



Informing Responses to Harms Related to Methamphetamine Use with Lessons from Public Health Crises

Key Messages

- The characteristics of other public health crises can inform the response to the increase in harms related to methamphetamine use in Canada.
- Challenges in addressing public health crises related to substance use include systems-level barriers, knowledge gaps and a lack of collaboration among sectors.
- Lessons learned include taking an interdisciplinary approach, being community driven and incorporating harm reduction strategies.

Introduction

Methamphetamine is a synthetic stimulant of the central nervous system, the short-term effects of which include feelings of alertness, energy and self-confidence. After the euphoric effects of the drug wear off, people can experience anxiety, depression, mental confusion, fatigue and headaches. Weekly or more frequent use of methamphetamine over periods of months or longer leads to harmful neurological, behavioural and physical effects (Canadian Centre on Substance Use and Addiction, 2020).

Indicators for harmful use of methamphetamine, such as emergency department visits, hospitalizations and deaths, are increasing in several regions of Canada, particularly in the western provinces (British Columbia, Alberta, Saskatchewan and Manitoba) (Canadian Centre on Substance Use and Addiction, 2020). Several Canadian jurisdictions report at least a three-fold increase in methamphetamine use over the past five years among individuals accessing treatment or harm reduction services (Canadian Centre on Substance Use and Addiction, 2020). Reports from some Indigenous communities also indicate a rise in health and safety issues from methamphetamine use (House of Commons, Canada, Standing Committee on Health, 2019). The increased availability and use of methamphetamine, as well as the high rate of polysubstance use among people who use stimulants, make it critical that we explore effective responses to mitigate its harmful impacts (Timko, Han, Woodhead, Shelley, & Cucciare 2018). There is an increasing demand for a range of evidence-based approaches to reduce harms related to methamphetamine use throughout Canada.

The COVID-19 pandemic has brought additional challenges to healthcare systems and public health policies that are likely to worsen the harmful impacts of methamphetamine use, especially for at-risk populations and communities. The effect of pandemic response measures on the illicit drug supply are anticipated to alter patterns of drug use and increase harmful practices among people who use



drugs. This report does not directly address the impacts of the pandemic, as the research informing it was undertaken before March 2020. The report summarizes lessons learned from previous public health crises in Canada, notably the HIV/AIDS crisis and the ongoing opioid overdose crisis, to establish a framework that could be applied to methamphetamine use. The report also briefly describes the origins of public health crises related to substance use and the challenges in resolving them. This resource is intended for a broad audience, including public health professionals, health systems planners and those working in the field of substance use harm reduction and treatment.

Method

Two literature searches of PubMed and PsychNet were conducted on (1) lessons learned from the opioid crisis and other public health crises in Canada (e.g., H1N1, HIV/AIDS, SARS, tuberculosis) and (2) harms related to methamphetamine use in Canada (see Appendix A for search terms used). The searches were limited to Canadian, peer-reviewed articles in English published between January 1990 and September 2019. An information specialist and a knowledge broker screened the titles and abstracts for duplicates and articles outside of the scope of the project. The public health crises identified by the literature search were the opioid crisis, SARS, *E. coli*, HIV/AIDS, tuberculosis, hepatitis and sexually transmitted diseases. After reading the selected full-text articles, the knowledge broker reviewed the articles on public health crises for general themes and then mapped findings from the methamphetamine-related harms search onto these themes. All the themes identified through public health crises included evidence from substance-related crises, notably HIV/AIDS and the opioid crisis.

Findings

This section is organized around three guiding questions. Discussions of the questions are subdivided according to the issues they raise. The discussions under each issue are further divided into analyses of lessons learned from previous public health crises and observations around the harms related to methamphetamine use.

Where Do Public Health Crises Originate?

Multi-faceted Origins

Lessons learned from public health crises

Public health crises related to substance use result from the complex interplay of psychological, social, political, economic and medical factors (Taha, Maloney-Hall, & Buxton, 2019; Hankins, 1992). It is important to acknowledge that substance use disorder is a complex chronic illness (Thomson, Lampkin, Maynard, Karamouzian, & Jozaghi, 2017), but we must also acknowledge the political (Health Canada, 2002), cultural and legal factors that contribute to the harmful outcomes of substance use. Notable in this regard is the criminalization of drugs that leads to increased harms through a reliance on the illicit market for drug supply (Canadian Centre on Substance Use and Addiction, 2019). Stigma, which stems from fear, a lack of understanding and moral judgments about substance use, as well as broader social issues such as racism, homophobia and colonialism, has exacerbated the harms of public health crises in Canada such as the opioid crisis and the HIV/AIDS crisis (Negin, Aspin, Gadsden, & Reading, 2015; Health Canada, 2002; Thomson, et al., 2017). Stigma also impacts Canadians' abilities to react with compassion and concern towards those affected by substance use (Hankins, 1992), while perpetuating a sense of distrust between the healthcare system and the general public, and those who need support (Bungay, et al., 2006).



