

Profiles on Health

September 2016

Prescription opioids and population health

Opioids are psychoactive substances derived from the opium poppy, or their synthetic analogues, primarily used in medicine for the treatment of acute and chronic pain resulting from disease, injury or surgery. Other medical uses include control of persistent cough or diarrhea, and the treatment of opioid addiction.

Opioids have a variety of trade, generic and street names, and they come in many forms such as tablets, capsules, syrups, nasal sprays, skin patches and suppositories. Medications that fall within this class include, for example, oxycodone (e.g. OxyContin[®], OxyNEO[®], Percocet[®], Percodan[®]), codeine (e.g. Tylenol No. 2[®], 3[®], 4[®]), morphine (e.g. Doloral 1[®], MS-Contin[®]), hydromorphone, fentanyl, hydrocodone, methadone and buprenorphine [1-3].

The World Health Organization includes selected opioid analgesics among the list of essential medicines for a health-care system, on the basis of efficacious, safe and cost-effective treatment for priority conditions [4]. In Canada, most opioids are available by prescription only, but some pharmaceutical products containing low doses of codeine can be purchased over-the-counter.

Like all medications, opioids have benefits and risks. Opioids can reduce pain and improve function and quality of life – although there is a dearth of evidence on effectiveness of long-term use of opioid medicines in treating chronic pain compared to potential harms [5,6]. Long-term opioid use has been associated with increased risk for opioid dependence and addiction, overdose, fractures, myocardial infarction and sexual dysfunction.

Increasing concerns over physical, mental and social health impacts have identified gaps and opportunities for opioid surveillance which in turn support evidence-informed clinical and public health approaches to understand and prevent opioid misuse, abuse and the associated harms.

In this issue:

- Prescription opioid use in New Brunswick.
- Non-medical use of opioids.
- Physical, mental and social health implications.
- Opportunities for action.

Opioids and pain management

Pain management is one of the most common reasons for seeking health care. Physicians have been increasingly prescribing opioids in Canada and the United States during the past 25 years [7]. The demand for opioid medications is likely to increase over time, given the aging of the population. Seniors typically take more pharmaceutical drugs than younger Canadians because on average they have a



Image courtesy of Centers for Disease Control and Prevention

Key points:

- Opioid therapy can be safe and effective in the treatment of various pain conditions, but taking these narcotics in a manner or for a purpose contrary to that prescribed can lead to addiction, overdose, ill health and death.
- The need to address the problem of chronic pain is the backdrop for expanding use of opioid drugs. However, their long-term use for chronic non-cancer pain remains controversial. Important increases in public drug plan claims for prescription opioids (particularly strong opioids) have been recorded in New Brunswick and across Canada in recent years; the increases were largely in line with the growth rates for all prescription drugs. The provincial drug plan cost for methadone medications for opioid dependence recorded a 10-fold increase during the past decade.
- Much has been written about problematic opioid use, but the evidence base is fragmented. There are insufficient comparative data to clarify the benefits and risks of opioid use to meet population health needs, and there are few systematic measures on the sources, determinants or socio-economic impacts of misused opioids. Where routine and systematic data are available on harms associated with drug use/misuse, there is often overlap between prescription opioids versus other licit and illicit drugs.
- The available data (albeit limited) suggest that the relative burden of prescription opioid use/misuse may be less acute in New Brunswick compared to other parts of Canada. Collaborative efforts are needed to enhance opioid surveillance to inform prevention of associated harms, including pan-Canadian standardized surveillance definitions and statistical reporting, quality toxicology information, and comprehensive evidence-based health-care policy and practice guidelines to improve pain management and patient safety.

higher number of chronic health conditions.

Across Canada, the prevalence of self-reported chronic pain increased considerably during the past decade or so, especially among the older population; most of those experiencing chronic pain also report that the pain interferes with their daily activities [8].

The population of New Brunswick is older than the national average [9]. Concurrently, according to results from the Canadian Community Health Survey, the percentage of New Brunswickers reporting limitations in their activities due

to pain is significantly higher than the national average (16.8 per cent versus 14.8 per cent in 2013–2014) [10].

The difference is largely attributable to differences in the population age structure. Only among adults 45 to 64 is the rate higher in New Brunswick than Canada; the rate among seniors and the total age-adjusted rate are not statistically different from the respective national average (Figure 1) [11].

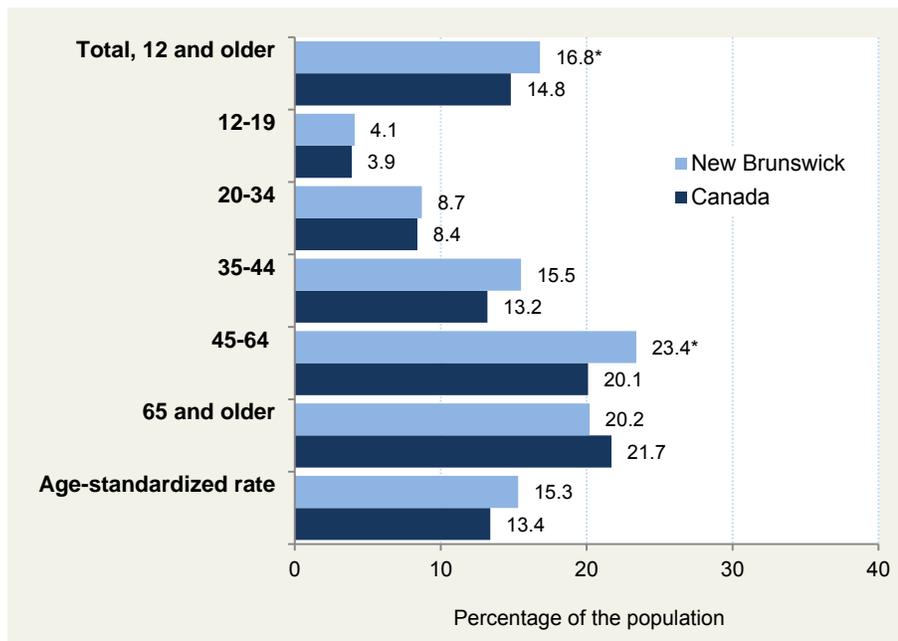
While some types of pain disorders may be appropriate for opioid therapy, including acute pain, cancer pain and pain at the end-of-life, there is limited evidence on whether opioids are

generally safe and effective for various other chronic pain conditions. The risk of adverse health effects increases when opioids are used in higher-than-appropriate doses or in combination with certain other drugs such as alcohol or benzodiazepines.

Prevalence of prescription opioids

Findings from drug plan surveillance indicate a marked increase in the number of prescriptions of opioid medications in Canada in recent years, with the increase largely in line with the growth rate for all prescription drugs [12].

Figure 1: Percentage of the population reporting pain or discomfort that prevents activities, by age group, Canada and New Brunswick, 2013–2014



Note: * = statistically different from the Canada rate ($p < 0.05$). Data based on representative samples of the population 12 and older living in private dwellings. Age-standardized rates calculated using 2014 survey results, adjusted against the 1991 Canadian Census population structure to allow for meaningful comparisons across different geographic areas with different population age distributions.

Source: Statistics Canada, Canadian Community Health Survey 2013–2014 (two year period estimates).

Opioids are broadly used by public drug plan beneficiaries, women and men alike, although opioids account for a small percentage of overall drug plan claims. Most individuals taking opioids are treated for only a short period of time or have other non-opioid prescription drug use, which may indicate other underlying health conditions (e.g., causes or consequences of living with pain) [12].

In New Brunswick, data from the provincial drug plan — which covers low-income seniors, residents of nursing homes, people receiving social assistance and other selected beneficiary groups, representing approximately 14 per cent of the total population [13] — reveal the number of claims for strong opioid prescriptions (including fills and refills for oxycodone, morphine, hydromorphone and fentanyl) increased continually over the past decade (Figure 2). Meanwhile, claims for weak opioid prescriptions (codeine) remained more stable. The annual cost for opioid prescriptions doubled, from about \$2 million to \$4 million, despite a limited (10-per-cent) increase in the total number of active beneficiaries over the same period.

