

# Opioid Related Harms in New Brunswick:

Deaths, Overdoses and Take Home Naloxone Kits

2021 – Quarter 2

September 2021

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## Introduction

This quarterly surveillance report describes data on apparent opioid-related harms including suspect overdoses, apparent opioid-related deaths, hospitalizations and take-home naloxone kit distribution and use. Together these data sources add to our understanding of the complex opioid overdose situation in New Brunswick; however, comparisons should not be made between different data sources as each represents a different population. All data are reported to the Public Health New Brunswick (PHNB).

## Key Messages

- To date, 2021 has the second highest rate of individuals responding to naloxone since 2017.
- The proportion of individuals responding to naloxone in 2020 is the lowest to date, whereas the proportion in 2021 is one of the highest to date, along with 2017.
- 2020 had the highest number of substance-related deaths and opioid-related deaths since 2016.
- Four fentanyl-related deaths occurred in 2020, but none have been reported in 2021 to date.
- The total number of opioid-related poisoning hospitalizations in 2020 were within an expected range; however, there is a notable peak in the proportion of individuals aged 60-69 years compared to previous years. The quarterly numbers in Q1 2021 are in an expected range.
- 2020 has the highest proportion of hospitalizations for accidental poisonings and the lowest proportion of intentional poisonings.
- Take home naloxone distribution sites have helped distribute over 2,500 kits since 2018.

Though some indicators are reporting heightened values and marked changes in trends since prior to the onset of COVID-19, interpretation of these results should still be done with caution due to the small number of events observed and the short duration during which some of these trends have been observed.

## Data Sources

### Ambulance New Brunswick

Data from ANB are aggregate and include information about:

- a) patients who were administered naloxone by a paramedic for a suspected opioid overdose, and
- b) patients who responded to naloxone.

The number of patients who were administered naloxone might be an overestimation of the actual number of opioid overdoses; therefore, the number of patients responding to naloxone was also collected and reported. If a patient responds to naloxone, this indicates that the patient

was experiencing an opioid-related overdose as naloxone only has an effect if opioids were consumed. Data in this report reflect data received from ANB as of July 20, 2021.

**Limitations:** The number of accidental/suspect opioid overdoses is an estimate based on the decision to administer naloxone by a paramedic. As such, the data do not include overdoses where patients were already dead on arrival or those who were not given naloxone by a paramedic.

See Appendix A for a detailed description of ANB data.

### Chief Coroner's Office

Data received from the Chief Coroner's Office include a line list of all apparent drug-related (opioid and non-opioid) overdose deaths. Data in this report reflect data received from the Chief Coroner's Office as of July 16, 2021.

**Limitations:** Due to the inherent delay in investigating deaths, data are preliminary and may change over time as investigations are concluded and more information is acquired, or new cases are added.

See Appendix A for a detailed description of Coroner Data.

### Non-Government Organizations, Detoxification Centres and Correctional Centres

Data for take home naloxone kits (THN kit) come from three non-government organizations (NGOs) (AIDS NB in Fredericton, Avenue B in Saint John, and Ensemble in Moncton), eight detoxification centres (located in Bathurst, Campbellton, Edmundston, Fredericton, Miramichi, Moncton, Saint John and Tracadie-Sheila), and three correctional centres (Saint John Regional Correctional Centre, Southeast Regional Correctional Center, and the New Brunswick Women's Correctional Centre / NB Youth Centre). Data include the number of THN kits that are distributed and used. An individual may be given a THN kit if 1) the individual is at risk of an opioid overdose due to current opioid use, or they have previously used opioids and are at risk of using opioids again; or 2) they are a family member, friend, or other person who is likely to witness and respond to an overdose. The data in this report reflect data received from the 13 centres as of July 27, 2021.

**Limitations:** Certain data elements are disclosed at the client's discretion and level of comfort, therefore not all variables requested may be collected. Data may be updated as additional information is obtained and reported, and as forms continue to be validated.

See Appendix A for a detailed description of the take home naloxone kit data.

### Hospital Data

Data for opioid-related poisoning hospitalizations are extracted from the Discharge Abstract Database. Data in this report reflect data received as of June 10, 2021.

An opioid-related poisoning hospitalization is defined by any acute care hospitalizations which has a diagnosis for opioid-related poisoning.

**Limitations:** Due to the inherent delay in data coding, there exists a data lag of several months.

See Appendix A for a detailed description of hospital data.

## Methodology

Data were received from ANB, the Chief Coroner's Office, and the NGOs, detoxification centres, correctional centres, and the Discharge Abstract Database then validated and analyzed by PHNB. Descriptive analyses were conducted for each data source.

Throughout this report, estimated rates were calculated using person-time contributed to the specified period. This method is used to provide a better estimate of rates that are calculated for partial years. Caution should be used when interpreting data in this report as small numbers can lead to wide variations.

The reported apparent opioid overdose death data and take home naloxone kit data are preliminary, and numbers are subject to change in the coming reports. Since the last report, updates have been made to previously reported counts and rates based on revised data.

See Appendix B for a detailed description of the methodology.

