

Opioid Use and Impacts

in THUNDER BAY DISTRICT



Prepared by the Situational Assessment Working Group
of the Opioid Surveillance and Response Task Force



THUNDER BAY
Drug Strategy



Thunder Bay District
Health Unit

This report was prepared by the Situational Assessment Working Group of the Opioid Surveillance and Response Task Force. The Task Force is a subcommittee of the Thunder Bay Drug Strategy.

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With many thanks to the following individuals for their thoughtful feedback on this report:

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Cite as: Sawula E, Greenaway J, Olsen C, Jaun A, Flanagan Q, Leiterman A, Groot E. Opioid Use and Impacts in Thunder Bay District. Thunder Bay, ON: Thunder Bay District Health Unit; 2018

Contents

Executive Summary.....	6	A Snapshot of the Most Recent Years	24
Introduction	7	Who.....	24
Background.....	8	What.....	25
What are opioids?.....	8	Why	26
Why do people use opioids and other drugs?	8	Where	27
Why do people overdose on opioids?.....	9	Hospital Admissions.....	28
How can we prevent problematic substance use?.....	10	Trends	28
What community factors may influence the opioid situation in Thunder Bay District?.....	11	Neonatal Abstinence Syndrome	31
Geography and Health System.....	11	A Snapshot of the Most Recent Years	32
Social Environment and Housing	13	Who.....	32
Historical and Present-Day Impacts of Colonization	13	Opioid-Related Mortality	33
What is the scope of opioid use in Thunder Bay District?	14	Trends	33
Prescription Opioids.....	14	A Snapshot of the Most Recent Years	37
Non-Medical Use of Opioids	16	Who.....	37
I-Track Study.....	16	What.....	38
The Supervised Injection Service Feasibility Study	17	Why.....	38
Law Enforcement Data.....	17	Snapshot of Opioid-Related Services in Thunder Bay District	39
What is the burden of opioid-related harms in Thunder Bay District?	18	Opioid-Specific Interventions.....	39
Emergency Medical Services	18	Opioid Agonist Therapy.....	39
Paramedic Calls for Suspected Opioid Overdose.....	18	Naloxone Distribution for Overdose Prevention.....	41
Paramedic Administration of Naloxone.....	19	Opioid Case Management	42
Administration of Naloxone Prior to Paramedic Arrival	20	Emerging Solutions	43
Emergency Department Visits.....	21	Northwestern Ontario Community of Practice on Trauma-Informed Systems	43
Trends	21	Supervised Consumption Services	43
		Rapid Access to Addiction Medicine Clinic.....	43
		Core Services	44
		Conclusions.....	47
		References.....	48

Executive Summary

Opioids are substances that activate opioid receptors in the human body. Examples of opioid medications include codeine, morphine, oxycodone, fentanyl, methadone, and buprenorphine. People use opioids for a wide variety of reasons, ranging from treatment of physical pain, cough, or substance use disorder; to recreational euphoria; to coping with stress or psychological pain; to preventing withdrawal. Social exclusion and traumatic events are strongly predictive of problematic drug use.

In 2016, 16.1 percent of Thunder Bay District residents were prescribed an opioid to treat pain and 2 percent of residents were prescribed an opioid to treat substance use disorder. The Thunder Bay District had the highest proportion of residents dispensed methadone or buprenorphine/naloxone in Ontario. People who inject opioids in the City of Thunder Bay report most commonly using oxycodone, morphine, or hydromorphone.

Individuals who use opioids are at risk of overdose. Risk factors for overdose include poverty and lack of housing, depression, use of alcohol or benzodiazepines, administration of drugs by injection, previous overdose, contaminated drug supply (e.g., with fentanyl analogues), and periods of abstinence. In Thunder Bay District, the rate of opioid overdose has been increasing over time, and is higher than the provincial rate. For example, over the past 12 years, the crude rate of emergency department visits for opioid overdose has increased from 32.9 per 100,000 people in 2005 to 53.4 per 100,000 people in 2016.

In Ontario, the most commonly detected opioid at death due to overdose is fentanyl; however, in Thunder Bay District, the most commonly detected opioid at death due to overdose is methadone. This may reflect appropriate access to treatment of substance use disorder in our community, over-prescription of opioids for substance use disorder treatment, or diversion of opioids intended for substance use disorder treatment.

Higher rates of opioid-related harms in the Thunder Bay District are the result of a number of factors. Poverty, unemployment, accessibility of services, and housing costs are barriers to achieving good health outcomes in the Thunder Bay District. Community partners who provide services to people who use drugs indicate that there is a lack of safe, affordable housing for their clients. The location of services and supports presents significant challenges to those who must travel great distances to access healthcare, and mental health and addictions services.

In order to address the opioid crisis, our community has increased the distribution of naloxone to treat overdose, continued to provide opioid agonist therapy, and introduced opioid case management. In addition, work is underway to implement a Community of Practice on trauma-informed systems, supervised consumption services, and a rapid access to addiction medicine clinic. These interventions will take place alongside the existing work on poverty reduction, prevention of problematic substance use, anti-stigma and drug awareness, harm reduction, emergency medical care, mental health and addictions, and housing already taking place in our community.



Introduction

The Opioid Surveillance and Response Task Force (Task Force) was convened in 2017 by the Thunder Bay Drug Strategy in response to rising opioid-related morbidity and mortality in Thunder Bay District. The goal of the Task Force is to reduce the harms associated with opioid use through coordinated surveillance and response.

One of the objectives of the Task Force was to complete a situational assessment to inform the development of a comprehensive opioid strategy for Thunder Bay District (1). The situational assessment, summarized in this report, addresses the following questions with respect to Thunder Bay District:

- What community factors may influence the opioid situation?
- What is the scope of opioid use?
- What is the burden of opioid-related harms?
- What opioid-related services are available?

Throughout the report, gaps in our knowledge about opioid use, associated harms, and service accessibility are highlighted to help guide future data collection efforts.

Considerations when interpreting data in the report

- It is important to keep in mind when interpreting the opioid-related morbidity and mortality data that we do not have information on the pathways that led these individuals to opioid use, the factors that may have contributed to opioid-related harms, nor whether the outcomes were from prescription or non-prescription opioids.
- Some of the data sources are based on self-report (e.g., the Ontario I-Track study; the Ontario Integrated Supervised Injection Services Feasibility Study). Response bias may be present. Thus, responses may be an under- or over-representation of accurate rates.

The goal of the Task Force is to reduce the harms associated with opioid use through coordinated surveillance and response.

- In most instances, proportions and rates are provided instead of the number of cases, as the number of cases was often too small to report. This practice protects confidentiality and ensures a minimum standard in terms of the precision of estimates.
- Small numbers need to be interpreted with caution because small absolute changes can produce large relative or proportionate changes in rates that may be misinterpreted by end users. Rates calculated from numerators smaller than 20 (e.g., death data) are not necessarily reliable and should be interpreted with caution.
- Data up until the most recent full available year were gathered and presented. As such, the year of data may differ among indicators.

A note about terminology

This document uses the terms “opioid poisoning” and “opioid overdose” interchangeably. Opioid poisoning is the diagnostic term used by the World Health Organization’s International Statistical Classification of Diseases and Related Health Problems that refers to the immediate adverse health effects resulting from the ingestion, inhalation, injection, or absorption of an opioid, excluding intoxication/inebriation. This term encompasses the outcomes of both prescribed and street drug use, as well as intentional and unintentional drug use (2). The term “opioid overdose” may imply that people who use drugs choose to take an excessive dose that results in poisoning. Especially in the context of contaminated drug supply in which people who use drugs are not choosing to be exposed to contaminants, “opioid poisoning” is a more encompassing term (3). At the same time, the term overdose is more commonly used, and many of the references to which this document refers use the term overdose, so both terms are used here.

Background

What are opioids?

Opioids are substances that activate the opioid receptor in the human body. Endogenous opioids are naturally produced by the human body, while exogenous opioids may be naturally produced by the opium poppy, or synthetically produced in laboratories. Opioids produced by the poppy, like heroin, codeine, and morphine, are also called “opiates”; opioids produced in a lab are called “synthetic opioids” or just “opioids”.

Examples of opioid medications include codeine, morphine, oxycodone, fentanyl, methadone, and buprenorphine. All of these medications can be used to treat pain. Methadone and buprenorphine are also used to treat opioid use disorder, while codeine is also used as a cough suppressant (4).

Short-term effects of opioids include euphoria (5), pain relief, constipation, and decreased respiratory rate (6). Long-term effects of chronic opioid use include substance use disorder, increased sensitivity to pain, depression, reduced libido, and osteoporosis (5,6). These effects can lead to complications like bone fractures, overdose, motor-vehicle collisions, and death (6).

Why do people use opioids and other drugs?

People use opioids for a wide variety of reasons, ranging from treatment of physical pain, cough, or substance use disorder; to recreational euphoria; to coping with stress or psychological pain; to preventing withdrawal. Social exclusion and traumatic events are strongly predictive of future drug use (7,8). Depending on the severity of the trauma, the cumulative effect of multiple traumas, and the protective factors surrounding the individual who experienced trauma, the impacts

Social exclusion and traumatic events are strongly predictive of future drug use.

can be lifelong and detrimental to overall health and well-being (9). For example, individuals who have experienced more than five adverse childhood experiences like abuse, neglect, or caregiver mental illness are seven to ten times more likely to use drugs than individuals who did not have these experiences (8). Trauma, especially in childhood, can result in epigenetic changes, prolonged hypothalamic-pituitary-adrenal axis activation, and maladaptive neurocognitive development that lead to poor health outcomes, including problematic substance use (10,11). Humans naturally produce endogenous opioids in response to positive social activities, like meaningful work and close relationships; individuals excluded from these activities may seek to acquire opioids elsewhere (7).

Capitalizing on the many reasons people use opioids, drug company marketing promoted and normalized the use of opioids for chronic, non-cancer pain—despite lack of evidence of effectiveness—resulting in a large increase in the availability of opioids in Ontario (5,12,13). Between 1991 and 2007, the number of oxycodone prescriptions in Ontario rose from 23 to 197 per 1,000 individuals, an 850 percent increase (12). First Nations leaders in Ontario have highlighted that opioid prescribing without appropriate follow-up is an issue of particular concern for remote First Nations communities (14).

Opioids are also prescribed to treat acute pain. Opioids are often only required for three days or less to treat acute pain, except in special circumstances. However, almost half of new prescriptions for opioid medications in Ontario in 2016 were for a supply of more than seven days. Individuals who take opioids for more than seven days are more likely to experience withdrawal symptoms when stopping the opioid (15). In Ontario, emergency physicians are more likely than family physicians to prescribe higher initial daily doses of opioids. Higher doses have an increased risk of opioid overdose (16).

Why do people overdose on opioids?

Most overdoses are unintentional: from 2006 to 2008 in Ontario, 84 percent of opioid-related deaths in Ontario were classified as accidental (17). Risk factors for overdose include poverty and poor housing, depression, concomitant use of alcohol or benzodiazepines, administration of drugs by injection, and previous overdose (18). Other risk factors for overdose include periods of abstinence that result in reduced opioid tolerance, like withdrawal management or imprisonment (17). In Ontario, one in 10 drug overdose deaths occurs in the year following release from prison. Most of those deaths occur in the first two weeks after release (19).

Changes in drug policy can also increase the risk of overdose. Increased opioid prescribing rates are closely associated with increases in opioid-related deaths (5,13,20). OxyContin, a long-acting form of oxycodone produced by Purdue Pharma, was withdrawn from the Canadian market in 2012. Although generic long-acting oxycodone is still available, it is not covered by the Ontario Drug Benefit Program (21). In place of OxyContin, Purdue Pharma introduced OxyNEO, another long-acting form of oxycodone that is more difficult to crush, inhale, or inject (5,21). The removal of OxyContin and introduction of OxyNEO led to reductions in prescribing of oxycodone, and concomitant increases in prescribing of other long-acting opioids in Canada, like fentanyl and hydromorphone (22). The sudden reduction in access to OxyContin has also led some people to use heroin instead (21), resulting in an increased number of heroin overdoses and deaths in Canada (22).

Increased opioid prescribing rates are closely associated with increases in opioid-related deaths.

Producers of non-pharmaceutical fentanyl analogues, like carfentanil and cyclopentyl fentanyl, are also taking advantage of these changes in the drug supply. These synthetic opioids, which are thousands of times more potent than morphine, are used as adulterants to achieve the same potency with less drug. Uncontrolled dosing—through contamination or uneven distribution in a product, for example—can result in unintentional overdose (23).

Knowledge gap: The extent to which the drug supply in our community is contaminated with high-potency opioids is unknown.



How can we prevent problematic substance use?

Preventing problematic substance use requires a multi-pronged approach that recognizes that underlying causes are incompletely understood. Policies, environments, and communities that build resilience and prevent trauma—especially in childhood—prevent the epigenetic, hormonal, and neurobiological changes that lead to poor health outcomes, including problematic substance use (10,11). Key prevention actions, based on the Ottawa Charter for Health Promotion, include:

- Strengthen community actions: Empower communities to improve social supports and public participation
- Develop personal skills: Support individuals to cope with illness and injury, to make healthy choices, and to exercise control over their own health and environment
- Reorient health services: Expand the mandate of health services beyond clinical and curative services to support individuals and communities to provide for the whole person
- Build healthy public policy: Legislation, fiscal measures, taxation, and organizational change should improve health equity and make healthier choices easier
- Create supportive socioecological environments, including the natural, built, and work environment (24)



What community factors may influence the opioid situation in Thunder Bay District?

Geography and Health System

Thunder Bay District comprises a geographical area of 103,723 square kilometres and has a population of approximately 146,048 people. Much of the population (73 percent) lives in the city of Thunder Bay, while approximately 26 percent of the population lives in municipalities dispersed throughout the vast region (25). In 2016, 15.2 percent of Thunder Bay District residents self-identified as Aboriginal (25).

Thunder Bay District is located within the Thunder Bay District Health Unit (TBDHU), a geographical area of approximately 230,000 square kilometres that is served by a local public health agency of the same name. Thunder Bay District and TBDHU are located within the North West Local Health Integration Network (LHIN) (figure 1).

In general the North West LHIN, when compared to Southern Ontario, has:

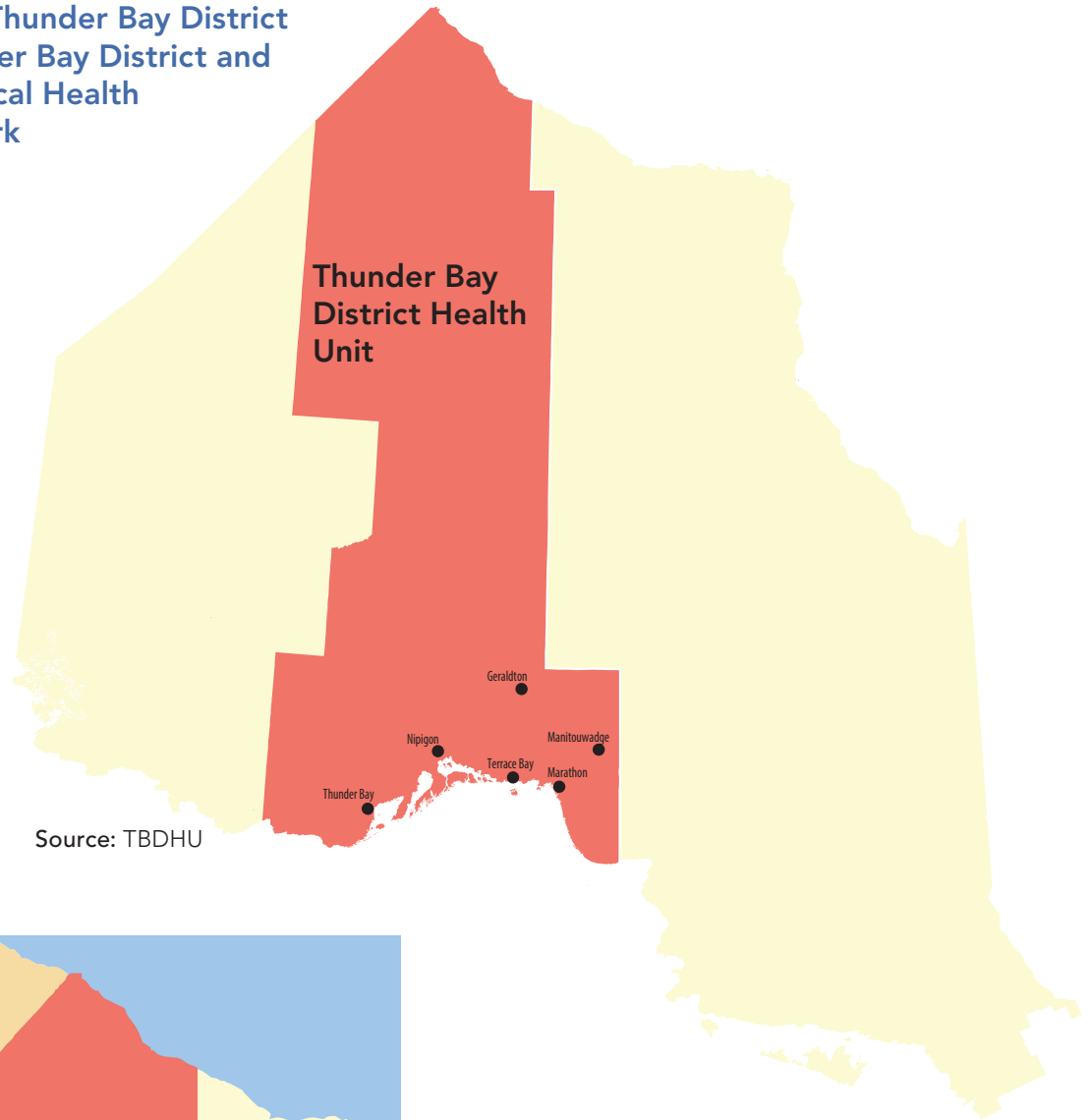
- Lower life expectancy at birth;
- Poorer perceived general health;
- Higher proportions of heavy drinkers;
- Higher rates of obesity;
- Higher rates of daily smokers;
- Lower proportion of individuals with a regular doctor;
- Higher rates of chronic disease, including chronic obstructive pulmonary disease, diabetes, and hypertension; and
- Higher rates of avoidable deaths (26).

Most health services and supports are located in the city of Thunder Bay. Often, residents of rural areas and remote Indigenous communities are required to travel to gain access to healthcare providers. Barriers to travel to these services include distance, road accessibility, and high cost. In some instances, when individuals are discharged from services in the city of Thunder Bay, they have no method of returning home to their families and support networks (27). The delivery of mental health services in rural and northern communities also significantly differs from urban communities, and are often only accessible for a limited time or through telemedicine initiatives (27). The location of most services in the city of Thunder Bay presents significant challenges to those who must travel great distances to access healthcare, mental health, and addictions services.

With respect to mental health and addictions services specifically, rural and Northern Ontario are underserved. In 2013, the North West LHIN had 7.2 practising psychiatrists per 100,000 people. In comparison, Ontario as a whole had 15.2 practising psychiatrists per 100,000 people, and the Toronto Central LHIN had 61 practising psychiatrists per 100,000 people (28). Psychiatrists may only be available for short periods of time through locums, telemedicine, or rotational assignments (27). Although Northern Ontario residents often report a higher quality of life and increased sense of belonging when compared to the rest of Ontario, the rates of mental illness hospitalization and mental illness patient days are more than double of the rest of Ontario (29).