Similar to the national trend, the growth rate of drug plan claims for all prescription medicines was also high; the average number of claims

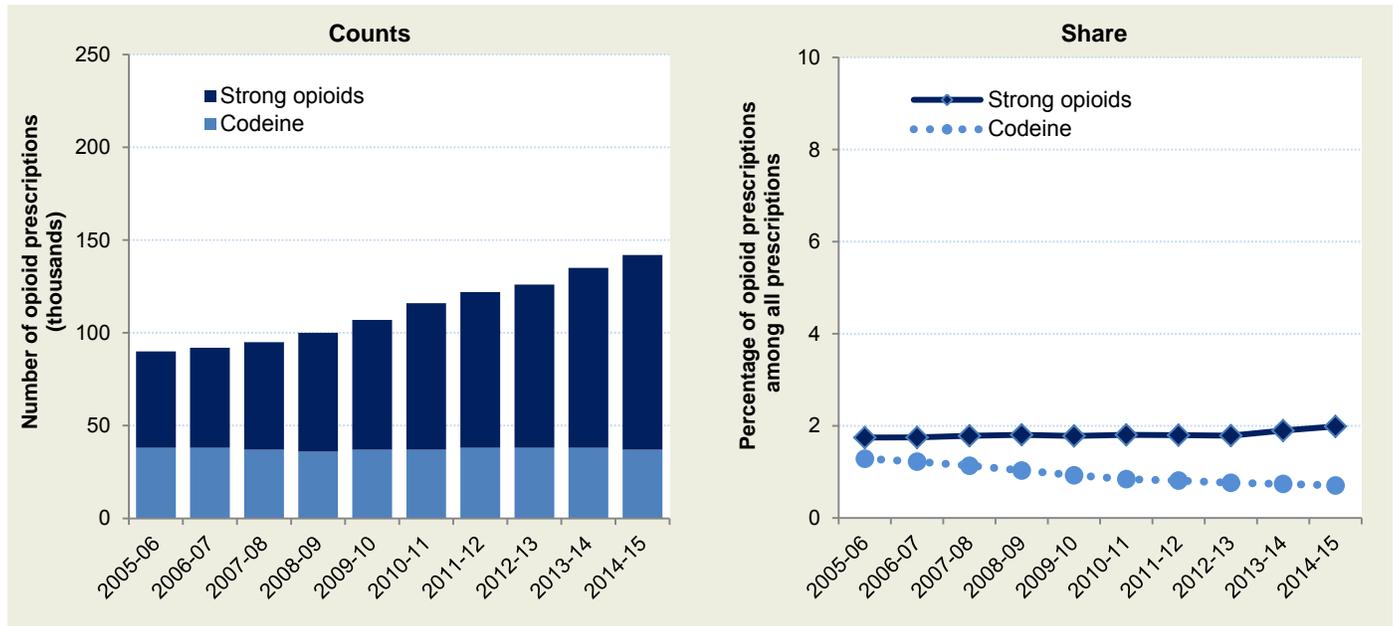
per beneficiary climbed from 27 in 2005-06 to 44 ten years later. As a result, the share of strong opioid prescriptions among all claims increased only marginally (from 1.7 per cent to 2.0 per cent) while that of codeine prescriptions declined (from 1.3 per cent to 0.7 per cent) during the same period (Figure 2).

The percentage of beneficiaries with codeine prescriptions decreased during the same 10-year period, from 14.4 per cent to 10.9 per cent (Figure 3). Across population groups, the latest provincial data indicate 31 per cent of nursing home residents (mostly 65 and older), 10 per cent of seniors 65 and older in the community and 13 per cent of beneficiaries younger than 65 were prescribed a strong opioid.

The patterns were generally consistent with national trends that show increases over time in dispensing levels of strong opioids in parallel to decreases in weak opioids [14], as well as considerably higher proportions of opioid prescriptions among seniors on public drug plans living in long-term care facilities compared to those in the community [15].

Public drug plans represent only one component of the pharmaceutical market. While drug plan data are not necessarily generalizable to the total population, national population survey data indicate 15 per cent of Canadians 15 and older use opioid pain relievers,

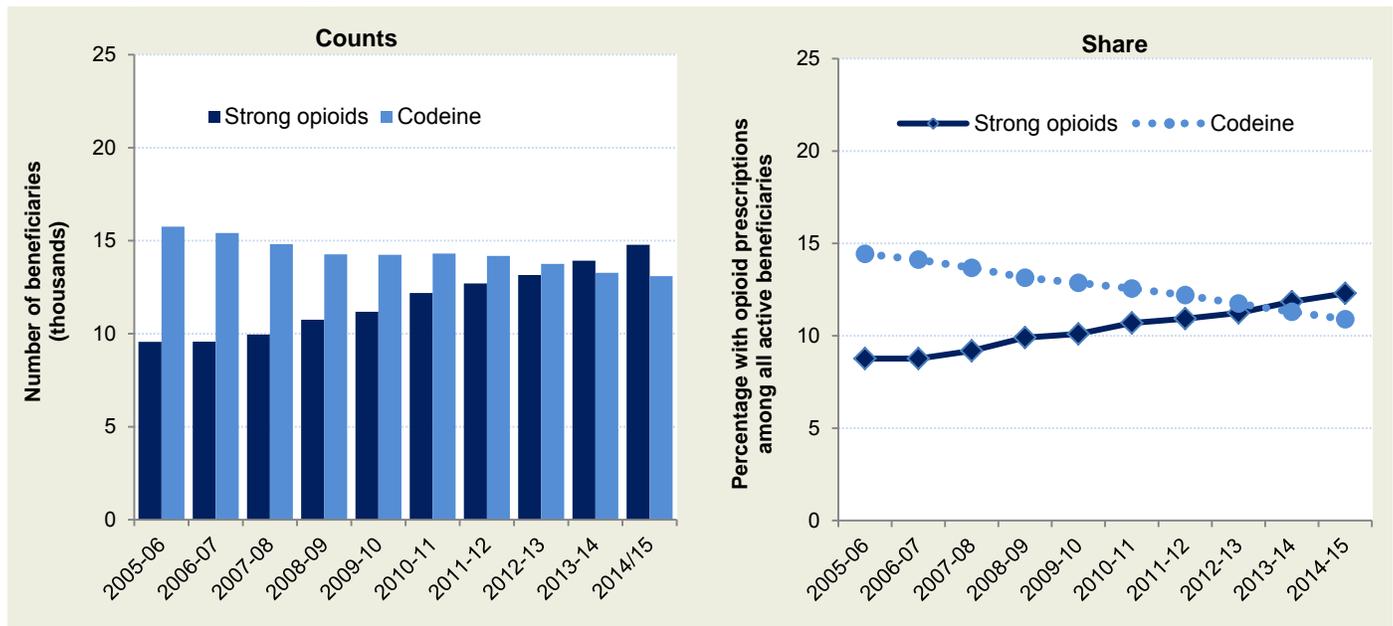
Figure 2: Trends in the number and share of prescription opioid claims in the provincial drug plan, New Brunswick, 2005-06 to 2014-15



Note: Data for New Brunswick residents receiving coverage under the provincial drug plan (select beneficiary groups). Includes paid prescription claims for fills and refills of strong opioids (oxycodone, oxycodone combinations, morphine, hydromorphone and fentanyl) and codeine (including codeine combinations). Data do not reflect any potential changes in frequency of dispensing, do not identify unused prescription drugs, do not include prescriptions paid for by another payer or out-of-pocket, and are not generalizable to the total population.

Source: New Brunswick Department of Health, Pharmaceutical Services [provincial drug plans drug claims database].

