

Opioid Related Harms in New Brunswick:

Deaths, Overdoses and Take Home Naloxone Kits

2022 – Quarter 4

May 2023

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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 Public Health New Brunswick (PHNB).

Key Messages and Summary

- The number of individuals administered naloxone by an Ambulance New Brunswick paramedic and who responded to it remain elevated but have slightly declined in the most recent quarter.
- The rate of individuals responding to naloxone in January to December 2022 is the highest to date.
- The rate of apparent accidental or pending intent opioid-related deaths and the rate of all substance-related deaths in 2022 are the highest to date.
- Seventeen accidental and pending intent opioid-related deaths were due to fentanyl or fentanyl analogues in 2022; additional accidental and pending intent opioid-related deaths involved nitazenes, bromazolam and etizolam.
- The number of hospitalizations for opioid-related poisonings in Q2 and Q3 2022 are elevated compared to 2016-2020 quarterly averages; Q4 decreased and is within an expected range.
- Take home naloxone distribution sites have distributed over 7,000 kits since 2018.
- The most recent three quarters (Q2-Q4 2022) have the highest number of take home naloxone kits distributed.

Over the last several months, New Brunswick has continued to see elevated rates of individuals responding to naloxone administered by an Ambulance New Brunswick (ANB) paramedic as well as a continued increase in the number of take home Naloxone (THN) Kits being distributed into the community.

In addition, data from Coroner investigations demonstrate that the proportion of fentanyl-related deaths has increased; additionally, there have been more novel substances detected in decedents compared to previous years.

While the consistent distribution and administration of naloxone from ANB and THN kits may help mitigate the harm from opioid overdoses, it may not be sufficient to combat the increasingly toxic drug supply and will have no effect against substances such as stimulants or benzodiazepines. Continued caution should be taken.

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 March 27, 2023.

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 March 30, 2023.

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.

Hospital Data

Data for opioid-related poisoning hospitalizations are extracted from the Discharge Abstract Database. Data in this report reflect data received as of April 3, 2023.

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.

Take Home Naloxone Kits

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), five correctional centres (Saint John Regional Correctional Centre, Southeast Regional Correctional Center, the New Brunswick Women's Correctional Centre / NB Youth Centre, Dalhousie and Madawaska), and four community mental health centres (Campbellton, Edmundston, Moncton, and Richibucto). 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 various centres as of January 24, 2023.

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.

Methodology

Data were received from ANB, the Chief Coroner's Office, the NGOs, detoxification centres, correctional centres, community mental health 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.

All data 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.

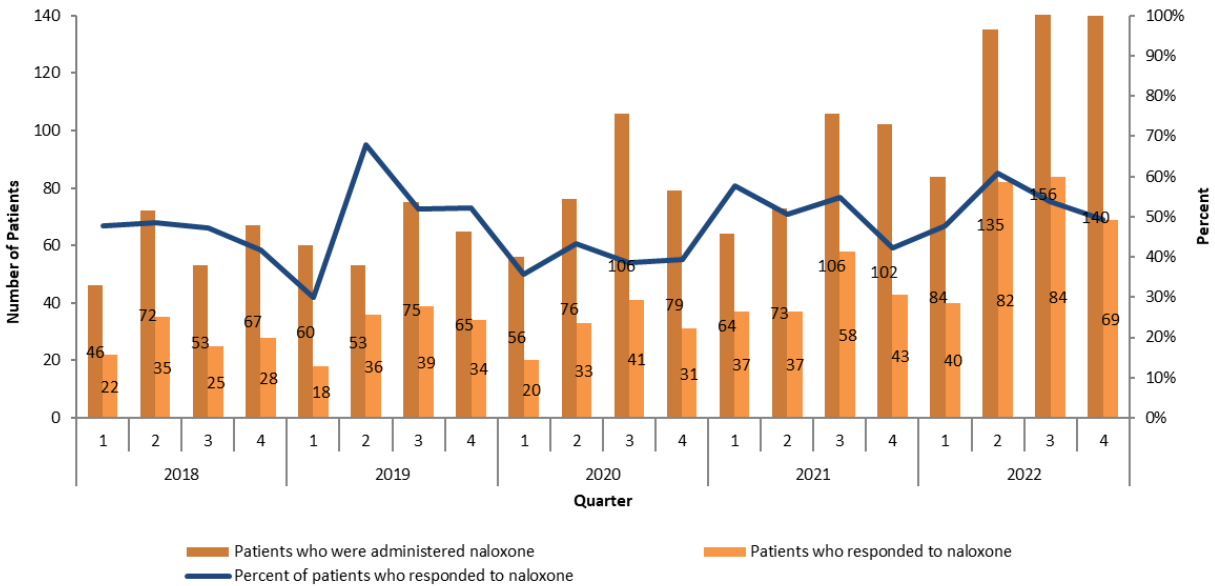
Suspect Opioid Overdoses

Ambulance New Brunswick

January to December 2022

In 2022, **naloxone was administered to 515 suspect opioid overdose patients** (Graph 1), with an average of 43 patients per month. Of the 515 suspect opioid overdose patients, **275 (53%) responded to naloxone** which corresponds to an average of 23 patients per month (range: 9 to 36). The number of individuals who were administered naloxone and who responded to it in Q2 to Q4 2022 have greatly surpassed previous quarters. Data for Q4 show a slight drop in the number of individuals responding to naloxone, but still remain elevated (Graph 1; Graph 2).