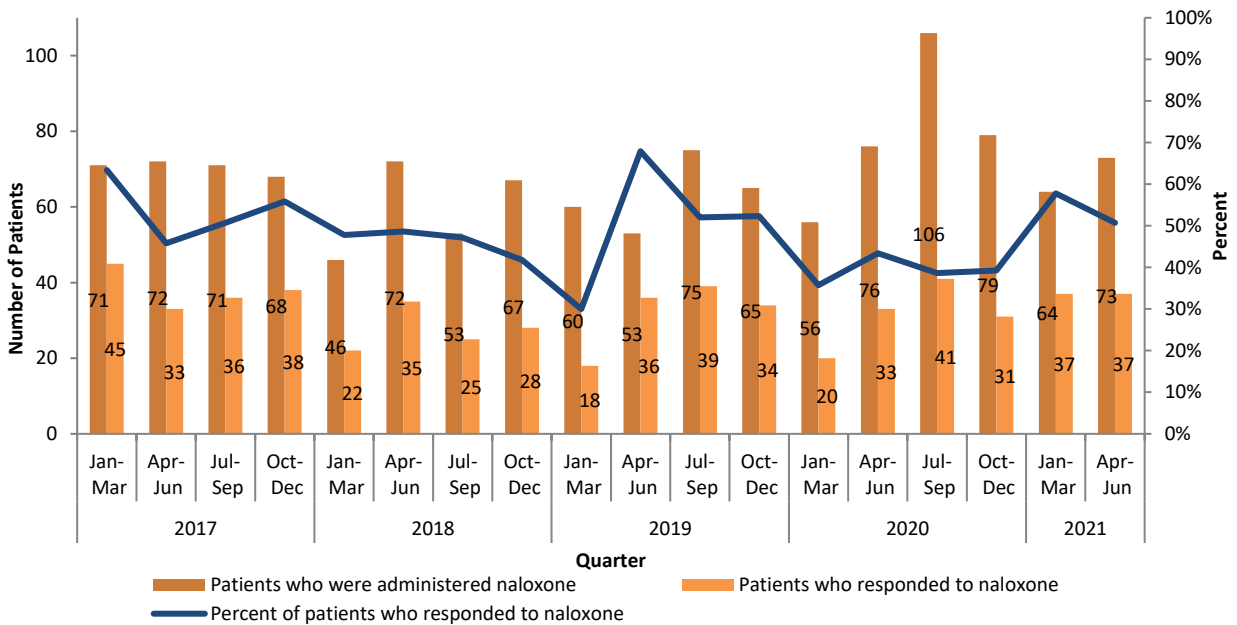
# Suspect Opioid Overdoses

## Ambulance New Brunswick

### 2021 Q1 & Q2 (January 1 to June 30)

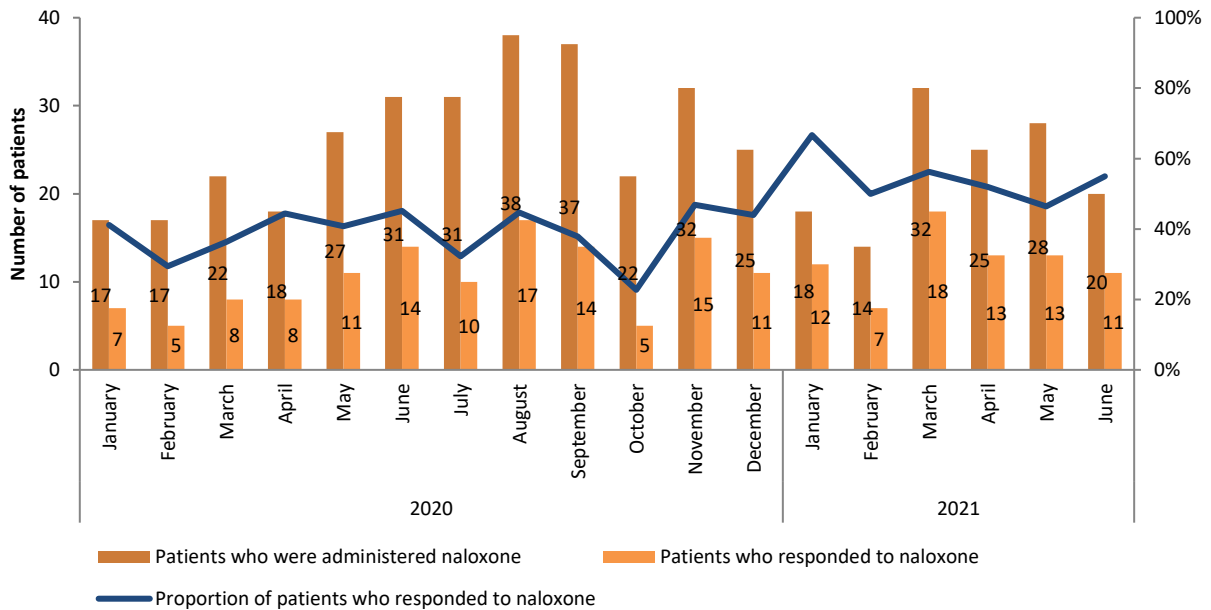
In Q1 & Q2 2021, **naloxone was administered to 137 suspect opioid overdose patients** (Graph 1), with an average of 23 patients per month. Of the 137 suspect opioid overdose patients, **74 (54%) responded to naloxone** which corresponds to an average of 12 patients per month (range: 7 to 18).

**Graph 1.** Number of suspect opioid overdose patients who were administered naloxone and number and percentage of patients who responded to naloxone, quarterly in New Brunswick, from January 2017 to June 2021.



Data source: Ambulance New Brunswick, July 20, 2021.

**Graph 2.** Number of suspect opioid overdose patients who were administered naloxone and number and percentage of patients who responded to naloxone, monthly in New Brunswick, from January 2019 to June 2021.

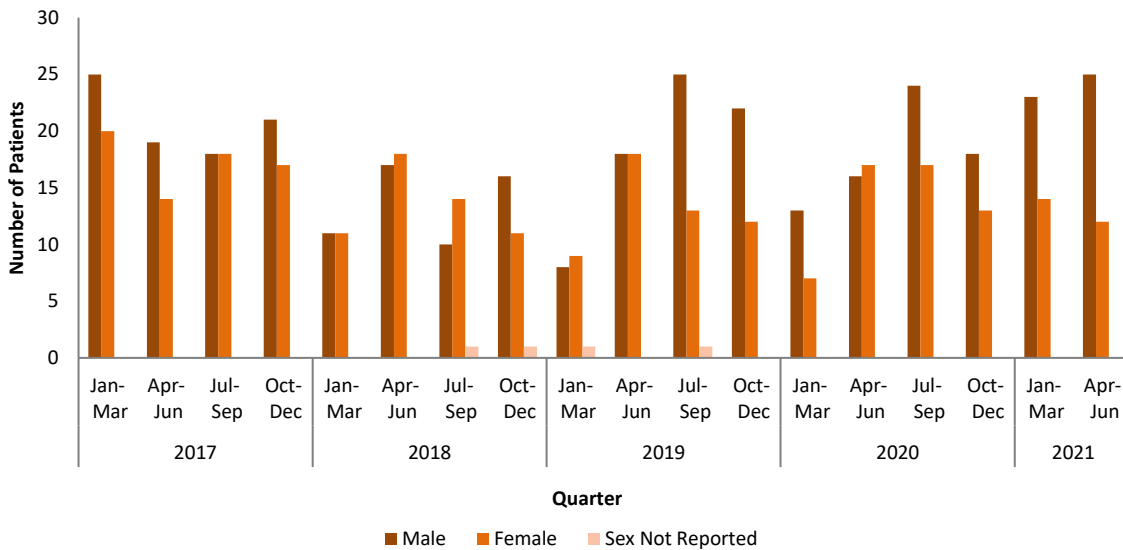


Data source: Ambulance New Brunswick, July 20, 2021.

**Among the 74 patients who responded to naloxone in Q1 & Q2 2021:**

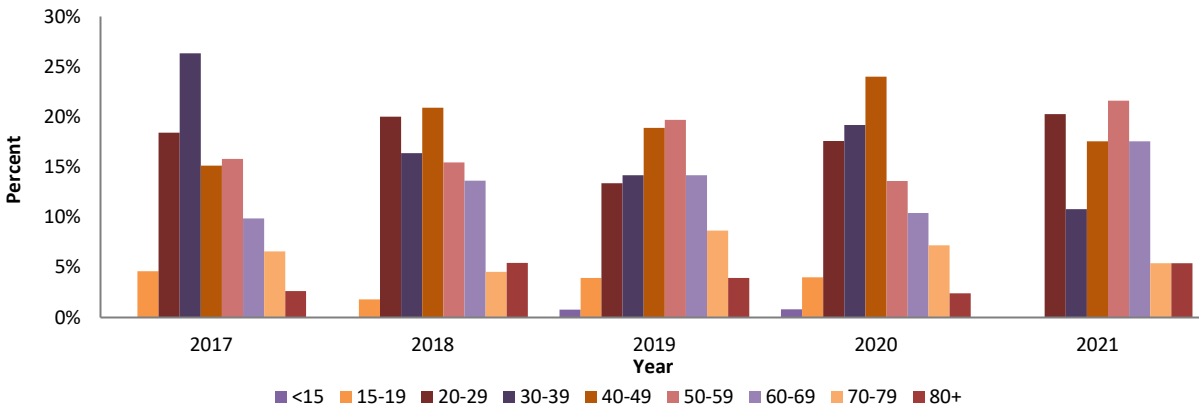
- **There were more males than females:** 48 (65%) were male and 26 (35%) were female (Graph 3).
- **The largest proportion of individuals were between 50-59 (21%),** but this was closely followed by individuals aged 20-29 (20%) (Graph 4). The age distribution is most similar to that of 2018 where individuals in age groups between 20 and 69 account for roughly the same proportion, except for individuals aged 30-39 years old.