Figure 3: Trends in the number and percentage of beneficiaries with prescription opioid claims in the provincial drug plan, New Brunswick, 2005-06 to 2014-15



Note: Data for New Brunswick residents receiving coverage under the provincial drug plan (select beneficiary groups). Includes paid prescription claims for strong opioids (oxycodone, oxycodone combinations, morphine, hydromorphone and fentanyl) and codeine (including codeine combinations). Beneficiaries can be counted more than once if more than one type of drug benefit was received during the reporting period. Active beneficiaries refer to those that had at least one claim paid during the period. Data do not identify unused prescription drugs, do not include prescriptions paid for by another payer or out-of-pocket, and are not generalizable to the total population.

Source: New Brunswick Department of Health, Pharmaceutical Services [provincial drug plans drug claims database].

the highest users being seniors 65 and older [3,16].

Non-medical use of opioids

Medical use of opioids is a pre-eminent determinant influencing non-medical use and abuse of these narcotics [17]. Opioids are known for their ability to produce euphoria (“high”), motivating some to use opioids recreationally.

When misused, opioids can cause respiratory depression and even death. Globally, 69,000 people die each year from opioid overdose, with the number increasing over time in part due to growing use of opioids in the management of chronic non-cancer pain [18].

In addition to overdose mortality, other important harms associated with opioid misuse include non-fatal overdoses and substance use disorders.

The problem of opioid-related harms is considered most acute in North America, but with considerable population and regional variations [19]. In Canada, perhaps the best-known misused pharmaceutical opioid is oxycodone, which may also be responsible for the greatest number of harms [20].

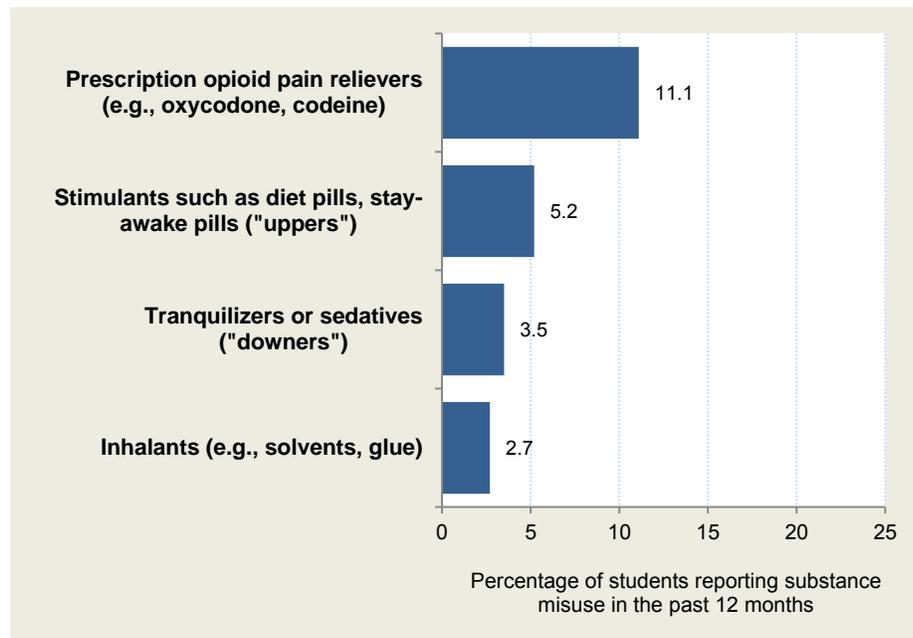
Many factors influence non-medical use of opioids, including drug availability and price, provider prescription practices,

individual predispositions, new modes of drug administration and social acceptability.

Data from the 2012 New Brunswick Student Drug Use Survey reveal misuse of opioids is widespread among youth: one in nine (11.1 per cent) students at middle or high school reported using prescription pain relievers without medical supervision in the past year [21]. The misuse rates were similar by gender and across the province’s seven health regions [22]. Prescription pain killers were the most frequently misused class of controlled pharmaceutical drugs among the student population (Figure 4). The survey did not distinguish between possible “self-medicating” to relieve pain and other reasons for using these drugs.

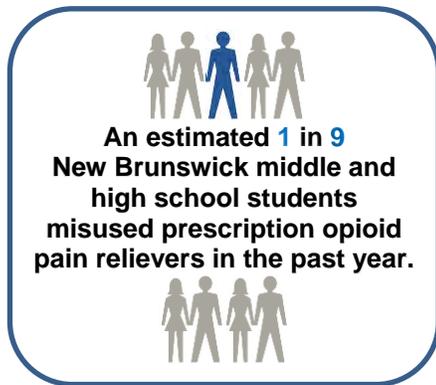
National data indicate that, whereas rates of opioid use are higher among seniors, opioid abuse is more frequent among youth [16]. While no general population studies have examined the motives for non-medical use of prescription opioids, studies among specific subgroups have pointed to pain relief among the most frequently reported reasons [23]. Other common reasons include getting high, experimentation, relieving tension and helping to sleep.

Figure 4: Past-year prevalence of misuse of prescription pain killers and other selected substances among middle and high school students, New Brunswick, 2012



Note: Data based on an anonymous representative sample of students in grades 7, 9, 10 and 12 (ages 11 to 19). Misuse refers to use of a controlled substance without a medical prescription or substance use in order to get high. Data do not distinguish the types or sources of prescription pain relievers used.

Source: New Brunswick Department of Health, Student Drug Use Survey 2012.



Tracking how pharmaceutical opioids are attained for non-medical purposes is challenging as they are legitimately available and distributed through the medical system. Anecdotal and ad hoc sources list physicians, other health-care workers, family, friends, “double doctoring” (i.e., obtaining opioid prescriptions from multiple prescribers), alteration of prescription or over-the-counter formulations, street drug markets, Internet purchases, theft and prescription forgery as the typical ways by which people who abuse these drugs gain access to them [3,17,24].

A national study of regular illicit opioid users surveyed in selected community-supported outreach sites, including in New Brunswick, indicated prescription opioids come more often from the medical system, either directly or indirectly, rather than from illicit production and distribution (as is the case for heroin, but found to have a marginal impact outside the large port cities of Vancouver and Montreal) [25].

There have been indications of substantive reductions in the non-medical use of prescription opioids at the population level in Canada since about 2011 [26]. Data from the Canadian Tobacco, Alcohol and Drugs Survey indicate the prevalence of opioid abuse – that is, use of opioids for reasons other than the prescribed therapeutic purpose or tampering with the medication prior to its use – was down somewhat in 2013 (2 per cent of opioid users) compared to the previous year (5 per cent of users) [16].

Health implications

Opioid therapy can be effective in the management of various types of severe and chronic pain when used in appropriate doses and manners. However, there are also non-negligible risks of negative impacts on physical and mental health.

Since 2002, the number of New Brunswickers assessed through provincial addiction services for treatment to address dependence to opiate-based drugs (such as oxycodone, morphine, codeine or heroin) has increased rapidly, attributable in part to efforts by the federal and provincial governments as well as medical licensing bodies to facilitate access to treatment [27]. The most common treatment for people dependent on prescription opioids is methadone maintenance [1], but there is a