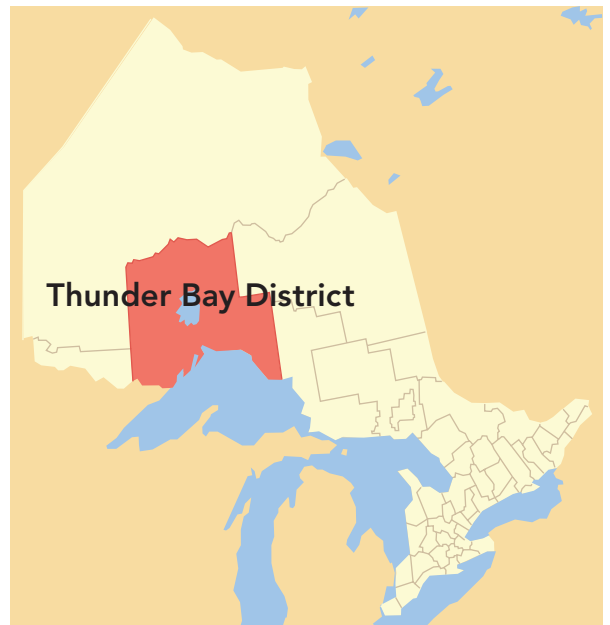
Figure 1. Maps of Thunder Bay District Health Unit, Thunder Bay District and the North West Local Health Integration Network



Source: TBDHU



Source: Health Analytics Branch, HSIM, Ministry of Health and Long-Term Care (02-2017)



Source: https://en.wikipedia.org/wiki/Thunder_Bay_District_-_/media/File:Map_of_Ontario_THUNDER_BAY.svg

Social Environment and Housing

Poverty, unemployment, and housing costs are barriers to achieving good health outcomes in the Thunder Bay District. In 2016, 13.8 percent of households in Thunder Bay District were classified as low income and 19.9 percent of children under 18 years were living in low-income households (25). Also in 2016, 13.4 percent of the population in Thunder Bay District had no diploma/degree and the unemployment rate was 8.2 percent (25). In total, 18.7 percent of the population was spending 30 percent or more of their income on shelter costs (10.3 percent among owners; 41.8 percent among renters) (25).



Housing loss and problematic substance use are often inter-related. The most commonly-reported reason for losing housing in the city of Thunder Bay is substance use (30,31). Community partners who provide services to people who use drugs indicate that there is a lack of safe, affordable housing for their clients. Housing providers indicate that there is a lack of coordinated supportive services to successfully house individuals who have been chronically homeless and who have mental health and/or substance use challenges.

Historical and Present-Day Impacts of Colonization

Trauma and social exclusion result in neurobiological changes that increase the probability of drug use (7,8,10,11). As the Final Report of the Truth and Reconciliation Commission of Canada summarizes, “the central goals of

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Canada’s Aboriginal policy were to eliminate Aboriginal governments; ignore Aboriginal rights; terminate the Treaties; and, through a process of assimilation, cause Aboriginal peoples to cease to exist as distinct legal, social, cultural, religious, and racial entities in Canada”, resulting in ongoing trauma to, and social exclusion of, Indigenous peoples (32). Multiple studies have identified trauma and intergenerational trauma, the latter meaning “the cumulative emotional and psychological harm experienced throughout an individual’s lifespan and through subsequent generations” (33), as risk factors for substance use disorder and overdose in Indigenous populations (9,32,34,35).

Historical policies are reflected in the present-day racism experienced by Indigenous people (32). Almost all (97 percent) of Indigenous respondents to a United Way Thunder Bay Counts survey reported witnessing or experiencing racism and discrimination (36). Historical policies are also reflected in the continued dislocation from community that individuals travelling to larger centres experience in order to access treatment. Research in Northwestern Ontario has highlighted the importance of social relationships, Anishinabe teachings, and community strength in maintaining health behaviours (37).

What is the scope of opioid use in Thunder Bay District?

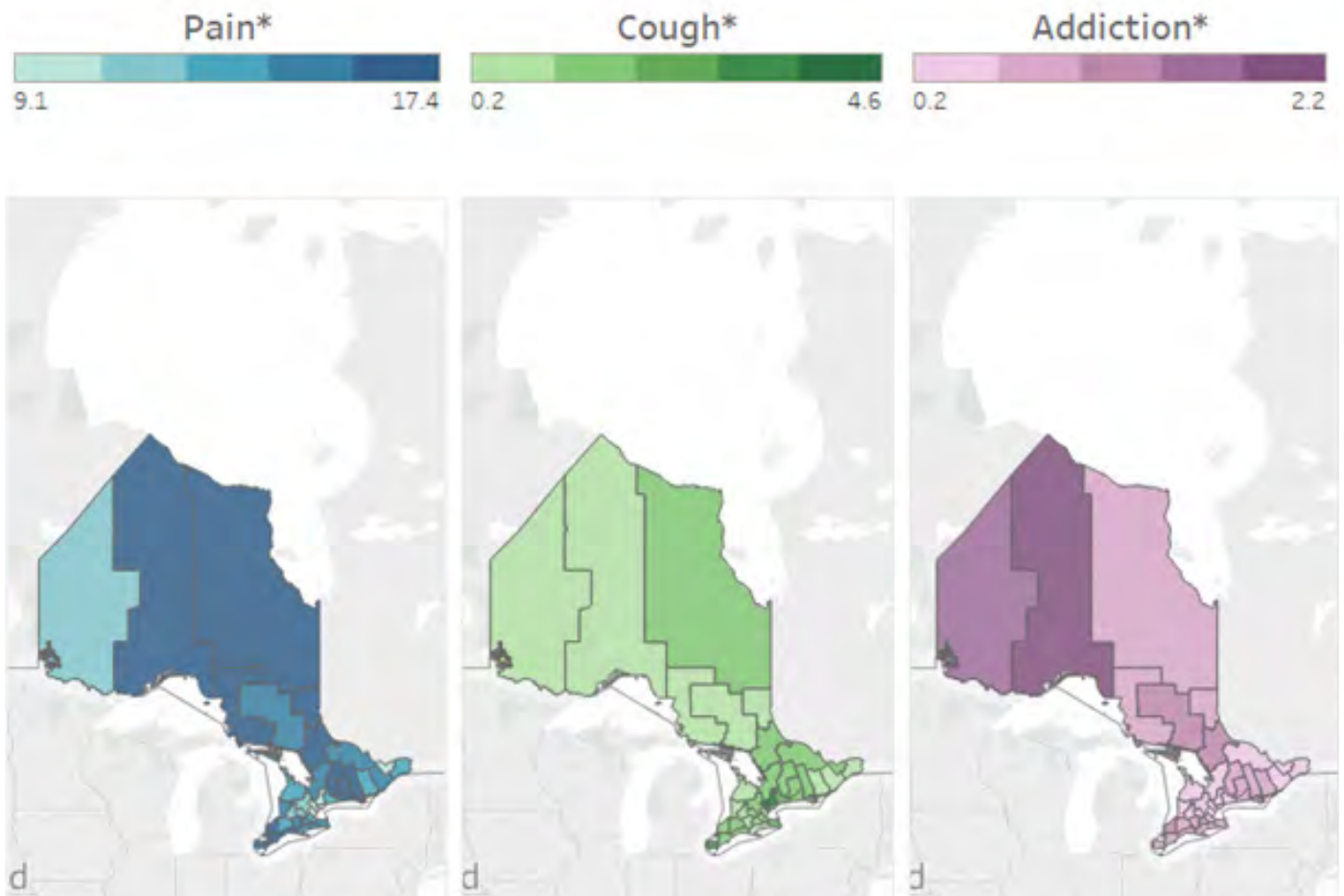
Prescription Opioids

Prescription opioids described in this section are grouped into three categories, including those used to treat pain (e.g., fentanyl, hydromorphone, oxycodone), those used to treat substance use disorder (methadone and buprenorphine/naloxone), and those used as cough suppressants (e.g., codeine). The following data represent the number of individuals with a valid health card who were dispensed an opioid prescription in Ontario in 2016 (figure 2). If an individual was dispensed an opioid for pain and a separate prescription for cough, they were placed in both groups.

In 2016, 16.1 percent of TBDHU residents were prescribed an opioid to treat pain (4). Only 0.2 percent of Thunder Bay District residents were dispensed opioids to treat cough (4). Most notably, TBDHU had the highest proportion of residents dispensed methadone or buprenorphine/naloxone in Ontario: one in 50 individuals in TBDHU was prescribed an opioid to treat a substance use disorder in 2016 (4).

One in 50 individuals in TBDHU was prescribed an opioid to treat a substance use disorder in 2016.

Figure 2. Geographic variation of Ontarians dispensed an opioid, by Public Health Unit, 2016



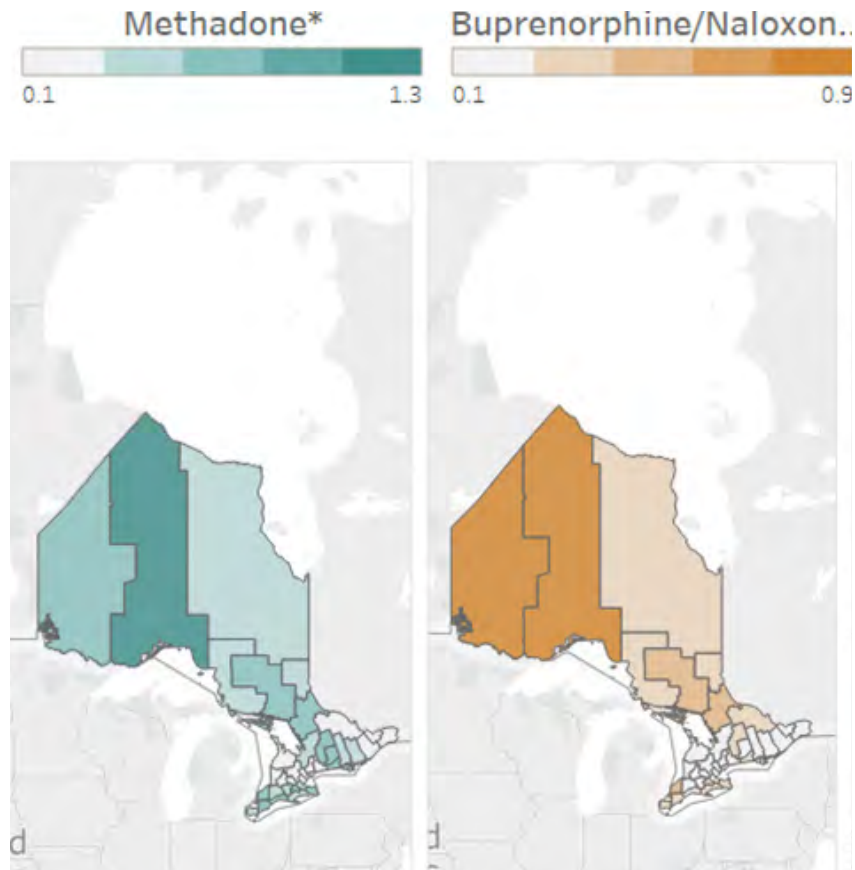
*Percent of the population.

Source: Reproduced with permission from the Ontario Drug Policy Research Network. Original source: www.odpr.ca/research/publications/august-2017/

In 2016, 1.3 percent of TBDHU residents were prescribed methadone to treat substance use disorder (4). Similarly, 0.9 percent of Thunder Bay

District residents were prescribed buprenorphine/naloxone to treat substance use disorder (figure 3) (4).

Figure 3. Geographic variation of Ontarians dispensed an opioid to treat addiction, by Public Health Unit, 2016



*Percent of the population.

Source: Reproduced with permission from the Ontario Drug Policy Research Network. Original source: www.odpr.ca/research/publications/august-2017/



Non-Medical Use of Opioids

“Non-medical use of opioids” refers to the use of both non-prescription opioids (e.g., heroin, carfentanil) and prescription opioids obtained outside of a therapeutic relationship with a healthcare provider (e.g., purchased on the street). There is limited data on non-medical opioid use in Thunder Bay District.

Knowledge gap: Information on youth opioid use in our community is limited.

Knowledge gap: The following information reflects available data, but may not be representative of the population using non-medical opioids in Thunder Bay District.

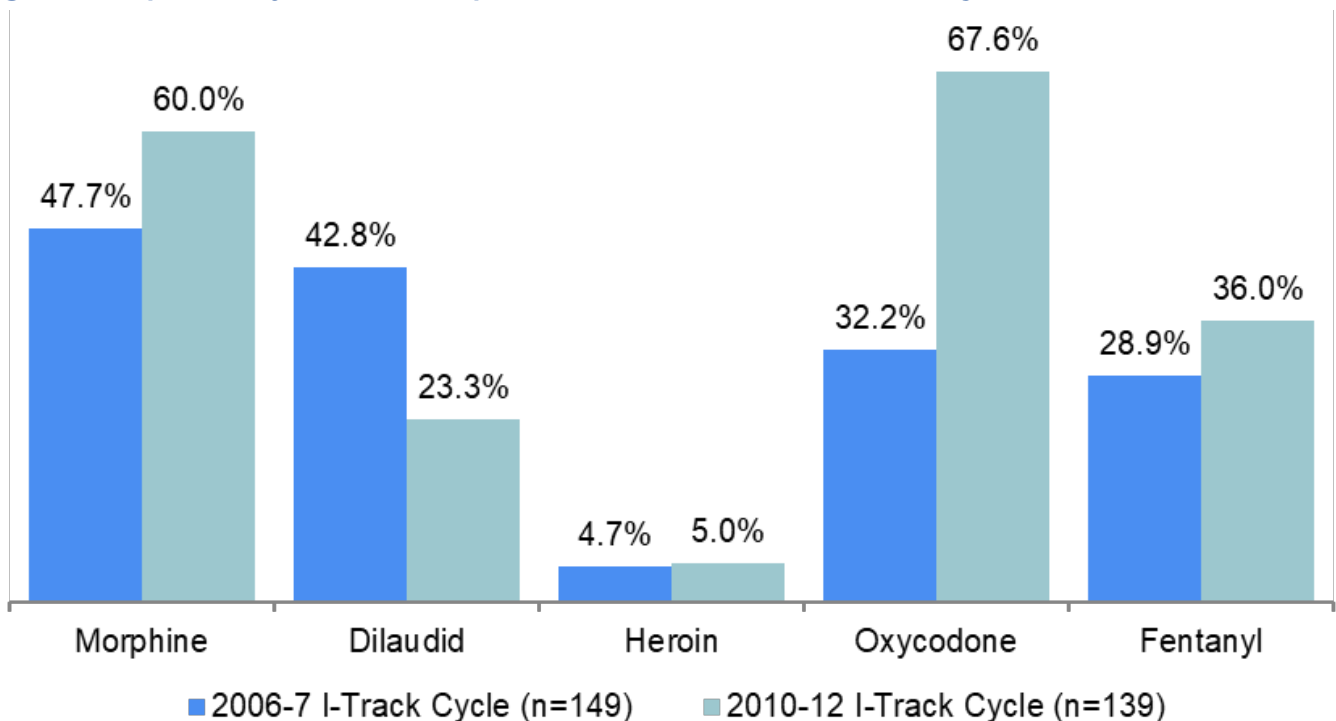
I-Track Study

I-Track is an enhanced surveillance system to track HIV and hepatitis C-associated risk behaviours in people who inject drugs (38). Thunder Bay joined I-Track for Phases 2 (2006-7) and 3 (2010-12).

From Phase 2 to Phase 3, the proportion of participants who injected opioids in the past 6 months increased for most opioids (figure 4) (38).

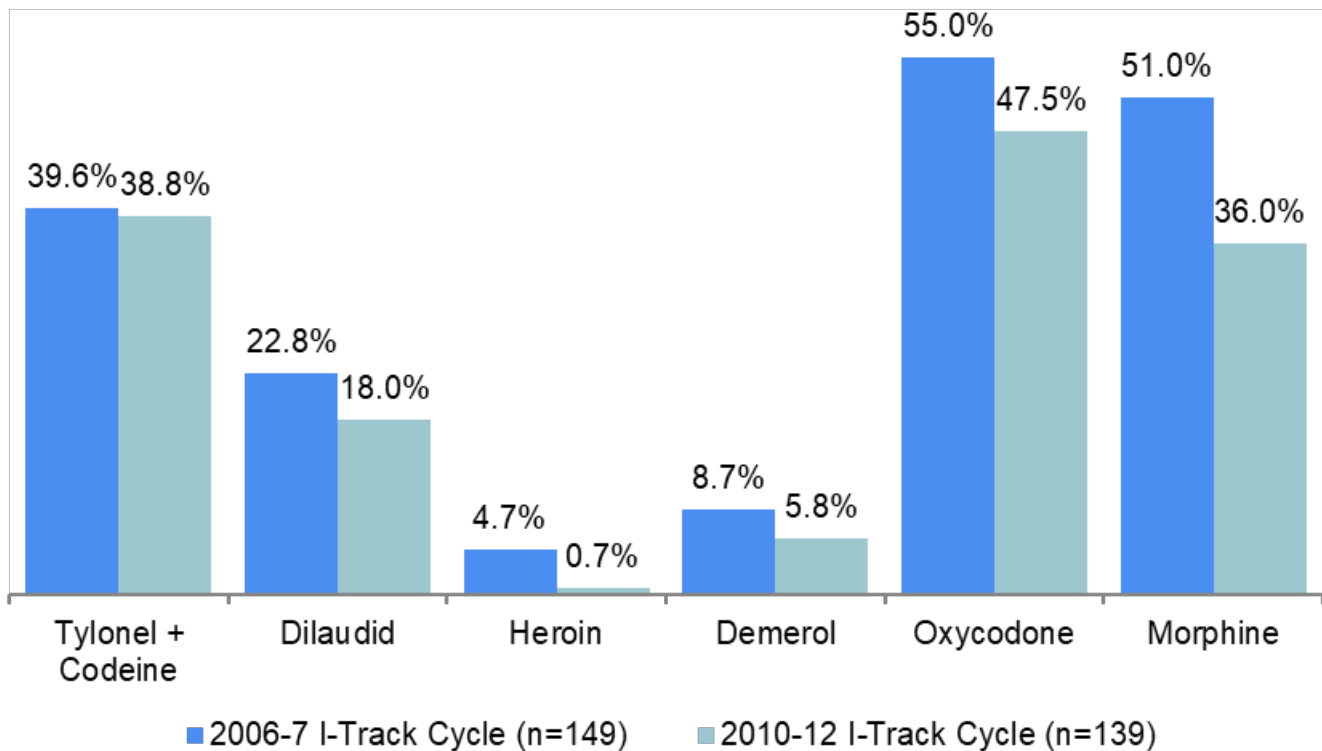
From Phase 2 to Phase 3, the proportion of participants who used non-injection opioids in the past six months decreased (figure 5) (38).

Figure 4. Opioids injected in the previous six months, Thunder Bay



Source: Millson, P., & White, S. (2016). Ontario I-Track Report: Enhanced Surveillance of Risk Behaviours and Prevalence of HIV and Hepatitis C Among People Who Inject Drugs. Toronto, Canada

Figure 5. Opioids used (not injected) in the past six months, Thunder Bay



Source: Millson, P., & White, S. (2016). Ontario I-Track Report: Enhanced Surveillance of Risk Behaviours and Prevalence of HIV and Hepatitis C Among People Who Inject Drugs. Toronto, Canada.

The Supervised Injection Service Feasibility Study

The Supervised Injection Service Feasibility Study collected data from 203 people who inject drugs in the city of Thunder Bay during 2016. Of the 203 people who participated in Thunder Bay, 167 (82.3 percent) reported injecting opioids at least once in the past six months and 46 (23 percent) reported injecting opioids daily. Males were more likely than females to report injecting opioids in the previous six months (56.3 percent compared to 43.7 percent). Morphine and hydromorphone were among the most commonly injected drugs reported by all Thunder Bay participants (39).

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Law Enforcement Data

The overall crime rate in Thunder Bay has been declining since 1998 (40). Similarly, police-reported drug offences for both the general population and youth declined from 2010 and 2015 (41). This stands in contradistinction to the national trend, where there has been an increase in the trafficking, possession, and distribution of illegal drugs since 2010, particularly heroin and fentanyl (40,42).

What is the burden of opioid-related harms in Thunder Bay District?

This section describes opioid-related harms measured by health care system use.

Knowledge gap: Other opioid-related harms in Thunder Bay District may not be visible or easily measured, such as overdoses that are not treated or reported; the societal and familial impacts of opioid use; and infectious diseases or other health conditions specifically related to substance use.