What we are observing about methamphetamine use

In parallel with other drug crises, methamphetamine-related harms stem from interrelated social, cultural and economic factors, including adverse childhood experiences and trauma, poverty, mental illness, concurrent substance use and stigma (Lecomte, et al., 2010; Fast, Kerr, Wood, & Small, 2014; Martin, Lampinen, & McGhee, 2006; House of Commons, Canada, Standing Committee on Health, 2019). The following factors play a particularly prominent role for methamphetamine use:

- Homelessness, because many individuals experiencing homelessness rely on the physiological effects of methamphetamine use, such as alertness, reduced sensitivity to cold and suppressed appetite, to cope with conditions on the street (Bungay, et al., 2006; Werb, Kerr, Zhang, Montaner, & Wood, 2010);
- Easy access to the drug, as methamphetamine is often cheaper and easier to obtain than other drugs in Canada (Brands, et al., 2012; Wood, et al., 2008; Centre for Addiction and Mental Health, 2019); and
- Stigma, which deters many people who use methamphetamine from seeking support (Bungay, et al., 2006; Canadian Centre on Substance Use and Addiction, 2019).

Group Disparities

Lessons learned from public health crises

Group disparities have intensified the harms of public health crises in Canada. Historically, socially and economically marginalized groups have been disproportionately affected by public health crises (Negin, et al., 2015). In the case of the HIV/AIDS and the opioid crises, for example, the groups most affected include people who are Indigenous, are women, have a mental illness, are in rural communities, are homeless or who identify as 2SLGBTQ+ (Perry, 2016; Negin, et al., 2015). Marginalized and hard-to-reach groups tend to face the most physical barriers (location) and psychosocial barriers (stigma) to accessing treatment services and supports (Health Canada, 2002). Furthermore, the availability of medical and social services, especially those tailored to the specific needs of different social groups, varies considerably across Canada (Perry, 2016; Taha, et al., 2019).

What we are observing about methamphetamine use

There is some overlap between the social groups disproportionately affected by the methamphetamine crisis and those disproportionately affected by other public health crises. In Canada, the groups most affected by harms related to methamphetamine use include those with less stable housing (Damon, et al., 2019), street-involved youth (Brands, et al., 2012), 2SLGBTQ+ students (Buxton & Dove, 2008; Martin, et al., 2006), women (Mayo, Paul, DeArcangelis, Van Hedger, & de Wit, 2019) and those who have been incarcerated (Marshall, et al., 2011; Milloy, Kerr, Buxton, Montaner, & Wood, 2009). Harms related to methamphetamine use are less likely to be adequately addressed among these social groups due to the lack of services tailored appropriately to age, gender and cultural needs, and increased the stigma and barriers to service associated with criminal justice involvement and homelessness. Meeting the needs of these social groups and related efforts to reduce barriers to services and supports are important considerations for alleviating methamphetamine-related harms in Canada.



What Are the Challenges to Addressing Public Health Crises?

System-level Barriers

Lessons learned from public health crises

Structural and systemic barriers have prevented equitable access for many Canadians to services and supports for a range of health conditions (Canadian Aboriginal AIDS Network, 2018). Access to evidence-informed treatment that integrates physical and psychosocial elements has been a persistent challenge for addressing opioid use (Taha, et al., 2019), HIV/AIDS and tuberculosis (Canadian Aboriginal AIDS Network, 2018). Resources are limited in many regions, partly because public health issues compete with each other for public attention, funding and political commitment (Health Canada, 2002). Barriers also exist in the healthcare system. Healthcare provider confidence, competence (National Advisory Council on Prescription Drug Misuse, 2013; Hering, Lefebvre, Stewart, & Selby, 2014; Wyness & Goldstone, 1998; Hankins, 1992), prescribing practices (Gomes, et al., 2018; Cheng & DeBeck, 2017) and stigma (Paquette, Syvertsen, & Pollini, 2018; Voon, et al., 2018; Wyness & Goldstone, 1998) have been identified as recurring barriers to care and recovery.

