

Surveillance of Apparent Opioid Overdoses in New Brunswick

2019 – Quarter 2

October 2019

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Introduction

This quarterly surveillance report describes data on apparent opioid overdoses and deaths that are collected by Ambulance New Brunswick (ANB) and the Chief Coroner's Office, respectively. Additionally, data on the take home naloxone kit distribution and use are collected by non-government organizations and detoxification centres throughout the province. All data are reported to the Office of the Chief Medical Officer of Health (OCMOH). Data sources are updated at different time periods and may change in subsequent reports.

Data Sources

Comparisons should not be made between different data sources as each represents a different population. Together these data sources add to our understanding of the complex opioid overdose situation in New Brunswick.

Ambulance New Brunswick

Data from ANB are aggregate and include information about:

- a) patients who were administered naloxone by a paramedic for an accidental/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 is 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 August 13, 2019.

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 29, 2019.

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 and Detoxification Centres

Data for take home naloxone kits come from three non-government organizations (AIDS NB in Fredericton, Avenue B in Saint John, and Ensemble in Moncton) and seven detoxification centres located in Bathurst, Campbellton, Edmundston, Fredericton, Miramichi, Moncton and Saint John. Data include the number of take home naloxone kits that are distributed and used. An individual may be given a take home naloxone kit if 1) the individual is at risk of an opioid overdose due to current opioid use, or 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 10 centres as of August 2, 2019.

Limitations: Certain data elements are disclosed at the client's discretion and level of comfort, therefore not all variables requested may be collected.

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

Methodology

Data were received from ANB, the Chief Coroner's Office, the NGOs and detoxification centres, then validated and analyzed. Descriptive analyses were conducted for suspect opioid overdoses and apparent opioid overdose deaths. Throughout this report, estimated rates were calculated using person-time contributed to the specified time 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 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.