**Graph 3.** Number of suspect opioid overdose patients who responded to naloxone by sex, quarterly in New Brunswick, from January 2017 to June 2021.



Data source: Ambulance New Brunswick July 20, 2021.

**Graph 4.** Distribution by age group of suspect opioid overdose patients who responded to naloxone in New Brunswick in 2017 to June 2021.



Data source: Ambulance New Brunswick, July 20, 2021.

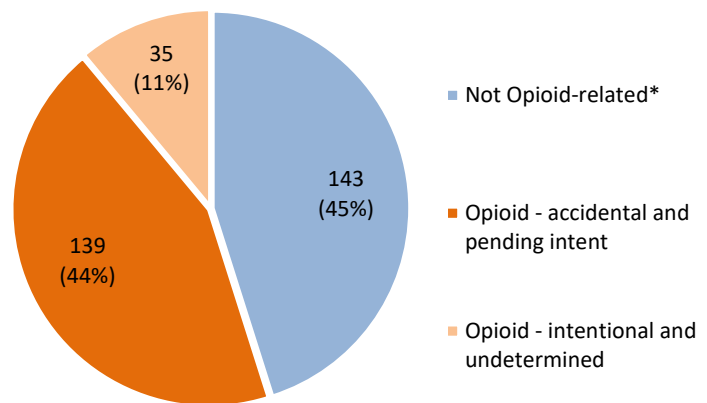
The estimated crude rate of suspect opioid overdose patients who responded to naloxone in New Brunswick in **Q1 & Q2 2021 is 18.9 cases per 100,000 person-years**. This is most comparable to the 2017 crude rate of 19.8 cases per 100,000 person-years and remains within the range of rates from all years to date. The crude rate may change in coming months as new data are compiled.



# Apparent Opioid Overdose Deaths

## Chief Coroner's Office

Drug-related deaths have taken a toll on the lives of New Brunswickers, their families, and their friends. **Between January 2016 and March 2021, there were 333 substance-related deaths** (Figure 1). Apparent opioid-related deaths were responsible for more than half (56%) of these deaths. Furthermore, apparent opioid-related deaths classified as accidental or pending intent account for 46% of all drug-related deaths. In 2020, **80 deaths** due to any type of drug (opioids and non-opioids) occurred, of which **44 (55%) were related to opioids**. Currently, there are **9 substance-related deaths in Q1 of 2021, of which 7 are related to opioids**.



**Figure 1.** Distribution of drug related deaths in New Brunswick, by drug type and intent, January 2016 to March 2021.

Data Source: Chief Coroner's Office, July 16, 2021\*\*

\*These numbers may change as more information becomes available and coroner investigations are concluded.

## Accidental and Pending Intent Deaths Due to Opioids

### 2020

In 2020, there were 80 substance-related deaths, of which **44 (55%) were apparent opioid-related deaths**. Among the opioid-related deaths, **37 were accidental or pending intent** (Graph 5), and four have involved fentanyl or fentanyl analogues. Since 2016, 2020 has reported the largest number of substance-related deaths and opioid-related deaths. Additionally, **Q4 2020 reported 16 deaths, which is the highest number of deaths in a single quarter** and more than double the quarterly average (7.3 deaths).

Of the 37 apparent opioid-related deaths classified as accidental or with pending intent:

- The **majority were male** (54% male, 46% female) (Graph 6).
- The **largest proportion of individuals were between 40-49 years old** (30%) (Graph 7). The average and median age for 2020 is 46 and 44, respectively. These values are similar to previous years.
- Fourteen (38%) of the deaths involved illicit opioids, 14 (38%) involved prescribed opioids, and 9 (24%) involved opioids of unknown source.

The 2020 estimated annual crude mortality rate for accidental or pending intent opioid-related deaths in New Brunswick is **4.7 deaths per 100,000 person-years**. The rate in 2020 is the highest rate since surveillance began in 2016. Regional rates are not reported as the small numbers involved can lead to unstable rates.

### Q1 2021

In Q1 of 2021, there are currently **9 substance-related deaths**, of which **7 (78%) were apparent opioid-related deaths** (Graph 5). All 7 deaths were accidental or pending intent and none have involved fentanyl.

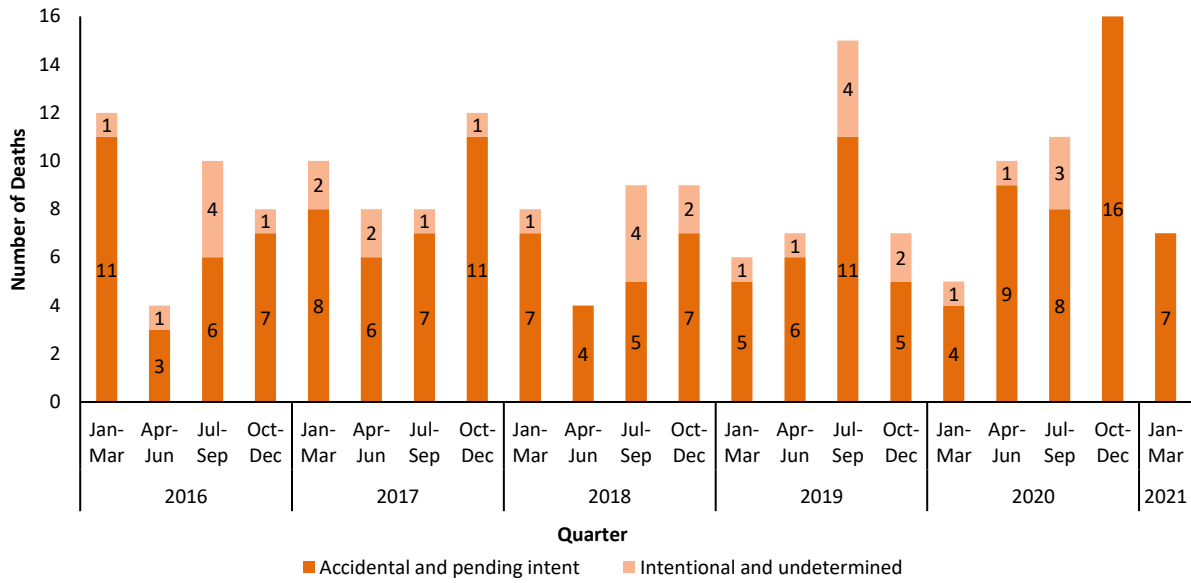
Of the 7 apparent opioid-related deaths classified as accidental or with pending intent:

- The **majority were male** (86% male, 14% female) (Graph 6)
- The majority of individuals were **between 40-49 years old** (57%), but proportions are expected to change as additional cases are reported.
- All but one individual has consumed opioids from **prescribed or unknown sources (43% each)**.