What we are observing about methamphetamine use

Similar trends are emerging for harms related to methamphetamine use. Gaining access to treatment (Argento, et al., 2017; Canadian Centre on Substance Use and Addiction, 2019; Fast, et al., 2014), especially treatment specifically for methamphetamine use (Callaghan, Rush, Tavares, Taylor, & Victor, 2009) (House of Commons, Canada, Standing Committee on Health, 2019), is a challenge for Canadians. To date, there are few evidence-based psychosocial and pharmacological treatment options that have demonstrated effectiveness for methamphetamine use disorder (Lee et al., 2018). The lack of treatment resources for methamphetamine use harms fuels the notion of “competition” with those seeking treatments for other health conditions. For example, high demand for methamphetamine use supports results in longer wait times for patients with other health conditions (House of Commons, Canada, Standing Committee on Health, 2019). Two barriers at the physician level have relevance to methamphetamine-related harms. First, the perception that physicians have stigmatizing attitudes about substance use has resulted in many individuals who use methamphetamine avoiding interactions with the healthcare system for fear of punitive action (Bungay, et al., 2006; Canadian Centre on Substance Use and Addiction, 2018; Canadian Centre on Substance Use and Addiction, 2019). Second, insufficient evidence-based treatment guidelines for methamphetamine use disorder contribute to the stress and burnout of healthcare practitioners (House of Commons, Canada, Standing Committee on Health, 2019).

Knowledge Gaps

Lessons learned from public health crises

Knowledge gaps have posed challenges to preventing and addressing public health crises. Persistent knowledge gaps specific to methamphetamine use include identifying which groups are high risk for poor outcomes (Taha, et al., 2019); which treatment modalities (e.g., group, psychosocial, individual) pair best with which medical treatments (Taha, 2018); and political controversy around innovative policy and treatment responses, such as assisted injection, safer supply, low-barrier treatment options and drug decriminalization (Taha, et al., 2019). Furthermore, there is a need to improve access to quality data and to align data collection processes across jurisdictions to compare trends and track outcomes for different policy interventions (House of Commons, Canada, Standing



Committee on Health, 2019). Another challenge has been finding ways to translate scientific knowledge into information that is useful for planning, decision making and communications (Public Health Agency of Canada, 2010).

What we are observing about methamphetamine use

Knowledge gaps for methamphetamine-related harms primarily pertain to the need to improve the quality of and access to national data on methamphetamine use (Brands, et al., 2012; Canadian Centre on Substance Use and Addiction, 2019) and treatment strategies, especially for high-risk populations. These populations include people with less stable housing (Damon, et al., 2019), street-involved youth (Brands, et al., 2012), 2SLGBTQ+ students (Buxton & Dove, 2008; Martin, et al., 2006), men who have sex with men (Ontario HIV Treatment Network, 2015), women (Mayo, et al., 2019), those who have been incarcerated and Indigenous populations (House of Commons, Canada, Standing Committee on Health, 2019). There is also a need for improved knowledge sharing and educational tools about methamphetamine use (Hunter, et al., 2012; Wood & Kerr, 2008). Improved data collection from vulnerable populations most affected by methamphetamine-related harms, such as adolescents outside of the reach of school-based surveys, is needed to monitor accurately the risk factors and harms associated with methamphetamine use (Buxton & Dove, 2008; Callaghan, et al., 2009). Gender-informed data collection should be considered to support targeted treatment and harm reduction responses. Further, a better understanding of different treatment modalities (Callaghan, et al., 2009), including those that can be politically controversial, would help inform treatment and support options for addressing methamphetamine-related harms.

Need for Improved Intersectoral Collaboration

Lessons learned from public health crises

The requirement for coordinated collaboration among health and social services sectors to achieve positive outcomes for complex health issues is a consistent message in many public health contexts. While nimble enforcement responses are important to addressing harms from substance use (Taha, et al., 2019), they are not enough on their own to curb harms (Vancouver Police Department, 2017). There are calls to address public health crises through transdisciplinary networks of collaboration that cut across a broad continuum, including primary care, acute care and public health, and the social sciences, economics, environmental and life sciences, and political domains (Arya, et al., 2009; Thomson, et al., 2017; U.S. Department of Health and Human Services, 2016). At-risk communities, including Indigenous communities and people with lived and living experiences of substance use and their families (Health Canada, 2019; Taha, et al., 2019; British Columbia Ministry of Health, 2012), should be involved in decision making to improve the relevance, effectiveness and acceptability of the response. Collaboration and consistency across Canadian jurisdictions (Special Advisory Committee on the Epidemic of Opioid Overdoses, 2018; Public Health Agency of Canada, 2010), levels of government (Masotti, et al., 2013) and services along the healthcare continuum (Masotti, et al., 2013) have been identified as both challenging to achieve and critical for responses to public health crises.

