter 6. Statistical Analysis

Overdose deaths identified by the BC Coroners Service started to increase in 2013, after fentanyl was first detected in the illicit drug supply. In the preceding decade, rates had been relatively stable at an average of 5.05 deaths per 100,000. For the period of 2013 to 2015, however, the average overdose rate climbed to 7.3 deaths per 100,000. From the outset, several communities emerged as outliers with overdose rates two to three times the provincial average (Figure 6.1). Several of these rural communities have maintained overdose rates significantly higher than the provincial average for each subsequent year following the introduction of fentanyl into the illicit drug market.

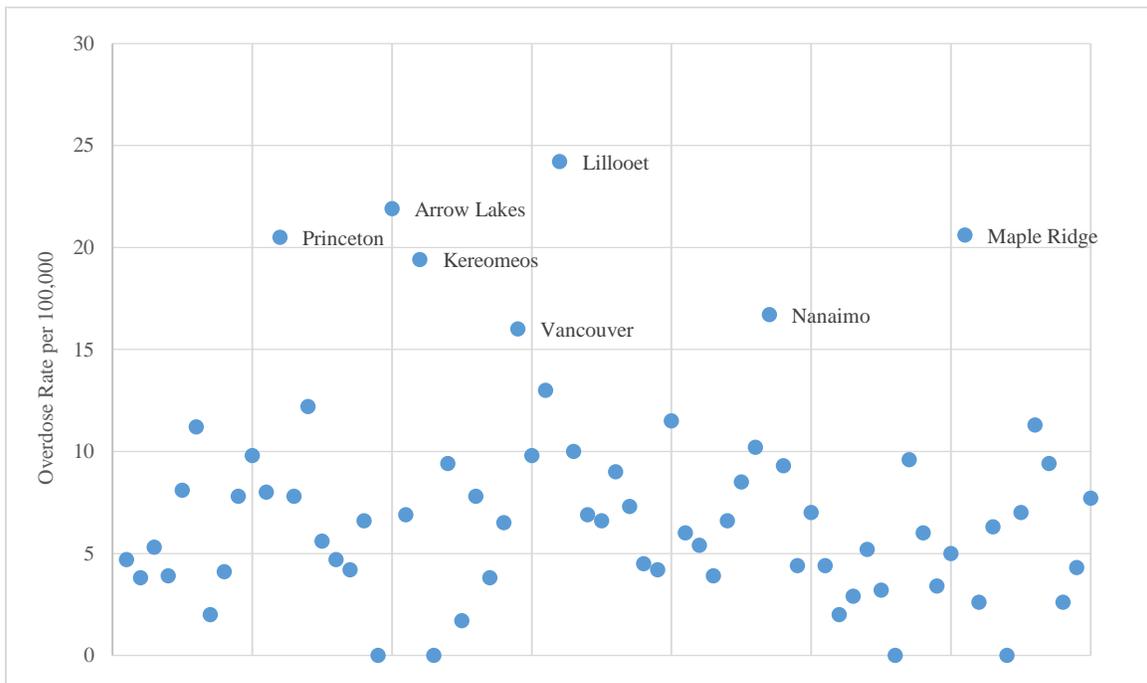


Figure 6.1. Rate of Fatal Overdose by Local Health Authority, 2013 - 2015

Source: Data obtained from the BC Coroners Service

For the purpose of assessing the social and socioeconomic factors that may have contributed to elevated overdose rates in some rural communities, average rates are contrasted across socio-economic dimensions including educational concerns, economic hardship, and children and youth at risk (Table 6.1).

Table 6.1. Socioeconomic indicators for Local Health Authorities with high overdose rates

Local Health Authority	Overdose Rate	Socio-Economic Index	Human Economic Hardship	Education Index	Children at Risk	Youth at Risk
Princeton	50.2	-0.07	-0.25	-0.27	-0.18	-0.52
Merritt	33.5	0.71	0.61	0.57	0.66	0.99
Lillooet	32.9	0.75	1.01	0.47	1.05	0.80
Keremeos	32.3	0.05	-0.37	0.66	-0.54	0.09
Hope	28.4	0.89	0.97	0.42	0.94	1.06
British Columbia	16.0	0.04	0.09	-0.05	0.05	-0.05²

Source: Data obtained from BC Statistics

The socio-economic index is a weighted average of six composite indices which include economic hardship, crime, health, education, children at risk and youth at risk. This index is a broad representation of the overall wellbeing of each community. As noted in *Table 2.1*, Merritt, Lillooet and Hope have poor socio-economic indices in relation to the provincial average. Similarly, the same communities rank poorly in terms of human economic hardship, a composite which includes the percentage of the population receiving income assistance for more than one year, percent receiving income assistance for less than one year, and percent of seniors receiving the maximum guaranteed income supplement. These variables are thought to capture economic hardship but notably do not include variables for low income earners or those who are working but earning below the poverty line. In both categories, Princeton and Kereomeos fare better than the provincial average.

The composite indicator for education includes the percent of the population without post-secondary education, percent of high school students who did not graduate,

² A higher number indicates worse outcomes in that category

percentage of students who did not complete Math or English 12, and percentage of students below standard Grade 4 reading, writing, and math averages. For this metric all five communities rank below the provincial average, but to greater and lesser degrees.

The children at risk indicator is comprised of variables for the percent of children living with families on income assistance, rate of children in care per 1000 population, percent of students below the standard reading level, and serious juvenile crime. For this category, Hope, Lillooet and Merritt score poorly compared to the provincial average and were notably among the ten communities in B.C. with the highest number of children in care. Of note, having spent time in government care has been found to correlate strongly with problematic substance use in adulthood (Courtney et al., 2001; Fowler et al, 2011; Rutman et al., 2007)

The index for youth at risk includes percent of the population 15 - 24 receiving income assistance, percent of 18 year olds who did not graduate from high school, and the three year average of the number of total serious crime offences for youth. For this category, Hope, Merritt and Lillooet rank poorly while Kereomeos and Princeton hover closer to the provincial average.

Table 6.2 outlines the non-cannabis related drug offences for each Local Health Authority, as well as the number of illicit drug deaths per 100,000 in 2012. Each community had a higher total number of drug offences than the provincial average. The same pattern presented in the previous section follows, with Hope, Lillooet and Merritt ranking poorly and Princeton and Kereomeos falling closer to the provincial average.