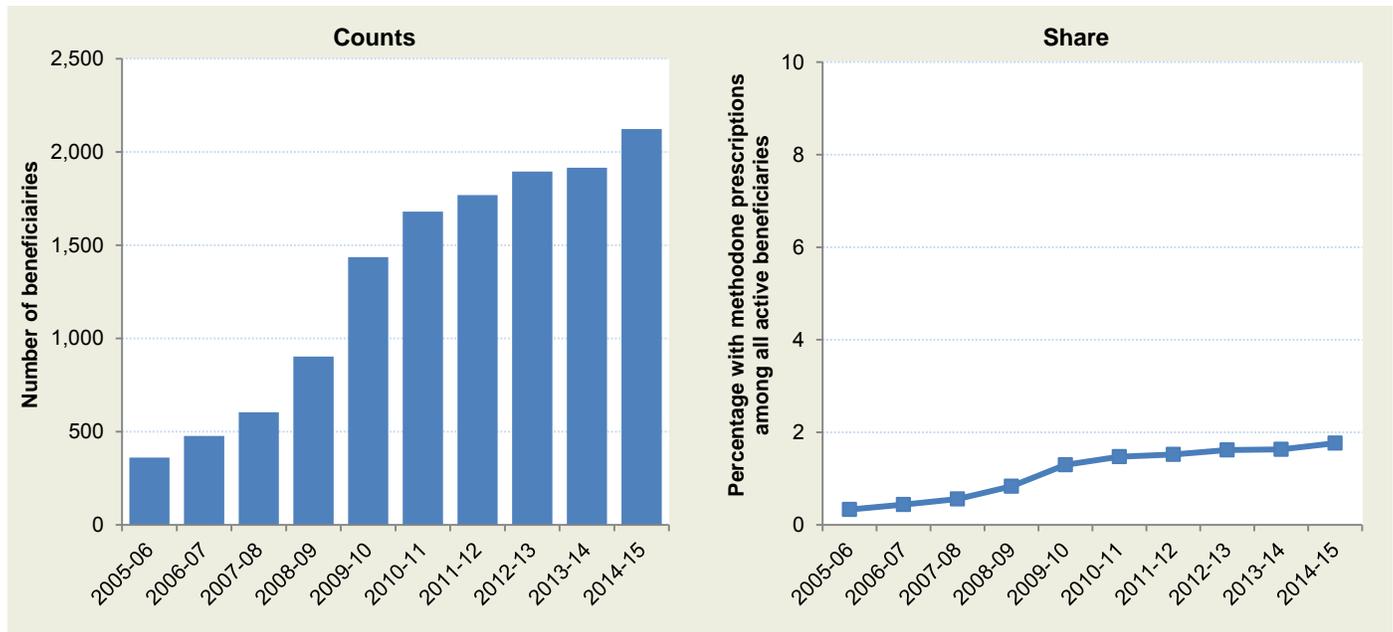
lack of Canada-wide data on treatment enrolment [3,17].

Surveillance data indicate that, at an average annual growth rate of 12.5 per cent, methadone and other drugs used in opioid dependence ranked seventh nationally in terms of growth of public drug plan spending from 2008 to 2013 [28].

In New Brunswick, 1.8 per cent of all beneficiaries of the provincial drug plan (some 2,100 individuals) were receiving methadone maintenance for opioid dependence in 2014-15, up from 0.3 per cent in 2005-06 (Figure 5). The cost for methadone medications is more than \$5 million annually, a 10-fold increase from a decade earlier. This increase may in part be due to the removal of the requirement for concomitant counselling [29].

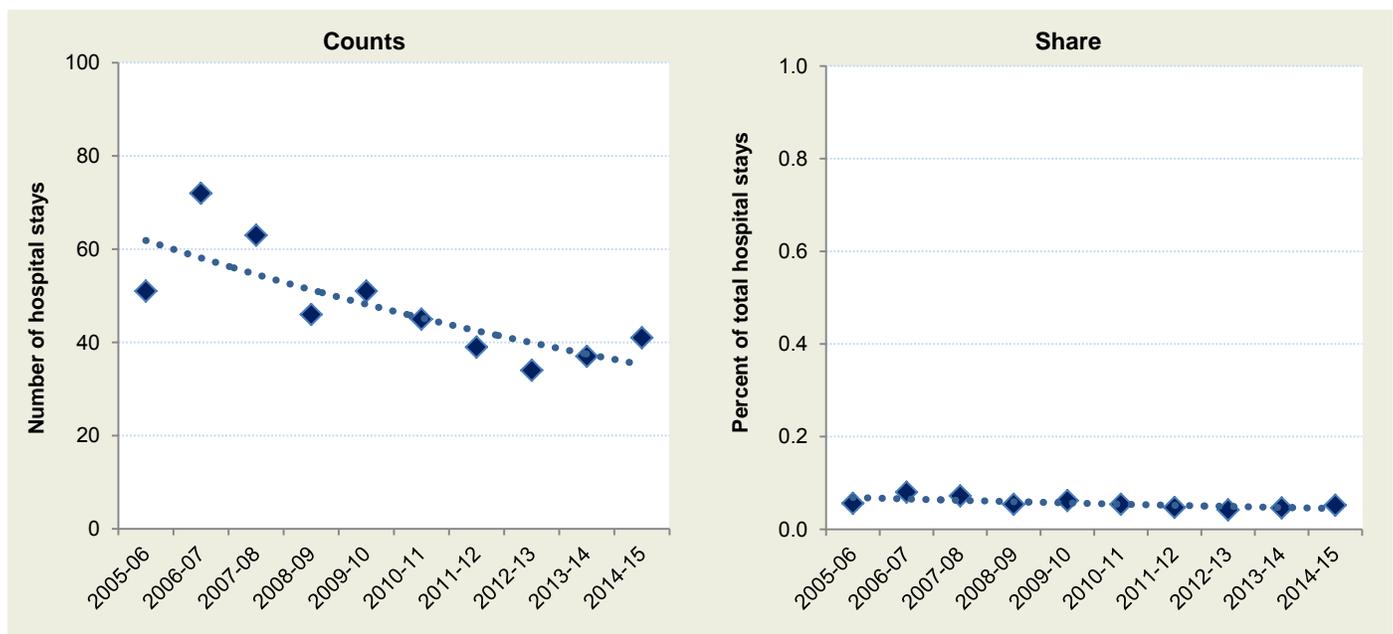
In some instances, problematic patterns of opioid use can lead to clinically significant impairment, in turn leading to hospitalization and death. Based on data from the New Brunswick Discharge Abstract Database, which records information on clinical diagnoses for acute-care hospital stays, the number of hospitalizations where an opioid-related mental health or behavioural disorder (e.g., acute intoxication, psychotic disorder, amnesic syndrome) was identified as the main diagnosis generally decreased from 2005-06 to 2014-15 (Figure 6).

Figure 5: Trends in the number and percentage of beneficiaries with prescription methadone claims in the provincial drug plan, New Brunswick, 2005-06 to 2014-15



Note: Data for New Brunswick residents receiving coverage under the provincial drug plan (select beneficiary groups). Active beneficiaries refer to those that had at least one claim paid during the fiscal year. Data do not distinguish between methadone for opioid dependence stemming from use of legally versus illegally sourced drugs.
Source: New Brunswick Department of Health, Pharmaceutical Services [provincial drug plans drug claims database].

Figure 6: Trends in the number and percentage of acute-care hospitalizations with a most responsible diagnosis of mental health and behavioural disorder due to use of opioids, New Brunswick, 2005-06 to 2014-15



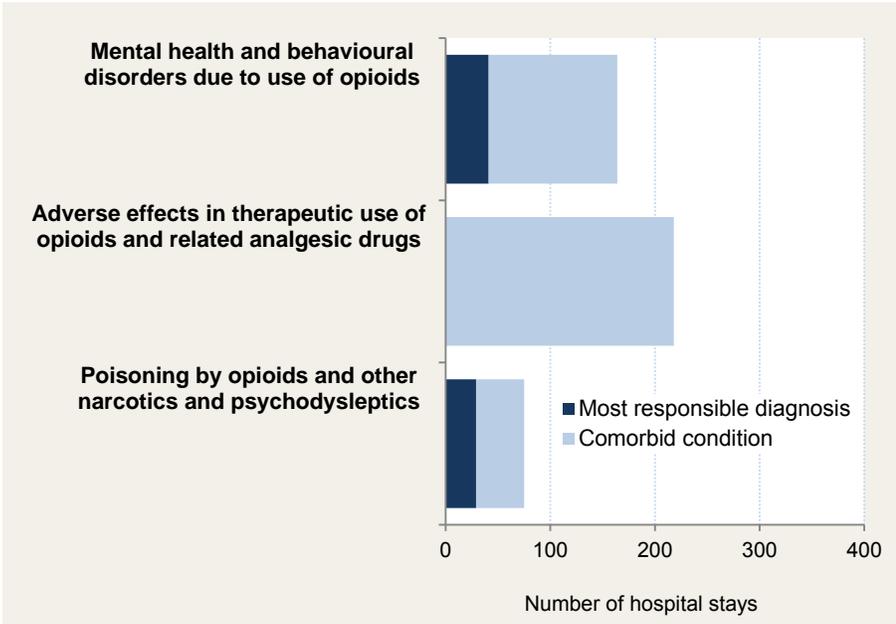
Note: Data for New Brunswick residents receiving acute inpatient care, categorized according to the *International Classification of Diseases and Related Health Problems*: Mental and behavioural disorders due to use of opioids [ICD-10-CA codes F11.0-F11.9]. Data based on most responsible diagnosis recorded for the length of stay. Patients can be counted more than once if more than one hospital stay during the reporting period. Substances in addition to opioids may have been involved and other health conditions present. Data do not distinguish between health problems stemming from legally versus illegally sourced drugs. Total hospitalizations exclude stays for pregnancy and childbirth. Lines on the charts describe best-fit trends in the data.
Source: New Brunswick Department of Health, Health Analytics [hospital Discharge Abstract Database].