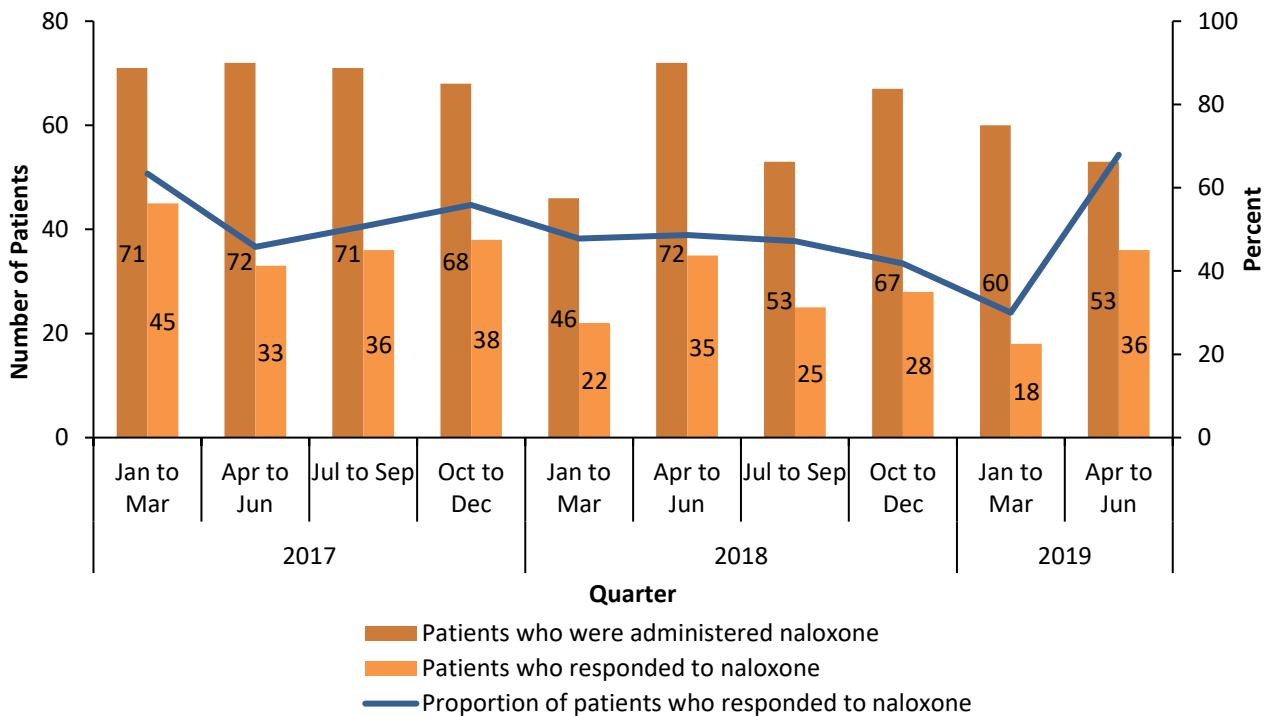
Suspect Opioid Overdoses

Ambulance New Brunswick

2019 Q1-2 (January 1 to June 30)

During the first two quarters of 2019, **naloxone was administered to 113 suspect opioid overdose patients** (Graph 1), with an average of 19 cases per month. Of the 113 suspect opioid overdose patients, **54 (48%) responded to naloxone** which corresponds to an average of 9 per month (range: 3 to 19). Compared to Q1, Q2 saw a 12% decrease (7 fewer) in the number of people who were administered naloxone, but a 100% increase (18 more) in the number of people who responded to naloxone. This resulted in a noticeable increase in the proportion of people responding to naloxone, from 30% in Q1 to 68% in Q2. Quarter 2 has the highest quarterly percentage of patients responding to naloxone since monthly surveillance began in 2017. At this time, it is unknown what might have caused this sudden increase in the proportion of people responding to naloxone. However, it could be partly due to the small numbers involved that can lead to wide variations in proportions over time. The short duration of surveillance makes it difficult to infer trends.

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 2019.

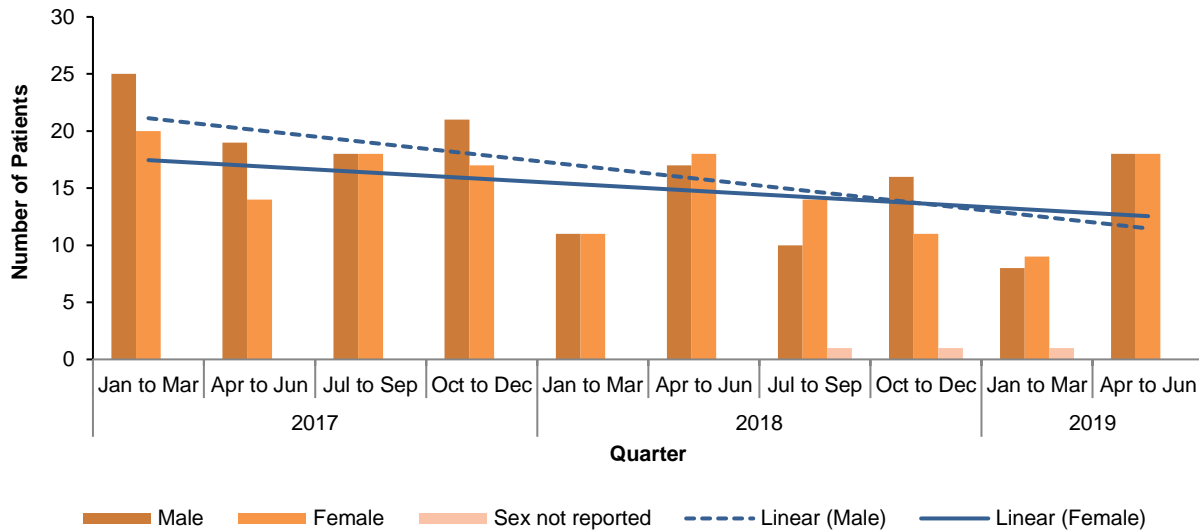


Data source: Ambulance New Brunswick, August 13, 2019

Among the 54 patients who responded to naloxone during the first two quarters of 2019:

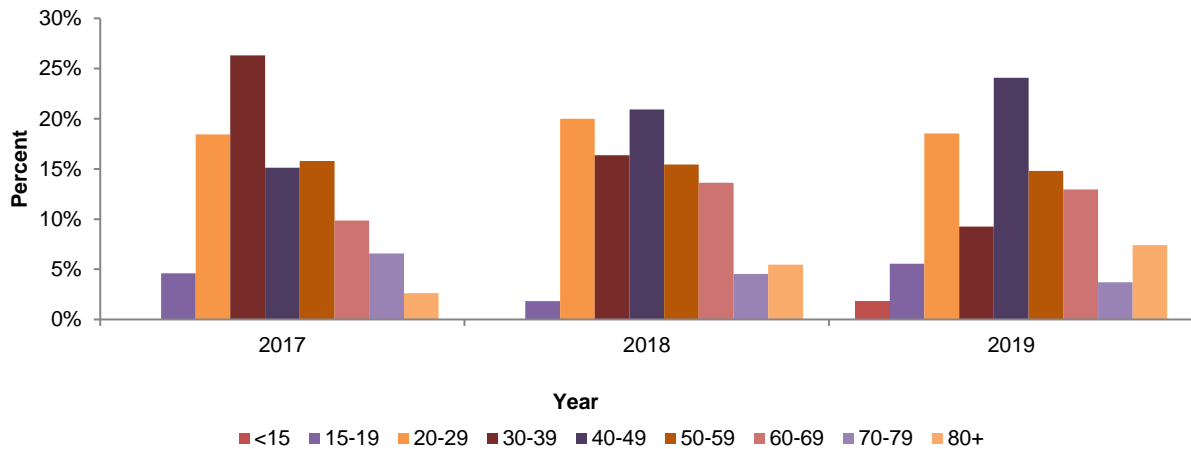
- **The proportion of females and males was nearly equal: 27 (50%) were female** and 26 (48%) were male (Graph 2). Since January 2017, the number of males responding to naloxone has experienced a slightly greater downward trend over time compared to females.
- **The largest proportion was between 40 and 49 years old (24%)** (Graph 3). This observation is comparable to 2018 when the largest proportion of patients who responded to naloxone were also between 40 and 49 years old.

Graph 2. Number of patients who responded to naloxone, quarterly in New Brunswick, from January 2017 to June 2019.



Data source: Ambulance New Brunswick, August 13, 2019

Graph 3. Percent distribution of suspect opioid overdose patients who responded to naloxone, by age group, New Brunswick, 2017, 2018 and January to June 2019.



Data source: Ambulance New Brunswick, August 13, 2019

During the first two quarters of 2019, the estimated crude rate of suspect opioid overdose patients who responded to naloxone was **14.0 cases per 100,000 person-years** (9.3 cases per 100,000 person-years in Q1 and 18.7 cases per 100,000 person-years in Q2). This is comparable to the 2018 and 2017 annual rates of 14.3 cases per 100,000 person-years and 15.4 cases per 100,000 person-years, respectively. Regional rates for the first two quarters of 2019 are not reported as the small numbers involved can lead to unstable rates.

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. Since surveillance of apparent opioid overdose deaths began in 2016, there have been 199 drug-related deaths (Figure 1). However, apparent opioid-related deaths are responsible for more than half (54%) of all drug-related deaths. Apparent opioid-related deaths classified as accidental or pending intent account for 44% of all drug related deaths. In 2018, **58 deaths** due to any type of drug (opioids and non-opioids) occurred, of which **31 (53%) were related to opioids**. In Q1 of 2019, there were **13 deaths** due to any type of drug (opioids and non-opioids) of which **6 (46%) were related to opioids**.

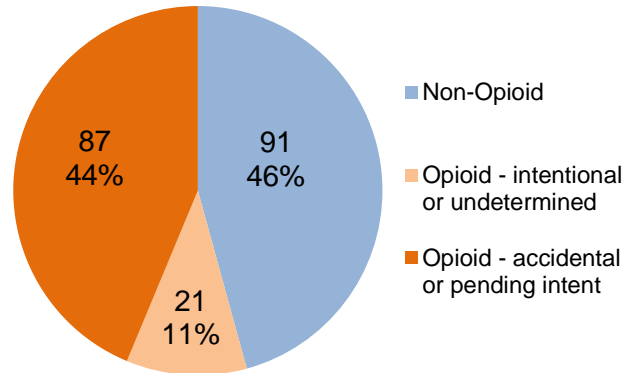


Figure 1. Percent distribution of drug related deaths in New Brunswick, by drug type and intent, January 2016 to June 2019*