Table 6.2. Substance use indicators by Local Health Authority

Local Health Authority	Non-Cannabis Drug Offences per 100,000	Illicit Drug Deaths per 100,000 in 2012
Hope	338.6	13.9
Lillooet	239.6	24.4
Merritt	234.9	23.6
Princeton	176.4	11.0
Kereomeos	154.2	11.9
British Columbia	154.2	8.5

Source: Data obtained from BC Statistics

In the subsequent years, overdose deaths would rise from a provincial average of 7.3 deaths per 100,000 for the period of 2013 to 2015, to 23.7 deaths per 100,000 for the period of 2017 to 2019. As indicated in *Figure 6.2*, many of the communities that were impacted in the years immediately following the introduction of fentanyl into the illicit drug supply maintained high overdose rates up until 2019.

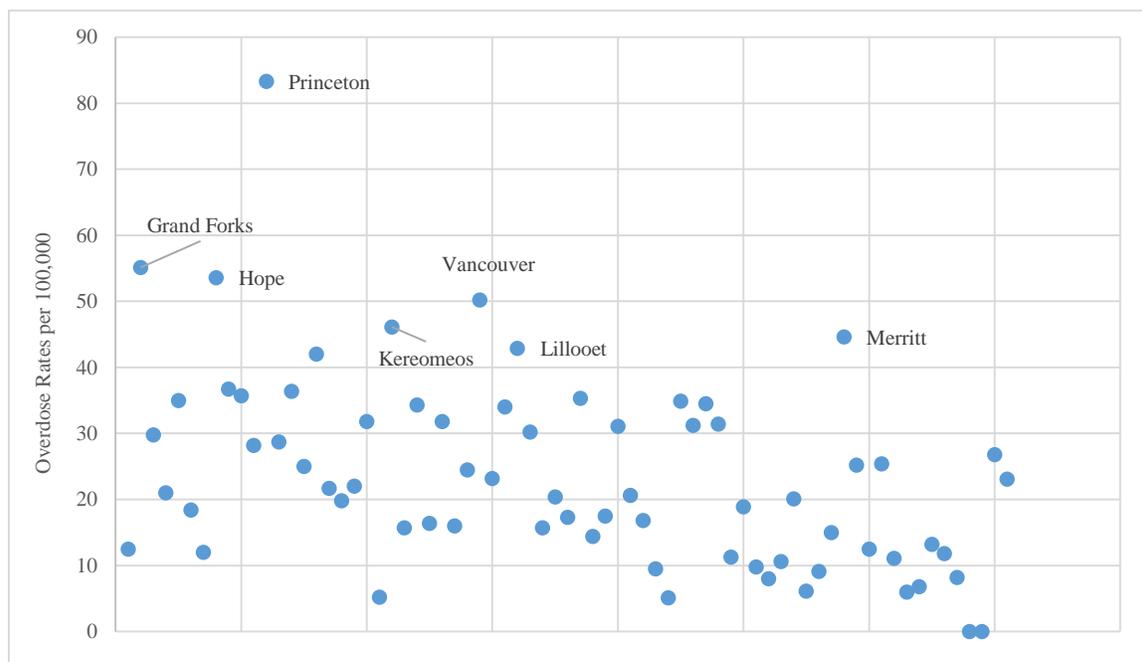


Figure 6.2. Rate of Fatal Overdose by Local Health Authority, 2017 - 2019

Source: Data obtained from the BC Coroners Service

However, as *Figure 6.2* demonstrates, only a small subset of Local Health Authorities maintained overdose rates near or below the pre-crisis numbers for this period. These regions include: Kitimat, Fernie, Creston, Armstrong, Cranbrook, Kimberly, and the Gulf Islands. The majority of whom rank better than the provincial average in terms of socio-economic outcomes.

Table 6.3. Socioeconomic index for Local Health Authorities with low overdose rates

Local Health Authority	Regional Socio-Economic Index
Creston	-0.04
Fernie	-0.43
Kimberley	-0.28
Cranbrook	-0.19
Kitimat	0.39
Gulf Islands	-0.66
British Columbia	0.44³

Source: Data obtained from BC Statistics

There are several conclusions that may be drawn from this analysis. The first is that economic hardship, poor educational outcomes, and pre-existing substance use may have resulted in the opioid epidemic gaining an early foothold in this subset of rural communities. While Princeton and Keromeos appear to not be laden with the same socioeconomic issues as Merritt, Hope and Lillooet, the prevalence of pre-existing drug related crime and geographical proximity of the communities to one another may be indicative of the flow of illicit substances through the region.

The second conclusion that can be drawn from this analysis is that while socioeconomic conditions may have preceded the overdose epidemic, by 2019, fentanyl and its analogues had saturated the illicit drug market. As a result, and as shown in *Figure 6.2*, overdose rates rose in every municipality in the province, with the exception

³ A higher number indicates worse outcomes in that category

of a very limited number of communities that for reasons of socioeconomic conditions or geography were not impacted in the same way.

Chapter 7. Qualitative Findings

A total of eleven semi-structured interviews with stakeholders and subject matter experts took place between December 2019 and February 2020. As previously noted, participants included medical health officers, social workers, epidemiologists, physicians and representatives from rural municipal governments. The primary focus of qualitative interviews was to gain insight into the challenge of preventing overdose deaths in rural settings and potential areas for policy improvement.

7.1. The Overdose Crisis in Rural British Columbia

Each participant was asked to discuss their understanding of the extent of the overdose crisis in rural British Columbia. A common theme in each interview was that rather than significant differences between urban and rural overdose rates what was notable were the similarities. However, the variation between communities was substantive with some faring significantly better than others.

“What was notable to me when I looked at the data wasn’t the difference between rural and urban, but the similarities between rural and urban, so if there are differences it would be good to identify them, and if there are similarities, our response also has to be comparable.”

- 1004

Suggestions as to why overdose rates were exceptionally high in some rural communities included prior known substance use or alcohol issues, fewer opioid agonist prescribing physicians, a lack of mental health services, a greater number of people using alone in their homes, and fewer options to choose where one’s drugs were purchased from. One participant also noted that overdose deaths often reflected the flow of illicit substances, with towns and cities close to key transportation routes experiencing higher numbers of both fatal and non-fatal overdose events.

“If you really get back to basics where there are roads and cars and trucks, there are drugs being moved around all of the time, so if you want to know where people are going to overdose you have to look at where the drugs flow.”

- 1003

Many participants indicated that the response to the crisis had initially been directed at urban centres. This was due to the disproportionately high number of deaths in these areas as well as a public health surveillance system that has historically focused on urban settings. This was felt to contribute to a greater number of resources initially being directed to cities and a slower recognition of the impact of the crisis on rural communities. One participant noted that in their community the problem had begun to stabilize with the introduction of overdose prevention measures but overall the underlying substance use issues remained the same.

“The overdose crisis itself is still there but because of things like Narcan, and all that kind of stuff, things seem to have stabilized. We aren’t seeing the same statistics we saw before. I wouldn’t say it’s gone away but it’s very similar to the way it was prior. It’s just people are living through it now.”