The estimated annual crude mortality rate for accidental or pending intent opioid-related deaths in Q1 2021 New Brunswick is **3.6 deaths per 100,000 person-years**. This is comparable to previous years.

Data for Q1 of 2021 are incomplete and numbers are expected to change as coroner investigations continue.

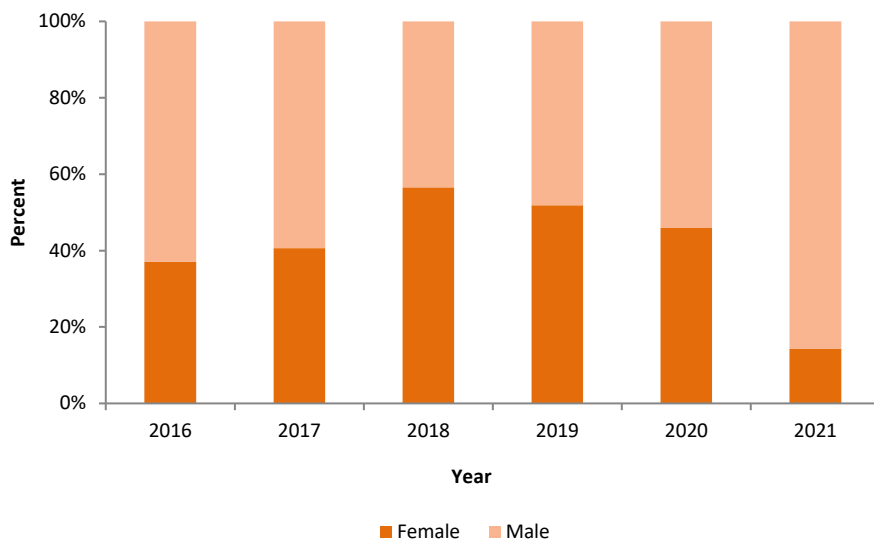
**Graph 5.** Number of apparent opioid-related overdose deaths by intent (intentional, accidental, pending intent or undetermined), quarterly in New Brunswick, from January 2016 to March 2021\*.



Data Source: Chief Coroner's Office, July 16, 2021.

\*These numbers may change as more information becomes available and coroner investigations are concluded.

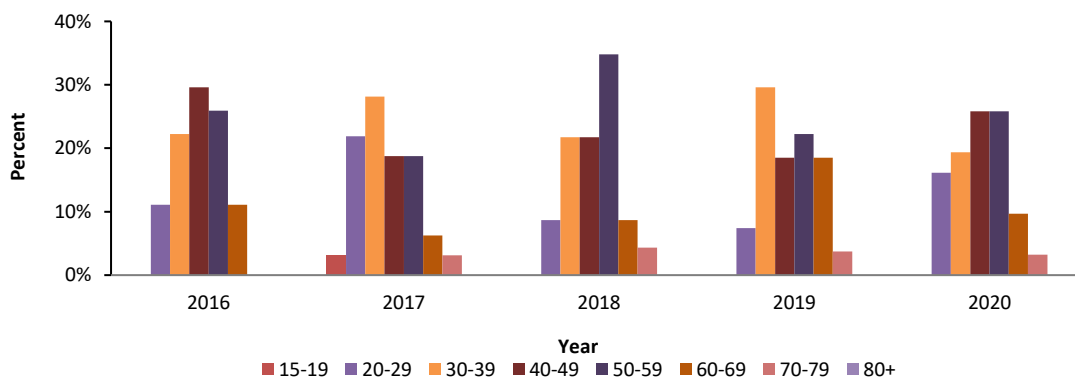
**Graph 6.** The proportion of apparent opioid-related overdose deaths classified as accidental or with pending intent by sex, quarterly, in New Brunswick from January 2016 to March 2021\*.



Data source: Chief Coroner’s Office, July 16, 2021.

\*These numbers may change as more information becomes available and coroner investigations are concluded.

**Graph 7.** Number of apparent opioid-related overdose deaths classified as accidental or with pending intent, by age group in New Brunswick, from January 2016 to December 2020\*.



Data source: Chief Coroner’s Office, July 16, 2021

\*These numbers may change as more information becomes available and coroner investigations are concluded.

## Polysubstance Use

Given that most substance-related deaths in New Brunswick demonstrate that multiple substances were consumed at the time of death, polysubstance use is of notable concern. Of the 188 decedents who died from an apparent opioid-related overdose between January 2016 and March 2021, **184 (97.9%) consumed opioids in conjunction with one or more non-opioid substance** (e.g. alcohol or non-opioid drugs)<sup>1</sup>. **Benzodiazepines and antidepressants were the most commonly co-consumed substance type** having been consumed by 123

<sup>1</sup> Substances were identified as having been consumed around the time of death based on toxicology testing, rapid toxicology testing, and any circumstantial evidence in the absence of testing.

(65%) and 105 (56%) of the decedents who died from an apparent opioid-related overdose, respectively (Table 1).

**Table 1.** Number (percent) of decedents who died from an apparent opioid-related overdose (AORD) who also consumed one or more non-opioid substance, from January 2016 to March 2021\*.

Substance Type**	Total (% of AORD)	Number by sex (% of row total)	
		Female	Male
Benzodiazepines	123 (65%)	67 (54%)	56 (46%)
Antidepressants	105 (56%)	59 (56%)	46 (44%)
Stimulants	79 (42%)	33 (42%)	46 (58%)
Cannabinoids	62 (33%)	25 (40%)	37 (60%)
Antipsychotics	39 (21%)	21 (54%)	18 (46%)
Alcohol	25 (13%)	11 (44%)	14 (56%)

Data source: Chief Coroner's Office, July 16, 2021

\*These numbers may change as more information becomes available and coroner investigations are concluded

\*\*See Appendix D for a description of the specific substances in each substance category. Categories are subject to change.

Of the decedents who died from an apparent opioid-related overdose, **70 (37% of AORD; 66% female, 34% male) decedents consumed both benzodiazepines and antidepressants** around the time of death.

It is important to note that the presence of other substances in addition to opioids does not necessarily indicate that they contributed to death, but only indicates that the substance was consumed around the time of death; therefore, this data should not be used to identify the number of individuals who died as a result of the indicated substances but should be used only to identify the number of people in whom these drug types were detected from toxicological testing or circumstantial evidence.