Although some year-to-year fluctuations were observed given the small numbers involved, the percentage of total hospitalizations attributable to mental health and behavioural disorders remained less than 0.08 per cent over the decade. Other health conditions may have been present during the hospital stays, and other drugs and psychoactive substances in addition to opioids may have been involved.

For every hospitalization where an opioid-related mental health or behavioural disorder was identified as the main diagnosis, there were three hospitalizations for opioid interactions with other (comorbid) conditions, five hospitalizations related to adverse effects from opioid therapy, and two hospitalizations for poisoning or overdose from opioids or other narcotics (Figure 7).

Altogether, hospitalizations due to opioid-related mental and physical health conditions accounted for 0.5 per cent of the total number of stays in New Brunswick hospitals in 2014-15.

Figure 7: Number of acute-care hospitalizations for selected causes of opioid-related morbidity, New Brunswick, 2014-15



Note: Data for New Brunswick residents based on medical diagnosis information for inpatient hospital stays, categorized according to the *International Classification of Diseases and Related Health Problems*: Mental and behavioural disorders due to use of opioids [ICD-10-CA codes F11.0-F11.9]; Poisoning by opioids [code T40.2]; Opioids and related analgesics causing adverse effects in therapeutic use [code Y45.0]. Patients can be counted more than once if more than one hospital stay during the fiscal year. Substances in addition to opioids may have been involved and other health conditions present. Data do not distinguish between health problems stemming from legally versus illegally sourced drugs.

Source: New Brunswick Department of Health, Health Analytics [hospital Discharge Abstract Database].

In terms of gender differences, the number of hospitalizations was similar among women and men regarding opioid-related mental health and behavioural disorders as well as drug poisoning (Figure 8).

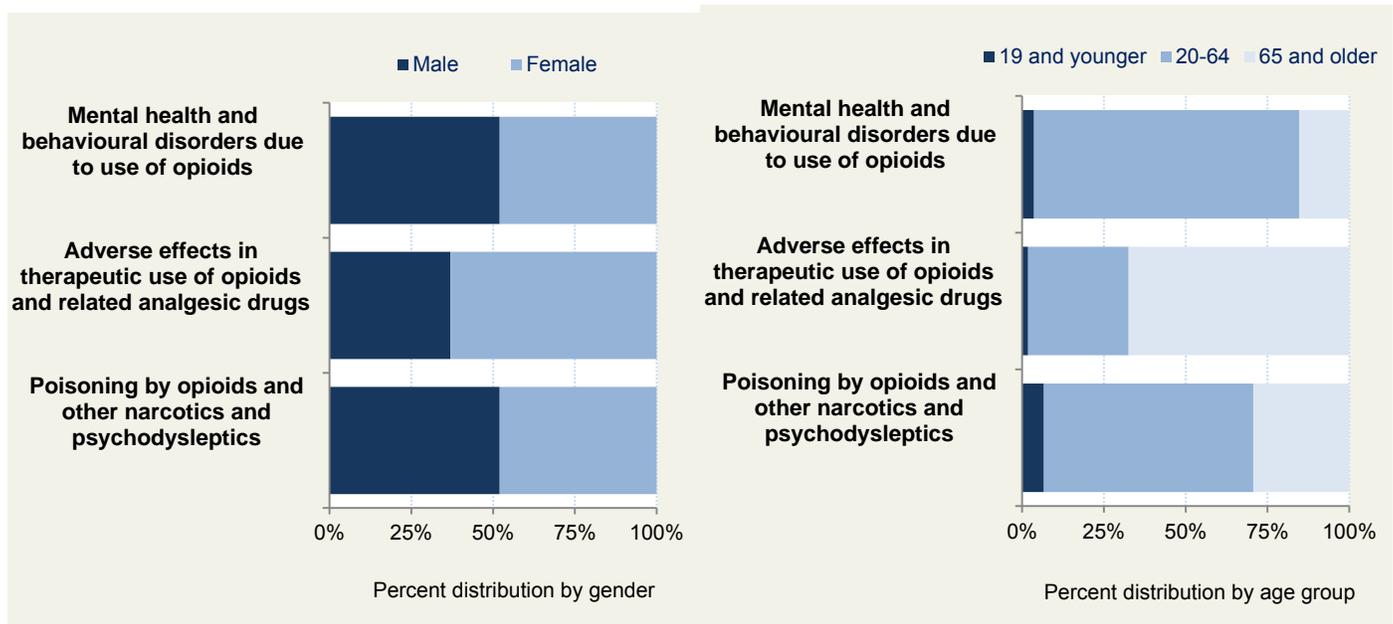
Women tended to be more often affected by adverse effects of opioid therapy. This may be related at least in part to the fact that treatment side effects disproportionately touch the senior population – two-thirds of hospitalizations for this cause were among those 65 and older – and that women outnumber men in the oldest age group owing to their greater longevity.

National data indicate constipation is the most commonly diagnosed side effect associated with opioid-related hospitalizations among seniors [30].

A review of New Brunswick’s coroner services data revealed a total of 178 opioid-implicated deaths from 2007 to 2012, for an average of 30 deaths per year, mostly unintentional (82 per cent) and most often among males (68 per cent) [31].

Deaths from opioid use – in particular, accidental overdoses where the actual substance and strength may not have been accurately known – can cause a great deal of media and public interest. In recent months, there have been several media reports about deaths from substances with added fentanyl or other synthetic opioids among

Figure 8: Percent distribution of acute-care hospitalizations for selected causes of opioid-related morbidity, by gender and by age group, New Brunswick, 2014-15



Note: Data for New Brunswick residents receiving acute inpatient care, categorized according to the *International Classification of Diseases and Related Health Problems*. Data do not distinguish between health problems stemming from legally versus illegally sourced drugs.
Source: New Brunswick Department of Health, Health Analytics [hospital Discharge Abstract Database].

recreational drug users in certain parts of the country.

Deaths related to fentanyl have also been in the news in New Brunswick [32]. According to coroner services data, there were 5 accidental, fentanyl-implicated deaths in the province between 2009 and 2014 [33].

Some Canadian jurisdictions, including Alberta, British Columbia and Ontario, have engaged in efforts to increase community capacity to administer naloxone, an emergency treatment for opioid overdose, as part of their harm-reduction strategies [33-35].

Relative burden of prescription opioids in New Brunswick

Different population health indicators generate important insights into the epidemiology and impacts of prescription opioid use – for example, indicators of the levels and costs of opioid use, non-fatal and fatal drug overdoses, mental health and behavioural disorders due to opioid misuse, or other risks to health and society such as injury and other harms as a result of uncontrolled compulsive use of opioids [19,26].

Generally speaking, the available data (albeit limited) suggest that

the relative burden of prescription opioid use/misuse may be less acute in New Brunswick compared to other parts of Canada (e.g., provinces with large cities).

Figure 9 illustrates the following indicators of the relative burden of prescription opioids in New Brunswick:

- The National Prescription Drug Utilization Information System shows that natural opium alkaloids (e.g., oxycodone, codeine, morphine, hydromorphone) accounted for 2.1 per cent of New Brunswick’s total public drug plan program spending in 2013,

compared to 2.3 per cent for Canada [28].