- 1011

7.2. Demographic Considerations

Several participants drew attention to the relationship between overdose deaths and specific demographics, particularly men working in primary industries such as mining, fishing, forestry, construction, trades and transportation. In some regions, the communities that are most reliant on these industries were noted to be the most adversely impacted. This demographic was also noted to be less likely to seek help for an opioid use disorder due to the risk disclosing a substance use disorder could pose to their employment.

Participants also referenced the impact of the crisis on Indigenous communities as a demographic consideration. This was a facet of the crisis that was felt to initially not receive the appropriate level of attention including in regards to engaging community organizations that could support overdose prevention work. However, it was an area where attention was being directed.

7.3. Challenges in Responding to the Crisis in a Rural Setting

When asked to outline the challenges in addressing the overdose crisis in a rural setting three themes were raised: awareness, access and stigma. Several respondents indicated that a lack of awareness about substance use was an issue for the public as well as the healthcare system. This was felt to manifest into a steady ‘state of denial’ in some communities regarding the extent of the problem. An example was the introduction of an overdose prevention site that was felt by members of a community to have created a substance use problem, rather than having unmasked an existing one. A lack of awareness about substance use issues within a community in some cases was felt to create barriers for the delivery of services.

“The perception that the community had changed, that these weren’t people who were from the community, that they were coming from bigger centres for an ‘easier life’. There was a real sentiment that this wasn’t our community’s problem and by drawing attention to it, we were exasperating the problem.”

-1008

Stigma towards people who use substances was a prominent theme in each of the interviews. Several participants indicated that stigma is as much of a problem within the healthcare system, as it is within the general population. People with substance use disorders were felt to not always be treated well when accessing healthcare services which prevents them from seeking help. Several respondents indicated that ongoing work is being done within the healthcare system to reduce stigma and build safer spaces for people who use substances, but that this process takes time, and the results are difficult to measure. While the lack of anonymity in rural communities was thought to potentially compound the problem, stigma was noted to be as much of a problem in urban settings as rural.

“That stigma, that sigma piece. You go to a hospital or you go to your family doctor and disclose your opioid use and the response that you get from people, and the treatment that you receive, is going to be substandard treatment. You don’t get the gold treatment. You get labeled as an addict.”

- 1006

Participants cited a number of examples of the role stigma plays in shaping behaviors and practices that contribute to the overdose problem. One example was that in rural communities, people are less likely to call an ambulance in the event of an overdose out of fear of being identified. Another emerging issue is the number of rural and urban communities that have enacted bylaws against panhandling, loitering, or sleeping in public places. This was felt to further marginalize vulnerable populations which made it more difficult for the healthcare system to reach them. Public backlash against overdose prevention sites was also noted to influence the amount of time it took to introduce a site, its location, and the hours of operation.

Access to healthcare services in rural settings was the third key theme raised in interviews. Several participants noted that even prior to the crisis the healthcare system had difficulty delivering the full suite of services to rural communities. Some of the specific challenges included a lack of infrastructure in rural areas, a limited number of clinicians willing to engage in addiction medicine, and the tendency of rural primary care providers to relocate to urban centres as vacancies became available. Geography creates an additional barrier in the delivery of services in rural communities. As a respondent noted, without a local opioid agonist prescriber a person seeking treatment for an opioid use disorder may be required to make daily trips to the nearest urban centre. A similar issue was cited for accessing mental health and harm reduction services.

Although opioid agonist treatment was felt to be the most effective means for preventing an overdose for a person with opioid use disorder, several participants noted that few primary care providers in B.C. have opted to become a prescriber. Reasons included a lack of education in addiction medicine, stigma, and the regulatory and administrative requirements of prescribing. A participant contrasted the issue to the early years of the HIV crisis where many physicians were reluctant to become the “go-to person ” for specific kinds of treatment. Additional barriers included concerns about liability and a willingness to add additional services to a full practice.

“We saw the same thing when AIDS and HIV first came into communities. There would be a few physicians who would be willing to provide care, and a lot of physicians who were unwilling. I can say that whenever a medical therapy comes in, a physician or nurse practitioner with a very stable full practice, doesn’t

necessarily see the value of providing an additional service when they are fully occupied to begin with. They also don't want to become known as the local go-to person for a particular illness.”

- 1004

7.4. The Strength of Rural Communities

Many challenges were cited for the delivery of overdose prevention services in rural settings, however, several participants highlighted the ways in which rural communities are better positioned to respond to a public health crisis. The healthcare system in rural areas is more nimble and thus able to mobilize more quickly. Primary care providers often have stronger relationships with the community which creates opportunities for outreach. Small communities are also able to form coalitions early due to existing relationships across sectors of government. Several participants also noted that in a rural setting a death often impacts the whole community which can serve as a catalyst for a broader community response.

“We know each other more, there's such a strength in that because it allows us to realize that we are all dealing with the same difficult issues, and pool our sometimes limited resources together, to streamline, so that has made a big difference.”

-1008

7.5. Areas for Policy Improvement

All participants were asked to identify the changes to law or policy that they would like to see. Topics raised included decriminalization, regulation of illicit substances, and measures to prevent discrimination against people who use drugs. Other issues raised were the lengthy wait-times for addiction treatment, barriers for prescribing opioid agonist treatments, and lack of in-community withdrawal management beds.

“It's still a fairly rigid program because Methadone and Suboxone are high alert medications or restricted medications. So the Colleges and Health Canada and the provincial government are going to have to work together to break down some of the barriers with OAT. Where it's still safe for people, still safe for professionals, still safe for organizations.”

-1006

The issue of discriminatory bylaws and permitting was an area that participants felt greater policy work was needed. While local governments cannot enact bylaws that infringe on a person's right to health services, a bylaw that prohibits loitering, panhandling, or lying in the street, in practice impedes access to services by further marginalizing vulnerable populations. As local governments issue building permits - including those for supportive housing – they are in a position to delay the implementation of a service if under public pressure. As noted by a participant, a local political body that is dependent on the support of voters may not be the entity best positioned to make decisions on when and how a social service is implemented.

The decriminalization of illicit substances for personal use was another policy issue raised by participants. It was felt that the criminalization of drug use created a good-bad dichotomy that influences how a person with a substance use disorder is treated in an institutional setting. The enforcement of drug prohibition in a supportive housing environment for example often results in a person opting to conceal their drug use by using alone which puts them at a higher risk of overdose. A similar issue was referenced in hospitals and other clinical settings. A participant noted that theoretically any clinical environment could serve as an overdose prevention site but that criminalization supported the notion that supervised consumption could only take place in prescribed settings.

“The services aren't going to be all that different fundamentally but more in the context in which they get rolled out. It needs to be more flexible. We've had a lot of success with the naloxone program and that's a decentralized model. We need more decentralized models.”