## Hospitalization Data

Between January 2016 and March 2021, **548 opioid-related poisoning hospitalizations have occurred.**

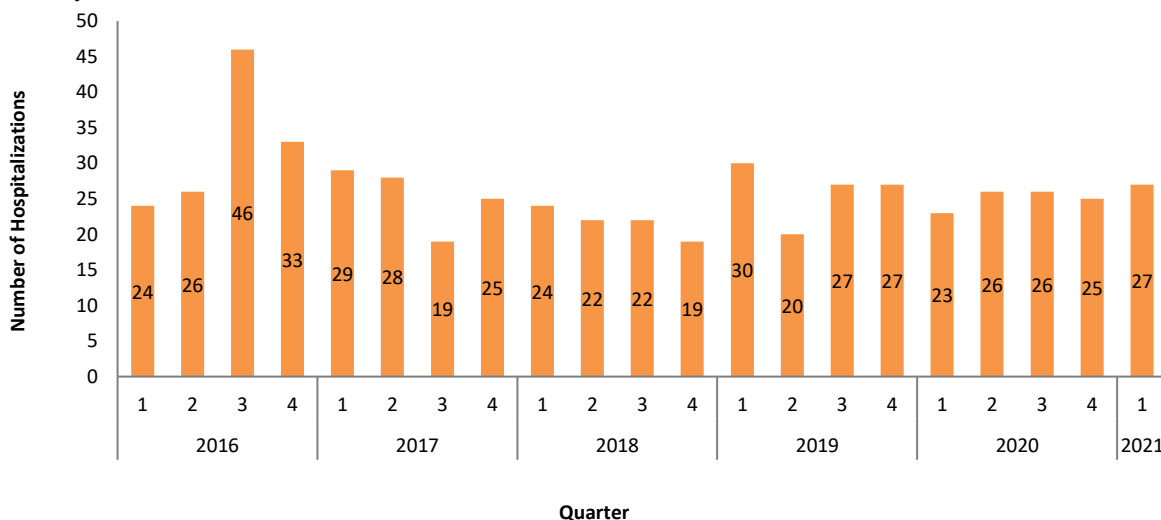
There were **100 hospitalizations in 2020** and **27 hospitalizations in Q1 2021** (Graph 8). Monthly numbers are within an expected range. The annual and monthly averages for 2016 to 2020 is 104 and 9 hospitalizations, respectively; the monthly average for Q1 2021 is also 9.

The overall proportion of hospitalizations who are male and female is equal (50% and 50%, respectively) (Graph 9). While **2020 has roughly equal proportions who were male and female (48% and 52%, respectively), Q1 2021 has a notably higher proportion of males than females (63% and 37%, respectively).**

Since January 2016, the **highest proportion of hospitalizations were among individuals aged 50 to 59 years old (18%).** In 2020, there was a notable peak of the number of hospitalizations of individuals aged 60 to 69 (26%). While the highest proportion of individuals was also among those aged 60 to 69 (26%) in Q1 2021, nearly as many individuals were aged 30 to 39 (22%) (Graph 10). The average age for 2020 continues to be the highest to date (54 years).

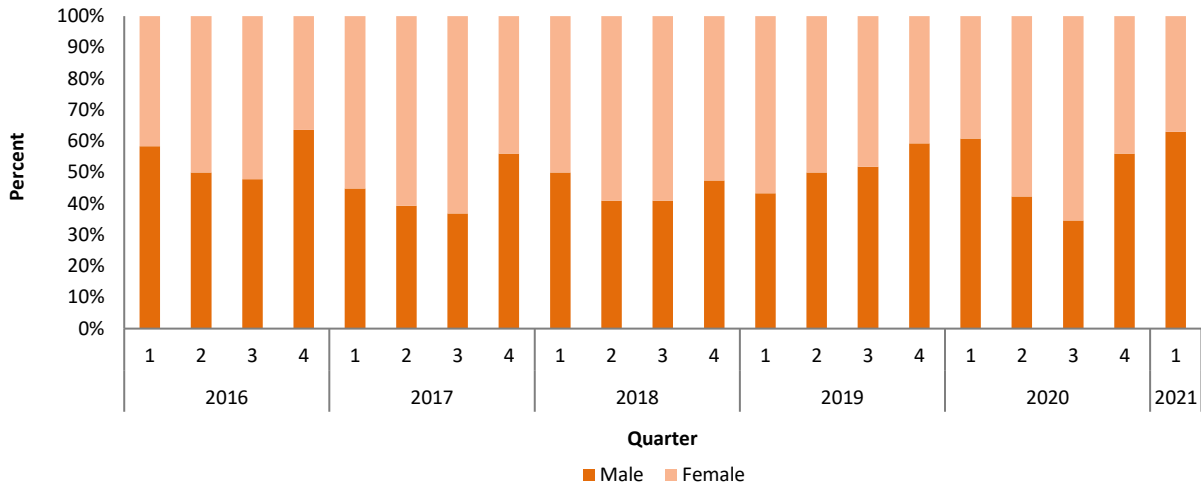
There was a **steady increase in the proportion of hospitalizations classified as accidental intent between Q1 2019 and Q2 2020;** since Q2 2020 it has stabilized at roughly 46% (Graph 11). 2020 has the highest proportion of accidental poisonings and the lowest proportion of intentional poisonings to date with 47% and 23%, respectively.

**Graph 8.** Number of opioid-related poisoning hospitalizations, quarterly, New Brunswick from January 2016 and March 2021.



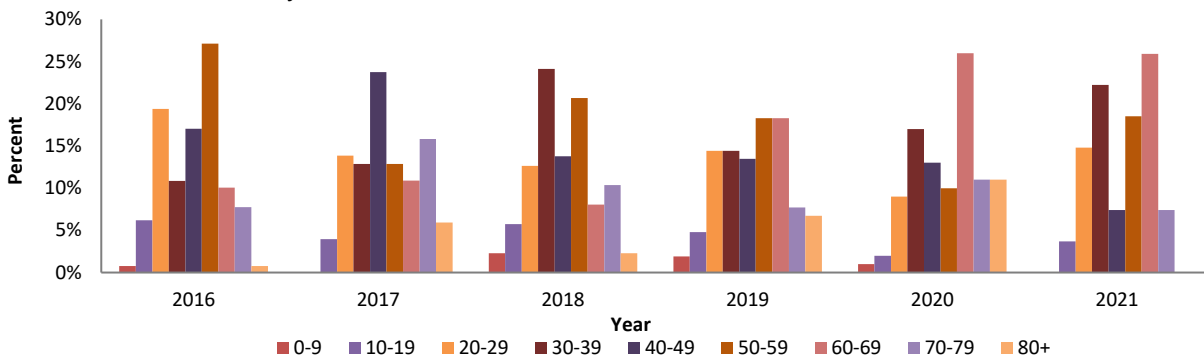
Data source: Discharge Abstract Database, June 10, 2021

**Graph 9.** Percent of opioid-related poisoning hospitalizations by sex, yearly, in New Brunswick from January 2016 to March 2021.