What we are observing about methamphetamine use

Efforts have been made in some communities and jurisdictions to address cross-sectoral coordination and collaboration through such tactics as task forces, webinars and specialized training (Canadian Centre on Substance Use and Addiction, 2019). There nonetheless remains a need for better coordination across sectors and regions (Brands et al., 2012) to improve responses to the



methamphetamine crisis. The research literature on methamphetamine also highlights the need for collaboration across sectors, including among researchers, policy makers, law enforcement personnel, people with lived and living experience and their families, frontline service providers, educators and health practitioners (Canadian Centre on Substance Use and Addiction, 2020; Brands, et al., 2012; House of Commons, Canada, Standing Committee on Health, 2019).

What Responses to Public Health Crises Are Effective?

Interdisciplinary Treatment Approaches

Lessons learned from public health crises

Effective responses to other public health crises related to substance use demonstrate that interdisciplinary treatment approaches work in many public health contexts (HealthCareCan, 2017; Buhler & Thrul, 2013; Arya, et al., 2009). The most effective treatment responses tend to be both immediate and long-term (Taha, et al., 2019), and to incorporate psychosocial approaches in addition to pharmaceutical and physical approaches (Hankins, 1992; Busse, 2017). Considering all options from multiple perspectives is important to avoid unintended consequences, such as over- or under-prescribing in the context of the opioid crisis (Gomes, et al., 2018; Taha, et al., 2019). The first step to improving interdisciplinary treatment approaches is to build the capacity of primary care providers to make connections among different services (Hankins, 1992).

What we are observing about methamphetamine use

Likewise, the research literature on methamphetamine calls for an interdisciplinary approach that offers an array of supports for addressing harms. Interventions should focus on predisposing conditions (Wood & Kerr, 2008), social determinants of health, treatment along the continuum of care (Buxton & Dove, 2008) and structural barriers, such as limited availability of supportive housing (Ti, et al., 2014). Additionally, the treatment itself should be trauma-informed (Canadian Centre on Substance Use and Addiction, 2018; Argento, et al., 2017), explore pharmacological and psychosocial strategies (Buxton & Dove, 2008), treat associated health problems (Fast, et al., 2014) and involve collaboration among medical, mental health and social services (Canadian Centre on Substance Use and Addiction, 2018). To date, however, there is little evidence on whether sufficient coordination among services is happening and what better coordination would look like.

Community-based Responses

Lessons learned from public health crises

Public health crises have highlighted the role of both sanctioned and unsanctioned community responses. Considering how health issues affect each region differently, community-led responses tend to better-address the specific realities faced in an area (Masotti, et al., 2013; Canadian Aboriginal AIDS Network, 2018). Community responses are growing in number and scope. In the case of the opioid crisis, unsanctioned actions to avert deaths related to opioid use have been taken by many communities to bypass regulatory barriers (Taha, et al., 2019; Irvine, et al., 2019; Glauser, 2018). More Canadians now turn to community groups and peer support services for health information instead of physicians (Hankins, 1992), reinforcing the need for peers to have access to accurate information and supports to guide practices. Similarly, prevention and treatment services and supports in Indigenous communities must involve community members and Elders, and be culturally sensitive and community led (Canadian Aboriginal AIDS Network, 2018; Negin, et al., 2015).



What we are observing about methamphetamine use

Peer support programs and community efforts in low-income communities have been linked to reduced harms related to methamphetamine use (House of Commons, Canada, Standing Committee on Health, 2019). Treatment services and supports that “meet people where they are at” are more likely to gain the adherence of participants, especially for individuals who have unstable housing or live on the streets (Fast, et al., 2014). Adherence is also improved when peer support workers who are persons with lived or living experience play a role in providing services and supports (Jozaghi, Lampkin, & Andresen, 2016). There is substantial variability from jurisdiction to jurisdiction in the amount and type of community-based supports in place to address harms related to methamphetamine use (Brands, et al., 2012; Canadian Centre on Substance Use and Addiction, 2019).

