

Review Article

Geography, Treatment Modality, and Substance Use: Evaluating Factors That Impact Opioid Agonist Therapy in Northern Ontario, Canada

Alexandra M. Franklyn¹, Joseph K. Eibl², Nancy E. Lightfoot³, and David C. Marsh^{2*}

¹School of Rural and Northern Health (AMF, NEL), Canada

²Northern Ontario School of Medicine (JKE, DCM), Canada

³Canadian Addiction Treatment Centers (DCM), Canada

***Corresponding author**

David C. Marsh, Northern Ontario School of Medicine, Sudbury, ON, Canada, P3E 2C6, Tel: 705-662-7200; Fax: 705-671-3830; Email: dmarsh@nosm.ca

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Abstract

The prescribing of opioids is becoming increasingly more prevalent in Ontario, and the misuse of prescription opioids is on the rise. Prescription opioid abuse is of particular concern across Northern rural communities throughout Ontario, where access to addiction treatment is limited. These communities experience high rates of addiction along with decreased access to addiction treatment services. However, research suggests that these communities greatly benefit from alternative modes of care, such as telemedicine. This form of care mitigates the distance and isolation that people living in Northern, rural, and remote communities face when seeking health care services. Along with the geographic hindrance that people in Northern rural communities' experience, the concurrent use of other substances may also negatively impact their treatment outcomes. This is of particular concern due to the high rates of concurrent drug use among patients receiving opioid addiction treatment, which is often associated with a more complex clinical course. In this paper, we discuss the various factors that impact opioid addiction treatment in Northern Ontario including geography, treatment modality, and substance use. It is necessary to better understand how these factors impact patient care in order to enhance treatment outcomes for people seeking addiction treatment in the North.

INTRODUCTION

Opioids are among the most frequently prescribed medications in Canada, and prescribing rates continue to rise [1]. In Ontario, Opioid prescribing rates have continued to rise [2], with the rate of oxycodone prescribing increasing by an alarming 850% between the years of 1991 and 2007 [1]. This has corresponded with an increase in the number of Opioid-related deaths [3]. Between the years of 1991 and 2010, the rate of opioid-related deaths increased by 242%, with an average age of mortality only 42 years of age [4]. In one population-based study of drug-related deaths in Ontario, nearly 60% were attributed to Opioids, with oxycodone accounting for a third of all opioid-related deaths [3].

The prescription opioid abuse crisis in Northern Ontario

communities – including First Nations, rural, and remote communities– is especially dire [5]. More than half of adults living in Northern Ontario First Nation's communities are prescription drug users who are in need of treatment [6]. First Nation peoples are an estimated two to five times more likely to die due to over dose than the general population [7]. In a study of opioid prescribing and opioid-related death in Ontario, Northern communities experienced the highest rate on both measures [8].

In this paper, we discuss methadone and buprenorphine for the treatment of opioid dependence and the factors affecting treatment for those people living in Northern, rural, and remote areas– including geography, treatment modality, and concurrent drug use. This review utilizes sources from a combination of scholarly articles, government resources, and regional health documents.

Methadone and buprenorphine

Opioids are often prescribed for chronic non-malignant pain [9]; this over-prescribing of opioids can often lead to opioid dependence. For those patients who develop opioid dependence, there is a treatment available known as opioid agonist therapy (OAT), available as methadone or buprenorphine. OAT is a maintenance therapy with the goal of harm reduction and improved psychosocial functioning [10]. Methadone is a full opioid receptor agonist that is administered orally in liquid form. Methadone dosing is typically observed by a pharmacist, nurse or clinic staff to discourage diversion of the medication. Methadone not only reduces illicit heroin use, but also reduces the use of other substances – including cocaine, amphetamines, and sedatives [11]. Another form of OAT is the combination sublingual tablet form of buprenorphine and naloxone, which – in Canada – is available as both generic form and under the brand name Suboxone®. Buprenorphine is a partial agonist that acts to relieve the patient of their withdrawal symptoms. While having lower maximum effect than methadone, the effects of buprenorphine are longer lasting [11]. Compared to methadone, buprenorphine poses a much lower risk of overdose due to it being a partial opioid receptor agonist and being formulated with naloxone, an opioid receptor antagonist. However, studies have shown that patients who are taking buprenorphine are at higher risk of dropping out of care, and are more likely to continue the use of illicit opioids [11].

In Ontario, the availability of OAT has expanded substantially over the past two decades. The number of patients initiating OAT in Ontario rose from 6,000 to over 30,000 between the years of 2000 and 2010 [12]. However, many areas of the province – particularly Northern rural areas – are still facing barriers in accessing addiction treatment.

Impact of northern and rural geography on OAT

Due to the strict requirement for physician approval (recommendation from the provincial licensing body leading to an exemption from the federal narcotics law), methadone is often unavailable in rural and remote communities [5]. Compared to methadone, buprenorphine has fewer prescribing limitations and prescribing physicians do not require special approval [10]. Aside from a lack of physicians, people living in rural and remote communities often face additional barriers to health care, including having to travel long distances to access pharmacies [5]. In a retrospective cohort study on patients initiating OAT in Ontario, more than half of Northern rural patients resided more than 127 km from their addiction treatment provider, compared to only 16 km for those residing in Southern urban communities [13]. The barriers that Northern and rural communities face when accessing health care are generalizable to other rural and geographically isolated regions throughout Canada.