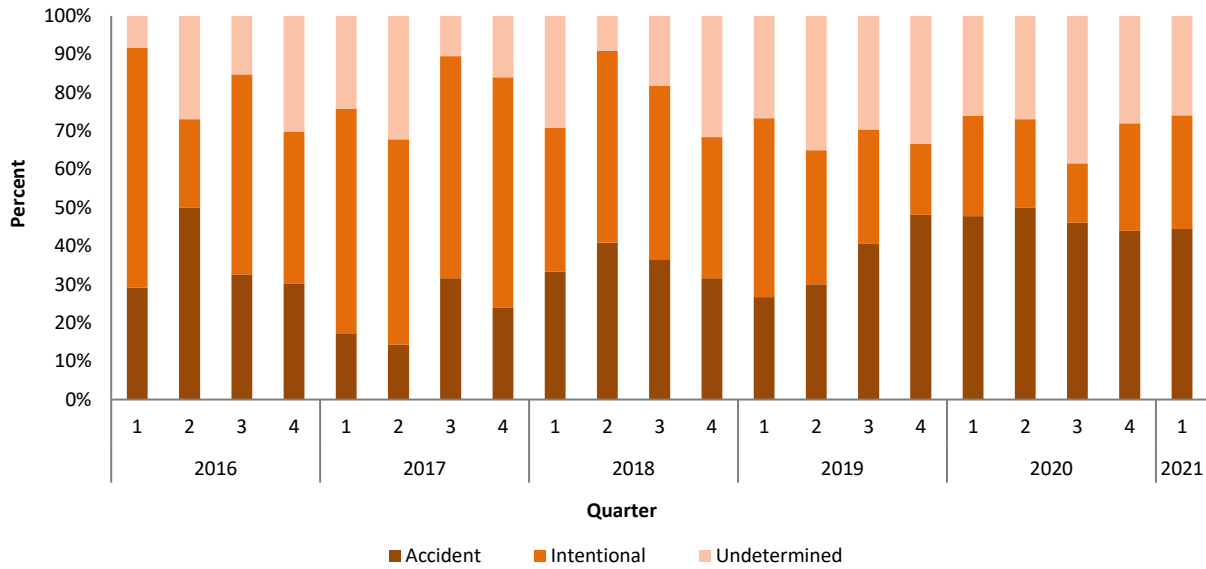
Data source: Discharge Abstract Database, June 10, 2021

**Graph 10.** Percent of opioid-related poisoning hospitalizations by age group, yearly, in New Brunswick from January 2016 to March 2021.



Data source: Discharge Abstract Database, June 10, 2021

**Graph 11.** Percent of opioid-related poisoning hospitalizations by intent, quarterly, in New Brunswick from January 2016 to March 2021.



Data source: Discharge Abstract Database, June 10, 2021



# Take-Home Naloxone Kit Data

## Non-Government Organizations, Detoxification Centres and Correctional Centres

### Kit Distribution

Since October 2018, **2,327 take home naloxone kits (THN kits) were distributed** into the community. In 2020, 742 THN kits were distributed; to date, **624 THN kits have been distributed in Q1&2 of 2021** (Table 2). In addition to the 2,327 THN kits distributed into the community, 207 were transferred to a local business or organization to be used on-site or further distributed to individuals in need of a THN kit. This yields a total of 2,534 THN kits that have been distributed.

**Table 2.** Number of THN kits distributed by site, from October 2018 to June 2021.

Site Name	2018*	2019	2020	2021	Total
AIDS NB - Fredericton	87	166	101	152	506
Avenue B - Saint John	118	330	262	83	793
Ensemble - Moncton	28	91	251	346	716
Detoxification Centres	34	107	85	40	266
Correctional Centres	N/A	N/A	43	3	46
<b>Total</b>	<b>267</b>	<b>694</b>	<b>742</b>	<b>624</b>	<b>2,327</b>

Data source: Non-government organizations, detoxification centres, and correction centres July 27, 2021

\*Data are only for Q4 in 2018.

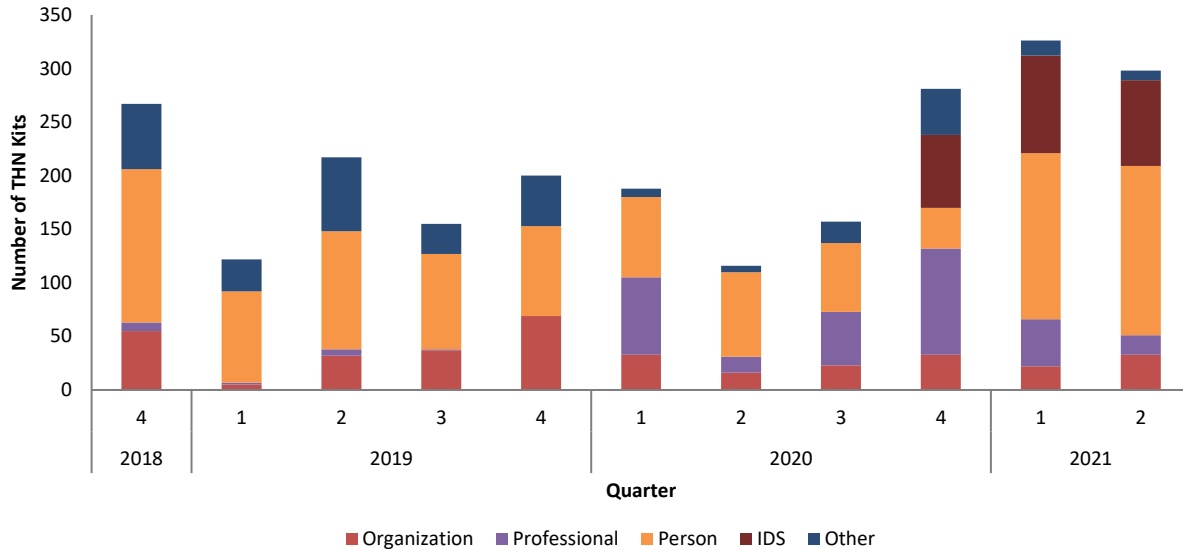
Excluding THN kits transferred to other sites, the number of THN kits distributed in Q1 2021 is the greatest number of THN kits distributed in a single quarter, followed by Q2 2021. This can in part be attributed to the new **Interactive Dispensing Service (IDS) at Ensemble, Moncton, which has distributed roughly 240<sup>2</sup> THN kits since Q4 2020** (Graph 12). In addition, there is a **higher than average number of individuals requesting a kit for themselves or for a friend or family member in Q1 and Q2 2021** compared to the quarterly average since 2018.

**Since January 2019, more than one third (854, 41%) of the THN kits distributed have been distributed directly to the person at risk of an overdose.** The proportion of kits distributed to the person at risk was lowest in 2020, and roughly equal the remaining years (37% vs 44%). Since Q4 2020, there has been a notable increase in the number of THN kits distributed to unspecified individuals because of the new IDS located which does not collect information on the individual receiving the kit.

<sup>2</sup> This number is expected to be updated as data are validated.

Among individuals at risk of an overdose, **more males received THN kits than females** or individuals of other/unknown gender in 2019, 2020, and Q1 & Q2 2021 (48%, 65%, and 54% respectively) (Graph 13).