Emergency Medical Services

Emergency medical service in Thunder Bay District is provided by Superior North Emergency Medical Services (SNEMS). Data in the following sections were extracted from the SNEMS electronic patient care record (ePCR). Identification of specific substances is obtained from the incident history data on the ePCR. The incident history is a combination of the paramedic's observations and information provided by the patient or bystanders on scene. As incident scenes are often chaotic, and patients and bystanders can be vague or uncertain with patient history, these results must be interpreted cautiously. These data only include instances where 911 was called in response to a suspected overdose. People who use drugs report multiple barriers to calling 911, including fear of arrest, breach of probation or parole, and fear of losing children (43), so these data likely underrepresent the burden of opioid-related harms in our community.

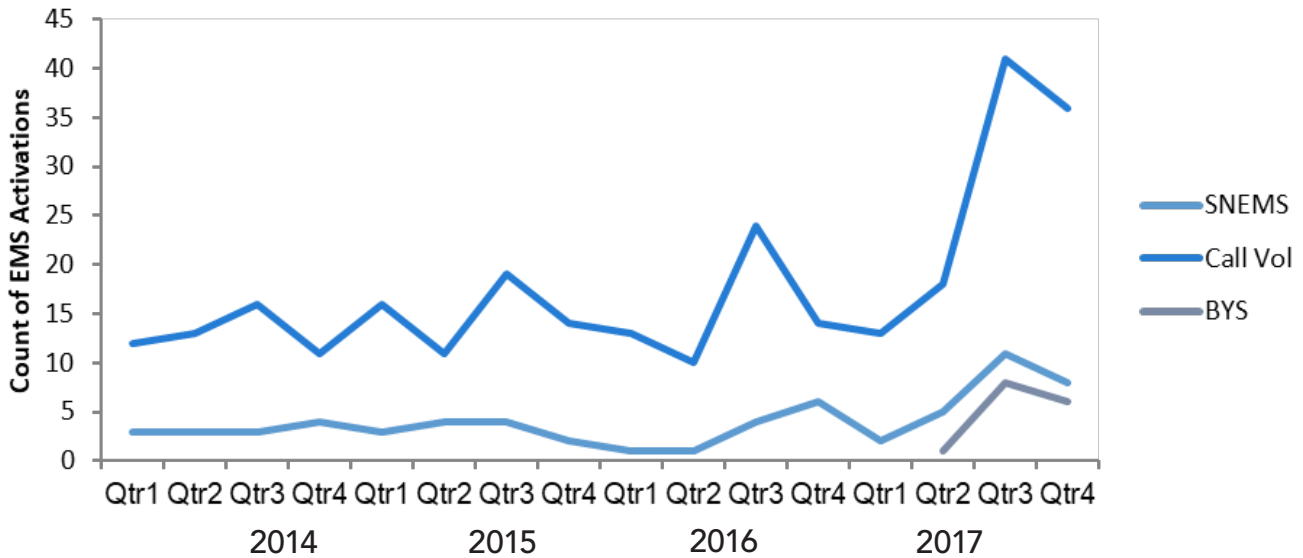
Paramedic Calls for Suspected Opioid Overdose

Figure 6 illustrates the number of SNEMS responses to suspected opioid overdoses in Thunder Bay District from 2014-2017. Of the suspected opioid overdoses that SNEMS responded to between 2014 and 2017:

- The median age of cases was 38 years;
- Approximately 45 percent of cases were female;
- 82 percent of calls occurred in the city of Thunder Bay; and
- 48 percent of cases were high acuity (Canadian Triage and Acuity Scale 1 or 2).

One in ten individuals who experienced a suspected opioid overdose to which SNEMS responded during 2016 and 2017 activated EMS more than once during that time period. This same cohort of individuals exhibits an increased need for medical attention: although they make up only 0.5 percent of all individuals who activated EMS, they represent 2 percent of SNEMS' entire service call volume.

Figure 6. Quarterly number of SNEMS responses to suspected opioid poisonings and number of responses where naloxone was administered, Thunder Bay District, 2014-17



Call vol=SNEMS responses to suspected opioid overdoses; SNEMS=Paramedic administration of naloxone; BYS=Bystander administration of naloxone

Source: Superior North EMS, Paramedic Electronic Patient Care Record. Extracted January 2018.

Knowledge gap: SNEMS is the only source of real-time information on opioid overdose in our community. Acute Care Enhanced Surveillance provides syndromic surveillance of opioid overdose, while emergency department visit data are only available on a weekly basis.

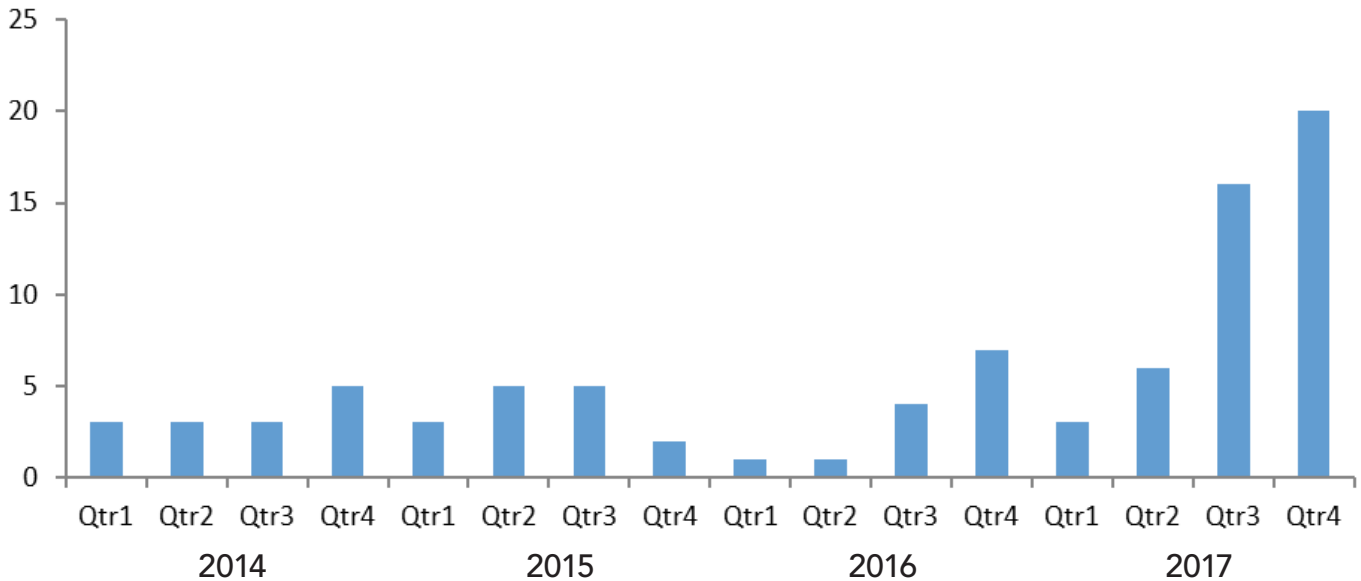
The number of naloxone doses delivered per call increased significantly in 2017 (figure 7). In the first quarter of 2014, the average number of doses was one per patient. By the fourth quarter of 2017, the average number of doses rose to 2.1 per patient, including three incidents requiring more than three standard doses of naloxone. The increase in naloxone required per patient suggests the presence of higher-potency opioids in the community.

Paramedic Administration of Naloxone

SNEMS administered naloxone for 64 EMS calls from 2014 to 2017. Prior to December 23, 2016, administration of naloxone required medical direction from a base hospital physician. After December 23, 2016, paramedics could administer naloxone without contacting a base hospital physician. The increase in SNEMS-administered naloxone may be associated with increased incidence of opioid overdoses (figure 6).

The increase in naloxone required per patient suggests the presence of higher-potency opioids in the community.

Figure 7. Quarterly counts of naloxone doses administered, Thunder Bay District, 2014-17



Source: Superior North EMS, Paramedic Electronic Patient Care Record. Extracted January 2018

Administration of Naloxone Prior to Paramedic Arrival

Prior to March 2016, the administration of naloxone prior to paramedic arrival was rare. Since naloxone became available without a prescription, SNEMS has started to observe treatment by bystanders prior to arrival. The first identified bystander use of naloxone prior to paramedic arrival occurred in the second quarter of 2017. A sharp increase of bystander administration of naloxone was observed in the third quarter of 2017. This increase appears to be associated with an increase in opioid overdose call volume (figure 6). Information about bystander administration of naloxone is often incomplete: in approximately 50 percent of cases, the route of administration is unknown, in 25 percent cases the route of administration is intra-muscular, and in the remaining 25 percent, the route of administration is intra-nasal.

Knowledge gap: Administration of naloxone prior to paramedic arrival is only recorded if a paramedic recognizes naloxone administration, or a community member reports administering naloxone. The true frequency with which naloxone is administered in our community is unknown.

A sharp increase of bystander administration of naloxone was observed in the third quarter of 2017.

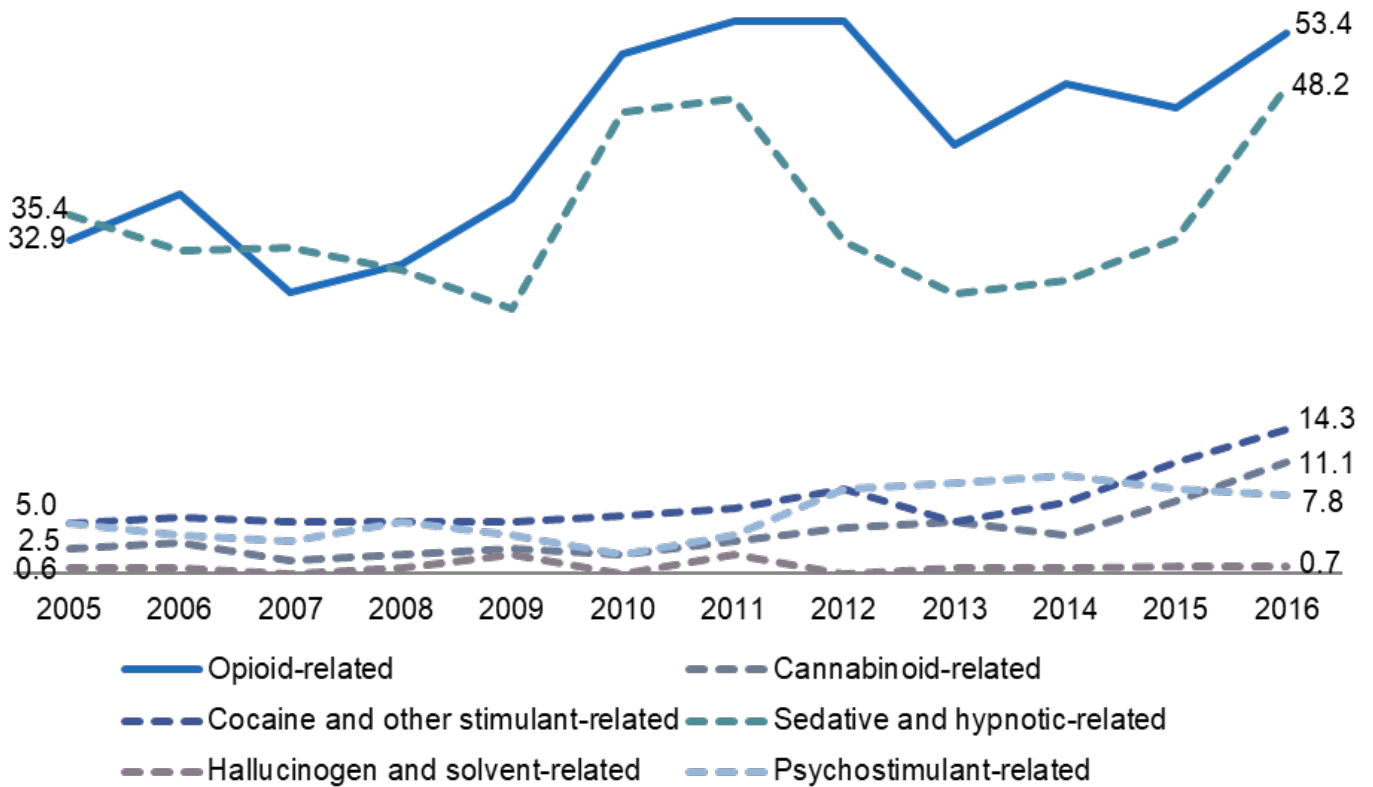
Emergency Department Visits

Trends

The crude rate of emergency department visits for drug overdose due to opioids has increased (i.e., 32.9 per 100,000 in 2005 compared to 53.4 per 100,000 in 2016) (figure 8).

Opioids now account for the highest rate (and proportion; 39.4 percent in 2016) of emergency department visits for drug overdose in TBDHU compared to other substances.

Figure 8. Rate of emergency department visits (per 100,000) for drug overdose by substance, TBDHU, 2005-2016



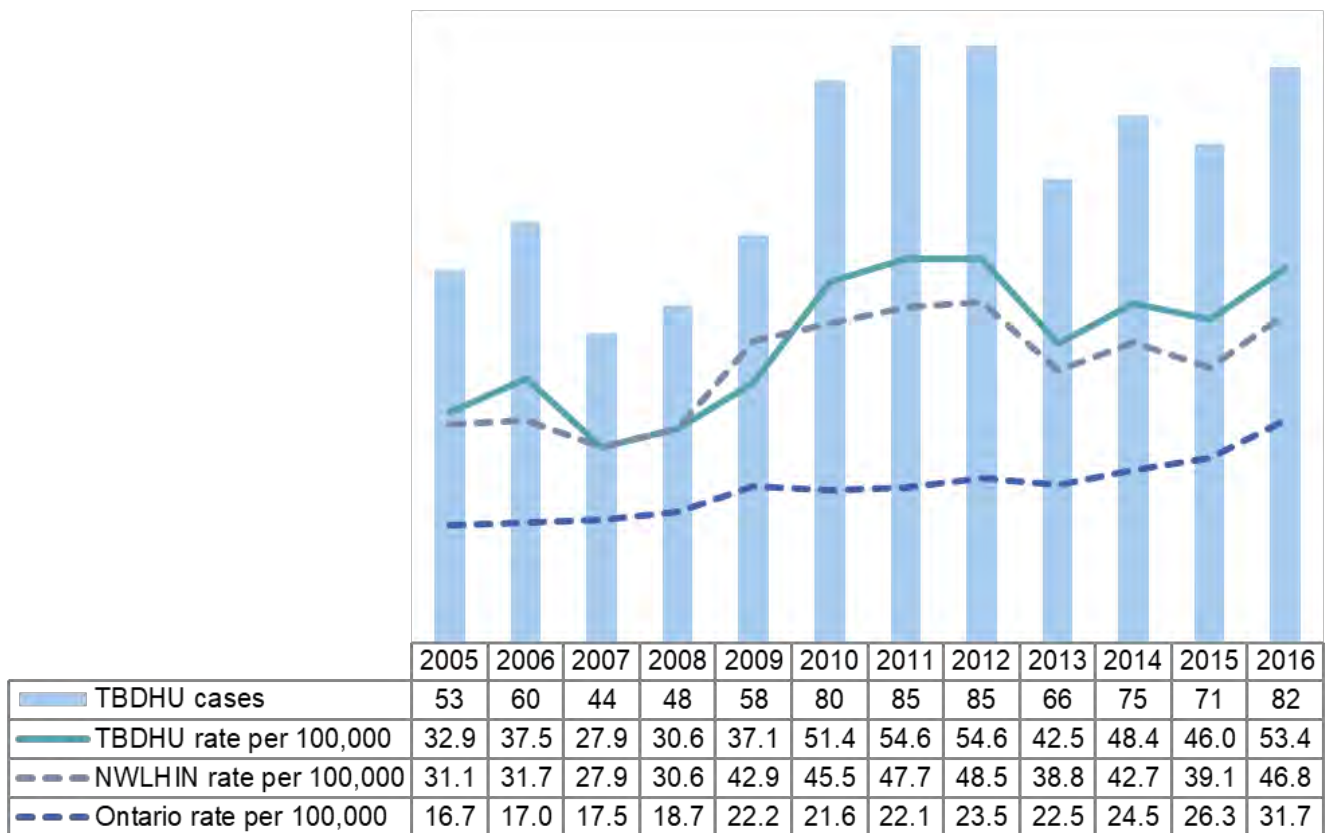
Source: National Ambulatory Care Reporting System (NACRS), 2005-2016, Ontario Ministry of Health and Long-Term Care, IntelliHealth Ontario, extracted 2018 January 15

Over the past 12 years, TBDHU experienced 807 emergency department visits for opioid overdose, which equates to an average of 67 visits per year.

During 2005-2016, TBDHU had higher rates of emergency department visits for opioid overdose than Ontario. In 2011 and 2012, TBDHU experienced its highest rates of emergency department visits for opioid overdoses – the crude rate for both years was 54.6 per 100,000 people (85 cases each year). This rate is more than two times higher the Ontario rate for the same time frame (22.1 and 23.5 per 100,000 respectively, in Ontario). Over the last five full years of data from 2012-2016, TBDHU's crude rate of emergency department visits for opioid overdose remained almost double that of the Ontario rate.

Over the last five full years of data from 2012-2016, TBDHU's crude rate of emergency department visits for opioid overdose remained almost double that of the Ontario rate.

Figure 9. Emergency department visits for opioid overdose, 2005-2016



Source: National Ambulatory Care Reporting System (NACRS), 2005-2016, Ontario Ministry of Health and Long-Term Care, IntelliHealth Ontario, extracted 2017 June 1

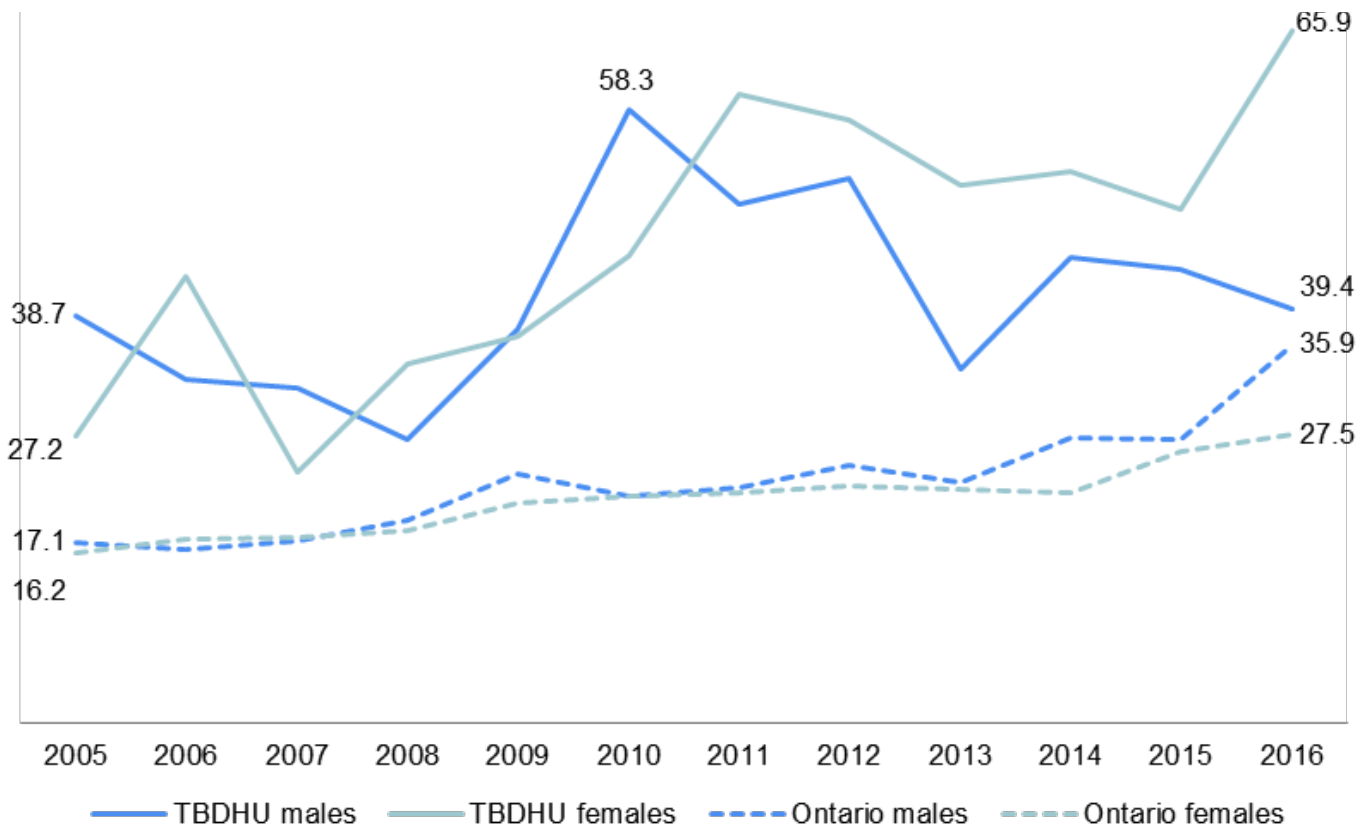
Citation: Ontario Agency for Health Protection and Promotion (Public Health Ontario). Interactive Opioid Tool. Toronto, ON: Queen's Printer for Ontario; 2017. Available from: <http://www.publichealthontario.ca/en/DataAndAnalytics/Opioids/Opioids.aspx>

Notes: The rates presented are not standardized to the population; comparisons between geographies and years should be interpreted with caution as the age composition of the populations may differ.