Despite the greater challenges in receiving health care services, it may be the case that patients seeking OAT in Northern communities have better treatment outcomes [13]. In a retrospective study of 48 addiction treatment clinics in Ontario, the duration of time that patients were retained in treatment was significantly influenced by geographic location; patients residing in Southern urban communities remained in treatment

for a shorter period of time, while those in Northern rural regions experienced enhanced treatment retention [13].

Due to the numerous barriers that Northern, rural, and remote communities are faced with, patients often rely on alternate forms of health care, including telemedicine. Telemedicine – or tele health – mitigates the barrier that rural and remote communities face when accessing medical care. In a study of OAT clinics in Ontario, telemedicine was the primary treatment modality for all clinics that were considered Northern rural [13]. In a study of over 7,000 patients initiating OAT in Ontario, 3,618 patients had received more than 75% of their care via telemedicine [13]. Of note, these patients experienced retention rates that were equal to those patients primarily receiving in-person care [13]. If relying on telemedicine to deliver OAT, physicians are encouraged to conduct the initial OAT visit in-person [8]. However, if an in-person visit is not feasible, this may be done via telemedicine [10]. If this is the case, the physician must see the patient in person within a period of 6 weeks after initiating treatment [10]. Despite facing several barriers to health care, patients receiving OAT in Northern rural areas appear to benefit from telemedicine, which mitigates the isolation often experienced by people living in these communities.

Innovative programming

In addition to telemedicine, another initiative has been developed with the goal of minimizing geographic barriers to accessing addiction care services. Through the Ontario College of Physicians and Surgeons, a program known as “Medical Mentoring for Addictions and Pain” has been implemented [14]. This program allows physicians with expertise in addiction and pain management to mentor family physicians who have patients presenting with these ailments [14]. This collaborative arrangement can help family physicians living in rural and remote communities treat patients with addiction and pain. Although the in-person physician would still require a license to prescribe methadone, this initiative certainly minimizes geographic barriers for patients living in isolated areas who need specialized care for addiction and pain.

Benzodiazepines and OAT

While OAT has proven a very cost-effective form of treatment, the course of OAT may be negatively impacted by concurrent drug use, such as use of benzodiazepines (BZDs) [15,16]. BZDs are a class of psychoactive drugs that are non-opioid central nervous system depressants. The short-term use of BZDs is clinically indicated for the treatment of anxiety, acute seizures, and acute alcohol withdrawal [17]. However, patients who use BZDs during OAT are at increased risk of overdose and death [15]. In a retrospective study of opioid-related deaths in Ontario, 59.5% involved BZDs [1]. Additionally, patients who had received a BZD prescription within the past year were twice as likely to suffer from an opioid-related death [18]. BZDs are often prescribed to patients who are concurrently receiving a prescription for opioid analgesics [19], with as many as 37% [20] to 66% [21,22] of patients in OAT self-reporting concurrent BZD use. A cross-sectional survey found that patients in OAT report using BZD to feel good, reduce anxiety, and out of curiosity [23]. Patients initiating OAT in Ontario are significantly more likely

to have received a prescription for BZDs prior to treatment entry if they resided in a Northern rural community [13]. In a separate study of 170 OAT patients, 24.1% met the criteria for BZD dependence, according to the Diagnostic Statistical Manual of Mental Disorders-IV (DSM-IV) [24].

Aside from being at greater risk of overdose and death, OAT patients who use BZDs on an ongoing basis are more likely to continue poly drug use –including cocaine and other opioids [15]. While previous studies have revealed mixed findings about whether ongoing BZD use negatively affects treatment retention, BZD use during treatment is correlated with a more complex clinical course [15,16] and has been shown to impact various patient outcomes including unemployment, criminality, and psychological distress [15].

Cocaine and OAT

Cocaine is another drug that is commonly used by patients in OAT, with as many as 75% of patients enrolled in OAT experience concurrent cocaine use [25]. This is of great concern given that research has shown that cocaine use is predictive of treatment dropout [26,15]. Not only are non-cocaine users retained in treatment at a higher rate, but these patients successfully complete treatment earlier than those patients with baseline cocaine use [27]. Patients who use cocaine during OAT are also more likely to use heroin [28], experience psychological disturbances [25], and have a higher risk profile for HIV [25]. In a secondary analysis of 162 patients receiving buprenorphine treatment, both baseline and ongoing cocaine use were predictive of poorer treatment outcomes, including opioid use and decreased retention rates [29]. In a retrospective cohort study of patients receiving OAT in Ontario, those that resided in a Northern community were more likely to have received a prescription for stimulants prior to treatment entry, compared to those patients in Southern Ontario [13].

CONCLUSION

In order to improve access to OAT for people living in remote Northern Ontario communities, there must be more infra structure for telemedicine and physicians living in these communities should seek mentorship from addiction specialists. In communities with no physician availability, additional funding and resources should be implemented to assist those patients who have to travel to seek care. In order to maximize the benefits of OAT for patients who do access treatment, physicians should be cautious when prescribing these patients BZD. They should also be aware of patients who have BZD and cocaine positive urine samples, as this may be a marker for premature dropout and greater clinical complexity.

Currently, there exist several knowledge gaps with respect to addiction medicine in the North. Further research must be conducted to better understand the unique implications of opioid addiction in the North, such as: how Northern Ontario patients seeking OAT are impacted by their geographic location, what method of treatment delivery provides the most efficacious form of care, culturally appropriate care models for First Nations patients, and how Northern Ontario patients receiving OAT are impacted by concurrent drug use in order to provide the

highest quality of care to this unique and vulnerable population. Understanding nuances of the rural and remote geography of Northern Ontario – as well as other remote areas in Canada – may aid planners and policy makers to enhance care for patients living in these geographically isolated regions.

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