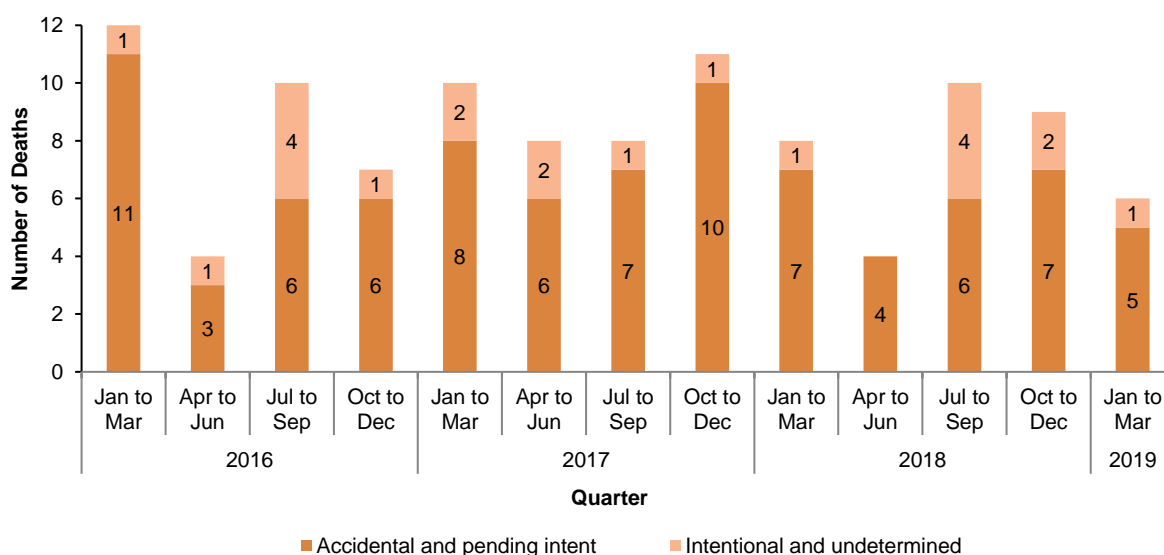
*Numbers may change as more information becomes available and coroner investigations are concluded
Data Source: Chief Coroner's Office, July 29, 2019

Accidental and Pending Intent Deaths Due to Opioids

2018

Of the 31 apparent opioid-related overdose deaths in 2018, **24 (77%) were classified as accidental or with pending intent** (Graph 4), of which **1 case (4%) was associated with fentanyl**, compared to 7 (23%) in 2017 and 4 (15%) in 2016.

Graph 4. Number of apparent opioid-related overdose deaths by intent (intentional, accidental, pending intent or undetermined), quarterly in New Brunswick, from January 2017 to March 2019*.



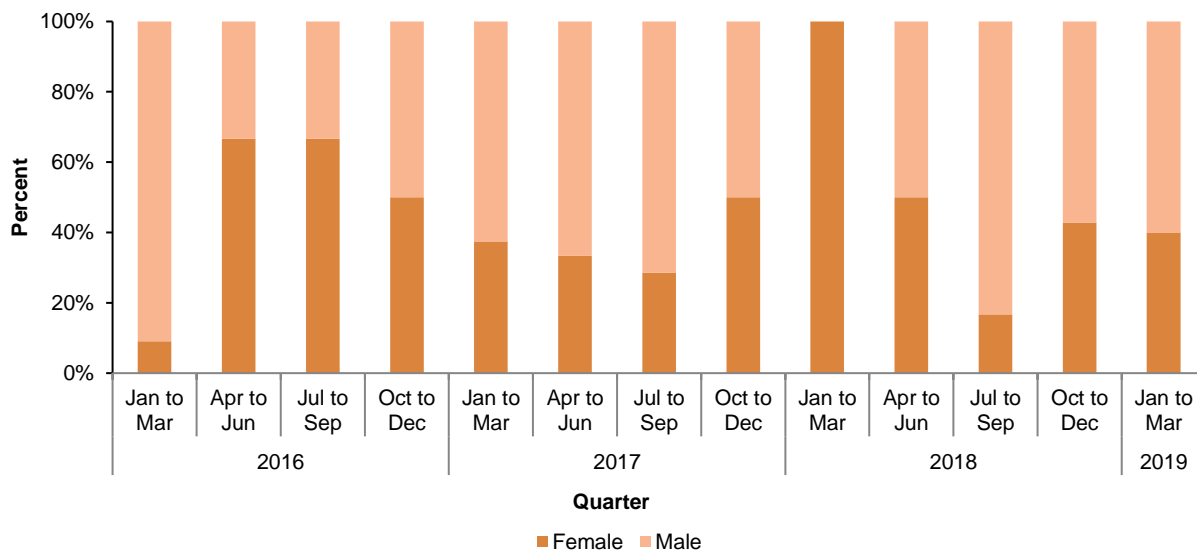
Data Source: Chief Coroner's Office, July 29, 2019