- 1010

Several participants referenced safe supply as the ultimate solution for addressing the overdose crisis. This issue was discussed both in respect to a model that could be implemented in a rural setting as well as the broader regulation of illicit substances. It was emphasized that in the current environment, solutions that target the demand for illicit substances will not be effective in mitigating overdose deaths. The supply-side nature of the overdose crisis ultimately will require a supply-side solution. However, it was noted that there is currently limited support for the regulation of illicit substances in Canada. Participants also indicated that the safe supply models currently in place may not be effective in rural settings given the associated costs and staffing requirements.

“This is not a demand side issue; this is a supply side issue. It’s interesting because for so long people working on the public health side of substance use issues have said ‘do not try to solve a demand side problem with supply side solutions. The reason people use drugs has nothing to do with the levers that prohibition might impose on the market side.’ I would say that we are now in the inverse situation, where the demand side levers - the levers by which we can shape peoples risk of overdose through public health - are really useless in dealing with what is almost exclusively a supply side issue. So you know, we need a regulated supply of drugs, yesterday, and there’s not really any way around it.”

-1009

Chapter 8. Policy Criteria and Measures

Given the unique challenges in mitigating overdose deaths in rural settings, five criteria were identified to evaluate policy interventions: effectiveness, equity, cost, implementation complexity, and stakeholder acceptance. The measures used to assess the proposed policy options are estimates informed by the literature, qualitative interviews, and statistical analysis.

8.1. Effectiveness

The fundamental factor for determining whether an intervention is appropriate is its effectiveness in reducing both fatal and non-fatal overdose events. However, due to the complex physiological, environmental and behavioral factors that influence entry and retention into addiction treatment, several considerations must be taken into account, including program retention and improvements to mental and physical health. Additionally, due to the unique challenges rural settings present, in order for a policy to be considered highly effective it must be feasible in a setting with limited healthcare infrastructure and personnel. Measures for evaluating the policy options have been extrapolated from evidence in the literature and are discussed in *Table 4.1*. These evaluations are supplemented by findings from qualitative interviews with addiction treatment and harm reduction professionals.

8.2. Equity

Equity in respect to policy making and the allocation of health resources for people who use substances is a case of both vertical and horizontal equity. Horizontal equity is defined by Cuyler (2001) as practices that ensure that patients who are similar in relative ways receive similar treatment, and vertical equity as those that ensure patients with greater need receive services in proportion to that need. Applied to the current overdose epidemic the concepts of horizontal and vertical equity would in practice mean that a person at risk of overdose in a rural setting would receive access to the same life-

saving healthcare services as their urban counterpart, and in proportion to their respective need.

8.3. Cost

As substance use disorders are associated with both direct and indirect costs to the healthcare system, the cost effectiveness of an option is measured by the direct costs of implementation, as well as the savings associated with the projected reduction in emergency services. As a point of reference, where possible, the cost of a specific option is weighted against the costs associated with responding to an overdose event.

8.4. Stakeholder Acceptance

Healthcare in British Columbia is comprised of a complex web of service providers, professional organizations and research centres that work together to set policies, deliver services, and regulate healthcare professionals. Multiple stakeholders within the healthcare system have the ability to shape the overarching response to a public health crisis making the acceptability of a policy option critical to its implementation. In the case of overdose prevention measures, stakeholders include, but are not limited to, the College of Physicians and Surgeons, College of Pharmacists of British Columbia, British Columbia College of Nursing Professionals, BC Centre on Substance Use, Ministry of Health, and Health Canada.

The mandate of organizations involved in the delivery of healthcare services is to promote patient health. As the aforementioned organizations oversee practice standards to ensure patient safety and wellbeing, the measure for assessing stakeholder acceptance must take into account the safety profile of the treatment modalities, projected health outcomes for people who use substances, and potential liability risks, where relevant.

The perspectives of people who use drugs are critical to the success of any policy designed to mitigate overdose events. For this reason, where relevant, studies that have sought the opinions of people who use drugs on specific treatment modalities have been included in the assessment of options.

8.5. Implementation Complexity

Due to the urgency of the crisis and unique geographical and capacity challenges associated with delivering overdose prevention services in rural areas, the ease with which a policy can be implemented is important for its success. The criterion of implementation complexity is subsequently evaluated by the amount of regulatory change, practice reform and coordination between stakeholders required of the option.

Chapter 9. Policy Options

Significant work has been done in B.C. to address the high number of overdose events including a province-wide anti-stigma campaign; expansion of the take-home naloxone program; introduction of a ministerial order to expand safe consumption sites, and removal of the federal exemptions required to prescribe methadone and buprenorphine/naloxone. There has also been significant work to scale up the number of opioid agonist treatment prescribers through the expansion of addiction treatment training offered through the BC Centre on Substance Use.

The purpose of the options selected for this study are to build upon these efforts through policy changes that would improve access to opioid agonist treatments in rural settings. This area of addiction treatment was selected as it is the first line option for treating opioid use disorder, and subsequently the most effective means of reducing the likelihood of an overdose for a person who uses illicit opioids. Given the geographical constraints and limited healthcare access inherent to rural settings, it was also necessary to select options that could be built into existing services and implemented in any rural B.C. community.

An important additional consideration that was factored into the selection process was that of the estimated 120,000 people in B.C. with an opioid use disorder, as a result of unsafe prescribing practices, only 22,872 were on some form of opioid agonist treatment as of February 2020 (BC Centre on Substance Use, 2019; BC Centre for Disease Control, 2020). While there are many factors that may prevent a person who uses opioids from starting treatment, including personal choice, limited access to treatment due to a shortage of prescribers shouldn't be one of them. This caveat of the public health response to the overdose crisis is subsequently an area where policy can be applied to address the problem of high overdose rates in rural communities.

9.1. Behind-the-Counter Buprenorphine/naloxone

As discussed in previous sections of this report, buprenorphine/naloxone is a partial opioid agonist that blocks withdrawal symptoms and cravings for opioids. Buprenorphine/naloxone is considered to be a first-line option for treating opioid use disorder due to its low risk profile in respect to overdose potential, interactions with other medications, and respiratory depression (BC Centre on Substance Use, 2017).

Currently, buprenorphine/naloxone can be prescribed by any physician in British Columbia, or by an authorized nurse practitioner. However, as of February 2020, only 1,069 health care professionals in B.C. were actively prescribing (BC Centre for Disease Control, 2020). While the exact geographic distribution of prescribers was not available at the time of writing, in 2016 it was estimated that more than half were located within the Vancouver Coastal Health Authority (Office of the Provincial Health Officer, 2017).