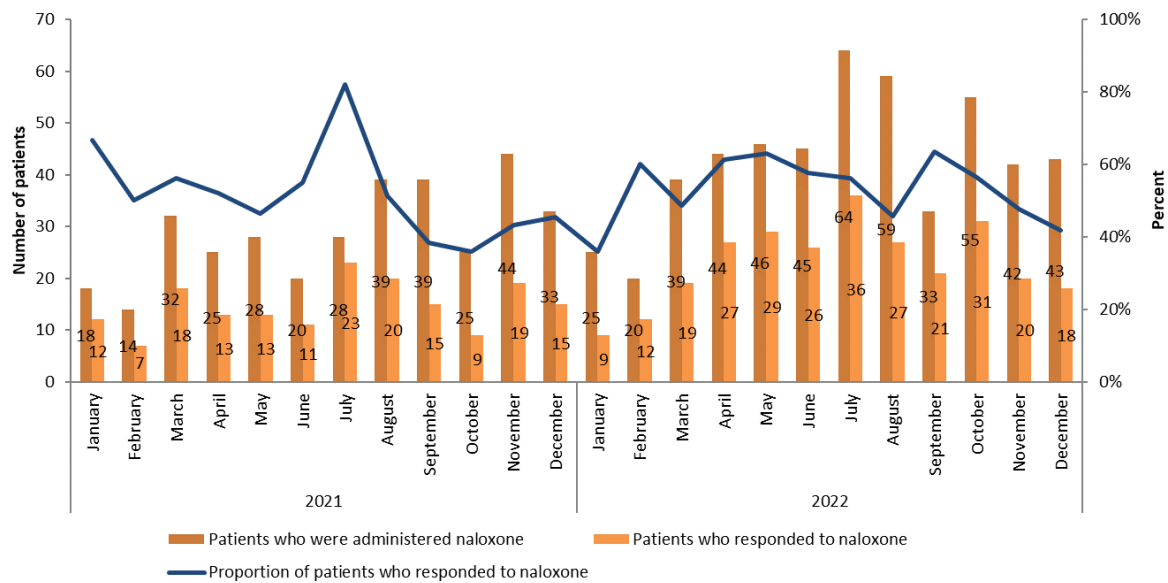
Graph 1. Number of suspect opioid overdose patients who were administered naloxone and number and percentage of patients who responded to naloxone, quarterly in New Brunswick, from January 2018 to December 2022*.



Data source: Ambulance New Brunswick, March 27, 2023.

*These numbers may change as more information becomes available.

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, the last 24 months*.



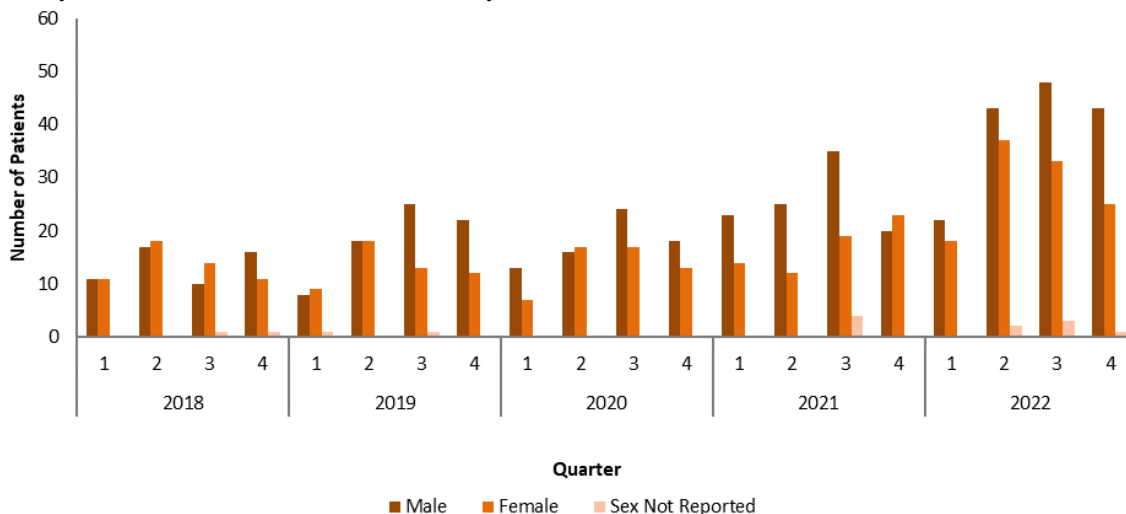
Data source: Ambulance New Brunswick, March 27, 2023.

*These numbers may change as more information becomes available.

Among the 275 patients who responded to naloxone in 2022:

- **There were more males than females:** 156 (57%) were male, 113 (41%) were female, and 6 (2%) were unspecified sex (Graph 3).
- **The largest proportion of individuals were between 40-49 (22%),** and this was followed by individuals between 30-39 (20%) (Graph 4).

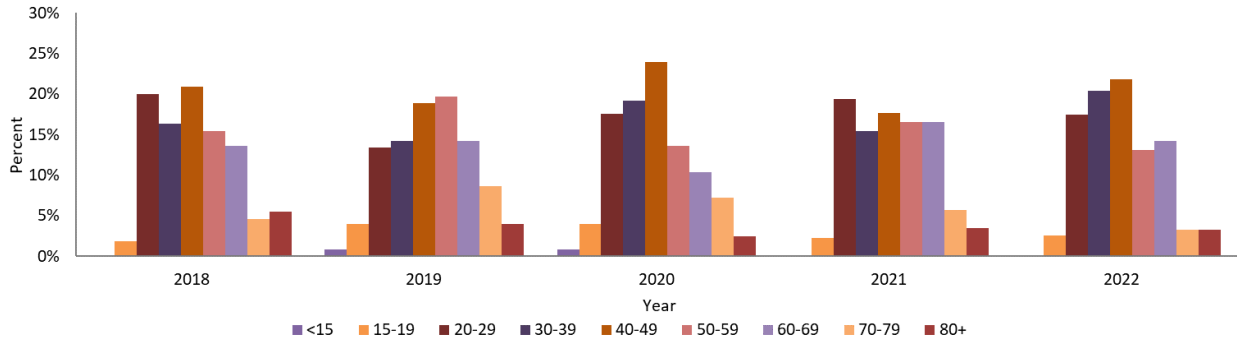
Graph 3. Number of suspect opioid overdose patients who responded to naloxone by sex, quarterly in New Brunswick, from January 2018 to December 2022*.