Harm Reduction Approaches

Lessons learned from public health crises

Harm reduction practices aim to reduce health harms associated with ongoing behaviours or conditions (Health Canada, 2008; Kerr, Mitra, Kennedy, & McNeil, 2017). To address the opioid crisis, evidence-based harm reduction approaches include peer-run supervised consumption facilities, naloxone administration and training programs, opioid agonist substitution treatment and needle distribution programs. These approaches have made great strides in reducing mortality and infectious disease transmission related to opioid use (Government of Canada, 2019; Thomson, et al., 2017). There have been calls to expand such programs, including their operating hours, resources and staff (Hyshka, Strathdee, Wood, & Kerr, 2012). Increased funding would allow these programs to better access hard-to-reach populations and alleviate some of the burden on the people providing the services (Hyshka, et al., 2012; Health Canada, 2019; Jozaghi, et al., 2016).

What we are observing about methamphetamine use

A variety of evidence-based harm reduction services to address harms related to methamphetamine use is needed throughout Canada (Buxton & Dove, 2008; Ti, et al., 2014), especially in Western Canada and Ontario (Canadian Centre on Substance Use and Addiction, 2020). The quality and type of existing harm reduction services varies across regions (Canadian Centre on Substance Use and Addiction, 2019). British Columbia, for example, has province-wide distribution of harm reduction supports, whereas other jurisdictions do not currently have that capacity (Canadian Centre on Substance Use and Addiction, 2019). Harm reduction services and supports that show promise in reducing methamphetamine-related harms include education about condom use and not sharing pipes, access to new pipes and sterile syringes, safe supply to prevent accidental consumption of adulterants (potentially opioids), naloxone kits, supervised inhalation sites and drug checking services (Hunter, et al., 2012; House of Commons, Canada, Standing Committee on Health, 2019). Safe spaces for those experiencing harms related to substance use have been created in parts of Manitoba. These centres provide shelter, while allowing service users to connect with community health resources and supports (Illicit Drug Task Force, 2019).

Looking Ahead

Interdisciplinary, community-based and harm reduction approaches are promising elements of an effective response to the methamphetamine crisis, as shown by the lessons learned from other public health crises. Planning treatment from multiple perspectives, such as trauma-informed and culturally safe perspectives and perspectives that take into account the social determinants of



health (Argento, et al., 2017; Ti, et al., 2014; Wood & Kerr, 2008), and improving the connections between psychosocial and pharmaceutical services (Hankins, 1992) are essential to a comprehensive response to methamphetamine-related harms. Investing in trauma-informed (Negin, et al., 2015) physician training to improve their competencies and confidence in addressing methamphetamine-related harms could significantly reduce physician stigma and improve quality of care (Wyness & Goldstone, 1998; House of Commons, Canada, Standing Committee on Health, 2019). Recovery-oriented treatment (Canadian Centre on Substance Use and Addiction, 2017), better staffing to alleviate burnout and increasing the number and scope of existing treatment services are promising directions for action to mitigate some of these challenges. Increased investment in emergency treatment for substance use disorders, such as Rapid Access Addiction Medicine clinics, could be an option for improving access to treatment and health outcomes (Taha, 2018), and could also help integrate treatment services along the continuum of care.

Given the specific ways in which methamphetamine-related harms affect communities across Canada, community-based responses are better able to adapt to a region's specific needs (Taha, et al., 2019). However, community-based responses and harm reduction approaches vary widely from region to region in approach, capacity (Health Canada, 2019; Jozaghi, et al., 2016; Thomson, et al., 2017) and geographic reach, particularly in rural and remote areas. There is a resounding need for targeted funding and resources to better support these programs across all of Canada.

Although outside the scope of this report, increased calls for safer supply could impact future approaches to addressing harms related to methamphetamine use and potentially complement established treatment options. Existing political and policy barriers to implementing safer supply require more in-depth exploration. Further collaboration and engagement among policy makers, subject-matter experts and people with lived and living experience is needed to identify opportunities for expanded regulatory amendments and exemptions for controlled substances.

Conclusion

Parallels exist between the spread of harms related to methamphetamine use and the opioid crisis and other public health crises in Canada. This report summarizes lessons learned from public health crises to help organize thinking about responses to methamphetamine-related harms in Canada. Despite regional variation, patterns in public health crisis origins, challenges and effective responses have emerged across different contexts. Knowledge of these patterns can help equip responses to harms related to methamphetamine use and suggest promising areas of focus. Emerging evidence from the COVID-19 pandemic can also inform research and responses to the methamphetamine crisis, including the need for increased collaboration across sectors and levels of government, greater service integration and additional harm reduction initiatives (Etches, Tam, & Henry, 2020).