Beginning in 2011, rates for emergency department visits for opioid overdose in TBDHU were higher among females; prior to 2011, rates were higher among males. TBDHU males experienced their highest rate of emergency department visits for opioid overdose in 2010 (58.3 per 100,000), while females experienced their highest rate in 2016 (65.9 per 100,000). In 2016, TBDHU and Ontario males had similar rates of emergency department visits for opioid overdose, whereas TBDHU females experienced a rate of emergency department visits for opioid overdose 2.4 times higher than Ontario females (figure 10).

Knowledge gap: Unlike the rest of Ontario, women in TBDHU experienced a higher rate of emergency department visits for opioids than men. The underlying reason for this difference is unknown.

Figure 10. Emergency department visits (rate per 100,000) for opioid overdose by sex, TBDHU vs. Ontario, 2005-2016



Source: National Ambulatory Care Reporting System (NACRS), 2005-2016, Ontario Ministry of Health and Long-Term Care, IntelliHealth Ontario, extracted 2017 June 1

Citation: Ontario Agency for Health Protection and Promotion (Public Health Ontario). Interactive Opioid Tool. Toronto, ON: Queen’s Printer for Ontario; 2017. Available from: <http://www.publichealthontario.ca/en/DataAndAnalytics/Opioids/Opioids.aspx>

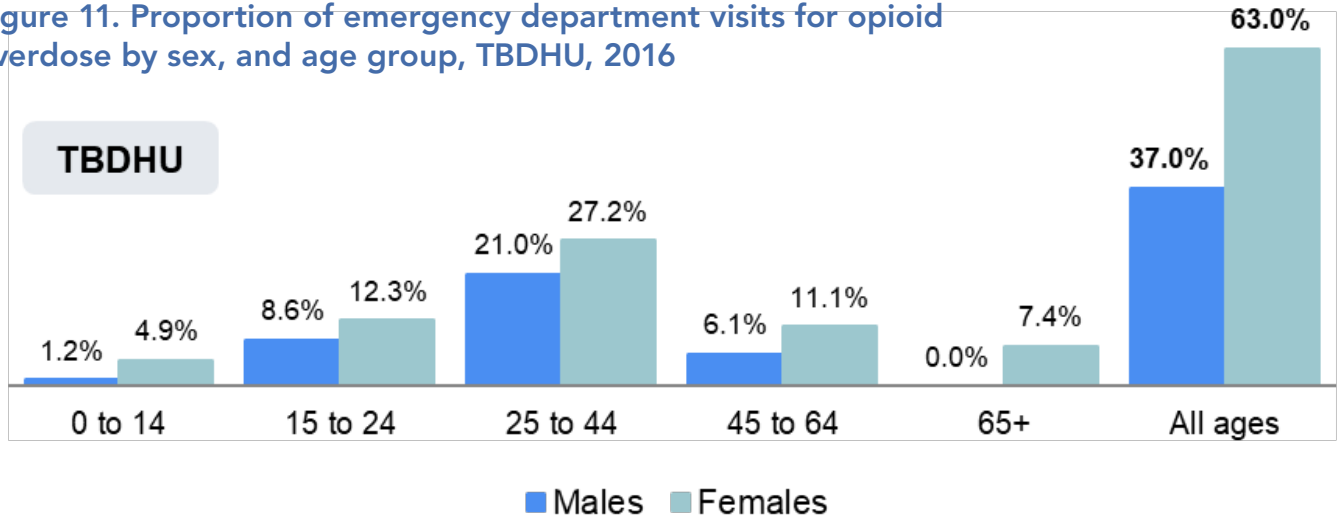
Notes: The rates presented are not standardized to the population; comparisons between geographies and years should be interpreted with caution as the age composition of the populations may differ.

A Snapshot of the Most Recent Years

Who

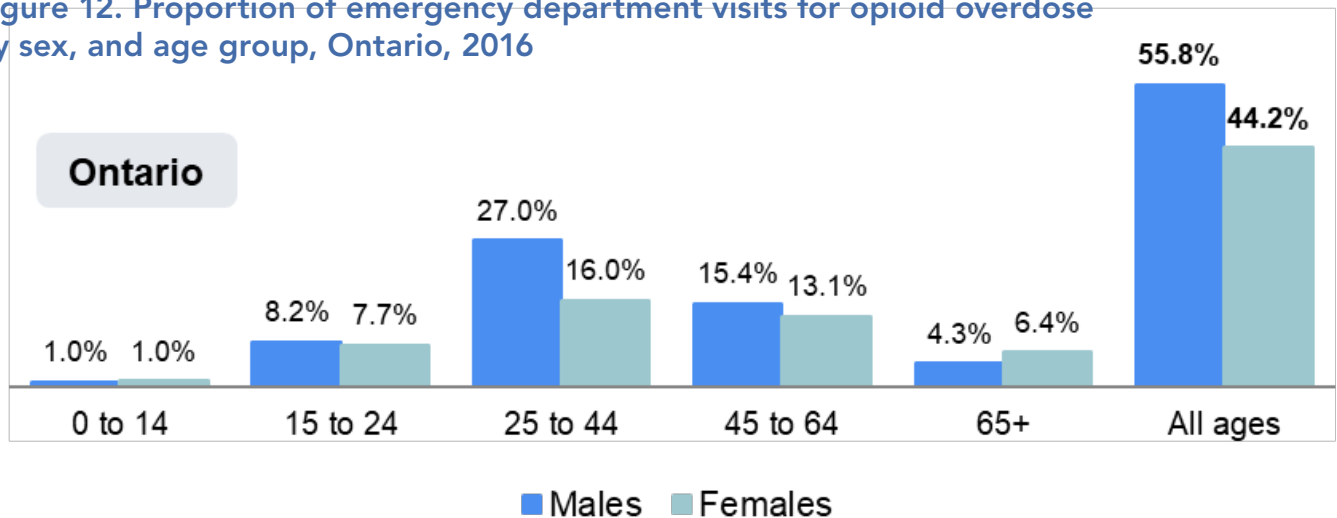
In 2016, females aged 25 to 44 years represented the highest proportion (27.2 percent) of emergency department visits for opioid overdose in TBDHU. The next highest proportion of emergency department visits for opioid overdose in TBDHU for both males and females were among those aged 15 to 24 years (8.6 percent and 12.3 percent, respectively).

Figure 11. Proportion of emergency department visits for opioid overdose by sex, and age group, TBDHU, 2016



In comparison, males aged 25 to 44 years represented the highest proportion (27.0 percent) of emergency department visits for opioid overdose in Ontario. The next highest proportion of emergency department visits for opioid overdose in Ontario for both males and females were among those aged 45 to 64 years (15.4 percent and 13.1 percent, respectively).

Figure 12. Proportion of emergency department visits for opioid overdose by sex, and age group, Ontario, 2016



Source: National Ambulatory Care Reporting System (NACRS), 2016, Ontario Ministry of Health and Long-Term Care, IntelliHealth Ontario, extracted 2017 June 1

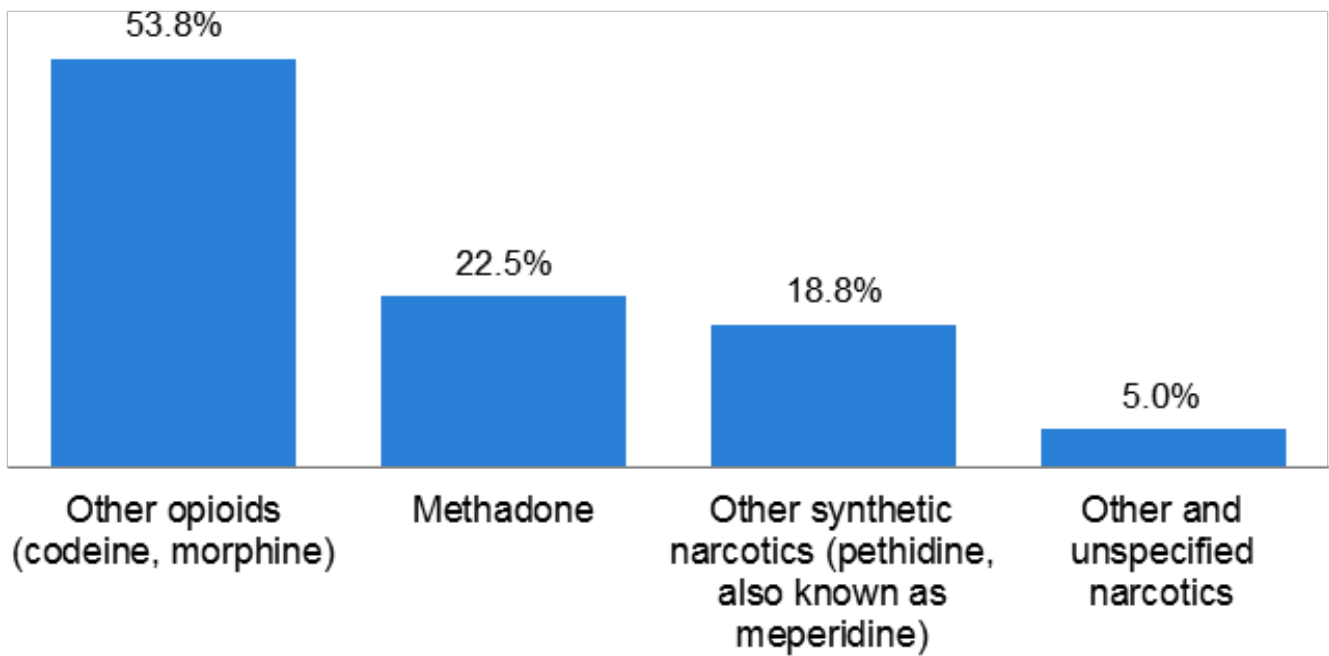
Citation: Ontario Agency for Health Protection and Promotion (Public Health Ontario). Interactive Opioid Tool. Toronto, ON: Queen’s Printer for Ontario; 2017. Available from: <http://www.publichealthontario.ca/en/DataAndAnalytics/Opioids/Opioids.aspx>

What

In 2016, slightly more than half (53.8 percent) of emergency department visits for opioid overdose in TBDHU were due to “other opioids”, including

codeine and morphine, followed by 22.5 percent of emergency department visits for opioid overdose due to methadone.

Figure 13. Proportion of emergency department visits for opioid overdose by type of opioid, TBDHU, 2016



Source: National Ambulatory Care Reporting System (NACRS), 2016, Ontario Ministry of Health and Long-Term Care, IntelliHealth Ontario, extracted 2018 January 15

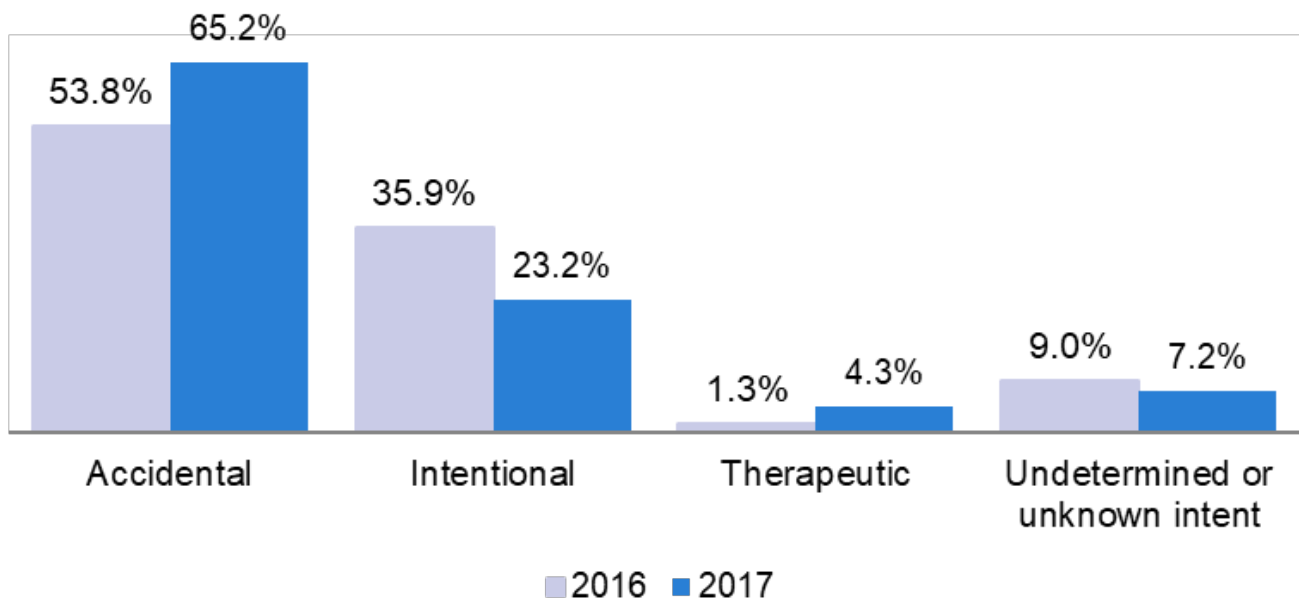


Why

In 2016, unintentional overdoses represented the highest proportion (53.8 percent) of emergency department visits for opioid overdose.

This increased to 65.2 percent in 2017 [subject to change].

Figure 14. Percentage of emergency department visits for opioid overdose by type, TBDHU, 2016



Source (2016): National Ambulatory Care Reporting System (NACRS), 2016, Ontario Ministry of Health and Long-Term Care, IntelliHealth Ontario, extracted 2018 January 15

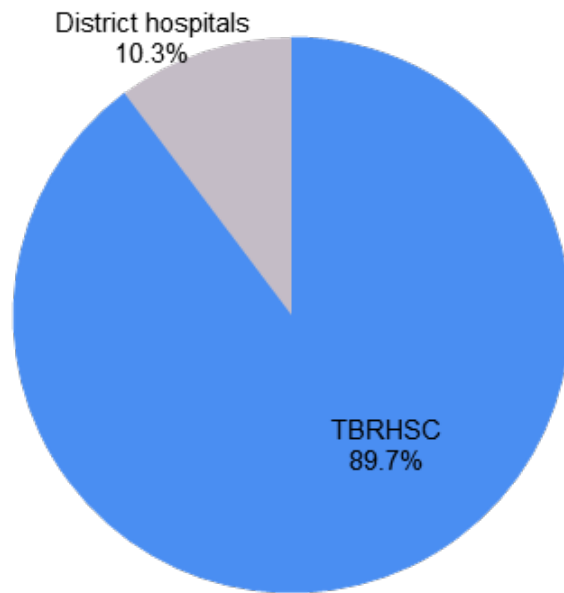
Source (2017): NACRS, Canadian Institute for Health Information (CIHI), extracted January 17, 2017



Where

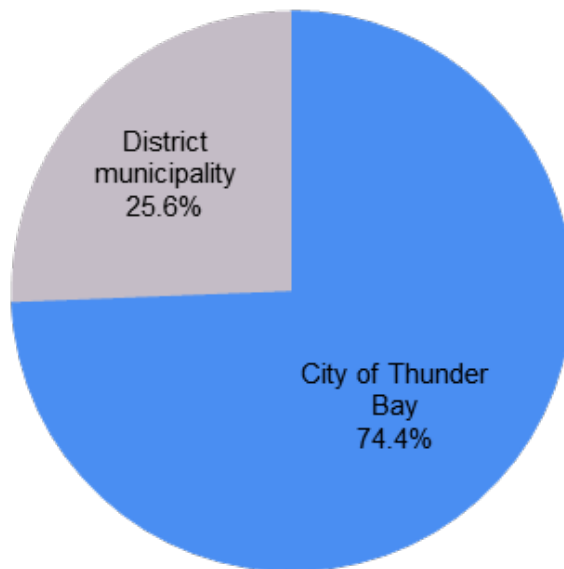
In 2016, the majority (89.7 percent) of emergency department visits for opioid overdose in TBDHU presented at the Thunder Bay Regional Health Sciences Centre.

Figure 15. Proportion of emergency department visits for opioid overdose by hospital, TBDHU, 2016



Also in 2016, the majority (74.4 percent) of emergency department visits for opioid overdose in TBDHU were among residents of the city of Thunder Bay.

Figure 16. Proportion of emergency department visits for opioid overdose by patient municipality, TBDHU, 2016



Source: National Ambulatory Care Reporting System (NACRS), 2016, Ontario Ministry of Health and Long-Term Care, IntelliHealth Ontario, extracted 2018 January 15

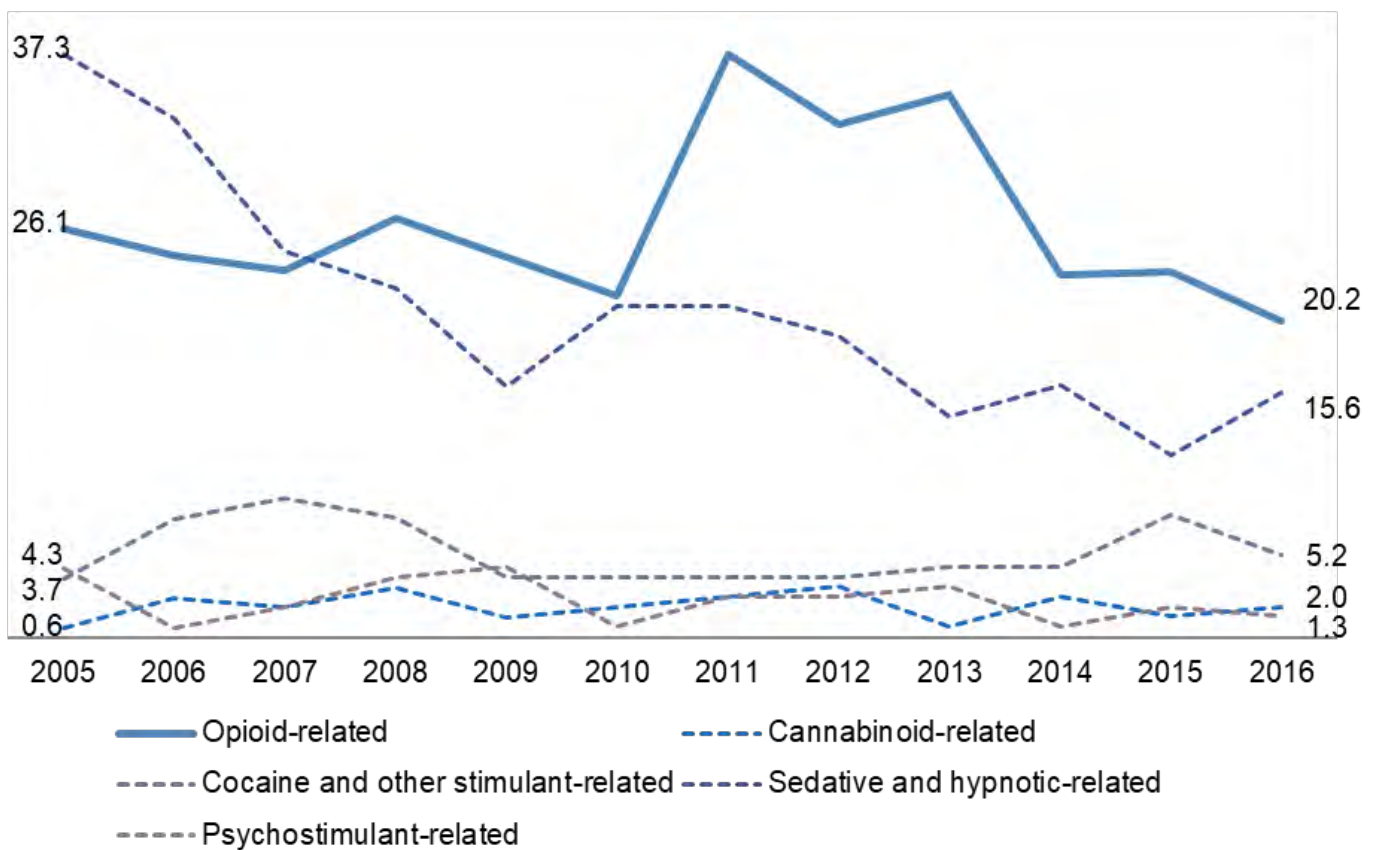
Hospital Admissions

Trends

Over the past 12 years, the crude rate of hospital admissions for drug overdose due to opioids increased most noticeably during 2011 to 2013. In 2016, opioids represented the highest rate (and proportion; 50.0 percent in 2016) of hospital

admissions for drug overdose in TBDHU compared to other substances; although they were only slightly higher than sedative and hypnotic-related overdose hospital admissions.