Limited research has been conducted on the self-managed use of opioid agonist treatment, however, studies into the use of non-prescribed buprenorphine/naloxone have found that people who use opioids report using the medication to self-detox and relieve withdrawal symptoms (Brown & Altice, 2014; Lofwall et al, 2014; Monte et al, 2009). This suggests that in some cases diverted buprenorphine/naloxone is already being used by people who use opioids for addiction management purposes. Research that has contrasted at-home inductions of buprenorphine/naloxone to those observed by a clinician has also found the methods to be comparable in respect to safety and effectiveness (Gunderson et al, 2010; Sohler et al, 2009).

Studies on buprenorphine/naloxone use have found that people seeking this form of treatment in a primary care setting are typically men, have lower rates of intravenous drug use, and on average report less than ten years of opioid use (Jenkinson and Ravert, 2014; Sullivan et al, 2005). While further research is needed on the characteristics people who use opioids in rural B.C., these findings indicate that a model which increased access to buprenorphine/naloxone may be suitable for the cohort of men in B.C. that are using alone and dying at elevated rates.

To ensure patient safety, a behind-the-counter model would entail quantity and age restrictions, as well as requirements for pharmacists to cross-reference patient records in Pharmanet to check for previously recorded conditions, including concurrent prescriptions for possible adverse drug reactions. An additional feature of a behind-the-counter model could include an initial three-day supply of the medication with information on where the patient can seek follow up support in a primary care setting. Currently, the Rapid Access Addiction Clinic at St. Paul's Hospital in Vancouver, B.C. operates a pilot program that provides a three-day supply of buprenorphine/naloxone to opioid overdose patients upon discharge with instructions on use and information for follow up treatment and support (BC Centre on Substance Use, 2019). This pilot could serve as a model for developing the appropriate instructions for induction, standard doses, quantity limits, and information on follow up treatment and supports.

The central principle of a behind-the-counter model, would be to increase access to a potentially life-saving and low barrier treatment that could circumvent issues related to geography, timely access to treatment, and stigma, which are known to deter people with substance use disorders from seeking help (Hardill, 2016; Redko et al, 2008; Woo et al, 2017).

9.2. Eliminate the Authorization Requirement for Methadone Prescribing

Methadone is a form of opioid agonist treatment that is ideal for people who struggle with the partial withdrawal requirements for buprenorphine/naloxone. There are currently 756 physicians in B.C. prescribing methadone to 15,374 patients (BC Centre for Disease Control, 2020). While the exact geographic distribution of prescribers is not available, a recent needs assessment found that the geographical variability for addiction medicine specialists in British Columbia ranged from 0 per 1000 population in some rural settings to 20 per 1000 in urban areas (McEachern et al, 2016).

Factors that are commonly cited by physicians as reasons for not prescribing opioid agonist treatments include a lack of training in addiction medicine, concern for taking on challenging patients with complex needs in a fee-for-service system, and a lack

of institutional support (Huhn et al, 2017; Mendoza et al., 2016; Netherland et al, 2009). A qualitative study conducted in Nova Scotia found that physicians also felt that prescribing methadone may pose a threat to career, reputation, or one's medical license due to the elevated scrutiny from governing bodies (Dooley et al, 2012).

Additional research on physician perspectives has found that the surveillance requirements for prescribing methadone forces clinicians to interrogate patients and engage in invasive behavior, such as monitoring the collection of urine samples (Livingstone et al, 2018). Studies in the United States, where prescribing opioid agonist treatment still requires a federal exemption, have also demonstrated that the heightened surveillance and monitoring required of methadone prescribing frequently deters physicians from engaging in this form of treatment (Mendoza et al., 2016). Physicians have also indicated that being the only prescriber in a clinic is isolating and can be disruptive to family practice, issues that are felt to be more difficult when a physician is practicing in a smaller community (Dooley et al, 2012).

An additional reason for streamlining the process for becoming a methadone prescriber is that a study on the prescription drug histories of people who overdosed in B.C. found that at the time of their death many had prescriptions for antidepressants, antipsychotics and benzodiazepines (BC Centre for Disease Control, 2018). This indicates that many overdose victims were in contact with a physician in the months prior to their death

Currently, the requirements for becoming a methadone prescriber involves completion of the Provincial Opioid Addiction Treatment Support Program (POATSP) and a preceptorship of two half day sessions with an experienced clinician. Removing the authorization and training requirement - while continuing to provide optional education and support through the BC Centre on Substance Use and Rapid Access to Consultative Expertise (RACE) line - would remove a structural barrier that may prevent a physician from prescribing methadone. The intent of this option would be to increase methadone prescribing in primary care settings, normalize treatment, and alleviate issues related to access for people who use opioids in rural settings.

To be successful this approach would require clear backing from the College of Physicians and Surgeons, in order to assure clinicians that they can actively engage in the treatment of opioid use disorder. Thus for this option to be effective it is recommended that the College issue practice standards which clearly indicate support for physicians engaging in these treatment modalities.

9.3. A Rural Model for Safe Supply

Safe supply refers to a regulated supply of drugs that are currently only available on the illicit market. In the case of opioid use disorder, safe supply could include access to pharmaceutical grade diacetylmorphine (prescription heroin) or hydromorphone. Several models of safe supply have been proposed, and in some cases trialed, as a means of improving health outcomes and reducing mortality for people who use illicit substances. Models range from the highly structured and supervised diacetylmorphine program currently offered at Vancouver's Crosstown Clinic, to heroin buying co-ops, to vending machines that dispense hydromorphone pills. The purpose of each program is to provide an alternative to illicit opioids, and subsequently prevent an overdose.

To be effective, a rural model for safe supply would be decentralized, built into existing services, and target the roughly 10 percent of people who use opioids that do not respond to other forms of opioid agonist treatment (Providence Health Care, n.d.). This model would also need to align with the BC Centre on Substance Use's Guidelines for injectable opioid agonist treatments (iOAT) which include recommendations for optimizing patient and public safety such as secure storage, supervised consumption by a healthcare professional, and providing access to mental health supports (BC Centre on Substance Use, 2017). Subsequently, the best means for providing a safe supply of opioids through a model that optimizes patient and public safety and given the resource and geographical constraints of rural settings, is to incorporate injectable opioid agonist programs into primary care settings.

This option could replicate a program piloted by Vancouver's Portland Hotel Society which provided injectable hydromorphone to patients through a partnering

physician and pharmacy. In this model patients are assessed by a physician and provided a prescription for prepared syringes that are dispensed at a pharmacy and self-administered in a designated space under the supervision of a nurse. The supervised consumption prevents diversion in addition to providing a safeguard in the event of respiratory depression, seizure, or overdose.

The model would require dedicated space for self-administration, a qualified healthcare professional to oversee the program, and protocols to ensure the secure storage of medication, and patient safety through observed injection.