Data source: Ambulance New Brunswick March 27, 2023.

*These numbers may change as more information becomes available.

Graph 4. Distribution by age group of suspect opioid overdose patients who responded to naloxone in New Brunswick in 2018 to 2022*.



Data source: Ambulance New Brunswick, March 27, 2023.

*These numbers may change as more information becomes available.

The estimated crude rate of suspect opioid overdose patients who responded to naloxone in New Brunswick in January to November 2022 is **34.8 cases per 100,000 person-years**. This is the highest rate to date followed by 2021 (22.2 cases per 100,000 person-years).

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 December 2022, there were 486 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 47% of all drug-related deaths. In 2021, **73 deaths** due to any type of drug (opioids and non-opioids) occurred, of which **44 (60%) were related to opioids**. Currently, there have been **86 substance-related deaths in 2022, of which 46 (53%) are related to opioids**.

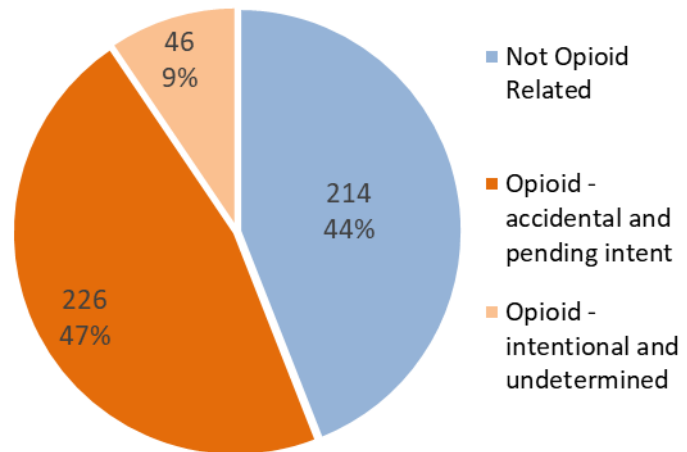


Figure 1. Distribution of drug related deaths in New Brunswick, by drug type and intent, January 2016 to December 2022.

Data Source: Chief Coroner's Office, March 30, 2023
These numbers may change as more information becomes available and coroner investigations are concluded.

Accidental and Pending Intent Deaths Due to Opioids

2021

In 2021, there were 73 **substance-related deaths**. Of these, **44 (60%) were apparent opioid-related deaths** (Graph 5). Thirty-nine were accidental or pending intent, of which 5 were related to fentanyl or fentanyl analogues.

Of the 39 apparent opioid-related deaths classified as accidental or with pending intent:

- The **majority were male** (59% male, 41% female) (Graph 6).
- The largest proportion of individuals were **between 40-49 years old** (38%) (Graph 7).
- Ten (26%) individuals consumed opioids of an illicit source, 12 (31%) consumed prescribed opioids, and 17 (44%) consumed opioids of an unknown source.

The estimated annual crude mortality rate for accidental or pending intent opioid-related deaths in 2021 New Brunswick is **4.9 deaths per 100,000 person-years**. This rate is the same as 2020.

Data for 2021 may change as coroner investigations continue.

2022

In 2022, there were **86 substance-related deaths**. Of these, **46 (53%) were apparent opioid-related deaths** (Graph 5). Forty were accidental or pending intent. Seventeen accidental or pending intent deaths were related to fentanyl or fentanyl analogues, additional accidental and pending intent opioid-related deaths involved nitazenes, bromazolam and etizolam.

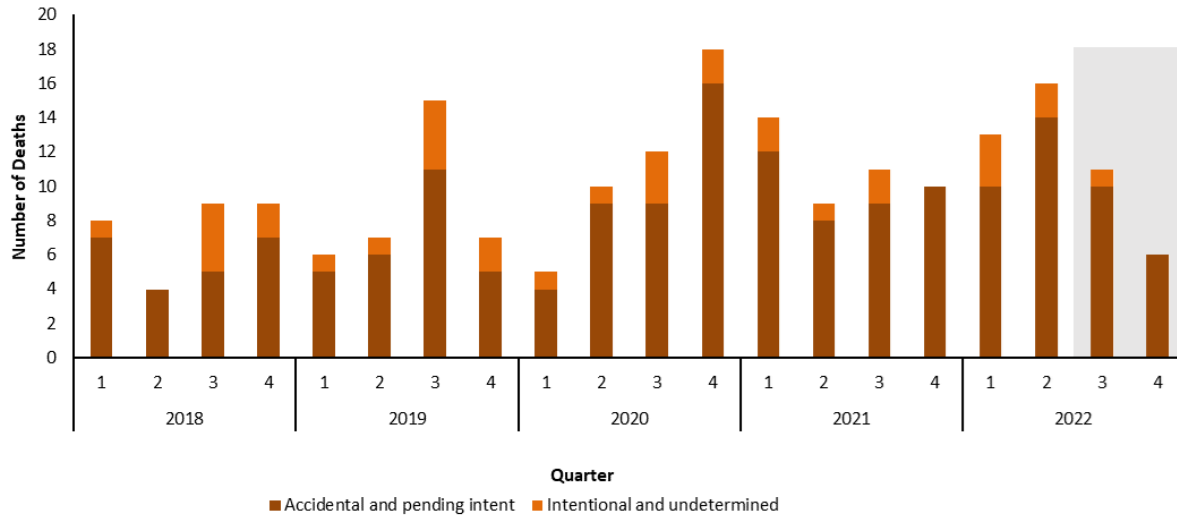
Of the 40 apparent opioid-related deaths classified as accidental or with pending intent:

- The **majority were male** (65% male, 35% female) (Graph 6).
- The largest proportion of individuals were **between 20-29 years old and 50-59 years old** (25% each) (Graph 7).
- Twenty (50%) individual consumed opioids of an illicit source, 9 (23%) consumed prescribed opioids, and 11 (28%) consumed opioids of an unknown source.

The estimated annual crude mortality rate for accidental or pending intent opioid-related deaths in 2022 New Brunswick is **5.1 deaths per 100,000 person-years**; this is the highest rate to date. The rate for all substance-related overdose deaths in 2022 is the highest to date at 10.9 deaths per 100,000 person-years

Data for 2022 are subject to change as coroner investigations continue.

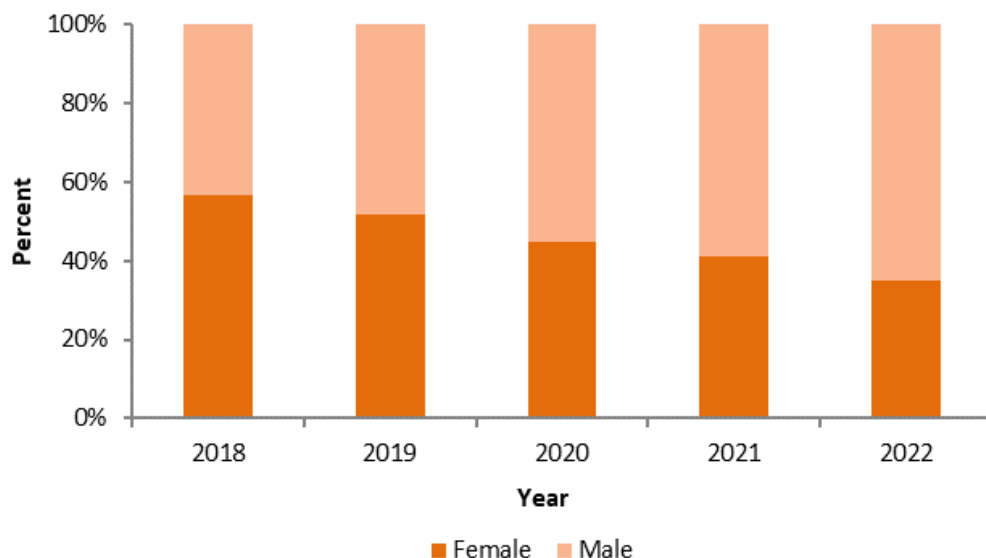
Graph 5. Number of apparent opioid-related overdose deaths by intent (accidental and pending intent, and intentional and undetermined), quarterly in New Brunswick, from January 2017 to December 2022*.



Data Source: Chief Coroner's Office, March 30, 2023

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

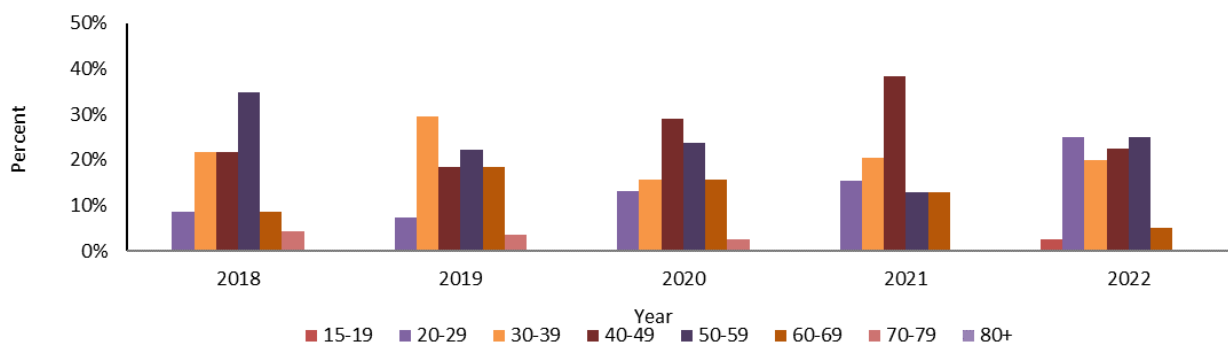
Graph 6. The proportion of apparent opioid-related overdose deaths classified as accidental or with pending intent by sex, yearly, in New Brunswick from January 2017 to December 2022*.



Data source: Chief Coroner's Office, March 30, 2023

*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 2022*.



Data source: Chief Coroner's Office, March 30, 2023

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

Co-occurrence

Co-occurrence is defined by the presence¹ of two or more drug classes that were either knowingly or unknowingly used at or around the time of death². Given that most substance-related deaths in New Brunswick demonstrate the presence of multiple drug classes, co-occurrence is of notable concern.