Figure 17. Rate of hospital admissions (per 100,000) for drug overdose by substance, TBDHU, 2005-2016

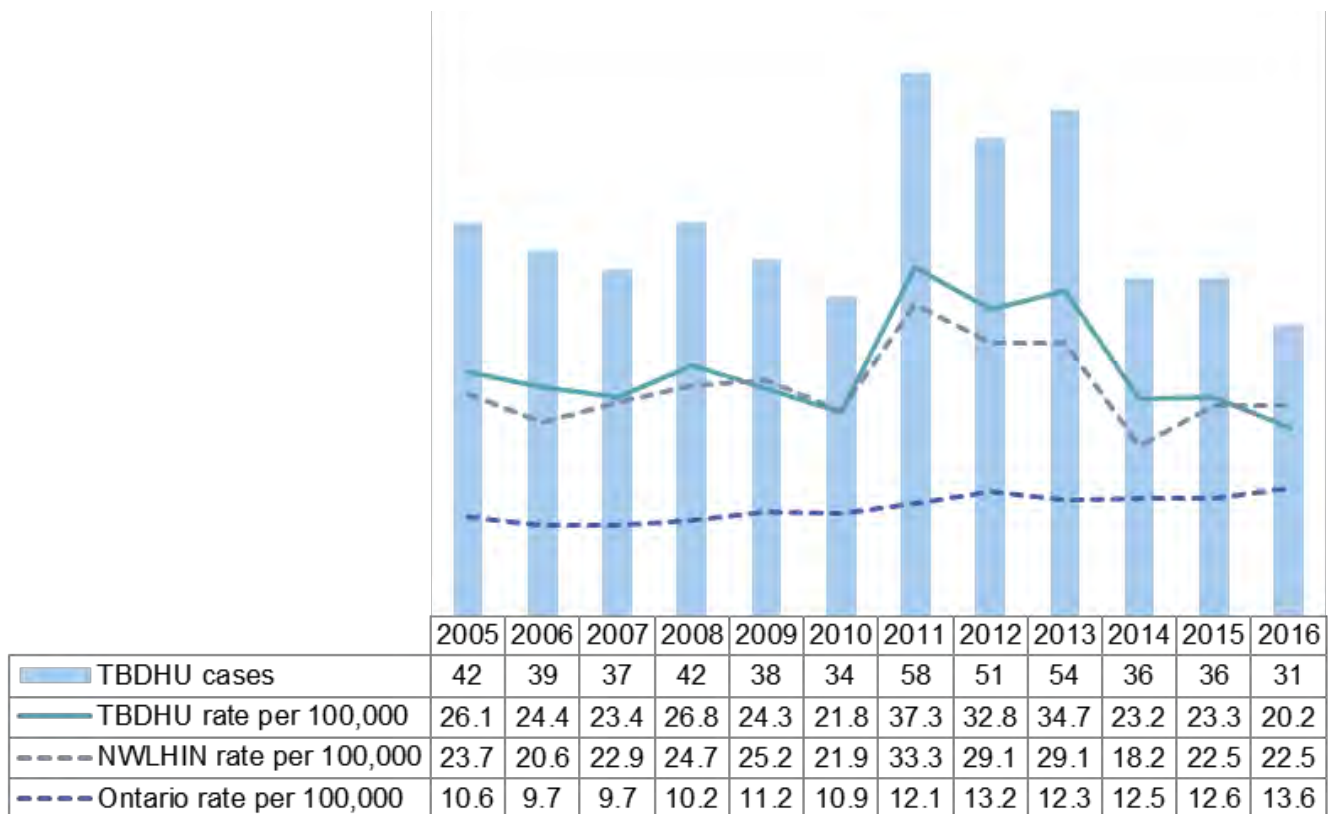


Source: Discharge Abstract Database (DAD), 2005-2016, Ontario Ministry of Health and Long-Term Care, IntelliHealth Ontario, extracted 2017 January 29

During 2005 to 2016, TBDHU experienced 498 hospital admissions for opioid overdose; this equates to an average of 41 admissions per year. From 2011-2013, TBDHU experienced its highest rates of hospital admissions for opioid overdose – 37.3 per 100,000 in 2011, 32.8 per 100,000 in 2012, and 34.7 per 100,000 in 2013. In the most recent full year of data for 2016, TBDHU had a crude rate of hospital admissions for opioid overdose of 20.2 per 100,000 people. The crude rate of hospitalization for opioid overdose in TBDHU was approximately 1.5 times higher than the Ontario rate for 2016 (13.6 per 100,000).

The crude rate of hospitalization for opioid overdose in TBDHU was approximately 1.5 times higher than the Ontario rate for 2016 (13.6 per 100,000).

Figure 18. Hospital admissions for opioid overdose, 2005-2016



Source: Discharge Abstract Database (DAD), 2005-2016, Ontario Ministry of Health and Long-Term Care, IntelliHealth Ontario, extracted 2017 June 1

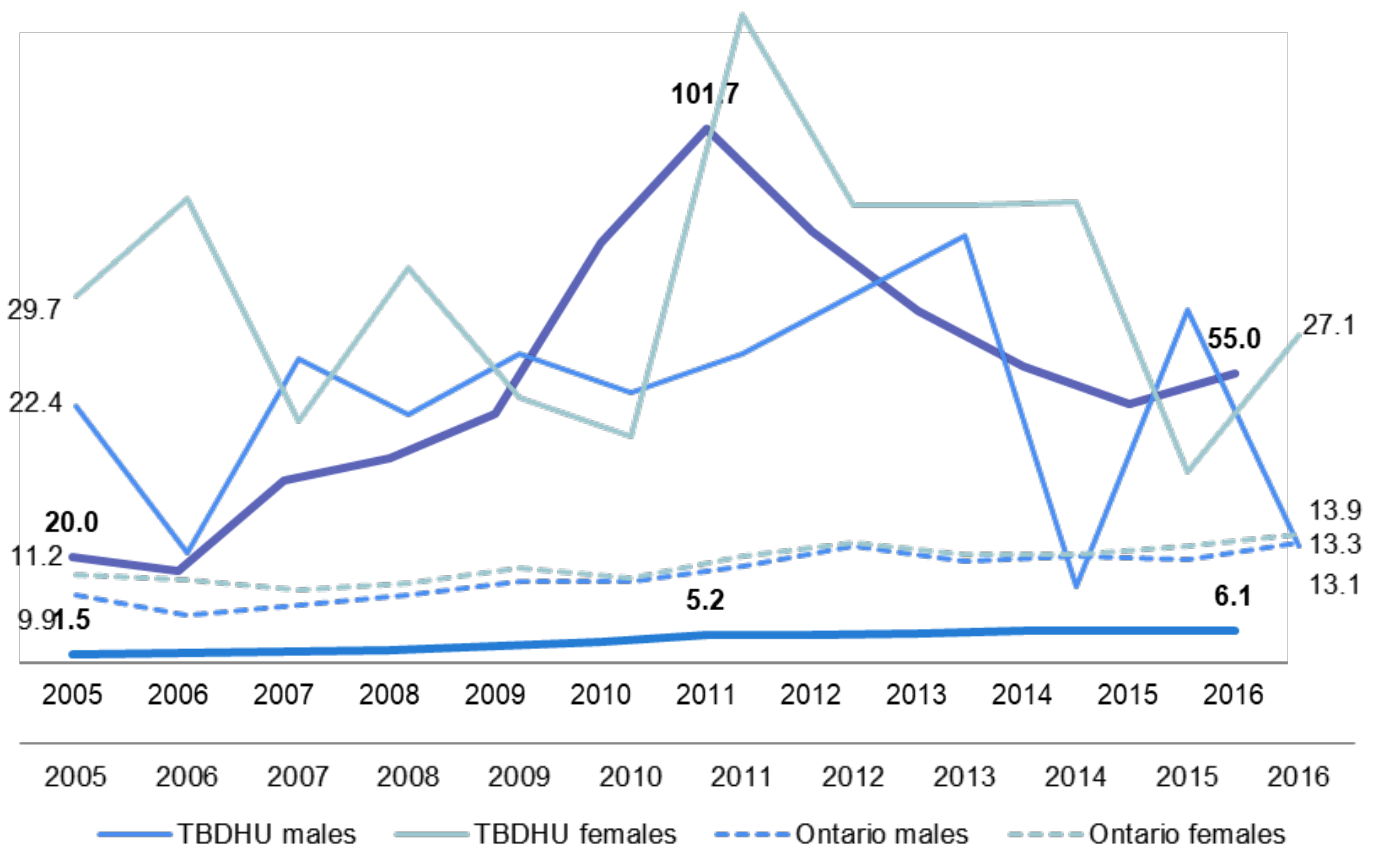
Citation: Ontario Agency for Health Protection and Promotion (Public Health Ontario). Interactive Opioid Tool. Toronto, ON: Queen’s Printer for Ontario; 2017. Available from: <http://www.publichealthontario.ca/en/DataAndAnalytics/Opioids/Opioids.aspx>

Notes: The rates presented are not standardized to the population; comparisons between geographies and years should be interpreted with caution as the age composition of the populations may differ.

In 2011, females in TBDHU experienced a sharp increase in their crude rate of hospital admissions for opioid overdose. This was the highest rate they experienced (48.4 per 100,000), as female rates decreased somewhat until 2016. TBDHU males experienced their highest rate of hospital admissions for opioid overdose in 2013 (33.7 per 100,000). In 2016, TBDHU and Ontario males had similar rates of hospital admissions for opioid overdose, whereas TBDHU females experienced a 1.9 times higher rate of hospital admissions for opioid overdose than Ontario females. The underlying cause of this discrepancy is unknown.

Knowledge gap: Ontario males had similar rates of hospital admissions for opioid overdose, whereas TBDHU females experienced a 1.9 times higher rate of hospital admissions for opioid overdose than Ontario females. The underlying cause of this discrepancy is unknown.

Figure 19. Hospital admissions (rate per 100,000) for opioid overdose by sex, TBDHU vs. Ontario, 2005-2016



Source: Discharge Abstract Database (DAD), 2005-2016, Ontario Ministry of Health and Long-Term Care, IntelliHealth Ontario, extracted 2017 June 1

Citation: Ontario Agency for Health Protection and Promotion (Public Health Ontario). Interactive Opioid Tool. Toronto, ON: Queen's Printer for Ontario; 2017. Available from: <http://www.publichealthontario.ca/en/DataAndAnalytics/Opioids/Opioids.aspx>

Notes: The rates presented are not standardized to the population; comparisons between geographies and years should be interpreted with caution as the age composition of the populations may differ.

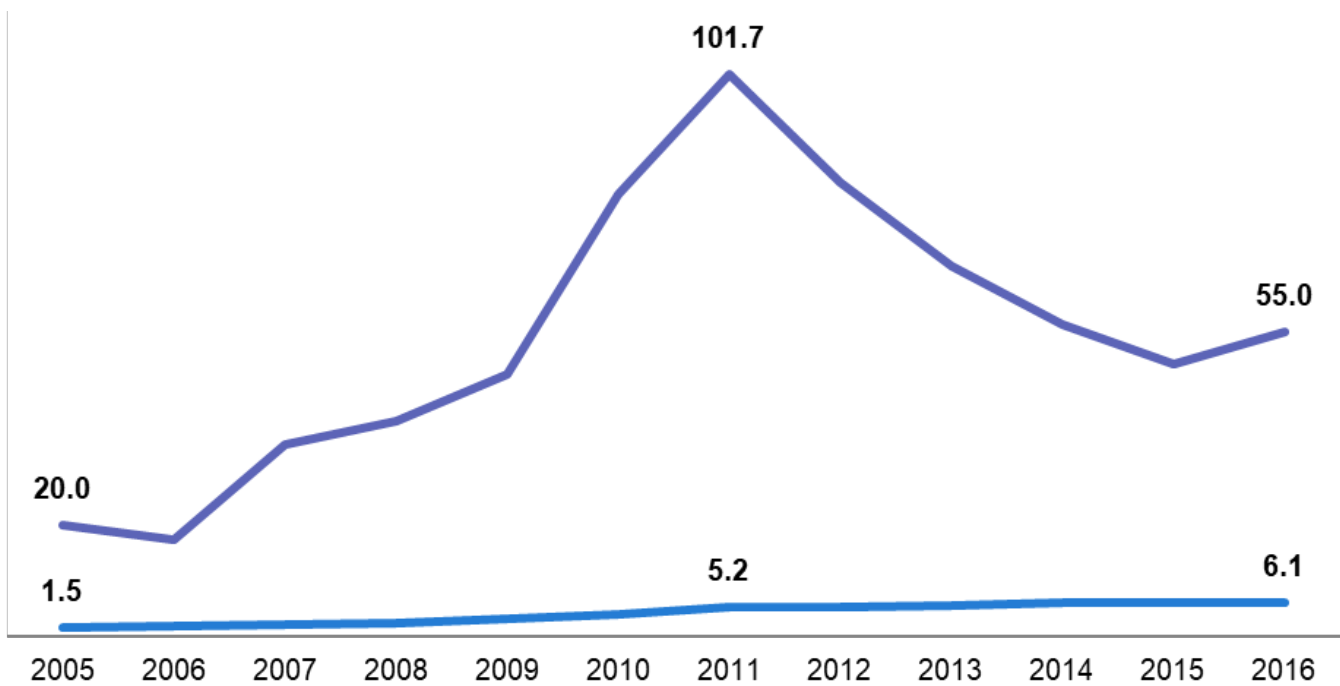
Neonatal Abstinence Syndrome

Neonatal Abstinence Syndrome (NAS) occurs in newborn babies who were exposed to opioids while in utero. In 2017, 4.0 percent of mothers that gave birth in Thunder Bay District reported exposure to opioids during pregnancy (44). These data do not include mothers who gave birth with an on-reserve residence.

The highest rate of NAS hospital admissions occurred in 2011 among babies born in TBDHU (101.7 per 1,000 live births). Rates have declined since then in TBDHU, yet still remain higher than Ontario.

The highest rate of NAS hospital admissions occurred in 2011 among babies born in TBDHU (101.7 per 1,000 live births). Rates have declined since then in TBDHU, yet still remain higher than Ontario.

Figure 20. Hospital admissions (per 1,000 live births) for NAS, TBDHU and Ontario, 2005-2016



Blue=TBDHU; Purple=Ontario

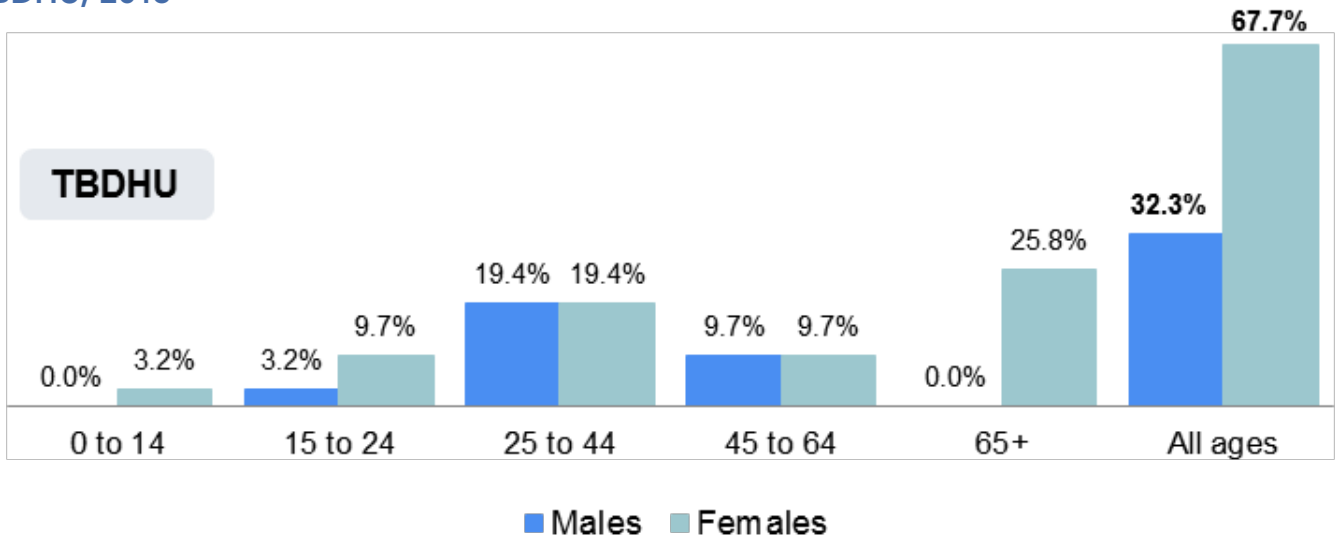
Source: Discharge Abstract Database (DAD), 2005-2016, Ontario Ministry of Health and Long-Term Care, IntelliHealth Ontario, extracted 2018 February 14

A Snapshot of the Most Recent Years

Who

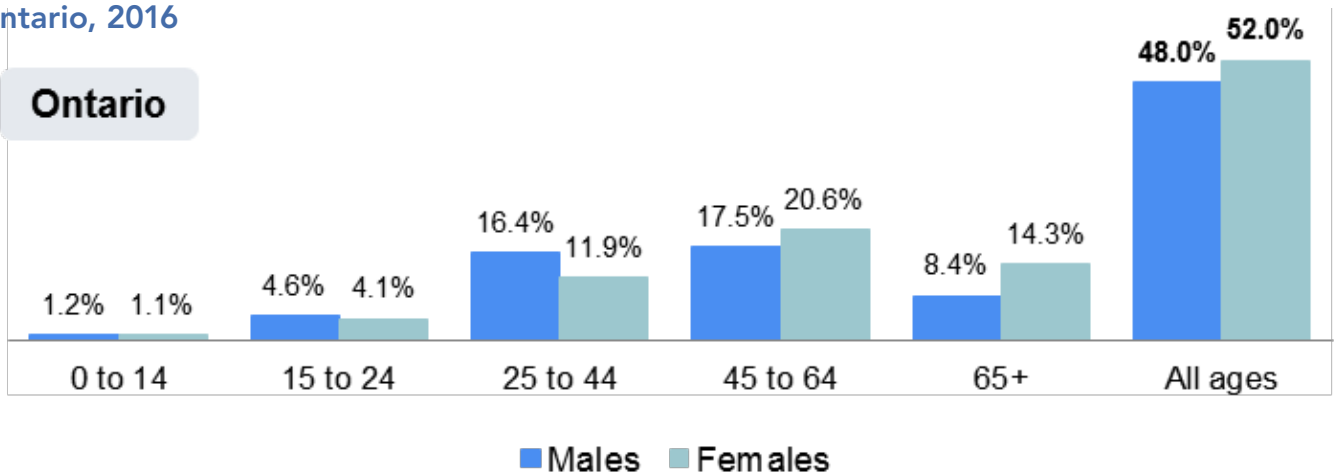
In 2016, females aged 65 years and above represented the highest proportion (25.8 percent) of hospital admissions for opioid overdose in TBDHU. Among males, the highest proportion of hospital admissions for opioid overdose was among 25 to 44 year-olds.