The evidence shows that other public health crises have multi-faceted origins in medical, social and economic factors, worsened by group disparities. Homelessness and stigma, and ease of access to methamphetamine and its affordability exacerbate the methamphetamine crisis. The evidence calls for investment in low-threshold housing and to reduce health inequities, building awareness of the social and biological aspects of substance use through health promotion initiatives to combat stigma, and efforts to reach northern and rural communities.

Common challenges for public health crises and the emerging methamphetamine crisis include system-level barriers, knowledge gaps and the need for improved intersectoral collaboration. Key factors for success are investment in integrated, evidence-informed treatment, temporary emergency treatment and trauma-informed physician training. Particular attention should also be paid to collaboration across sectors and jurisdictions, and along the continuum of care, as well as improved



national data collection and mobilization strategies. Although outside the scope of this report, it is important to note the role of prevention measures to reducing the harms associated with methamphetamine use specifically and substance use disorders generally. Given the similarities between the lessons learned from public health crises and observations about methamphetamine-related harms, applying approaches evidenced to be effective for public health crises holds promise for addressing harms related to methamphetamine use.

Limitations

The scope of this report has are some key limitations. Lessons learned from the COVID-19 pandemic had not yet emerged at the time the report was written. Future research that addresses emergency response measures to the pandemic and their impact on people who use substances will help identify opportunities for improved responses to the growing methamphetamine crisis. The report does not address the link between previous drug-related public health crises and the current methamphetamine crisis. Research is also needed to develop lessons learned on dealing with concurrent crises and polysubstance use, and their implications for treatment and harm reduction.



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APPENDIX A: Detailed Search Strategy

Two literature searches of PubMed and PsychNet were conducted on (1) lessons learned from the opioid crisis and other public health crises in Canada (e.g., H1N1, HIV/AIDS, SARS, tuberculosis) and (2) methamphetamine-related harms in Canada. The searches were limited to Canadian, peer-reviewed articles in English published between 1990 and 2019. An information specialist and a knowledge broker screened the titles and abstracts for duplicates and articles outside of the scope of the project. After reading the selected full-text articles, the knowledge broker conducted a thematic analysis to identify lessons learned from public health crises in Canada and an exercise to map these findings onto the results of the methamphetamine-related harms search.

PubMed

((((methamphetamine*[Title]) OR "crystal meth"[Title]) OR "Methamphetamine"[Mesh])) AND (((((((((((((((canada) OR ontario) OR "British Columbia") OR Alberta) OR Saskatchewan) OR Manitoba) OR Quebec) OR "New Brunswick") OR "Nova Scotia") OR "Prince Edward Island") OR Newfoundland) OR "Northwest Territories") OR Nunavut) OR Yukon)) OR "Canada"[Mesh] Filters: Publication date from 2004/01/01 to 2019/09/06; English

PsycNET

(((title: ("crystal meth"))) OR ((title: (methamphetamine*))) OR (((IndexTermsFilt: ("Methamphetamine")))) AND (((title: (Canad*)) OR ((abstract: (Canad*)) OR ((title: (Ontario))) OR ((abstract: (Ontario))) OR ((title: ("British Columbia"))) OR ((abstract: ("British Columbia"))) OR ((title: (Alberta))) OR ((abstract: (Alberta))) OR ((title: (Saskatchewan))) OR ((abstract: (Manitoba))) OR ((title: (Manitoba))) OR ((title: (Quebec))) OR ((abstract: (Quebec))) OR ((title: ("New Brunswick"))) OR ((abstract: ("New Brunswick"))) OR ((title: ("Nova Scotia"))) OR ((abstract: ("Prince Edward Island"))) OR ((title: ("Prince Edward Island"))) OR ((title: (Newfoundland))) OR ((abstract: (Newfoundland))) OR ((title: ("Northwest Territories"))) OR ((abstract: ("Northwest Territories"))) OR ((title: (Nunavut))) OR ((abstract: (Nunavut))) OR ((abstract: (Saskatchewan))) OR ((abstract: ("Nova Scotia"))) OR ((Geographic Location: (Canada)))) AND Peer-Reviewed Journals only AND Year: 2004 To 2019