- The 2012 Student Drug Use Survey data indicate that 2.6 per cent of middle and high school students in New Brunswick had injured themselves as a result of misuse of opioids and other drugs in the past year, significantly lower than the rate in Nova Scotia (3.8 per cent) [22].
- In 2014-15, there were 164 acute-care hospitalizations with

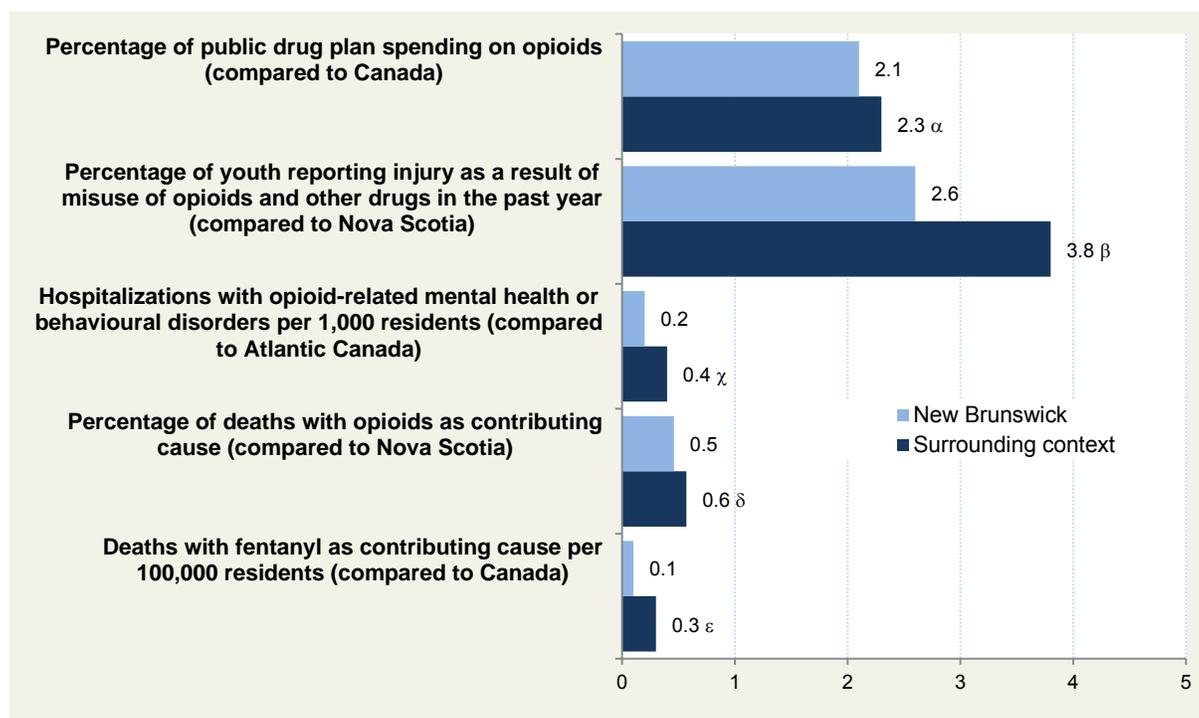
diagnosed opioid-related mental health and behavioural disorders among New Brunswickers, which translates to 0.2 hospitalizations per 1,000 residents. The rate for Atlantic Canada averages 0.4 hospitalizations per 1,000 population [31].

- The number of opioid-implicated deaths in New Brunswick from 2007 to 2012 was 178, which represented 0.5 per cent of all deaths in the province during the same period [31,36]. In Nova Scotia,

coroner services reported 393 opioid-implicated deaths from 2007 to 2014, equivalent to 0.6 per cent of all deaths in the province.

- In New Brunswick, the rate of deaths with fentanyl as contributing cause was 0.1 per 100,000 residents in 2009–2014 [33]. The national rate averaged 0.3 per 100,000 population during the same period.

Figure 9: Selected indicators of the relative burden of opioid use and misuse in New Brunswick



Source: Adapted from: α = National Prescription Drug Utilization Information System, New Brunswick and Canada, 2013; β = Student Drug Use Survey, New Brunswick and Nova Scotia, 2012; χ = Hospital Discharge Abstract Database, New Brunswick (2014-15) and Atlantic Canada (2006–2011); δ = Provincial Coroner Services and Vital Statistics, New Brunswick (2007–2012) and Nova Scotia (2007–2014); ϵ = Canadian Centre on Substance Abuse (fentanyl-implicated deaths, New Brunswick and Canada, 2009–2014) and Statistics Canada (population estimates, New Brunswick and Canada, 2009–2014).

Looking ahead

Opioids have long been regarded as among the most effective drugs for the relief of pain and suffering, but their use in the management of severe and chronic pain is not without controversy given the growing concerns over opioid safety and the risks of misuse, addiction and overdose. Harms associated with prescription opioid misuse and abuse can exercise a heavy burden on individuals, families and communities as well as on health care, social services and public safety systems.

Although much has been reported about opioid misuse in recent years, the evidence base is fragmented and complex, with different information sources using different definitions, drugs evaluated, target populations and reporting parameters – each with their strengths and limitations [19,24,31].

There is no established optimal range for prevalence rates of opioid use for therapeutic purposes for a given population, and little conclusive evidence on the sources, determinants or socio-economic impacts of misused prescription opioids in Canada and New Brunswick. Existing data are typically limited to descriptive prevalence statistics [37], and there is often overlap between prescription opioid misuse and the use of other licit and illicit drugs.

In parallel with the increased attention in North America on

prescription opioid abuse, the World Health Organization estimates that about 80 per cent of the world's population lacks access to opioid analgesics, and international data show that use of this essential medication remains inadequate in many countries where the burden of health disorders warranting use of opioids is high [38,39]. Evidence also suggests that pain relievers are often underused in emergency departments in Canada and the United States [40].

There are a number of challenges and opportunities in developing and sustaining approaches and strategies to improve population health and reduce the harms associated with opioid misuse, notably in the areas of research, surveillance, policy and awareness.

Several important gaps to better understand the burden of opioids have been identified:

- Relative to other widely used drugs, there are insufficient comparative population-level data to clarify the benefits and risks of long-term opioid use, especially for treating chronic non-cancer pain.
- Routine and systematic data on deaths related to opioid misuse are not currently available for New Brunswick or Canada. The main source of mortality statistics in Canada, Vital Statistics death records classifying the cause of death, does not distinguish between

deaths caused by exposure to prescription opioids versus other narcotics and psychodysleptics (e.g., heroin) [41]. While there are occasional reports where a specific opioid (e.g., fentanyl) was deemed by a coroner or medical examiner to have contributed to or caused the death, data drawing on coroner reports should be interpreted with caution because the criteria that defines a death as opioid-implicated varies from province to province [31] and investigation practices may change over time [42].

- There is little population-wide evidence on the social drivers of prescription opioid use and misuse. Although it has been speculated that the sociodemographic profile of those deceased from prescription drug overdose is more “middle class” compared to those who died from heroin or cocaine overdose (i.e., marginalized populations), there are no conclusive data [43]. In particular, some First Nations have declared the prevalence of certain pharmaceutical drugs (including opioids) a “community crisis” owing to the associated harms [24], but there is a paucity of evidence on Aboriginal-specific rates of opioid use, dependency and abuse in New Brunswick.
- No comprehensive surveillance data are available for New Brunswick on volumes or dosages of opioid prescriptions

obtained from physicians' offices or clinics, nor on emergency department admissions for substance-related problems. Studies from British Columbia, Ontario and across the United States indicate substantial variations in opioid prescribing practices, with some observed clustering of physicians who prescribe the drug frequently [44-47].

- Despite a growing perception of prescription opioid abuse as a "gateway" to heroin and/or injection drug use, there is a lack of scientific evidence on previous prescription opioid

misuse and subsequent abuse of illicit drugs at the population level in Canada. Some findings from the United States have noted that poisoning deaths from pharmaceutical opioids and illicit drugs have increased concurrently [19].