Figure 21. Proportion of hospital admissions for opioid overdose by sex and age group, TBDHU, 2016



In comparison, females aged 45 to 64 years represented the highest proportion (20.6 percent) of hospital admissions for opioid overdose in Ontario. Among males, the highest proportion of hospital admissions for opioid overdose in Ontario were also among those aged 45 to 64 years (17.5 percent).

Figure 22. Proportion of hospital admissions for opioid overdose by sex and age group, Ontario, 2016



Source: Discharge Abstract Database (DAD), 2005-2016, Ontario Ministry of Health and Long-Term Care, IntelliHealth Ontario, extracted 2017 June 1

Citation: Ontario Agency for Health Protection and Promotion (Public Health Ontario). Interactive Opioid Tool. Toronto, ON: Queen’s Printer for Ontario; 2017. Available from: <http://www.publichealthontario.ca/en/DataAndAnalytics/Opioids/Opioids.aspx>

Opioid-Related Mortality

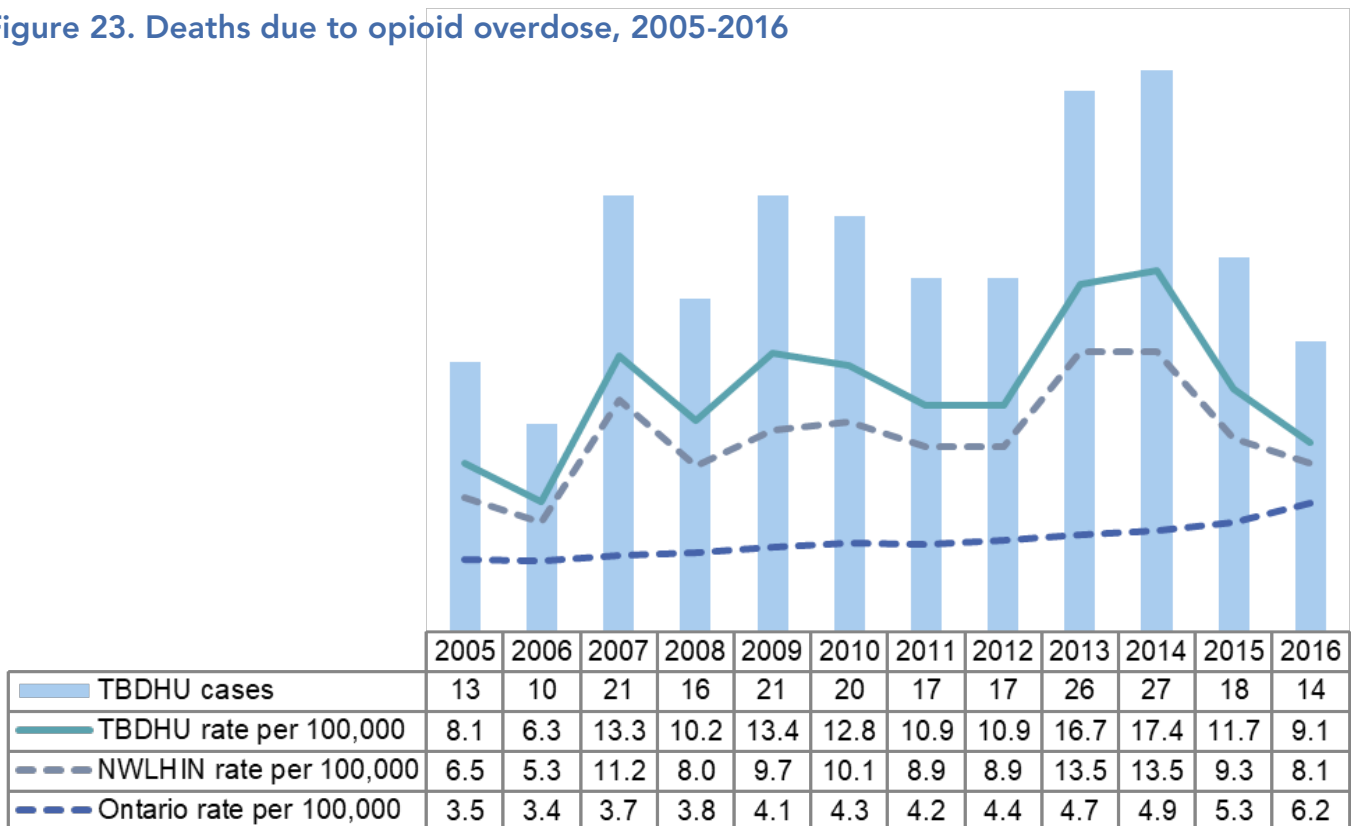
Trends

Over the past 12 years, 220 deaths attributed to opioid overdose occurred in TBDHU. During these years, TBDHU had higher crude rates of deaths from opioid overdose than Ontario. TBDHU’s rate increased noticeably in 2007 to 13.3 deaths from opioid overdose per 100,000 people (21 cases). The rate increased noticeably again in 2013 to 18.8 deaths from opioid overdose per 100,000 people (26 cases), followed by the highest rate of death from opioid overdose in 2014 -17.5 per 100,000 people (27 cases).

Over the past 12 years, 220 deaths attributed to opioid overdose occurred in TBDHU. During these years, TBDHU had higher crude rates of deaths from opioid overdose than Ontario.

It is important to note that death data for 2015 and 2016 are still being updated, so the decrease in TBDHU’s death rates during these years should be interpreted with caution.

Figure 23. Deaths due to opioid overdose, 2005-2016



Source: Ontario Opioid-Related Death database, 2005-2016 (update), Office of the Chief Coroner for Ontario, received 2017 October 25

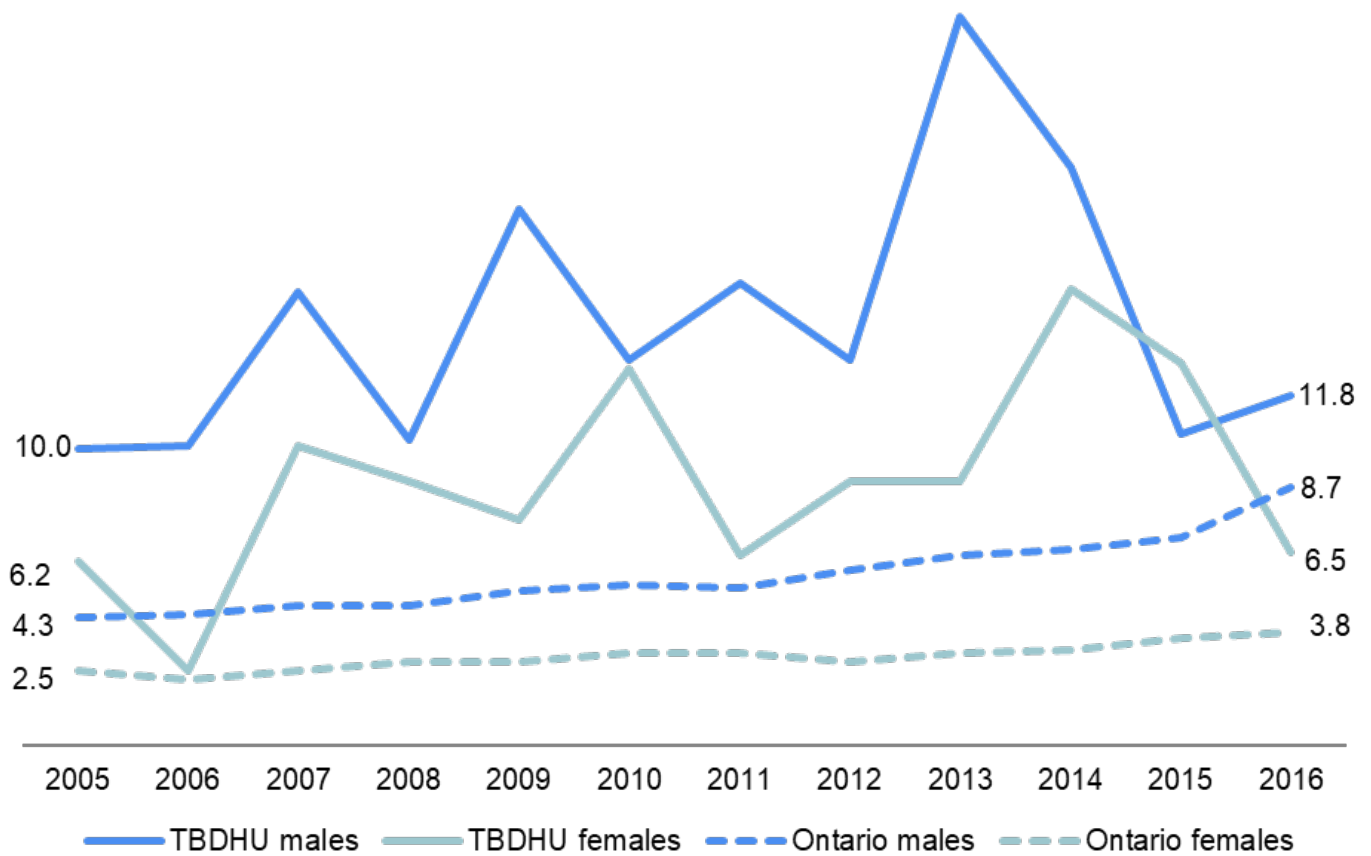
Citation: Ontario Agency for Health Protection and Promotion (Public Health Ontario). Interactive Opioid Tool. Toronto, ON: Queen’s Printer for Ontario; 2017. Available from: <http://www.publichealthontario.ca/en/DataAndAnalytics/Opioids/Opioids.aspx>

Notes: Death data for 2015 and 2016 are preliminary and subject to change. The rates presented are not standardized to the population; comparisons between geographies and years should be interpreted with caution as the age composition of the populations may differ.

The highest rate of deaths due to opioid overdose for TBDHU males was in 2013 (24.6 per 100,000), and females in 2014 (15.4 per 100,000). TBDHU males experienced higher rates of deaths due to opioid poisonings than females for most years. Also, compared to Ontario, TBDHU males and females experienced higher rates of deaths due to opioid poisonings for most years.

It is important to note that death data for 2015 and 2016 are still being updated, so the sex-specific death rates during these years should be interpreted with caution.

Figure 24. Deaths (rate per 100,000) due to opioid overdose by sex, TBDHU vs. Ontario, 2005-2016



Source: Ontario Opioid-Related Death database, 2005-2016 (update), Office of the Chief Coroner for Ontario, received 2017 October 25

Citation: Ontario Agency for Health Protection and Promotion (Public Health Ontario). Interactive Opioid Tool. Toronto, ON: Queen’s Printer for Ontario; 2017. Available from: <http://www.publichealthontario.ca/en/DataAndAnalytics/Opioids/Opioids.aspx>

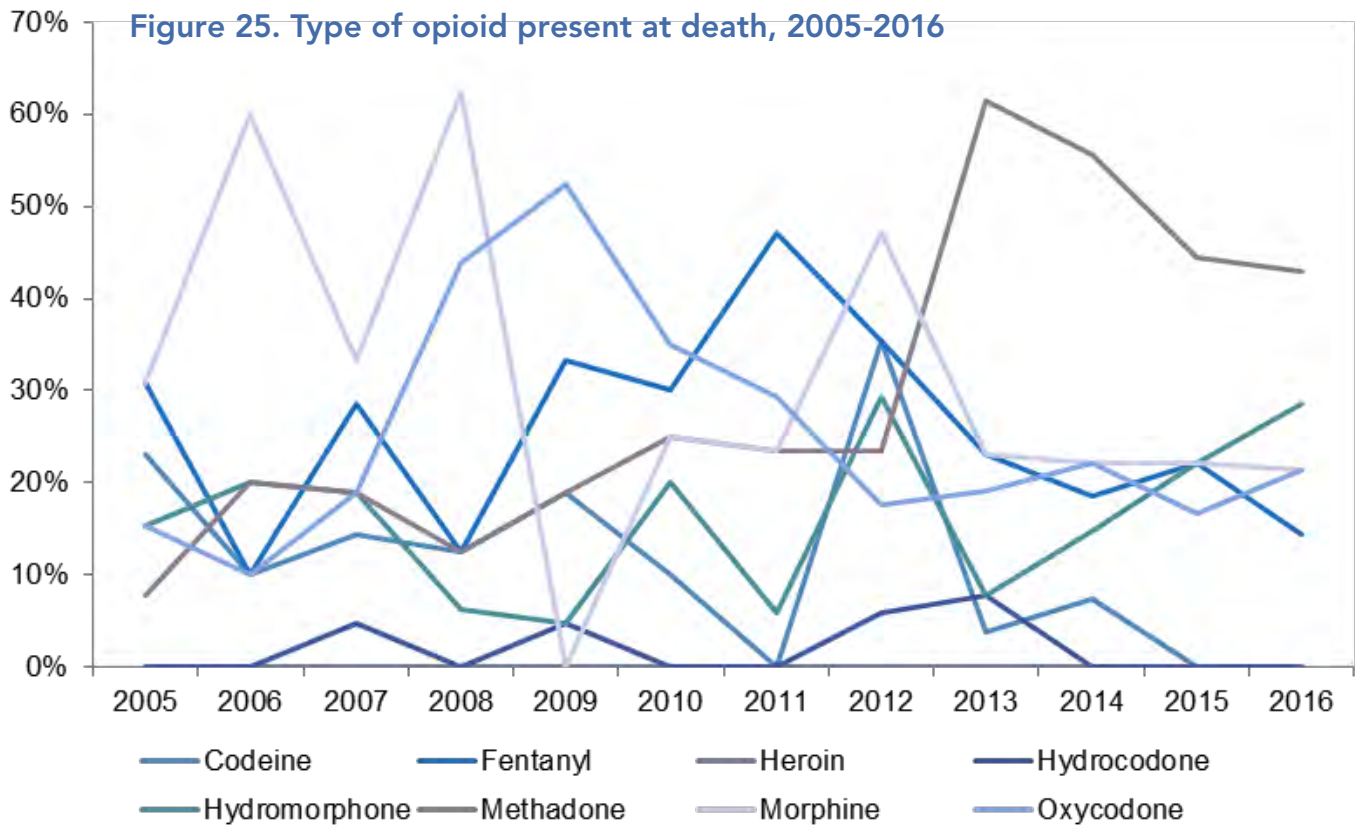
Notes: Death data for 2015 and 2016 are preliminary and subject to change. The rates presented are not standardized to the population; comparisons between geographies and years should be interpreted with caution as the age composition of the populations may differ.

The type of opioid present at death is expressed as a percentage of the total number of deaths from opioid overdose (figure 25). Drugs present at time of death may not be the cause of death, and drugs for which testing is not currently available in Ontario are excluded.

In Ontario, oxycodone was the most commonly detected opioid at death for most years, with fentanyl leading in 2014-2016. This is substantially different from the experience in TBDHU: from 2012-2016, methadone was the leading opioid present at death for deaths from opioid overdose. Prior to 2012, morphine, oxycodone, or fentanyl were the most commonly detected opioids at death for deaths from opioid overdose in TBDHU. Heroin has not been detected in opioid overdose deaths in TBDHU.

Knowledge gap: Based on data from the Interactive Opioid Tool, whether or not a detected drug contributed to mortality is unknown.

In Ontario, oxycodone was the most commonly detected opioid at death for most years, with fentanyl leading in 2014-2016. This is substantially different from the experience in TBDHU: from 2012-2016, methadone was the leading opioid present at death for deaths from opioid overdose.



Source: Ontario Opioid-Related Death database, 2005-2016 (update), Office of the Chief Coroner for Ontario, received 2017 October 25
Citation: Ontario Agency for Health Protection and Promotion (Public Health Ontario). Interactive Opioid Tool. Toronto, ON: Queen’s Printer for Ontario; 2017. Available from: <http://www.publichealthontario.ca/en/DataAndAnalytics/Opioids/Opioids.aspx>
Notes: Death data for 2015 and 2016 are preliminary and subject to change.

Combined use of alcohol with opioids can lead to increased sedation and increased risk of opioid overdose. In Ontario, rising rates of opioid-related deaths have primarily been driven by accidental deaths that do not involve alcohol. Despite this, the rates of opioid-related deaths involving alcohol more than doubled between 1993 and 2013. By 2013, 22% of opioid-related deaths in Ontario involved alcohol (45).

Knowledge gap: Based on data from the Interactive Opioid Tool, the role of alcohol in opioid related mortality in TBDHU is unknown.

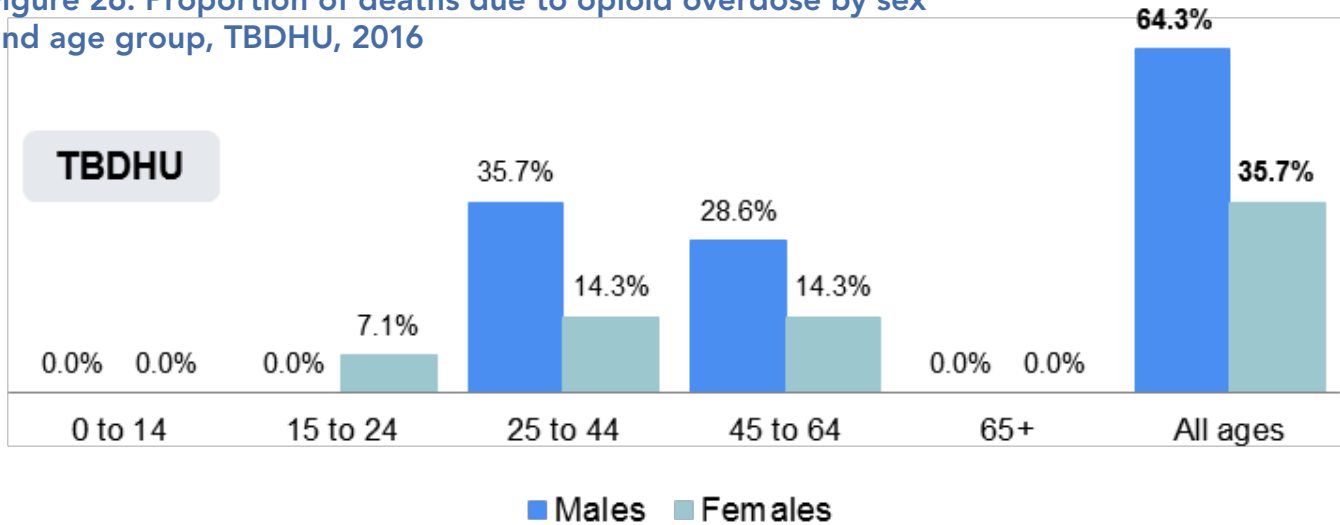


A Snapshot of the Most Recent Years

Who

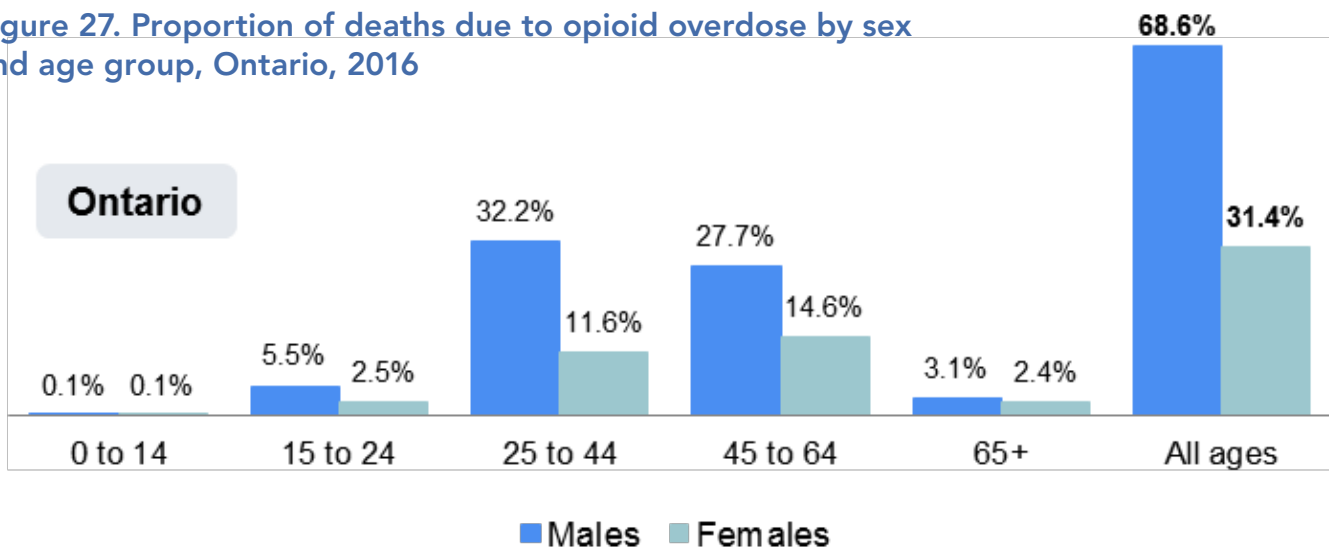
In 2016, males aged 25 to 44 years represented the highest proportion (35.7 percent) of deaths due to opioid overdose in TBDHU. The next highest proportion of deaths due to opioid overdose in TBDHU was among males aged 45 to 64 years (28.6 percent) (figure 26).