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

Of the 24 apparent opioid-related overdose deaths classified as accidental or with pending intent in 2018:

- **Just over half (54%) were female** (Graph 5). It is the first year in which females accounted for the majority of deaths. This observation is predominantly driven by the sex distribution in Q1 in which there were 7 female deaths and no male deaths; however, males accounted for the majority of deaths in Q2-4 (range: 50% to 83%).
- **The largest proportion (38%) were 50-59 years old** (Graph 6), with an average of 48.2 years and a median of 49 years. The age distribution for 2018 did not reflect the shift towards younger age groups that was observed in 2017.
- **Half (50%) were from prescribed opioids**, 42% were from illicit opioids, and 8% were from unknown opioid source. Different than previous years, the majority of deaths from prescribed opioids were among females (8, 67%). However, like previous years, males represented the majority of deaths from illicit opioid sources (6, 60%).

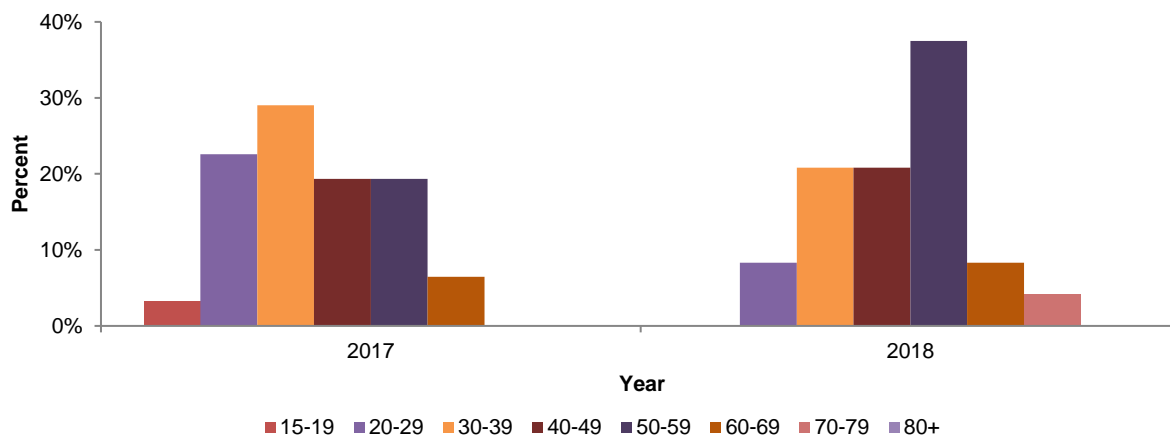
Graph 5. Proportion of apparent opioid-related overdose deaths classified as accidental or with pending intent, by sex, quarterly in New Brunswick, from January 2016 to March 2019*.



Data source: Chief Coroner's Office, July 29, 2019

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

Graph 6. Number of apparent opioid-related overdose deaths classified as accidental or with pending intent, by age group in New Brunswick, from January 2017 to December 2018*.



Data source: Chief Coroner's Office, July 29, 2019

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

The estimated annual crude mortality rate for accidental or pending intent apparent opioid-related overdose deaths in 2018 was **3.1 per 100,000 population**. This rate is smaller than in 2017 (4.0 deaths per 100,000 population) and 2016 (3.4 deaths per 100,000 population).

Data for 2018 may change as active cases continue to be investigated, others come to a conclusion, and new cases may be acquired.

2019 Q1 (January 1 – March 31)

Of the 13 apparent drug-related overdose deaths in Q1 of 2019, **6 (46%) were opioid-related** of which **5 (83%) were accidental or pending intent** (Graph 4), including **one case (20%) that was associated with fentanyl**.

Of the 5 apparent opioid-related overdose deaths classified as accidental or with pending intent:

- **More than half (3, 60%) were males**, the remaining (2, 40%) being females (Graph 5).
- **All individuals were between the ages of 40-69 years old**. Like 2018, Q1 of 2019 does not reflect a shift towards the younger age groups as seen in 2017. The average and median ages for 2019 Q1 are the highest to date with an average of 51.6 years and a median of 50 years.
- **Illicit and prescribed opioid sources each accounted for 40% of deaths**, another 20% came from an unknown opioid source.

The estimated annual crude mortality rate for accidental or pending intent apparent opioid-related overdose deaths in Q1 of 2019 was **2.6 per 100,000 person-years**. This is the smallest rate since surveillance began in 2016.