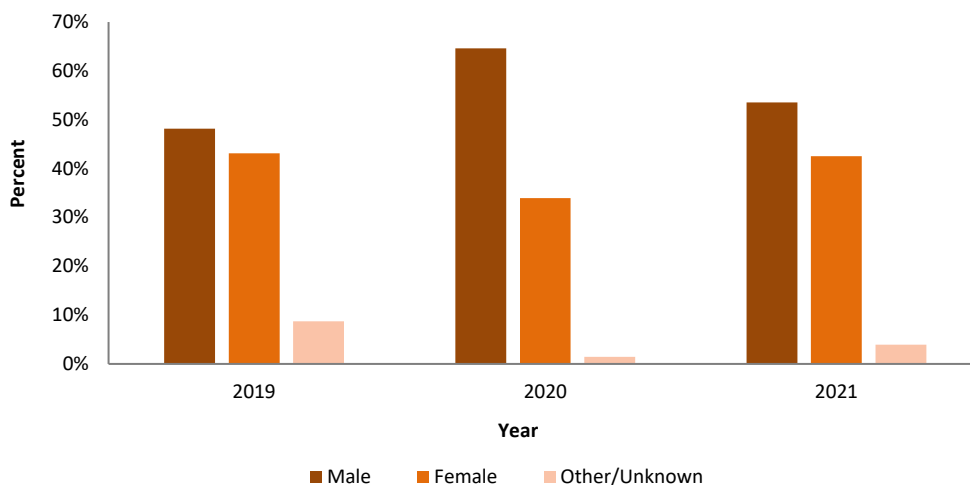
**Graph 12.** The proportion of THN kits distributed based on the type of recipient\*\*, quarterly, New Brunswick, Q4 2018 to Q2 2021.



Data source: Non-government organizations, detoxification centres, and correction centres July 27, 2021

\*\*The type of recipients are categorized as: Organization is a business or non-government organization; Person is the person at risk of an overdose or the family/friend of someone at risk; Professional is a student or service worker; IDS is the interactive dispensing unit at Ensemble, Moncton; Other is an individual who falls into more than one category, unknown, or other.

**Graph 13.** The proportion of individuals at risk of an overdose who received take home naloxone kits by gender, in New Brunswick, 2019, 2020, and Q1 & Q2 2021.



Data source: Non-government organizations, detoxification centres, and correction centres July 27, 2021

### Kit Use

**Replacement THN kits were sought out by 59 individuals in 2019, 113 individuals in 2020, and 87 in Q1 & Q2 2021.** Using a kit was the primary reason provided for seeking a replacement in 2019, whereas replacing an expired kit was the primary reason in 2020 and Q1 & Q2 2021. Since 2018, **96 THN kits individuals sought a replacement kit** after having reportedly used a kit to treat an overdose.

Of the 96 instances in which a kit was reportedly used, **66 individuals completed a questionnaire about the overdose.** Among these, **27 THN kits were used in 2020, and 7 THN kits were used in Q1 & Q2 2021.** Take home naloxone kits were reportedly used to **treat more males than females or individuals of other/unknown sex** (55% for males, 41% for females, and 5% other/unknown).

Overall, **55 individuals were not alone (83%)** at the time of overdose, 5 were alone (8%), and the remaining instances were unknown or not reported (9%). Just over **half of the overdoses occurred in a private residence** (34, 52%) followed by a hotel/motel (11, 17%).

**Thirty-nine (59%) report not calling 911 (70% in 2018, 59% in 2019, 44% in 2020, 100% in Q1 & Q2 2021).** The primary reason was **fear the police would come** (16 of 39, 41%).

The reported number of THN kits used may be an underestimation of the total number of THN kits being used due to potential barriers that may inhibit individuals from reporting kit use (e.g. stigma, fear of re-traumatization, accessibility, fear of criminality). Data are subject to change as forms continue to be validated.

## Appendix A: Data Sources

### Ambulance New Brunswick

Data from ANB are abstracted in aggregate form and do not contain patient-level data. Monthly totals for the following variables are broken down by sex (male, female, and sex not reported) and age group in years (<15, 15-19, 20-29, 30-39, 40-49, 50-59, 60-69, 70-79, 80+, and age not reported):

- Accidental/suspect opioid overdoses
- Repeat individual opioid overdose cases
- Individuals who received 1 dose of naloxone
- Individuals who received 2 doses of naloxone
- Individuals who received 3 or more doses of naloxone
- Individuals who responded to naloxone

Data also include the monthly total of referrals to hospitals for patients with accidental/suspect opioid overdoses and those who responded to naloxone. The monthly totals of reason for dispatch are also included.

### Chief Coroner Office

Data from the Chief Coroner's Office include individual-level data. Data include all drug-related deaths and collect the following variables.

Variable	Variable Description	Response Options
Coroner Case ID	Unique ID number that coroner office assigns to each death	Number - Up to 8 digits
Quarter	The quarter of the year in which the death occurred	1, 2, 3, 4
Year	Year in which the death occurred	yyyy
DOD	Date of death based on the date the death is pronounced	(dd-mmm-yy)
Age	Age of case in years	
Sex	Sex of the case	Male Female
Case Status	Status of the case investigation.	Active Completed
Death Manner	The coroner assigns each case a manner of death	Accident Suicide Undetermined
Judicial District	The judicial district in which the death occurred.	Bathurst Campbellton Edmundston Fredericton

		Miramichi Moncton Saint John Woodstock
Residential First 3 Digits of Postal Code	The first three digits of the residential postal code of the case	
Opioid Related	Whether the case is opioid-related or not. This is determined using all available evidence.	Opioid Not Opioid
Source of Opioid	The source of the opioid taken by the case. This information is obtained by reviewing the file.	Prescribed Illicit Unknown NA
With/Without Other Substances	Whether the opioid was taken with or without other substances. Other substances include alcohol or non-opioid drugs. This is determined through the toxicology results.	With Other Substance Without Other Substance Unknown NA
Drug 1 - 15	List of drugs that were present in the toxicology report.	

### Non-Government Organizations, Detoxification Centres and Correctional Centres

Data from the three NGOs, seven detoxification centres, and three correctional centres include individual-level data. Data are collected from two forms: a distribution form and a use form.

The distribution form collects information on each kit that is distributed, including who is receiving it (e.g. person at risk, service worker) and why they are seeking one (e.g. first kit, replacement). The Use form collects detailed information about a reported overdose that occurred for which a THN kit was used; it collects information such as overdose setting, who was present, what emergency responders arrived, outcome, etc.

### Hospital Data

Data are obtained from the discharge abstract database on a monthly basis and include record-level data for all discharged related to opioid-related poisonings as defined by select diagnoses. In addition to variables containing diagnostic information, demographic and hospital-related variables are collected and include but not limited to age, sex, residence area, date of admission, date of discharge, length of stay, etc.

### Population Estimates

All population estimates were from 2019 population estimates received from Statistics Canada, Demography Division, March 2020.

## Appendix B: Methodology

### Ambulance New Brunswick

Data are sent to the PHNB monthly and analyzed on a quarterly basis. Aggregate data are organized into various tables used to conduct descriptive analyses for apparent/suspect opioid overdoses and individuals who responded to naloxone; this includes counts, proportions, means, and rates. Health region specific rates, if reported, are estimated based on the hospital of referral as the location of dispatch pick-up is not available. Denominator data for the current year are based on the most recent estimates available (e.g. the 2019 version of the population estimates were used for the 2018 population estimates).

Data in this report primarily focus on individuals who responded to naloxone and referrals to hospitals for those who responded to naloxone. Any data for monthly totals of individuals who responded to naloxone are a subset of the totals for individuals with an accidental/suspect opioid overdose. Data include accidental/suspect opioid overdoses regardless of intent, and therefore may differ in terms of demographics from other data sources (e.g., apparent opioid overdose deaths).

All analyses were conducted using Excel 365 ProPlus.