Chapter 10. Evaluation

Policy options are evaluated using the criteria and measures outlined in *Chapter 8*. In order to assess an option, a policy is assigned a score of low, medium or high, according to its performance for each criterion (see Table 10.1). Rankings are then assigned a corresponding numerical value, with low given a value of 1, medium a value of 2, and high a value of 3. The purpose of this ranking system is to apply a common system of measurement across the criteria.

As discussed in *Chapter 8*, the criterion of ‘effectiveness’ has three sub-categories: program retention, improved health outcomes, and feasibility in a rural setting. As the effectiveness of an option is paramount, each sub-category is scored independently which results in a higher total weight for this objective. For the criterion of equity, the total value is divided between the sub-criterion of horizontal and vertical equity with each weighted as half of the total score. The total score for each policy option is summed to produce the final recommendation, which is discussed in *Chapter 11*.

Table 10.1. Policy Criteria & Measures

Objective	Criterion	Measure	Index
Effectiveness	The rate of retention in a program which minimizes the use of illicit opioids	The percentage of patients retained in treatment	High - 70 percent or greater rate of retention
			Medium - Retention rates between 30 and 70 percent
			Low - 30 percent or lower rate of retention
	Improved mental and physical health outcomes	Reported improvements to a patient's physical and mental health	High - Substantial improvements in physical and mental health
			Medium - Moderate improvements in physical and mental health
			Low - Little or no improvements to physical or mental health
	Feasibility in a rural setting	The feasibility of the option given the challenges associated with stigma, geography, and limited healthcare resources	High - Implementable in a range of rural and remote communities
			Medium - Implementable in rural communities with moderate access to healthcare services
			Low - Not feasible in a rural setting
Equity	The extent to which a policy enhances horizontal equity between people who use substances in urban and rural settings through the provision of similar healthcare services	Enhanced access to evidence-based treatment for opioid use disorder and harm reduction services	High - Greatly enhances access to treatment
			Medium - Moderately enhances access to treatment
			Low - Does not enhance access to treatment
	The extent to which the policy promotes vertical equity through services that improve health outcomes for people who use substances, relative to the general population	Access to services that meet the unique needs of the patient population	High - Service greatly enhance vertical equity
			Medium - Service moderately enhance vertical equity
			Low - Service does not enhance vertical equity
Cost-effectiveness		Measured in Canadian dollars	High - Highly cost-effective
			Medium - Moderately cost-effective

Objective	Criterion	Measure	Index
	The implementation and operating costs of an intervention contrasted with savings to emergency services such as acute and ambulatory care		Low – Somewhat cost-effective
Stakeholder Acceptance	Projected acceptability and liability considerations for the following stakeholders: people who use drugs; BC Centre on Substance Use; Ministry of Health; College of Physicians and Surgeons; College of Pharmacists of British Columbia, and Health Canada	Number of stakeholders likely to support the option	High – All stakeholders are likely to support the policy option
			Medium – Some stakeholders would support the policy option
			Low – Few stakeholders would support the policy option
Implementation Complexity	The degree of stakeholder coordination and practice or regulatory reform required for implementation	Degree of coordination and number of changes to regulation or practice	High – High degree of changes to regulation or practice
			Medium – Moderate changes to regulation or practice
			Low – Limited changes to regulation or practice

10.1. Evaluation of Option 1: Behind-the-Counter Buprenorphine/naloxone

As outlined in previous sections, retention on buprenorphine/naloxone is associated with reductions in overdose mortality and overall improvements in health for people who use opioids (Fiellin et al, 2008; Korthuis et al, 2010; Lawrinson et al, 2008). A study of people initiated on buprenorphine/naloxone in the emergency department found that 78 percent were still on treatment after 30 days. This study also found that patients reduced the number of days on illicit opioids from 5.4 to 0.9 days a week (D’Onofrio et al. 2015). However, research into the long term retention on buprenorphine/naloxone has indicated that at the six-month mark only 30 to 60 percent of patients are still on treatment (Timko et al, 2016; Office of the Provincial Health Officer, 2017).

As mentioned in previous sections, multiple studies have identified travel-time and access to primary care providers as barriers to addiction treatment (Eibl et al, 2015; BC Centre on Substance Use, 2019; Hardill, 2016; Godersky et al, 2019). These issues are particularly acute in rural communities where a patient may have to travel to the closest urban centre in order to access healthcare services. Subsequently, a model that ensured a patient could access treatment from any pharmacy would be ideal for rural communities.

For people who use opioids in rural communities, providing access to a potentially life-saving treatment through a reduced barrier model would promote vertical equity by establishing an option for treating opioid use disorder that could be used in even the most remote rural settings. An additional benefit of this model is that a patient could maintain a degree of anonymity when accessing treatment, which would address some of the issues associated with stigma. However, the option may have limited value to a person with a severe opioid use disorder or those who find the partial withdrawal requirement of buprenorphine/naloxone to be unmanageable. Subsequently, this would amount to a limited improvement in achieving horizontal equity between people who use opioids in rural and urban settings, given the number of harm reduction options available to people who use drugs in urban settings. For these reasons, this model would rank medium for horizontal and vertical equity.

A behind-the-counter model for buprenorphine/naloxone would be cost-effective as the option would require minimal investments into additional healthcare services or infrastructure in rural communities to support implementation. The policy option would also create additional savings by offering buprenorphine/naloxone outside of a clinical setting, thus limiting the cost to the healthcare system associated with frequent visits to a physician or nurse practitioner.

The acceptability of a behind-the-counter model for buprenorphine/naloxone is ranked medium. Extensive research on patient experiences with opioid agonist therapies has found that some of the greatest hurdles to patient retention are the requirements of the program which include daily or weekly visits to a clinic, monitored urine tests, and the

cost and time associated with travel (Eibl et al, 2015; BC Centre on Substance Use, 2019; Hardill, 2016). Patients in opioid agonist treatment programs also frequently report experiencing poor treatment, shame, and judgement when accessing treatment which could be partially avoided through a behind-the-counter model. For these reasons this model would foreseeably rank favorably among people who use drugs.

However, a behind-the-counter model would limit a patient's interactions with the healthcare system which may result in lost opportunities to connect patients with psychological, social and health supports. Additionally, this model would shift the burden of responsibility for patient monitoring from physicians to pharmacists, who would retain a greater degree of the implementation burden including cross-referencing patient prescriptions in Pharmanet. For these reasons this option would likely rank less favorably with the relevant regulatory colleges and government health agencies.