- No empirical assessments of the costs of productivity loss or of criminal impacts due to non-medical use of prescription opioids are currently available in Canada and New Brunswick [17,24]. Evaluations of established opioid dependency treatment programs in terms of improving functional outcomes

(e.g., return to work) or reducing harms (e.g., community safety) at the population level remain wanting [27,29]. While federal laws regulate possession and distribution of all opioids from a law enforcement perspective, the majority (84 per cent) of drug violations in New Brunswick involve cannabis, cocaine or methamphetamines [48].

While opioid-related harms are widely cited as an important public health issue, there is no universal solution and more research is needed [7]. There

For more information:

- New Brunswickers are encouraged to speak to a health-care professional if they have questions about the risks, benefits and potential adverse effects of prescription drugs or to call Tele-Care at **811** (24 hours a day). Visit the Health Canada website for more information about opioid pain medications (<http://hc-sc.gc.ca/hl-vs/iyh-vsv/med/ana-opioid-med-eng.php>) or the New Brunswick Department of Health website for information on support services for substance abuse and addiction (<http://www2.gnb.ca/content/gnb/en/departments/health/Addiction.html>). If you have an opioid poisoning emergency, call **911** immediately.
- Safe storage and disposal of prescription opioids and other pharmaceuticals help ensure they do not end up in the wrong hands; visit <http://healthycanadians.gc.ca/drugs-products-medicaments-produits/buying-using-achat-utilisation/disposal-defaire-eng.php>.
- Health-care professionals are reminded to review the latest evidence and practice guidance for appropriate prescribing of opioids and other treatment options to improve pain management and patient safety at <http://www.cdc.gov/drugoverdose/prescribing/resources.html> and <http://nationalpaincentre.mcmaster.ca/opioid>.
- Public health and community stakeholders can share and align collective actions to reduce the harms associated with prescription opioids and other drugs through the *First Do No Harm: Responding to Canada's Prescription Drug Crisis* strategy: <http://www.ccsa.ca/Eng/collaboration/Partnerships-to-Address-Prescription-Drug-Misuse/Pages/default.aspx>.
- Resources for addressing problematic substance use that impacts the workplace are available at: <https://www.gnb.ca/0378/acca/pdf/ACCA-Toolkit-English.pdf>.
- Information and updates about the New Brunswick Drug Information System and Prescription Monitoring Program can be found at: <http://www2.gnb.ca/content/gnb/en/departments/health/MedicarePrescriptionDrugPlan/DrugInformationSystemandPrescriptionMonitoringProgram.html>.

have been no systematic evaluations to date on recent policy measures implemented at the federal and provincial levels to reduce opioid-related harms, such as electronic prescription monitoring programs and delisting of oxycodone formulations from provincial drug benefit formularies [26].

New Brunswick has a prescription monitoring program in development, and there is some evidence regulatory interventions can promote appropriate prescribing of selected drugs prone to misuse and diversion [49]. However, the administration and scope of prescription monitoring programs vary considerably across Canada and the United States, and there is limited supporting evidence of their overall value in significantly reducing harm, misuse and addiction [50].

It is widely advocated that collaborative approaches and knowledge exchange are needed to enhance surveillance and prevention of opioid misuse and the associated harms. Prescribers, dispensers, patients, health system and community stakeholders, researchers and the general public all have an important role to play to ensure opioids are used safely [51,52].

About the data

This document focuses on opioids as pharmaceutical drugs, and not on illicit narcotics with opium-like effects such as heroin. Medical use refers to opioids that are legally made and used by individuals



Image courtesy of National Institute of Mental Health

in either non-prescribed doses or as prescribed by a health-care professional according to instructions. Non-medical use or misuse refers to drugs consumed not as prescribed, in terms of either dose or consumption mode, or by someone who was not prescribed the drug. Data that include both medical and non-medical use of opioids are referred to as opioid-related. However, sometimes the lines between medical and non-medical use, between legally made and counterfeited drugs, or between drug dependence and abuse, cannot be clearly distinguished in the data.

Data from various sources, including clinical administrative records, drug claims records and health surveys, provide different measures of prescription opioids use and misuse, their contributing factors and impacts. Since this report uses multiple sources to provide a comprehensive portrait of pharmaceutical opioids and population health in New Brunswick, estimates may be presented for different reference periods and age groups, and definitions may vary depending on the source – for example, whether the investigation considers adverse effects during patient care, detection of opioids in the body during toxicological screening, use of different types and dosages of opioids, mental and behavioural disorders due to opioid misuse, accidental drug overdose, intentional drug overdose as self-harm, misuse of opioids in conjunction with other substances (e.g., alcohol, marijuana, cocaine or polydrug interaction), or other risks to health and society.

Specific conventions are used to distinguish between different reference

periods of data collection. The format “20XX-YY” indicates a fiscal year running from April 1, 20XX, to March 31, 20YY; data spanning more than one year are reported as “20XX–20YY.”

References

1. Health Canada, *Opioid Pain Medications* [<http://www.hc-sc.gc.ca/hl-vs/iyh-vsv/med/opioid-faq-opioides-eng.php>, accessed 12 September 2016].
2. National Institute of Drug Abuse, *Opioids* [<http://www.drugabuse.gov/publications/research-reports/prescription-drugs/opioids>, accessed 12 September 2016].
3. Canadian Centre on Substance Abuse, “Prescription opioids.” *Canadian Drug Summary, July 2015* [<http://www.ccsa.ca/Resource%20Library/CCSA-Canadian-Drug-Summary-Prescription-Opioids-2015-en.pdf>, accessed 28 October 2015].
4. World Health Organization, *WHO Model List of Essential Medicines, 19th list (April 2015)* [<http://www.who.int/medicines/publications/essentialmedicines/en/>, accessed 28 October 2015].
5. Chou R, Turner JA, Devine EB et al., “The effectiveness and risks of long-term opioid therapy for chronic pain: A systematic review for a National Institutes of Health Pathways to Prevention Workshop.” *Annals of Internal Medicine*, 2015; 162(4):276-286.
6. Kolodny A, Courtwright DT, Hwang CS et al., “The prescription opioid and heroin crisis: A public health approach to an epidemic of addiction.” *Annual Review of Public Health*, 2015; 36: 559-574.
7. Dhalla IA, Persaud N, Juurlink DN, “Facing up to the prescription opioid crisis.” *BMJ*, 2011; 343.
8. Reitsma ML, Tranmer JE, Buchanan DM, Vandenkerkhof EG, “The prevalence of chronic pain and pain-related interference in the Canadian population from 1994 to 2008.” *Chronic Diseases and Injuries in Canada*, 2011; 31(4):157-164.
9. Statistics Canada. *Focus on Geography Series, 2011 Census*.