¹ The presence of a drug class is determined by detection in toxicology testing or through circumstantial evidence of consumption or use

² The presence of a drug class does not indicate when the substance was consumed prior to death; it is only indicative of the substance being present in the decedent's system at the time of death.

Of the 272 decedents who died from an apparent opioid-related overdose between January 2016 and September 2022, **one or more non-opioid drug classes** (e.g., alcohol, benzodiazepines, stimulants, etc.) **were present among 266 (97.8%) decedents.** **Benzodiazepines and stimulants were the two most common drug classes** and co-occurred among 158 (58%) and 136 (50%) decedents who died from an apparent opioid-related overdose (AORD), respectively (Table 1). Of the decedents who died from an apparent opioid-related overdose, **the detection of both benzodiazepines and stimulants were present among 74 (27% of AORD; 47% female, 53% male) decedents.** The detection of both benzodiazepines and antidepressants were present among 87 (32% of AORD; 62% female, 38% male) decedents.

Table 1. Number (percent) of decedents who died from an apparent opioid-related overdose (AORD) and for whom there was co-occurrence of one or more non-opioid drug classes, from January 2016 to December 2022*.

Substance Type**	Total (% of AORD)	Number by sex (% of row total)	
		Female	Male
Benzodiazepines	158 (58%)	82 (52%)	76 (48%)
Stimulants	136 (50%)	56 (41%)	80 (59%)
Antidepressants	134 (49%)	74 (55%)	60 (45%)
Cannabinoids	84 (31%)	35 (42%)	49 (58%)
Antipsychotics	53 (19%)	26 (49%)	27 (51%)
Alcohol	29 (11%)	12 (41%)	17 (59%)

Data source: Chief Coroner's Office, March 30, 2023

*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.

It is important to note that co-occurrence of other drug types in addition to opioids does not necessarily indicate that they contributed to death. It only indicates that the drug was present in the decedent's system at 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 drug class but should be used only to identify the number of people in whom these drug classes were detected from toxicological testing or circumstantial evidence.

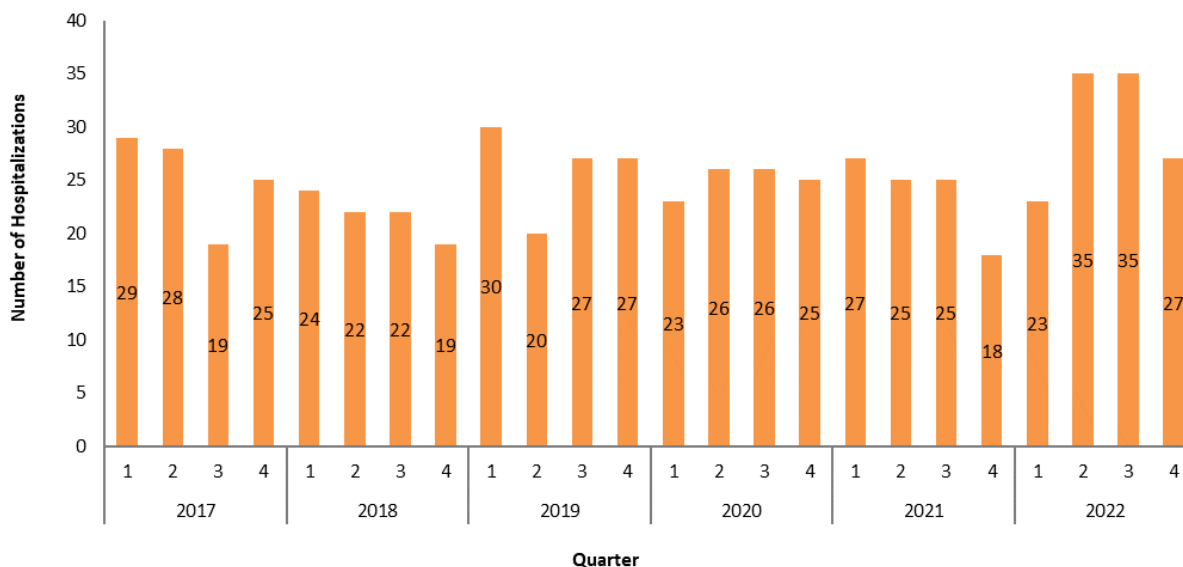
Hospitalization Data

Between January 2016 and December 2022, **736 opioid-related poisoning hospitalizations have occurred**. There were **95 hospitalizations in 2021 and 120 hospitalizations in 2022** (Graph 8). There number of hospitalizations in 2022 was the second highest to date, following 2016 (129 hospitalizations). Quarterly numbers for Q2 and Q3 are elevated compared to 2016-2020 quarterly averages and have reached the highest number of hospitalizations since Q3 2016; Q4 has reduced to expected levels.

Of the 120 hospitalizations in 2022:

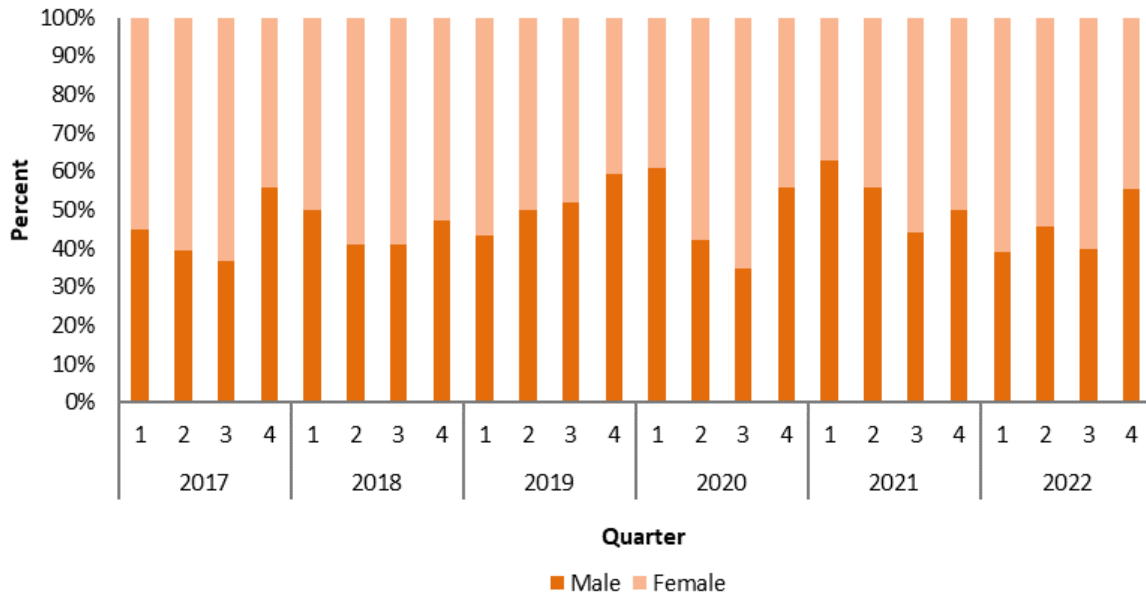
- The majority were female (55% female, 45% male) (Graph 9)
- The highest proportion of hospitalizations were among individuals aged 60-69 (21%), followed by individuals aged 50-59 years (18%).
- Roughly half (51%) were classified as accidental, 30% intentional, and 19% undetermined. (Graph 11).

Graph 8. Number of opioid-related poisoning hospitalizations, quarterly, New Brunswick from January 2017 to December 2022.



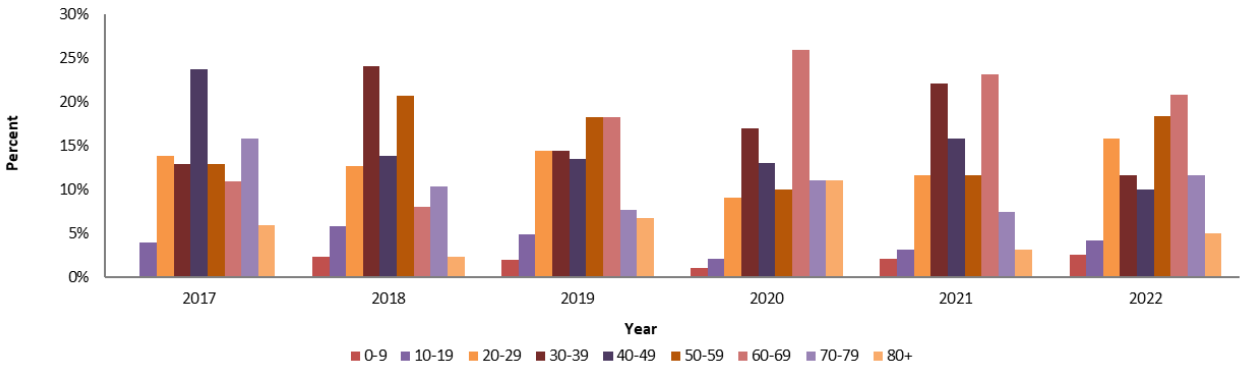
Data source: Discharge Abstract Database, April 3, 2023

Graph 9. Percent of opioid-related poisoning hospitalizations by sex, quarterly, in New Brunswick from January 2017 to December 2022.



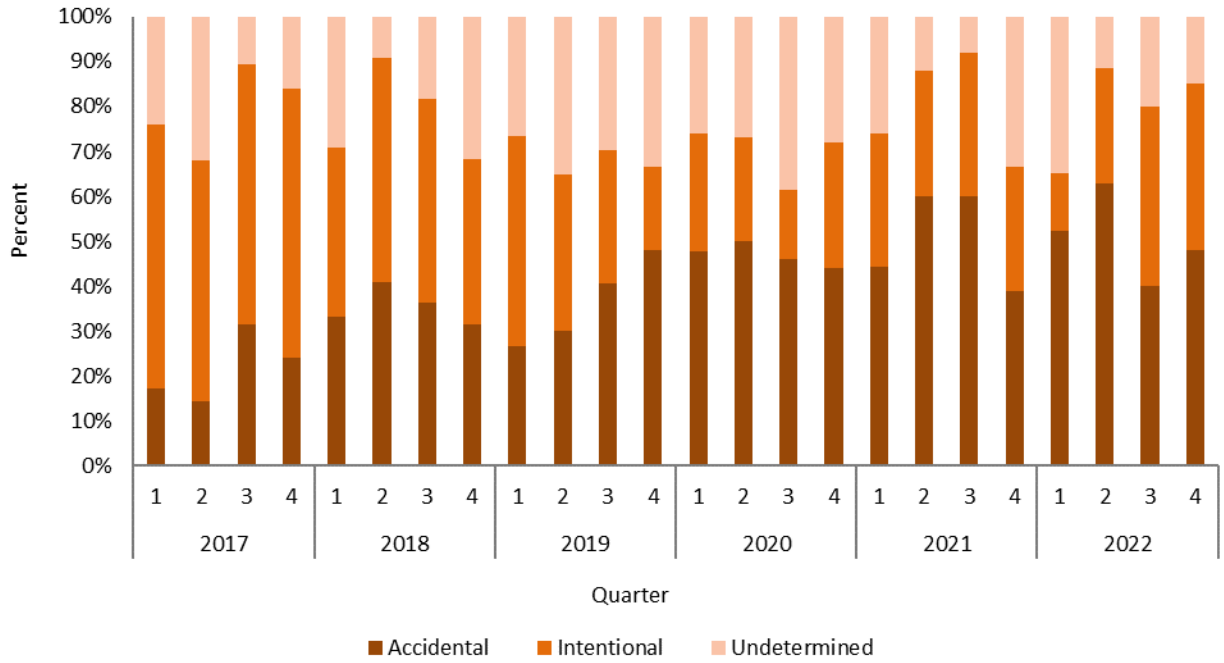
Data source: Discharge Abstract Database, April 3, 2023