### Chief Coroner Office

Cases for drug-related deaths are identified by coroner investigations. Once data are received by PHNB, the data are validated prior to analyses. The data validation process includes verifying the classification of all variables by using case files and the coroner database, identifying any changes to previous cases, and identifying new cases since the last data submission. Once data are validated, they are further classified by intent (accidental, pending intent, intentional and undetermined) and drug type (non-opioids, non-fentanyl opioids, fentanyl opioids).

Descriptive analyses includes counts, proportions, means, and rates. The rates are calculated using denominator data for the current year based on the most recent estimates available (e.g. the 2020 version of the population estimates were used to populate 2019 population estimates).

Analyses were conducted using Excel 365 ProPlus and Stata MP v16.

### Take Home Naloxone Kits: Non-Government Organizations, Detoxification Centres and Correctional Centres

Data are sent to PHNB monthly and cover the previous month. For the purpose of reporting, the date on which a THN kit was used is based on the recorded date of the overdose; if this is unavailable, then it is based on the date at which the form was completed. Basic descriptive analyses includes counts, proportions, means

All analyses were conducted using Excel 365 ProPlus and Stata MP v16.

## Hospital Data

Data include any opioid-related poisoning hospitalization as defined<sup>3</sup> by the following International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Canada (ICD-10-CA) codes: T40.0-T40.4 and T40.6. An opioid-related poisoning hospitalization diagnosis required a diagnosis type of “M” (most responsible diagnosis), “1” (pre-admission comorbidity), “2” (post-admission comorbidity), “W”, “X”, or “Y” (service transfer diagnosis). Any hospitalizations where the diagnoses was considered a query, i.e. a prefix code of “Q”, were excluded.

The intent of the opioid-related poisoning hospitalization was defined by the following diagnoses codes: “X42” for accidental, “X62” for intentional, and “Y12” for undetermined.

All analyses were conducted using Excel 365 ProPlus and Stata MP v16.

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<sup>3</sup> Definitions reflect previously published methodologies for opioid-related poisoning hospitalizations. <https://health-infobase.canada.ca/substance-related-harms/opioids/>

## Appendix C: Definitions and Abbreviations

- **Illicit opioid:** Indicates the decedent consumed at least one street opioid or at least one opioid medically prescribed to another person.
- **Manner of death:**
  - **Accidental death:** A death considered to be unintentional in nature based on the coroner investigation.
  - **Death with pending intent:** An open investigation where the intent of death is yet to be determined by the coroner.
  - **Intentional death:** A death classified as a suicide based on the coroner investigation.
  - **Undetermined death:** A closed death investigation where the intent of death was deemed unknown by the coroner.
- **Naloxone:** An opioid antagonist which reverses or prevents the effects of an opioid but has no effect in the absence of opioids.
- **Opioid:** A class of pain-relieving drugs that block pain messages by binding to specific receptors (opioid receptors) on cells in the body. They can include either non-fentanyl opioids or fentanyl and fentanyl analogs.
  - **Fentanyl and fentanyl analogs:** Synthetic opioids that can be extremely toxic. Includes but is not limited to fentanyl, norfentanyl, acetylfentanyl, 3-methylfentanyl, carfentanil, butyrylfentanyl, furanyl-fentanyl, despropionyl-fentanyl.
  - **Non-fentanyl opioids:** Any opioid that is not a fentanyl or fentanyl analog opioid. Includes but is not limited to buprenorphine metabolites, codeine, dihydrocodeine, heroin, hydrocodone, hydromorphone (total, unconjugated), loperamide, meperidine, methadone, monoacetylmorphine, morphine (unconjugated, unconjugated-RIA), normeperidine, oxycodone, tapentadol, tramadol, U-47700.
- **Opioid Related Death:** Death from an acute intoxication resulting from the direct effects of consuming exogenous substance(s) where one or more of the substances is an opioid.
- **Prescription opioid:** Indicates the decedent consumed only opioids that were prescribed to the decedent.
- **Take Home Naloxone Kit (THN Kit):** Take home naloxone kits include two doses of naloxone as well as the necessary supplies to administer naloxone (e.g. alcohol swabs, syringes) and for personal protection (e.g. gloves, face shield).
- **Q1:** Quarter 1, January to March
- **Q2:** Quarter 2, April to June
- **Q3:** Quarter 3, July to September
- **Q4:** Quarter 4, October to December



## Appendix D: Polysubstance Use Substance Types

Specific substances, drugs, and metabolites were used to identify individuals who co-consumed specific substance types. An individual was identified as having co-consumed these substances if there was one or more of the following substances detected. The detection of these substances is based on toxicology testing, rapid toxicology testing and circumstantial evidence in the absence of testing. Drug type categories are subject to change, and new substances may be added should they be identified among decedents who died from a substance related overdose death. Further, not all drugs listed in the categories have been detected in decedents.

**Benzodiazepine:** Adinazolam, Alprazolam (Alpha-Hydroxyalprazolam), Bromazepam (Hydroxybromazepam), Chlordiazepoxide, Clobazam (Norclobazam), Clonazepam (7-Amino Clonazepam), Clonazolam, Clorazepate, Delorazepam, Demoxepam, Diazepam (Nordiazepam), Diclazepam, Estazolam, Etizolam (Deschloroetizolam, Hydroxyetizolam), Flubromazepam, Flubromazolam, Flunitrazepam, Flurazepam (Hydroxyflurazepam, Hydroxyethylflurazepam, Desalkylflurazepam, Norflurazepam, Hydroxyflurazepam), Ketazolam, Loprazolam, Lorazepam (Lorazepam-glucuronide), Meclonazepam, Medazepam, Methazolamide, Midazolam (11-Hydroxymidazolam), Nimetazepam, Nitrazepam (7-Amino Nitrazepam), Oxazepam, Phenazepam, Pyrazolam, Temazepam, Tetrazepam, Triazolam (Hydroxytriazolam)

**Antidepressant:** Amitriptyline, Bupropion (Hydroxybupropion), Citalopram (Citalopram/Escitalopram, Escitalopram), Duloxetine, Fluoxetine (Norfluoxetine), Mirtazapine, Nortriptyline, Paroxetine, Sertraline (Desmethylsertraline), Trazodone (mCPP), Venlafaxine (O-Desmethylvenlafaxine)

**Antipsychotic:** Aripiprazole, Asenapine, Clozapine (Desmethylclozapine, Norclozapine), Fluphenazine, Haloperidol, Lurasidone, Loxapine, Olanzapine, Quetiapine (Desalkyquetiapine, Norquetiapine), Risperidone (9-Hydroxyrisperidone)

**Stimulants:** 6-MAM, Amphetamine, Atomoxetine, Caffeine, Catha, Cocaine (Benzoylecgonine, Cocaethylene), Dexamfetamine, Dextroamphetamine, Ethylphenidate, Ephedrine, Fluorophenmetrazine, Ketamine (Norketamine), Lisdexamfetamine, Methamphetamine, Methylenedioxyamphetamine, Methylenedioxymethamphetamine, Methylphenidate (Ritalinic Acid), Modafinil, Pemoline, Pseudoephedrine (Norpseudoephedrine), TFMPP

**Cannabinoids:** Tetrahydrocannabinol (Delta-9 THC, Delta-9 Carboxy THC, 11-Hydroxy Delta-9 THC)

**Alcohol:** Ethanol