The criterion of implementation complexity for this option is contingent on the regulatory process for drug scheduling. For buprenorphine/naloxone to be available behind-the-counter, Health Canada would be required to reclassify the medication as non-prescription, and the National Association of Pharmacy Regulatory Authorities would need to change the schedule of the medication in order for it to be offered behind-the-counter. These measures would require support from the associated regulatory colleges and the backing of clinical trials that show the self-managed use of buprenorphine/naloxone to be safe outside of a clinical setting. Due to the required regulatory changes and number of organizations required for implementation, this option is assigned a value of medium.

10.2. Evaluation of Option 2: Eliminate the Authorization Requirement for Methadone Prescribing

When taken as instructed, methadone has been found to be effective in mitigating illicit opioid use, as well as reducing cocaine use for polysubstance users, factors that greatly reduce the likelihood of an overdose (Faggiano et al, 2003; Nosyk et al, 2009). An additional benefit of methadone, over other forms of opioid agonist treatment, is that a patient is not required to be in withdrawal in order to commence treatment, making the

medication ideal for people who find the partial withdrawal requirement of buprenorphine/naloxone to be prohibitive to induction.

Jurisdictions that have reduced the barriers to prescribing have higher numbers of patients on methadone. In the Netherlands, where any physician can prescribe methadone without a special authorization, 68 to 78 percent of people who use opioids in the country are reported to be on treatment (Van Den Berg, 2007; Open Society Institute, 2010). A similar model operates in Scotland where 70 percent of primary care providers prescribe methadone and 60 percent of people who inject opioids are on treatment (Greenwood, 1996; Weinrich, 2000).

A meta-analysis of quantitative studies on methadone programs found that when a patient receives proper dosing which is individualized to his or her needs, more than half remain in the program at the 6-month mark (Bao et al, 2013). However, studies on patient retention in B.C. have found that by one year only 32 percent are still in treatment (BC Centre on Substance Use, 2019).

Overall, retention in a methadone program is associated with improved health and quality of life outcomes for a person who uses substances (Ponizovsky & Grinshpoon, 2007). However, an additional benefit of a model that supports increased access to methadone maintenance in primary care settings is that patients are in regular contact with the healthcare system which may generate greater support for concurrent physical and mental health issues.

Given the limited access to a range of healthcare specialists in rural settings a policy option that had the effect of increasing the number of physicians that prescribe methadone in primary care settings would be ideal for rural communities where a patient may only have a single general practitioner to choose from. Given that this option would build upon existing primary care services it thus meets the sub-criterion for feasibility in a rural setting.

A benefit of this model is that it would provide a person who uses opioids with a greater number of options when selecting a methadone prescriber. By increasing the

number of entry points into addiction treatment this model would subsequently improve horizontal equity between people who use opioids in rural and urban opioid settings. However, this option is only a small improvement to the addiction treatment options currently available and would not greatly enhance the breadth of choices available to a person who uses opioids in a rural setting. Additionally, a person with an opioid use disorder that did not wish to engage in treatment would not benefit from this option. For these reasons this model would rank medium for horizontal and vertical equity.

A methadone maintenance program is more cost-effective than no treatment at all for a person with an opioid use disorder. As the model would be built into existing primary care services, it would require minimal additional costs for implementation so is ranked high for cost effectiveness.

Significant evidence suggests that methadone is safe when taken as directed, however it is also associated with risks related to diversion, interactions with other drugs, and overdose if taken concurrently with alcohol or illicit substances. For these reasons, methadone has been found to be present in more than a third of prescription opioid overdose deaths in the United States (Webster et al, 2011). As regulatory colleges are mandated with ensuring that physicians, pharmacists, and nurses are qualified to practice and abide by standards of conduct, in the current environment of heightened opioid prescribing surveillance, a measure that removed a mandatory training requirement may not be supported by the relevant colleges. This option is subsequently assigned a value of medium.

In order to implement this policy, three organizations would need to amend standards of practice for methadone prescribing: the BC Centre on Substance Use, the College of Physicians and Surgeons of British Columbia, and the College of Pharmacists of British Columbia. For this option the BC Centre on Substance Use could remove the authorization requirement for prescribing methadone while still providing recommended training modules and prescribing guidelines. The respective regulatory colleges would then be required to change the language of their practice standards to clearly indicate that any physician in B.C. is authorized to prescribe methadone, with the caveat that

physicians continue to adhere to BC Centre on Substance Use' *Guidelines for the Clinical Management of Opioid Use Disorder*, in order to ensure public and patient safety. As this option requires the fewest number of steps it is ranked high for implementation complexity.

10.3. Evaluation of Option 3: A Rural Model for Safe Supply

Injectable opioid agonist programs are associated with higher retention rates than both buprenorphine/naloxone and methadone. The Vancouver based SALOME trial, for example, found that at six-months 80 percent of patients on diacetylmorphine and 77 percent of patients on injectable hydromorphone were still in treatment (Oviedo-Joekes et al, 2016). Patients in injectable iOAT programs have also been found to be significantly more likely to test negative for illicit heroin than patients on methadone or buprenorphine/naloxone (Perneger et al, 1998; Strang et al, 2010).

Retention in an iOAT program is associated with improved mental and physical health, specifically related to reductions in blood-borne illnesses, skin infections, anxiety, and delusional states (Rehm et al, 2001). Patients' social circumstances also typically improve in part due to a reduction in criminal behavior. A study that compared the physical, social, and mental health of patients on opioid agonist treatments found that 67 percent of those on iOAT reported an improvement from baseline in contrast to 48 percent of methadone patients (Oviedo-Joekes, 2009).

While the process for a pharmacy based iOAT program would not differ significantly than the daily witnessed ingestion required of a methadone program, current models for injectable iOAT involve a greater degree of oversight, staffing, and expertise in addiction medicine. As indicated in the interview portion of this study, rural communities often have trouble attracting and retaining health care professionals, particularly those with specialized knowledge of substance use disorders. Additionally, operating a iOAT program is more costly than other forms of opioid agonist treatment which would be a barrier in a rural setting.

The nature of a substance use disorder, stigma towards people who use opioids, and illegality of illicit substances often has the effect of forcing a person with an opioid use disorder into hiding. For a person with entrenched opioid use disorder, for whom other forms of treatment have failed, there are often few options for improving one's health and wellbeing. While engagement in an iOAT program may not appear to solve the problem of illicit substance use, a model that connects people who use opioids with the healthcare system is an opportunity to improve his or her health outcomes. For this reason, this option would rank high for vertical equity. The model also ranks high for horizontal equity as it would provide a person with an opioid use disorder with the option to access a service within their community that is similar to a service offered in an urban environment.