Graph 10. Percent of opioid-related poisoning hospitalizations by age group, yearly, in New Brunswick from January 2017 to 2022.



Data source: Discharge Abstract Database, April 3, 2023

Graph 11. Percent of opioid-related poisoning hospitalizations by intent, quarterly, in New Brunswick from January 2017 to December 2022.



Data source: Discharge Abstract Database, April 3, 2023

Take-Home Naloxone Kit Data

Kit Distribution

Since October 2018, **6,788 take home naloxone kits (THN kits) were distributed** into the community. In 2021, 1,670 THN kits were distributed, and **3,415 THN kits have been distributed in 2022³** (Table 2). In addition to the 6,788 THN kits distributed into the community, 308 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 7,096 THN kits that have been distributed.

Table 2. Number of THN kits distributed by site, from October 2018 to December 2022**.

Site Name	2018*	2019	2020	2021	2022	Total
AIDS NB - Fredericton	87	166	101	324	519	1,197
Avenue B - Saint John	118	330	262	321	668	1,699
Ensemble - Moncton	28	91	251	945	2,017	3,332
Detoxification Centres	34	107	85	75	148	449
Correctional Centres	N/A	N/A	43	5	34	82
Community Mental Health Centres	N/A	N/A	N/A	0	29	29
Total	267	694	742	1,670	3,415	6,788

Data source: non-government organizations, detoxification centres, correction centres, and community mental health centres. January 24, 2023

*Data are only for Q4 in 2018.

**Data are subject to change as sites continue to provide updates.

Excluding THN kits transferred to other sites, the number of THN kits distributed in Q4 2022 is the greatest number of THN kits distributed in a single quarter, followed by the previous two quarters (Graph 12). The number of THN kits distributed in 2022 (3,415) is more than double the number of kits distributed in 2021 (1,670).

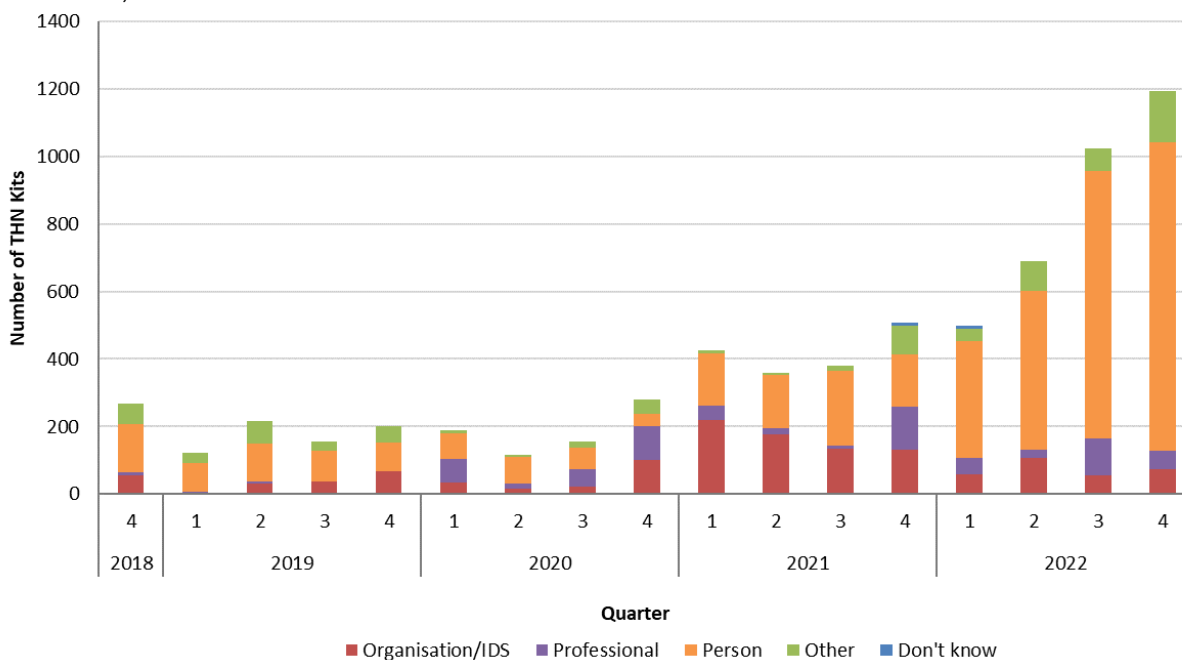
The **number of individuals requesting a kit for themselves or for a friend or family member continues to rise quarterly**, such that some sites cannot keep up with demand. Public Health works closely with the non-government organizations to help support community needs in part by allocating funds to acquire harm reduction supplies. Ensemble has implemented Interactive Dispensing Services (IDS) in Moncton and Richibucto where kits can be distributed anonymously (Graph 12). More recently, however, the number of kits being distributed through the IDS has declined quarterly; in recent months this has in part been attributed to the temporary closure of the Moncton IDS due to maintenance.