Take-Home Naloxone Kit Data

Non-Government Organizations And Detoxification Centres

2019 Q1-Q2 (January 1 to June 30)

Since the beginning of 2019, preliminary data show that **340 take-home naloxone kits (THN kits) were distributed** from the NGOs and detoxification centres (Table 1). Additionally, **13 kits were reportedly used to treat overdoses**.

Table 1. Number of take-home naloxone kits distributed by site, from January 1 to June 30, 2019.

Site Name	2019
AIDS NB - Fredericton	82
Ensemble - Moncton	48
Avenue B - Saint John	145
Detoxification Centres	65
Total	340

Data source: Non-government organizations and detoxification centres, August 2, 2019

Summary

When considering data from ANB, a general downward trend in the proportion of individuals who received naloxone and those who responded to naloxone was observed from January 2017 to March 2019, but a recent sudden increase in the proportion occurred in Q2 2019. This trend should be interpreted with caution as numerous factors could influence this observation.

Compared to previous years, the proportion of apparent opioid-related overdose deaths has shifted from a male majority to a slight female majority. Additionally, the age distribution does not reflect the shift towards younger age groups as seen in 2017.

Though there have been notable changes in the data and trends since the last report and previous years, interpretation of these results should be done with caution due to the small numbers involved and the short duration over which these trends have been observed..

Appendix A: Data Sources

Ambulance New Brunswick

Data from ANB are abstracted in aggregate form and therefore do not contain patient-level data. Data are sent to OCMOH on a monthly basis. The monthly totals 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) for the following variables:

- 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.

Data in this report primarily focus on individuals who responded to naloxone and referrals to hospitals for those who responded to naloxone. The 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 suspect opioid overdoses regardless of intent, and therefore may differ in terms of demographics from other data sources (e.g., apparent opioid overdose deaths).

Chief Coroner's Office

Data from the Chief Coroner's Office include individual-level data. They are sent to OCMOH on a quarterly basis for the previous quarter. Data include all drug-related deaths with 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 Natural Homicide
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 and Detoxification Centres

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

As this surveillance system is in the preliminary stages, the variables to be collected are not yet finalized. Therefore, only the total numbers are analyzed in this report. Future reports will include more details as data become available.

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 the form was completed.

Population Estimates

Population estimates for 2017 and 2018 were from 2019 population estimates received from Statistics Canada, Demography Division, March 2019.

Appendix B: Methodology

Ambulance New Brunswick

Data are sent to the OCMOH on a monthly basis, but 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 hospitals patients were referred to as the location of dispatch pick-up is not available. Denominator data are based on the most recent population estimates available (e.g. the 2019 version of the population estimates were used for the 2018 population estimates).

All analyses were conducted using Excel 365 ProPlus.

Chief Coroner's Office

Cases for drug-related deaths are identified by coroner investigations. Once data are received by OCMOH, 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).

Descriptive analyses were conducted for apparent opioid overdose deaths; this includes counts, proportions, means, and rates. The rates are calculated using denominator data based on the most recent population estimates available (e.g. the 2019 version of the population estimates were used for the 2018 population estimates).

All analyses were conducted using Excel 365 ProPlus.

Non-Government Organizations and Detoxification Centres

Data are sent to OCMOH on a monthly basis for the previous month., then cleaned and analyzed. Basic counts of the number of kits distributed and the number of kits reported as being used are calculated. Additional analyses may be conducted as more data are obtained in the future.

All analyses were conducted using Excel 365 ProPlus

Appendix C: Definitions and Abbreviations

- **Illicit opioid:** A street opioid or an opioid medically prescribed to a person other than the patient/deceased 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 include non-fentanyl opioids, fentanyl and fentanyl analogs.
 - **Fentanyl and fentanyl analogs:** Synthetic opioids which are extremely toxic. Includes but is not limited to fentanyl, norfentanyl, acetylfentanyl, 3-methylfentanyl, carfentanil, butyrylfentanyl, furanyl-fentanyl, despropionyl-fentanyl.
 - **Non-fentanyl opioids:** Any opioid which 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:** An acute intoxication/toxicity death resulting from the direct effects of the administration of exogenous substance(s) where one or more of the substances is an opioid
- **Prescription opioid:** A medically prescribed opioid to the patient/deceased person.
- **Take Home Naloxone Kit:** Take home naloxone kits include two doses of naloxone as well as the necessary supplies to administer a dose of 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