Figure 26. Proportion of deaths due to opioid overdose by sex and age group, TBDHU, 2016



Similarly, males aged 25 to 44 years represented the highest proportion (32.2 percent) of deaths due to opioid overdose in Ontario. The next highest proportion of deaths due to opioid overdose in Ontario was among males aged 45 to 64 years (27.7 percent) (figure 27).

Figure 27. Proportion of deaths due to opioid overdose by sex and age group, Ontario, 2016



Source: Ontario Opioid-Related Death database, 2005-2016 (update), Office of the Chief Coroner for Ontario, received 2017 October 25

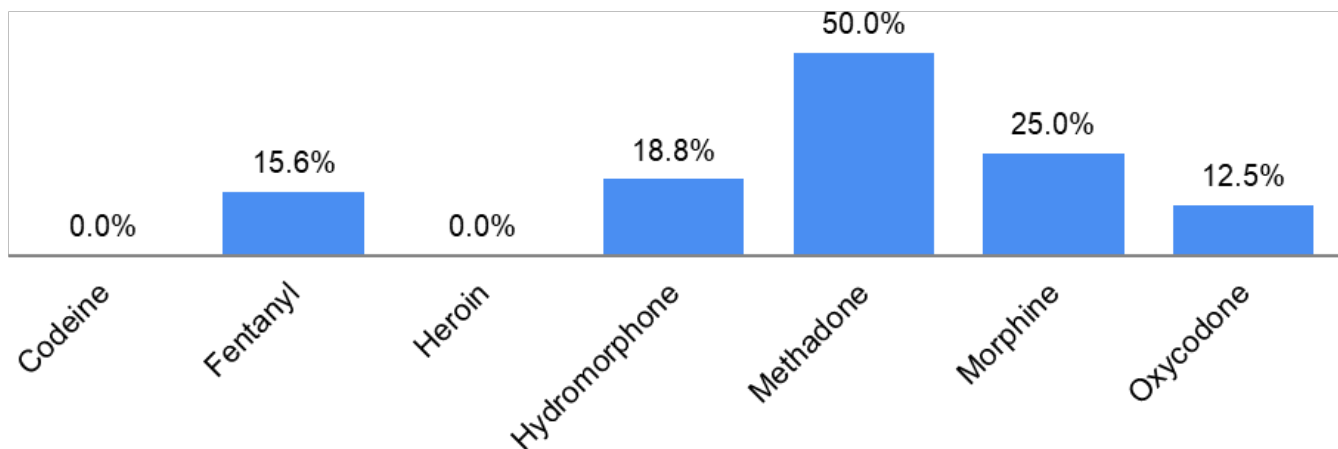
Citation: Ontario Agency for Health Protection and Promotion (Public Health Ontario). Interactive Opioid Tool. Toronto, ON: Queen’s Printer for Ontario; 2017. Available from: <http://www.publichealthontario.ca/en/DataAndAnalytics/Opioids/Opioids.aspx>

Notes: Death data for 2016 is preliminary and subject to change.

What

Deaths may occur from a single opioid, or from multiple opioids, in combination with other medications/drugs. The proportions provided for each type of opioid represent deaths where the drug was believed to be a direct contributor to the death, either in isolation, or in combination with another opioid or opioids. As a result, proportions will not add up to 100 percent. In TBDHU, methadone was present in half of deaths due to opioid overdose in 2015-16 (57.1 percent).

Figure 28. Type of opioid present at time of death, TBDHU, 2015-16 combined



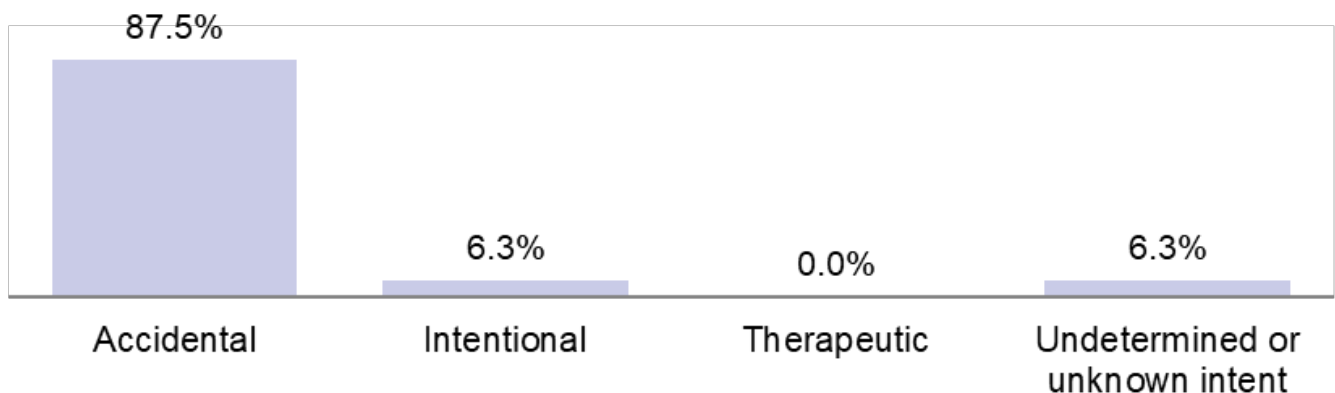
Source: Ontario Opioid-Related Death database, 2005-2016 (update), Office of the Chief Coroner for Ontario, received 2017 October 25

Notes: Death data for 2015 and 2016 are preliminary and subject to change.

Why

In 2015-16, most deaths due to opioid overdose in TBDHU were unintentional (87.5 percent) (figure 29).

Figure 29. Proportion of deaths due to opioid overdose by motivation, TBDHU, 2015-16 combined



Source: Ontario Opioid-Related Death database, 2005-2016 (update), Office of the Chief Coroner for Ontario, received 2017 October 25

Notes: Death data for 2015 and 2016 are preliminary and subject to change.

Snapshot of Opioid-Related Services in Thunder Bay District

This section is not intended to be a comprehensive overview of all substance use and mental health services in Thunder Bay District, but rather a snapshot of some of the ongoing and upcoming interventions.

Opioid-Specific Interventions

Opioid Agonist Therapy

The term “opioid agonist” refers to any chemical that activates the opioid receptor in humans. “Opioid agonist therapy” refers to using one of two long-acting medications—methadone or buprenorphine—to activate the opioid receptors to prevent withdrawal, without resulting in euphoria or a high, for individuals with substance use disorders. Buprenorphine-naloxone is the preferred first-line opioid agonist for the treatment of substance use disorder, because of its superior safety profile compared to methadone (46).

Thunder Bay District has the highest proportion of residents receiving opioid agonist therapy in Ontario: 1 in 50 residents were dispensed an opioid to treat opioid use disorder in 2016 (4). Table 1 summarizes the total amount paid by the Ministry of Health and Long-Term Care to health care providers in the census subdivision of Thunder Bay for the provision of opioid agonist maintenance therapy.

Table 1. Amount paid to physicians for the Opioid Agonist Maintenance Program (OAMP) in the city of Thunder Bay, FY 2012-FY 2016

Measure	FY 2012	FY 2013	FY 2014	FY 2015	FY2016
Amount paid for individuals with OAMP claims	4,273,206	4,804,025	5,095,779	4,768,532	4,348,741

Source: Ministry of Health and Long-term Care, Health Analytics Branch, received 2018 Jan 01

Notes: Includes total for all care provided by OAMP physician during the month that an OAMP claim was billed.

Since 2012, the most common opioid reported on toxicological screen after death was methadone (47). There have been no deaths attributable to buprenorphine in our region (Regional Supervising Coroner, personal communication, 2018).

The most common opioid reported on toxicological screen after death was methadone.

Use of buprenorphine is increasing in the census subdivision of Thunder Bay. Data from the Narcotics Monitoring System indicates that the ratio of individuals taking methadone to buprenorphine has been decreasing since 2012 (table 2). This transition is particularly beneficial to individuals travelling from remote communities for treatment, as methadone treatment often requires relocation to Thunder Bay.

Knowledge gap: It is unknown if methadone-related mortality reflects appropriate access to addiction treatment in our community, over-prescription of opioids for the treatment of substance use disorder, diversion of opioids intended for treatment of substance use disorder, or inadequate supports outside of medication for addiction provided by the current model of care.

Methadone treatment often requires relocation to Thunder Bay.

Table 2. Number of individuals receiving methadone maintenance treatment or buprenorphine, in Thunder Bay, FY 2012-September 2017

Measure	FY 2012 ¹	FY 2013	FY 2014	FY 2015	FY 2016	Q1-Q2 FY 2017
Number of individuals receiving methadone	1,446	1,602	1,628	1,648	1,592	1,446
Number of individuals receiving buprenorphine	99	202	304	473	600	634
Ratio of methadone to buprenorphine	14.6	7.9	5.4	3.5	2.7	2.3

Source: Ministry of Health and Long-term Care, Health Analytics Branch, received 2018 Jan 01

Notes: FY 2012 data does not reflect a full fiscal year. The NMS was activated April 1, 2012 and fully operational May 12, 2012.

Naloxone Distribution for Overdose Prevention

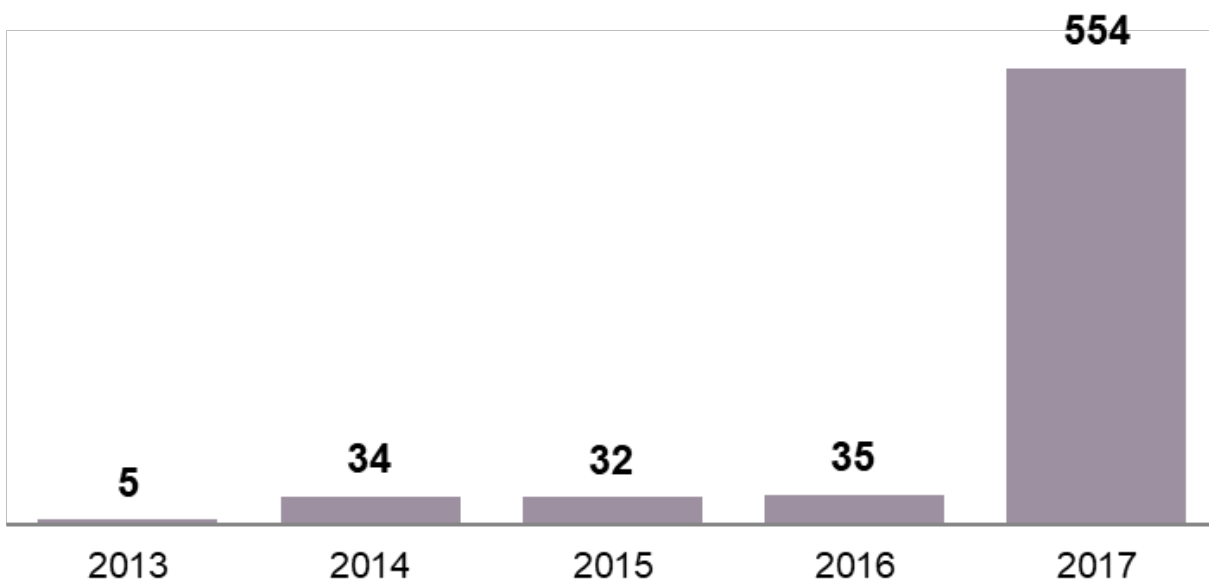
Naloxone is a medication that knocks opioids out of the opioid receptor, reversing the short-term effects of opioids. Naloxone is very safe, but can cause opioid withdrawal symptoms. Naloxone has been available in the city of Thunder Bay since 2013. In that year, Health Canada announced it would provide naloxone, a prescription-only medication, to Ontario through the Ontario Harm Reduction Distribution Program. Thunder Bay became the fourth community in Ontario to launch an overdose prevention program with naloxone that same summer (48). In order to provide this service, the program had to be delivered through existing needle exchange programs, and required a medical directive. Injectable naloxone was the only formulation available, and only individuals who were at risk of overdose could receive training and a naloxone kit. At the time, there was little public awareness around overdose risks and prevention opportunities, and with the narrow focus on who could access training and kits, limited kits were distributed.

Between 2014 and 2016, continued local awareness efforts, partnerships with other organizations, and a growing sense of urgency around the overdose crisis, resulted in more individuals accessing the training and kits.

In June 2016, Health Canada announced that naloxone would no longer be a prescription-only medication (49). By January 2017, the local overdose prevention program was able to order and secure nasal formulation and began to phase out their injectable naloxone supply. Since February 2018, intranasal kits are available to police and fire services.

These policy changes are reflected in the number of naloxone kits distributed by the Superior Points Harm Reduction program (figure 30).

Figure 30. Naloxone Kits Distributed by TBDHU from 2013-2017



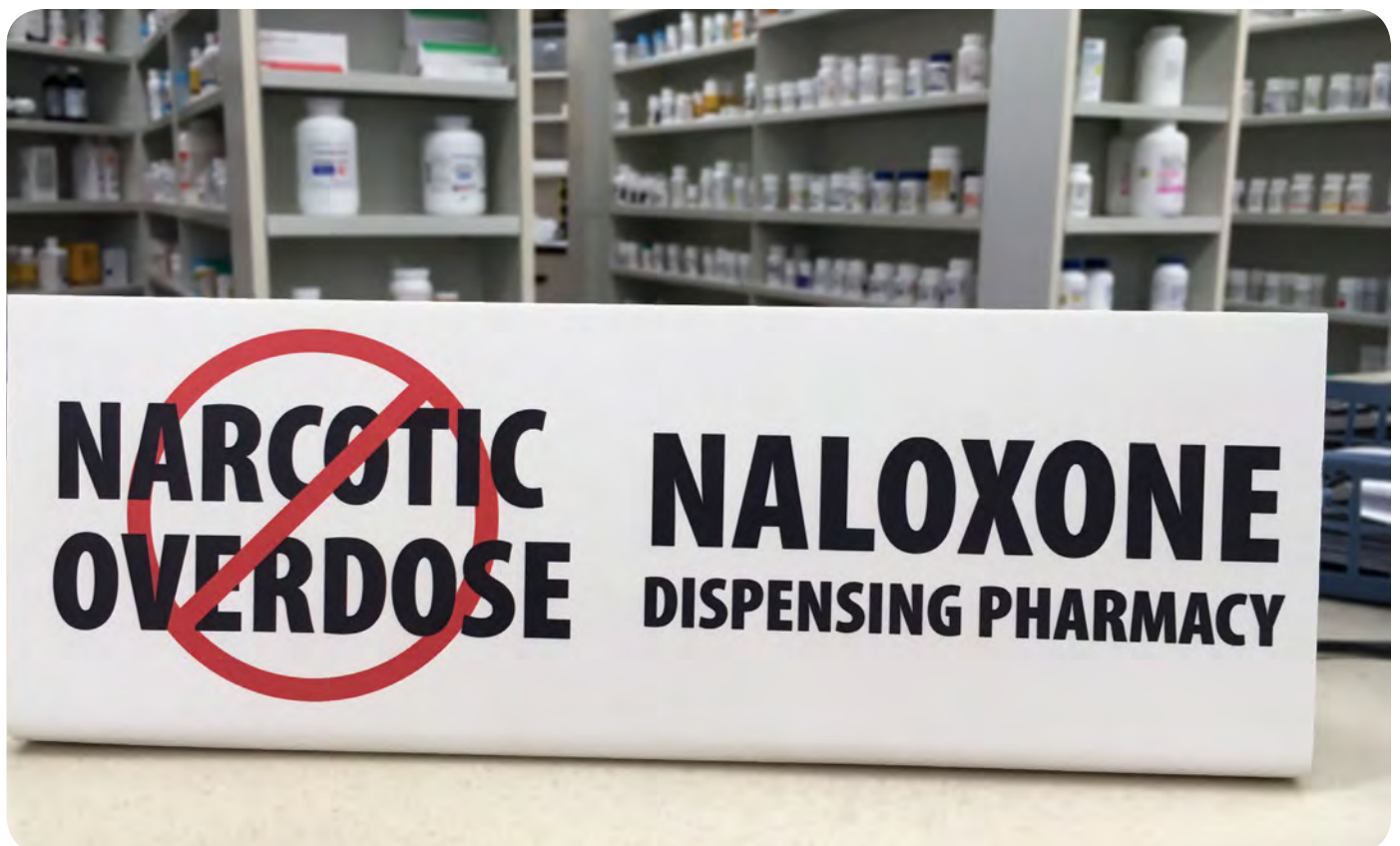
Data Source: Superior Points Harm Reduction Program, TBDHU, 2017

In December 2016, the Ontario Naloxone Pharmacy Program launched, enabling any Ontarian with a valid health card to access an injectable naloxone kit from participating pharmacies, along with training on overdose and how to use the kit. Pharmacies throughout Thunder Bay District, including the city of Thunder Bay, Marathon, Terrace Bay, Nipigon, and Longlac, identified having naloxone kits available in their pharmacy for pick up. Pharmacies carrying a low number in stock indicated that they would be ordering more kits soon.

The Ministry of Health and Long-Term Care Drug Program Branch indicated 563 naloxone kits distributed by the Ontario Naloxone Pharmacy Program by pharmacies in the city of Thunder Bay. Anecdotally, however, many of these kits were distributed to individuals who work with clients at risk of overdose (e.g., crisis workers, first responders), highlighting the lack of effective mechanism for these individuals to acquire naloxone and overdose prevention training.

Opioid Case Management

Opioid case management services are offered as a part of a best practice model in the treatment of opioid use disorder, and are available to individuals using opioids or accessing opioid agonist therapy. These services include supporting individuals to develop skills, navigate the system, advocate for themselves and access needed services. Specialized opioid case manager positions were more recently developed to provide tailored, evidence-informed services for women who are pregnant and/or parenting, and youth. These programs meet individuals where they are at and work to overcome and mitigate the unique barriers they face.