³ Data for THN kits are collected up to September 2022 for all sites excluding Miramichi detoxification site, Campbellton Community Mental Health Centre, Richibucto Community Mental Health centre, and Moncton Community Mental Health centre, which are collected until November 2022, June 2022, June 2022 and November 2022, respectively.

Since January 2019, just under half (3,597 53%) of the THN kits distributed have been distributed directly to a person at risk of an overdose. The proportion of kits distributed to a person at risk was highest in 2022 (70%).

Among individuals at risk of an overdose, more males received THN kits than females or individuals of other/unknown gender in all years (Graph 13).

Graph 12. The number of THN kits distributed based on the type of recipient*, quarterly, New Brunswick, Q4 2018 to 2022**.

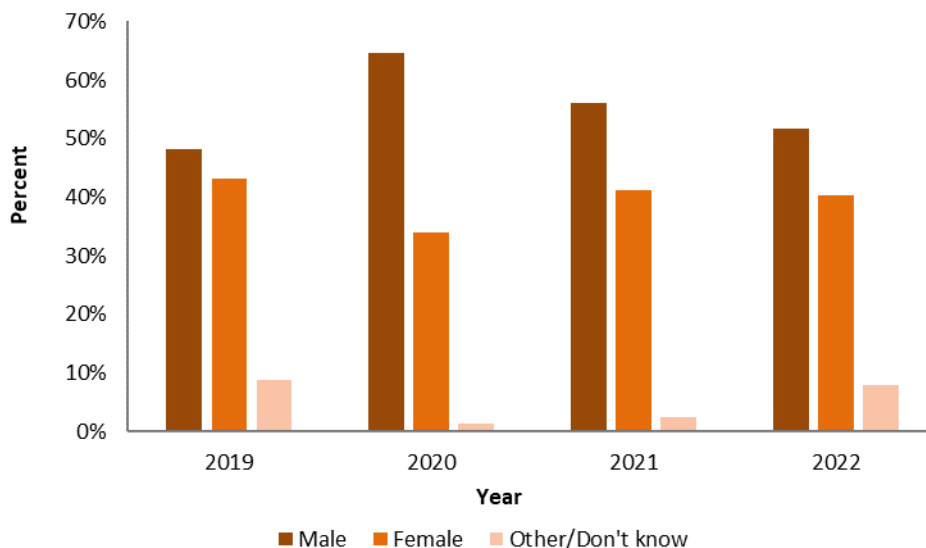


Data source: non-government organizations, detoxification centres, correction centres, and community mental health centres. January 24, 2023

*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.

**Data are incomplete and may change as additional sites complete data collection

Graph 13. The proportion of individuals at risk of an overdose who received take home naloxone kits by gender, in New Brunswick, 2019, 2020, 2021, and 2022*.



Data source: non-government organizations, detoxification centres, correction centres, and community mental health centres. January 24, 2023

*Data are incomplete and may change as additional sites complete data collection

Kit Use

Replacement THN kits are increasingly requested each year with 250 in 2021 and 1,505 in 2022. Using a kit was the primary reason provided for seeking a replacement in all years except for 2020 where replacing an expired kit was the primary reason for replacement. Since 2018, **1,475 (75%) individuals who sought a replacement kit** did so after having reportedly used a kit to treat an overdose. This proportion is highest for 2022 (86%, 1,298).

Of the **1,475** instances in which a kit was reportedly used, **233 individuals completed a questionnaire about the overdose.** The number of individuals completing a form **increases each year with 31 (13%) in 2021 and 143 (61%) in 2022.** The number of kits reportedly used has greatly increased in recent months, with Q4 2022 (65) more than quadrupling from what it was in Q4 2021 (15). Avenue B, in Saint John, has experienced a large increase in the number of THN kits reportedly being used in 2022 with 75% of all used kits having been reported in 2022.

Take home naloxone kits have been reportedly used to **treat more males than females or individuals of other/unknown sex** in all years and in 2022 (64% for males, 36% for females, and 1% other/unknown).

Overall, **192 individuals were not alone (82%)** at the time of overdose, 27 were alone (12%), and the remaining 14 instances were unknown or not reported (6%); these proportions have remained relatively stable over the years. The **majority of the overdoses occurred in a private residence** (130, 56%) followed by a street/alley/park (33, 14%) or a hotel/motel (22, 9%); 76% of the overdoses in a street/alley/park occurred in 2022.

Since 2018, there were 109 (47%) reports of not calling 911. Excluding **2021 which had the highest proportion (74%) of not calling 911**, there has been a decrease in those not calling 911. The current proportion in 2022 is the lowest to date at 38%. The primary reason in all years continues to be **fear the police would come** (27 of 111, 24%).

The reported number of THN kits used may be an underestimation of the total number of THN kits being used in the community 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.

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.	

Take Home Naloxone Kits

Data are from the three NGOs, seven detoxification centres, five correctional centres, and four community mental health centres. They 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 2022 population estimates received from Statistics Canada, Demography Division, May 2022.

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., population estimates for 2022 are based on 2021 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. Denominator data for the current year are based on the most recent estimates available (e.g., population estimates for 2022 are based on 2021 estimates).

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

Take Home Naloxone Kits: Non-Government Organizations, Detoxification Centres, Correctional Centres, and Community Mental Health 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 defined⁴ 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.

⁴ 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.
 - **Nitazenes:** A type of opioid belonging to the benzimidazole-opioids class
 - **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), Bromazolam, 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