- Statistics Canada Catalogue no. 98-310-XWE2011004. Ottawa, 2012.
10. Statistics Canada, "Table 105-0502: Health indicator profile, two year period estimates, by age group and sex, Canada, provinces, territories." *CANSIM* database [http://www5.statcan.gc.ca/cansim/, accessed 6 November 2015].
 11. Statistics Canada, "Table 105-0503: Health indicator profile, Health indicator profile, age-standardized rate, annual estimates, by sex, Canada, provinces and territories." *CANSIM* database [http://www5.statcan.gc.ca/cansim/, accessed 6 November 2015].
 12. Patented Medicine Prices Review Board, *Utilization of Prescription Opioids in Canada's Public Drug Plans, 2006/07 to 2012/13*. Ottawa: Government of Canada, 2014.
 13. Government of New Brunswick, *The New Brunswick Prescription Drug Program (NBPDP)* [http://www2.gnb.ca/content/gnb/en/departments/health/MedicarePrescriptionDrugPlan/TheNewBrunswickPrescriptionDrugProgram.html, accessed 31 March 2016].
 14. Fischer B, Jones W, Rehm J, "Trends and changes in prescription opioid analgesic dispensing in Canada 2005–2012: An update with a focus on recent interventions." *BMC Health Services Research*, 2014; 14:90.
 15. Canadian Institute for Health Information, *Drug Use Among Seniors on Public Drug Programs in Canada, 2012*. Ottawa, 2014.
 16. Health Canada, *Canadian Tobacco, Alcohol and Drugs Survey (CTADS): Summary of Results for 2013*. [http://healthycanadians.gc.ca/science-researches-recherches/data-donnees/ctads-ctad/summary-sommaire-2013-eng.php, accessed 29 October 2015].
 17. Fischer B, Rehm J, Gittins J, *An Overview of Non-Medical Use of Prescription Drugs and Criminal Justice Issues in Canada*. Ottawa: Department of Justice Canada, 2009.
 18. World Health Organization, *Information Sheet on Opioid Overdose, November 2014* [http://www.who.int/substance_abuse/information-sheet/en, accessed 12 September 2016].
 19. King NB, Fraser V, Boikos C, Richardson R, Harper S, "Determinants of increased opioid-related mortality in the United States and Canada, 1990–2013: A systematic review." *American Journal of Public Health*, 2014; 104(8): e32–e42.
 20. Canadian Centre on Substance Abuse, "Misuse of opioids in Canadian communities." *Canadian Community Epidemiology Network on Drug Use Bulletin*, April 2013.
 21. Gupta N, Wang H, Collette M, Pilgrim W, *New Brunswick Student Drug Use Survey Report 2012*. Fredericton: New Brunswick Department of Health, 2013.
 22. Asbridge M, Langille D, *Student Drug Use Survey in the Atlantic Provinces 2012: Technical Report*. Halifax: Dalhousie University, 2013.
 23. van Amsterdam J, van den Brink W, "The misuse of prescription opioids: A threat for Europe?" *Current Drug Abuse Reviews*, 2015; 8 3-14.
 24. National Advisory Committee on Prescription Drug Misuse, *First Do No Harm: Responding to Canada's Prescription Drug Crisis*. Ottawa: Canadian Centre on Substance Abuse, 2013.
 25. Fischer B, Rehm J, Patra J, Firestone Cruz M, "Changes in illicit opioid use across Canada." *Canadian Medical Association Journal*, 2006; 175(11): 1385.
 26. Fischer B, Gooch J, Goldman B et al, "Non-medical prescription opioid use, prescription opioid-related harms and public health in Canada: An update 5 years later." *Canadian Journal of Public Health*, 2014; 105(2): e146–e149.
 27. New Brunswick Department of Health and Wellness, *Methadone Maintenance Treatment Guidelines for New Brunswick Addiction Services*. Fredericton: Government of New Brunswick, 2005.
 28. Canadian Institute for Health Information, *Prescribed Drug Spending in Canada, 2013: A Focus on Public Drug Programs*. Ottawa, 2015.
 29. Hawkins M, Liston HL, "Opioid use trends and summary of the 'Canadian Guideline for Safe and Effective Use of Opioids for Chronic Non-Cancer Pain': Information for healthcare providers." *Prescription Drug Plan Bulletin*, No. 802. Moncton: New Brunswick Department of Health, 2010.
 30. Canadian Institute for Health Information, *Adverse Drug Reaction-Related Hospitalizations Among Seniors, 2006 to 2011*. Ottawa, 2013.
 31. Inglis D, Perrin C, Gilbert R, *Trends in Prescription Opioid Use, Misuse, and Related Harms in Atlantic Canada*. Halifax: Nova Scotia Department of Health and Wellness and Dalhousie University, 2015.
 32. Royal Canadian Mounted Police, *News Release: Fentanyl Linked to November Sudden Deaths, Moncton, N.B. December 17, 2014* [http://www.rcmp.gc.ca/en/news/2014/17/fentanyl-linked-november-sudden-deaths-moncton-nb, accessed 29 October 2015].
 33. Canadian Centre on Substance Abuse, "Deaths involving fentanyl in Canada, 2009–2014." *Canadian Community Epidemiology Network on Drug Use Bulletin*, August 2015.
 34. Buxton JA, Pursell R, Gibson E, Tzemiz D, "Increasing access to naloxone in BC to reduce opioid overdose deaths." *British Columbia Medical Journal*, 2012; 54(5): 231.
 35. Webber V, *Opioid Use in Canada: Preventing Overdose with Education Programs & Naloxone Distribution*. Montreal: National Collaborating Centre for Healthy Public Policy, 2016.
 36. Statistics Canada, "Table 051-0004: Components of population growth, Canada, provinces and territories, annual (persons)." *CANSIM* (database) [http://www5.statcan.gc.ca/cansim/, accessed 30 May 2016].
 37. Fischer B, Rehm J, "Nonmedical use of prescription opioids: Furthering a meaningful research agenda." *The Journal of Pain*, 2008; 9(6): 490–493.
 38. World Health Organization, *Essential Medicines and Health Products: Access to Analgesics and to Other Controlled Medications* [http://www.who.int/medicines/areas/

- quality_safety/access_Contr_Med/en, accessed 31 March 2016].
39. Berterame S, Erthal J, Thomas J et al., "Use of and barriers to access to opioid analgesics: A worldwide, regional, and national study." *Lancet*, 2016; 387(10028): 1644-1656.
 40. Todd KH, Ducharme J, Choiniere M et al., "Pain in the emergency department: Results of the Pain and Emergency Medicine Initiative (PEMI) Multicenter Study." *The Journal of Pain*, 2007; 8(6): 460-466.
 41. Canadian Institute for Health Information, *International Statistical Classification of Diseases and Related Health Problems, Tenth Revision (ICD-10-CA)*. Ottawa, 2009.
 42. Dasgupta N, Mandl KD, Brownstein JS, "Breaking the news or fueling the epidemic? Temporal association between news media report volume and opioid-related mortality," *PLOS One*; 2009; 4(11).
 43. Fischer B, Rehm J, "Deaths related to the use of prescription opioids," *Canadian Medical Association Journal*, 2009; 181(12): 881-882.
 44. Gladstone EJ, Smolina K, Weymann D et al., "Geographic variations in prescription opioid dispensations and deaths among women and men in British Columbia, Canada." *Medical Care*, 2015; 53(11): 954-959.
 45. Gomes T, Juurlink D, Moineddin R et al., "Geographical variation in opioid prescribing and opioid-related mortality in Ontario." *Healthcare Quarterly*, 2011; 14(1):22-4.
 46. Dhalla IA, Mamdani MM, Gomes T, Juurlink DN, "Clustering of opioid prescribing and opioid-related mortality among family physicians in Ontario." *Canadian Family Physician*, 2011; 57(3): e92-e96.
 47. Paulozzi LJ, Strickler GK, Kreiner PW, Koris CM, "Controlled substance prescribing patterns — prescription behavior surveillance system, eight states, 2013. *Morbidity and Mortality Weekly Report*, 2015; 64(SS09): 1-14.
 48. Statistics Canada, "Table 2: Police-reported *Controlled Drugs and Substances Act (CDSA)* violations, by type of substance, by province and territory, 2013." *Juristat* [<http://www.statcan.gc.ca/pub/85-002-x/2015001/article/14201/tbl/tbl02-eng.htm>, accessed 10 November 2015].
 49. Gomes T et al., "Impact of legislation and a prescription monitoring program on the prevalence of potentially inappropriate prescriptions for monitored drugs in Ontario: A time series analysis." *CMAJ Open*, 2014; 2(4): e256-e261.
 50. Sproule B, *Prescription Monitoring Programs in Canada: Best Practice and Program Review*. Ottawa: Canadian Centre on Substance Abuse, 2015.
 51. National Opioid Use Guideline Group, *Canadian Guideline for Safe and Effective Use of Opioids for Chronic Non-Cancer Pain*. 2010 [<http://nationalpaincentre.mcmaster.ca/opioid>, accessed 29 October 2015].
 52. Franklin G, Sabel J, Jones CM et al, "A comprehensive approach to address the prescription opioid epidemic in Washington State: Milestones and lessons learned." *American Journal of Public Health*, 2015; 105(3): 463-469.