A pharmacy based model for the safe supply of opioids would be associated with higher costs than other forms of opioid agonist treatment. This is due to the costs associated with supplying injectable hydromorphone or diacetylmorphine, as well as the need for administration to be supervised and available three times a day (Tyndall, 2018). In addition, the BC Centre on Substance Use (2017) recommends that a pharmacy based model include a private room for injecting and a minimum of two qualified health professionals to supervise the consumption of the medication. This entails a higher degree of upfront and program maintenance costs than the other options.

People on iOAT report reduced criminal activity, increased self-worth and greater connection to health care as a result of the program, indicating that this option would be received well by people who use opioids (Oviedo-Joekes, et al, 2014). However, other stakeholders required for program implementation may not support this model due to the high degree of oversight, costs, and negative perceptions associated with “heroin” use. As demonstrated in previous sections of this report, many healthcare professionals have opted to not participate in more traditional forms of opioid agonist treatment indicating that initially there may be a limited number of clinicians and pharmacies in rural communities that wish to participate.

In 2019, Health Canada approved injectable hydromorphone for the treatment of patients with severe opioid use disorder. Diacetylmorphine has also been added to the *List of Drugs for Urgent Public Health Need* which allows for any province to import the drug for the treatment of opioid use disorder, which provides a pathway to implementation. In a rural setting the key issues related to implementation are that provincial standards for iOAT prescribing require an experienced physician to administer treatment and the partner pharmacy to have trained staff able to respond to an overdose. This may impede implementation due to the limited number of addiction specialists practicing in rural areas. In addition, involvement of the regulatory colleges would be required for the monitoring of pharmacists and physicians which would entail a degree of coordination and training in order to scale up the program.

Chapter 11. Recommendation

As indicated in *Table 11.1*, the option to remove the training and authorization requirements for methadone prescribing ranks highest. This option would be effective, relatively acceptable to stakeholders, feasible in a rural setting, and require a limited number of changes to regulation or practice. Of note, many of the educational resources and physician supports that would be critical to the successful implementation of this option are already in place including the Provincial Opioid Addiction Treatment Support Program, BC Centre on Substance Use *Guidelines for the Clinical Management of Opioid Use Disorder*, and Rapid Access to Consultative Expertise line. These resources would continue to provide the requisite support and optional training to new prescribers.

Table 11.1. Summary of Policy Evaluation

Objective	Criterion	Option 1: Behind-the-counter buprenorphine/ naloxone	Option 2: Eliminate the authorization requirement for methadone prescribing	Option 3: A rural model for safe supply
Effectiveness	Program retention	Medium (2)	Medium (2)	High (3)
	Improved health outcomes	High (3)	High (3)	High (3)
	Feasibility in a rural setting	High (3)	High (3)	Medium (2)
Equity	Vertical equity	Medium (1)	Medium (1)	High (1.5)
	Horizontal equity	Medium (1)	Medium (1)	High (1.5)
Cost	Cost of intervention	High (3)	High (3)	Low (1)
Stakeholder Acceptability	Projected acceptability of stakeholders	Medium (2)	Medium (2)	Medium (2)
Implementation Complexity	Degree of coordination or regulatory reform required for implementation	Medium (2)	High (3)	Medium (2)
Total		17	18	16

While the option for increasing the number of methadone prescribers is the initial recommendation of this report, it is important to highlight the need for a broad offering of solutions to address the ongoing overdose crisis in British Columbia. The unique circumstances of rural communities and diversity of people at risk of an overdose will require a multitude of options for mitigating future overdose deaths. Research into opioid use disorder has demonstrated that many people cycle on and off treatment several times before finding a solution that works for them – and as mentioned in previous sections of this report, roughly ten percent do not respond at all to the available forms of opioid agonist treatment (Bell et al, 2006). For this group in particular, for whom other forms of treatment have been ineffective, an injectable opioid agonist treatment, such as hydromorphone, may be the only option for preventing a fatal overdose.

In addition, different methods may be better suited to different rural communities. Very remote rural communities, for example, may not benefit from changes to methadone prescribing or a pharmacy based safe supply model - if the community has very limited healthcare services to begin with. In these cases, a decentralized model, such as behind-the-counter buprenorphine/naloxone may be the most viable means of preventing an overdose for a person who uses illicit opioids in these settings.

For these reasons, it is the recommendation of this report, that in addition to changes to the requirements for methadone prescribing, government take the requisite steps required to make the other two options available to healthcare providers. In the case of the model for behind-the-counter buprenorphine/naloxone this may entail conducting clinical trials to determine the efficacy of the self-managed induction and use of the medication in order to support changes to drug scheduling. With the backing of necessary research findings, Health Canada and the National Association of Pharmacy Regulatory Authorities could work together to develop a classification and scheduling scheme that would allow the medication to be offered behind-the-counter in rural areas at the discretion of the relevant Health Authority. The purpose of these measures would be to

provide British Columbia's Health Authorities with an additional tool for addressing overdose deaths in their respective regions.

To implement a pharmacy based model for providing a safe supply of opioids, it is recommended that the Ministry of Health provide dedicated funding to each of the Health Authorities to implement this program in the rural communities in their region that would benefit the most from this option. Qualified physicians and pharmacists would need to be identified and trained in the administration of injectable opioid agonist treatment and dedicated maintenance funding would need to be committed in order to operate the program according to the BC Centre on Substance Use's *Guidelines for Injectable Opioid Agonist Treatment for Opioid Use Disorder*.

The purpose of these two additional options is provide healthcare providers with tools that can be tailored to the specific circumstances of their regions and create additional entry points to treatment for the estimated 120,000 British Columbians with an opioid use disorder.

Chapter 12. Conclusion

This research project sought to examine the issue of high overdose rates in rural communities within the broader context of a public health crisis. Through an analysis of socioeconomic indicators and expert interviews, several issues were identified regarding overdose prevention in a rural context. The first, and perhaps most important, is that while the total number of overdose deaths in British Columbia has been highest in urban centres, rural communities continue to grapple with a similar problem, compounded by limited resources. The second is that the lack of anonymity characteristic of rural communities, dispersed populations, and limited healthcare personnel creates additional challenges for addressing the overdose crisis in these settings.

The policy analysis section of this report sought to address these issues through measures that would streamline access to different forms of opioid agonist treatment. Given the complex challenges of the current opioid epidemic, the final recommendation of this report includes both short and long term options for increasing the availability of methadone, buprenorphine/naloxone and injectable hydromorphone.

The ongoing overdose crisis has drawn attention to the widespread use of opioids and other illicit substances in British Columbia, as well as to the difficulties in reaching and treating people with substance use disorders. In addition to the structural barriers that limit the number of physicians prescribing opioid agonist treatment, this report also identified a number of additional issues that warrant further research. The impact of stigma on policy and practice, the criminalization of people with substance use disorders, and ultimately the question of drug regulation, are just some of the broader issues that underpin the current overdose epidemic, and require further attention from policy makers.

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