Emerging Solutions

Northwestern Ontario Community of Practice on Trauma-Informed Systems

A regional Community of Practice for trauma-informed care is being organized through the Thunder Bay Drug Strategy, and a steering committee was developed in January 2018. This steering committee is focused on improving the approaches of trauma-informed care for all systems by establishing a regional, cross-sectorial leadership advisory table and implementation team; developing an integrated trauma-informed framework and approach for the Northwest region; and establishing a sustainable mechanism for continuous collaboration, knowledge exchange, and mutual accountability in the region. The steering committee has submitted a proposal for funding from the Ministry of Health and Long-Term Care for the Health and Well-Being Grant Program to support the coordinated development of this region-wide Community of Practice.

Supervised Consumption Services

The city of Thunder Bay participated in a local feasibility study on supervised injection services in 2016. The results indicated that 69 percent of the 200 people who inject drugs who were interviewed were interested in using supervised injection services. There was consensus among community partners that supervised injection services would reduce harms and promote health among individuals who inject drugs. The feasibility study recommended at least two supervised injection sites (39).

Currently NorWest Community Health Centres, in partnership with Dilico Anishinabek Family Care, is working toward a model of care and applying for a federal exemption to the Controlled Drugs and Substances Act to be able to offer these services. Elevate NWO, in partnership with Joseph Esquega Health Centre and Anishnawbe Mushkiki, is also working on the development of a model of care and applying for a federal exemption to be able to offer these services.

Rapid Access to Addiction Medicine Clinic

St. Joseph's Care Group submitted a successful joint proposal with Dilico Anishinabek Family Care, Thunder Bay Counselling, Alpha Court, People Advocating for Change through Empowerment (PACE), NorWest Community Health Centres, and Thunder Bay Regional Health Sciences Centre to the North West LHIN to establish a multi-site Rapid Access to Addiction Medicine (RAAM) Clinic in Thunder Bay. This collaborative response to the opioid crisis has resulted in the creation of a RAAM Implementation Committee, which will oversee the progress of establishing these sites in the city. RAAM clinics provide access to specialized supports in a timely manner to individuals who are living with substance use disorders, with a focus on individuals with opioid use disorder. It is anticipated that these services will begin operating in March 2018.



Core Services

In addition to opioid-specific interventions, response to the opioid crisis requires an accessible core basket of mental health and addiction services, including prevention, promotion, and early intervention services. Only a small proportion of individuals experiencing problems associated with substance use in Canada access appropriate and evidence-informed care. Many people do not get the most appropriate support or treatment they require due to stigma, gaps in service, or inconsistent practices (50). Additionally, the proportion of the overall health budget dedicated to mental health and addiction treatment in Ontario has been declining since the 1980s, from 11.3% in 1979 to 6.5% today (51).

Ontario's Mental Health and Addictions Leadership Advisory Council (MHALAC) was established in 2015 as a means to provide cross-sectoral and expert leadership and advice to the Ontario government to support the province's commitment to improving mental health and addiction services in Ontario. As part of their work, MHALAC identified a core basket of mental health and addiction services that should be available and accessible to all Ontarians. Similarly, Health Quality Ontario has described a set of quality standards for the care of individuals with opioid use disorder, that, when met, indicate that clinicians and organizations are providing high-quality care. Taken together, the core basket of services and the quality standards identify the services required to address the opioid crisis (table 3).

In addition to opioid-specific interventions, response to the opioid crisis requires an accessible core basket of mental health and addiction services, including prevention, promotion, and early intervention services.

Knowledge gap: The extent to which these services are accessible to the individuals who need them most in Thunder Bay District is not well-understood.

Table 3. High-quality services required to address the opioid crisis

MHALAC Core Basket of Services	HQO Quality Standards for Opioid Use Disorder (52)
Prevention, Promotion, and Early Intervention Services: Universal mental health promotion	
Prevention, Promotion, and Early Intervention Services: Universal prevention for mental health and addictions	
Prevention, Promotion, and Early Intervention Services: Targeted prevention services for mental health and addictions	Access to Take-Home Naloxone and to Overdose Education: People with opioid use disorder and their families have immediate access to take-home naloxone and to overdose education.
Prevention, Promotion, and Early Intervention Services: Early intervention and identification	Identifying and Diagnosing Opioid Use Disorder: People at risk of opioid use disorder are asked about their opioid use and are further assessed, as appropriate.
Information, assessment, and referral services	Harm Reduction: People who use opioids have same-day access to harm reduction services. A comprehensive harm reduction approach includes education, safe supplies, infectious disease testing, vaccinations, appropriate referrals, and supervised consumption services.
Counselling and therapy services	
Peer and family capacity building support	Information to Participate in Care: People with opioid use disorder are provided with information to enable them to participate in their care. If their family is involved, they are also provided with this information.
Specialized consultation and assessment	<p>Comprehensive Assessment and Collaborative Care Plan: People diagnosed with or identified as having opioid use disorder have a comprehensive assessment and a care plan developed in collaboration with their care providers.</p> <p>Opioid Agonist Therapy as First-Line Treatment: People with opioid use disorder are informed that treatment that includes opioid agonist therapy is safer and more effective than treatments that do not include opioid agonist therapy.</p> <p>Access to Opioid Agonist Therapy: People diagnosed with or identified as having opioid use disorder have access to opioid agonist therapy as soon as possible, within a maximum of 3 days.</p> <p>Tapering Off of Opioid Agonist Therapy: People who have achieved sustained stability on opioid agonist therapy who wish to taper off are supported in a collaborative slow taper if clinically appropriate.</p>

Table 3. High-quality services required to address the opioid crisis (continued)

MHALAC Core Basket of Services	HQO Quality Standards for Opioid Use Disorder (52)
Crisis services	
Intensive treatment services	<p>Treatment of Opioid Withdrawal Symptoms: People with opioid use disorder who are in moderate or severe withdrawal from opioids are offered relief of their symptoms with buprenorphine/naloxone within 2 hours.</p> <p>Concurrent Mental Health Disorders: People with opioid use disorder who also have a mental health disorder are offered concurrent treatment for their mental health disorder</p>
Housing and other supports	
	<p>Addressing Physical Health, Mental Health, Additional Addiction Treatment Needs, and Social Needs: People with opioid use disorder have integrated, concurrent, culturally safe management of their physical health, mental health, additional addiction treatment needs, and social needs.</p>



Conclusions

This situational assessment summarizes the available epidemiological information about opioid use and harms in Thunder Bay District. Overall, prescription opioid use is more common in Thunder Bay District than the rest of Ontario. Harms relating to opioid use, including overdose requiring EMS response, emergency department visit, or hospital admission, have been increasing since approximately 2007. Rates of emergency department visits and hospitalizations for opioid poisonings in the TBDHU are almost twice the provincial averages. The TBDHU has the highest opioid-related mortality rate in Ontario.

In order to prevent these harms, our community has increased the distribution of naloxone to prevent overdose, continued to provide opioid agonist therapy, and introduced opioid case management. Work is also underway to implement a Community of Practice on trauma-informed systems, supervised consumption services, and a rapid access to addiction medicine clinic. In addition to the unknowns highlighted in the report, a number of gaps remain, especially qualitative information describing the perspectives and experiences of people who use opioids, as well as their providers, families, and friends. There is also limited information specific to smaller communities in Thunder Bay District, as well as limited information on socio-demographic risk factors. Describing the available epidemiological information about opioid use and harms, as well as the gaps in that information, will inform the development of comprehensive opioid strategy for the Thunder Bay District.



References

1. Public Health Ontario. Applying situational assessment skills to address opioid-related harms: Workshop report [Internet]. Toronto, Canada; 2017. Available from: https://www.publichealthontario.ca/en/eRepository/Situational_Assessment_Opioid_Workshop.pdf
2. World Health Organization. ICD-10 Classifications of Mental and Behavioural Disorder: Clinical Descriptions and Diagnostic Guidelines [Internet]. Geneva, Switzerland: World Health Organization; 2016. Available from: <http://apps.who.int/classifications/icd10/browse/2016/en>.
3. Allingham J. Is the fentanyl situation an overdose crisis or a poisoning crisis? CBC News [Internet]. 2017 Sep 4; Available from: <http://www.cbc.ca/news/canada/british-columbia/overdose-fentanyl-1.4269917>
4. Gomes T, Pasricha S, Martins D, Greaves S, Tadrous M, Bandola D, et al. Behind the Prescriptions: A snapshot of opioid use across all Ontarians. Toronto, Canada; 2017.
5. Kolodny A, Courtwright DT, Hwang CS, Kreiner P, Eadie JL, Clark TW, et al. The prescription opioid and heroin crisis: A public health approach to an epidemic of addiction. *Annu Rev Public Health*. 2015;36(1):559–74.
6. Juurlink DN. Rethinking “doing well” on chronic opioid therapy. *CMAJ*. 2017;189(39):E1222–3.
7. Heilig M, Epstein D, Nader M, Shaham Y. Time to connect: Bringing social context into addiction neuroscience. *Nat Rev Neurosci*. 2016;17(9):592–9.
8. Dube SR, Felitti VJ, Dong M, Chapman DP, Giles WH, Anda RF. Childhood abuse, neglect, and household dysfunction and the risk of illicit drug use: The Adverse Childhood Experiences Study. *Pediatrics*. 2003;111(3):564–72.
9. Ross A, Dion J, Cantinotti M, Collin-Vézina D, Paquette L. Impact of residential schooling and of child abuse on substance use problem in Indigenous Peoples. *Addict Behav*. 2015;51:184–92.
10. Felitti V, Anda R, Nordenberg D, Williamson D, Spitz A, Edwards V, et al. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The Adverse Childhood Experiences. *Am J Prev Med*. 1998;14(4):245–58.
11. McCain MN, Mustard JF. Early Years Study: Final Report: Reversing the Real Brain Drain [Internet]. Toronto, Canada: Children’s Secretariat; 1999. 207 p. Available from: <http://earlyyearsstudy.ca/media/uploads/more-files/early-years-study-en.pdf>
12. Dhalla IA, Mamdani MM, Sivilotti MLA, Kopp A, Qureshi O, Juurlink DN. Prescribing of opioid analgesics and related mortality before and after the introduction of long-acting oxycodone. *CMAJ*. 2009;181(12):891–6.
13. Dhalla IA, Persaud N, Juurlink DN. Facing up to the prescription opioid crisis. *BMJ*. 2011;343(23 Aug):d5142.
14. Webster PC. Indigenous Canadians confront prescription opioid misuse. *Lancet*. 2013;381(9876):1447–8.
15. Health Quality Ontario. Starting on Opioids: Opioid prescribing patterns in Ontario by family doctors, surgeons, and dentists, for people starting to take opioids [Internet]. Toronto, Canada; 2018. Available from: <http://www.hqontario.ca/Portals/0/Documents/system-performance/starting-on-opioids-en.pdf>
16. Borgundvaag B, McLeod S, Khuu W, Varner C, Tadrous M, Gomes T. Opioid prescribing and adverse events in opioid-naïve patients treated by emergency physicians versus family physicians: A population-based cohort study. *C Open*. 2018;6(1):E110–7.
17. Madadi P, Hildebrandt D, Lauwers AE, Koren G. Characteristics of opioid-users whose death was related to opioid-toxicity: A population-based study in Ontario, Canada. *PLoS One*. 2013;8(4):e60600.

18. Fischer B, Brissette S, Brochu S, Bruneau J, El-Guebaly N, Noël L, et al. Determinants of overdose incidents among illicit opioid users in 5 Canadian cities. *CMAJ*. 2004;171(3):235–9.
19. Groot E, Kouyoumdjian FG, Kiefer L, Madadi P, Gross J, Prevost B, et al. Drug toxicity deaths after release from incarceration in Ontario, 2006–2013: Review of coroner’s cases. *PLoS One*. 2016;11(7):e0157512.
20. Gomes T, Juurlink D, Moineddin R, Gozdyra P, Dhalla I, Paterson M, et al. Geographical variation in opioid prescribing and opioid-related mortality in Ontario. *Healthc Q*. 2011;14(1):22–4.
21. Gomes T, Juurlink DN. Opioid use and overdose: What we’ve learned in Ontario. *Healthc Q*. 2016;18(4):8–11.
22. Gomes T, Mastorakos A, Paterson M, Sketris I, Caetano P, Greaves S, et al. Changes in the dispensing of opioid medications in Canada following the introduction of a tamper-deterrent formulation of long-acting oxycodone: A time series analysis. *C Open*. 2017;4(4):E800.
23. Cole J, Nelson L. Controversies and carfentanyl: We have much to learn about the present state of opioid poisoning. *Am J Emerg Med*. 2017;35(11):1743–5.
24. World Health Organization. The Ottawa Charter for Health Promotion [Internet]. Ottawa, Canada; 1986. Available from: <http://www.who.int/healthpromotion/conferences/previous/ottawa/en/>
25. Statistics Canada. Thunder Bay, DIS [Census division], Ontario and Ontario [Province] Census Profile [Internet]. Ottawa, Canada; 2017. Available from: <http://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/index.cfm?Lang=E>
26. North West LHIN. North West LHIN Local Environmental Scan [Internet]. 2013. Available from: <http://www.northwestlhin.on.ca/Page.aspx?id=7228>
27. Canadian Mental Health Association. Rural and Northern Community Issues in Mental Health [Internet]. Toronto, Canada; 2009. Available from: https://ontario.cmha.ca/wp-content/uploads/2009/09/cmha_on_rural_northern_mental_health_issues_20090827.pdf
28. Kurdyak P, Zaheer J, Cheng J, Rudoler D, Mulsant BH. Changes in characteristics and practice patterns of Ontario psychiatrists: Implications for access to psychiatrists. *Can J Psychiatry*. 2017;62(1):40–7.
29. Statistics Canada. Health Profile, December 2013 [Internet]. Government of Canada. 2013 [cited 2018 Jan 28]. Available from: <http://www12.statcan.gc.ca/health-sante/82-228/details/page.cfm?Lang=E&Tab=1&Geo1=HR&Code1=3562&Geo2=PR&Code2=35&Data=Rate&SearchText=Thunder Bay District Health Unit&SearchType=Contains&SearchPR=01&B1=All&Custom=&B2=All&B3=All>
30. Lakehead Social Planning Council. Thunder Bay Point in Time Count Data 2016 [Internet]. 2016 Point in Time Count. 2016 [cited 2018 Jan 19]. Available from: <https://www.lspc.ca/2016-point-in-time-count/>
31. Krysowaty B. Building a Better Thunder Bay for All: A Community Action Plan to Reduce Poverty [Internet]. Thunder Bay, Canada; 2017. Available from: <https://www.lspc.ca/wp-content/uploads/2016-Building-a-Better-Thunder-Bay.pdf>
32. Truth and Reconciliation Commission of Canada. Honouring the Truth, Reconciling for the Future: Summary of the Final Report of the Truth and Reconciliation Commission of Canada [Internet]. Winnipeg, Canada; 2015. Available from: http://www.trc.ca/websites/trcinstitution/File/2015/Honouring_the_Truth_Reconciling_for_the_Future_July_23_2015.pdf
33. Marsh TN, Coholic D, Cote-Meek S, Najavits L. Blending Aboriginal and Western healing methods to treat intergenerational trauma with substance use disorder in Aboriginal peoples who live in Northeastern Ontario, Canada. *Harm Reduct J*. 2015;12(14):Online.

34. Nutton J, Fast E. Historical trauma, substance use, and Indigenous peoples: Seven generations of harm from a "Big Event." *Subst Use Misuse*. 2015;50(7):839–47.
35. Jongbloed K, Pearce ME, Pooyak S, Zamar D, Thomas V, Demerais L, et al. The Cedar Project: Mortality among young Indigenous people who use drugs in British Columbia. *CMAJ*. 2017;189(44):E1352–9.
36. Zhu R. *The Community Report on Racism and Discrimination*. Thunder Bay, Canada; 2017.
37. Big-Canoe K, Richmond CAM. Anishinabe youth perceptions about community health: Toward environmental repossession. *Heal Place*. 2014;26:127–35.
38. Millson P, White S. *Ontario I-Track Report: Enhanced Surveillance of Risk Behaviours and Prevalence of HIV and Hepatitis C Among People Who Inject Drugs*. Toronto, Canada; 2016.
39. Kerr T, Mitra S, Krysovaty B, Marshall Z, Olsen C, Rachlis B, et al. *Ontario Integrated Supervised Injection Services Feasibility Study: Study Report: Thunder Bay, ON* [Internet]. Toronto, Canada; 2017. Available from: <http://www.ohtn.on.ca/wp-content/uploads/2017/02/OISIS-Thunder-Bay-Report-Online.pdf>
40. Chevrette L-A. *Snapshot in Time: Risk Factors, Protective Factors and Trends in Crime in Thunder Bay* [Internet]. Thunder Bay, Canada; 2016. Available from: <http://www.thunderbay.ca/Assets/Snapshot+in+time+document.pdf>
41. Olsen C. *Check In 2012-2016: A Closer Look at Substance Use and Related Harms in Thunder Bay*. Thunder Bay, Canada; 2017.
42. Statistics Canada. *Police-Reported Crime Statistics, 2016* [Internet]. Ottawa, Canada; 2017. Available from: <http://www.statcan.gc.ca/daily-quotidien/170724/dq170724b-eng.pdf>
43. Follet K, Piscitelli A, Parkinson M, Munger F. Barriers to calling 911 during overdose emergencies in a Canadian context. *Crit Soc Work* [Internet]. 2014;15(1). Available from: http://www1.uwindsor.ca/criticalsocialwork/barriers_calling_911
44. BORN Ontario. *BORN Information System* [Internet]. Ottawa, Canada; 2017. Available from: <https://www.bornontario.ca/en/born-information-system/>
45. Gomes T, Juurlink DN, Mamdani MM, Paterson JM, Brink W van den. Prevalence and characteristics of opioid-related deaths involving alcohol in Ontario, Canada. *Drug Alcohol Depend* [Internet]. 2017;179:416–23. Available from: [http://www.drugandalcoholdependence.com/article/S0376-8716\(17\)30393-9/abstract](http://www.drugandalcoholdependence.com/article/S0376-8716(17)30393-9/abstract)
46. Bruneau J, Ahamad K, Goyer M-È, Poulin G, Selby P, Fischer B, et al. Management of opioid use disorders: A national clinical practice guideline. *Can Med Assoc J* [Internet]. 2018;190(9):E247–57. Available from: <http://www.cmaj.ca/lookup/doi/10.1503/cmaj.170958>
47. Public Health Ontario. *Opioid-related morbidity and mortality in Ontario* [Internet]. Interactive Opioid Tool. 2017 [cited 2018 Jan 24]. Available from: <https://www.publichealthontario.ca/en/dataandanalytics/pages/opioid.aspx#/drug>
48. Thunder Bay Drug Strategy Steering Committee. *Travelling the Road to Change: Thunder Bay Drug Strategy Community Report* [Internet]. Thunder Bay, Canada; 2013. Available from: <http://www.thunderbay.ca/Assets/City+Government/News+Strategic+Initiatives/docs/Travelling+the+Road+to+Change+2013.pdf>
49. Cressman AM, Mazereeuw G, Guan Q, Jia W, Gomes T, Juurlink DN. Availability of naloxone in Canadian pharmacies: A population-based survey. *C Open*. 2017;5(4):E779–84.

50. Canadian Centre on Substance Use and Addiction. Treatment and Supports [Internet]. ccdus.ca. [cited 2018 Feb 28]. Available from: <http://www.ccdus.ca/Eng/topics/Treatment-and-Supports/Pages/default.aspx>
51. Addictions and Mental Health Ontario. Where Change Happens: Addictions and Mental Health Ontario 2018 Priorities [Internet]. Toronto, Canada; 2018. Available from: http://www.addictionsandmentalhealthontario.ca/uploads/1/8/6/3/18638346/amho_where_change_happens_-_2018_priorities.pdf
52. Health Quality Ontario. Quality Standards: Opioid Use Disorder: Care for People 16 Years of Age and Older [Internet]. Toronto, Canada; 2018. Available from: <http://www.hqontario.ca/portals/0/documents/evidence/quality-standards/qs-opioid-use-disorder-clinician-guide-en.pdf>



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