

# **Surveillance of Apparent Opioid Overdoses in New Brunswick**

**2017- Quarter 4**

April, 2018

## Surveillance of Apparent Opioid Overdoses in New Brunswick

### Quarter 4: October to December, 2017 Report

#### Highlights

##### **Suspect opioid overdoses: Ambulance New Brunswick, 2017 Q1-4 (January to December)**

- Both the number of suspect opioid overdose patients who were administered naloxone and those who responded to naloxone has increased almost every year since 2012.
- In 2017, naloxone was administered to 282 suspect opioid overdose patients, of which 152 responded to naloxone (53.9%).
- Of those who responded to naloxone in 2017:
  - 54.6% were males and 44.7% were between 20 and 39 years old.
  - A shift to the younger age groups was observed compared to the 5-year historical average.
  - The estimated annual crude rate of suspect opioid overdose patients that responded to naloxone in New Brunswick was 18.9 per 100,000 population.

##### **Emergency Department (ED) non-suicidal opioid overdoses: Horizon and Vitalité Health Networks, 2017 (May to December)**

- There were 108 ED visits related to non-suicidal opioid overdoses, with an average of 13.5 visits per month between May and December 2017.
- The estimated annual crude rate of ED visits related to non-suicidal opioid overdoses in New Brunswick was 27.0 per 100,000 population.
- 63.0% were males and 48.1% were between 20 and 39 years old.

##### **Apparent opioid overdose deaths: Chief Coroner's Office, 2017 Q1-4 (January to December)**

- There were 37 apparent opioid deaths in 2017 of which 33 were deemed accidental or with pending intent, including 8 related to fentanyl or fentanyl analogs (5 fentanyl, 2 furanyl-fentanyl and 1 carfentanyl).
- Of the 33 apparent accidental/pending intent opioid overdoses:
  - 61.0% were males.
  - 21.2 % were between 20 and 29 years old.
  - The estimated annual crude mortality rate for apparent accidental opioid overdoses in New Brunswick was 4.4 deaths per 100,000 population.
- There were more deaths classified as accidental/pending intent in 2017 compared to 2016 (33 in 2017 versus 26 in 2016).
- Data for 2017 are incomplete and numbers are expected to increase as coroner investigations continue.

## Introduction

This quarterly surveillance report focuses on apparent opioid overdose and death data collected by Ambulance New Brunswick (ANB), NB Emergency Departments (Horizon and Vitalité Health Networks) and the Chief Coroner's Office and shared with the Office of the Chief Medical Officer of Health (OCMOH). Additional sources of data will be included in future reports as they become validated. Data sources are updated at different time periods and may change in subsequent reports.

## Changes from last report

- Emergency departments data are now included.
- Updates have been made to previously reported counts and rates based on revised data.
- Apparent opioid overdose death data are now classified into four categories (intentional, accidental, pending intent and undetermined). Previously, deaths where intent was pending further investigation were classified as undetermined. The additional category was created to distinguish between closed investigations where deaths were classified as undetermined, and deaths where the investigation is still ongoing and a manner of death has not yet been assigned.

## Data Sources

### Ambulance New Brunswick

Data include the number of patients ANB treated for suspect opioid overdoses regardless of intent. A patient is counted as a suspect overdose when a first responder (paramedic) who attended the event suspects the patient might be experiencing symptoms compatible with an opioid overdose, resulting in the decision to administer naloxone. The number of patients receiving naloxone might be an overestimation of the actual number of opioid overdoses as naloxone will not have an effect if opioids were not taken. Therefore, the number of patients responding to naloxone is also collected and reported as this information is more specific to an opioid overdose. Data in this report reflects data received from ANB as of January 16, 2018.

**Limitations:** The number of suspect opioid overdoses is an estimate based on the decision to administer naloxone. As such, the data do not include overdoses where patients were already dead on arrival and those who were missed and not given naloxone. Data include suspect opioid overdoses regardless of intent (i.e. accidental, intentional or unknown), therefore may differ in terms of demographics from other data sources (e.g. apparent opioid overdose deaths). The health region specific rates are estimated based on hospital of referral as location of dispatch pick-up is not available.

### Emergency Departments

Data include the number of patients who visited an Emergency Department (ED) for non-suicidal opioid or suspected opioid overdoses. Suspected opioid overdoses of undetermined intent are also included. Data in this report reflect data received from Horizon and Vitalité Health Networks as of January 22, 2018.

**Limitations:** Data captured from EDs are collected manually. Although a standard data collection tool and case definition are used, each hospital has a unique system and process for collecting the data. Underreporting is also likely occurring in some hospitals. Because of these reporting differences, caution should be used when interpreting regional rates and comparisons should not be made between regions. As data collection began in March 2017, no historical data are currently available so trends cannot be assessed at this time. Due to inconsistency in reporting during March and April 2017, analyses included in this report show data starting May 2017.

## Chief Coroner Office

Data include all apparent opioid overdose deaths (including fentanyl and fentanyl analogs) that are classified as either accidental (unintentional) or pending intent at the time of reporting. Data on deaths, including intentional and undetermined related to any type of drugs (opioids and non-opioids) are also included. Data in this report reflect data received from the Chief Coroner's Office as of February 13, 2018.

**Limitations:** Due to the inherent delay in investigating deaths, the reported number of apparent opioid overdose deaths is preliminary and may change over time as the cause of death certification may lead to a change in classification.

## Methodology

Descriptive analysis was conducted for suspect opioid overdoses and apparent opioid overdose deaths. Throughout this report, estimated annual rates are 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 region-specific rates because of the small numbers involved that can lead to wide variation in rates. Also, the reported data are preliminary and numbers are subject to change in the coming reports.

Comparisons should not be made between different data sources as each represents a different population. For example, ANB data look at the number of patients ANB treated for suspect opioid overdoses regardless of intent, while ED data look at the number of patients who visited EDs for suspect non-suicidal opioid overdoses. Together these data source add to our understanding of the complex opioid overdose situation in New Brunswick.

## Definitions used in this report

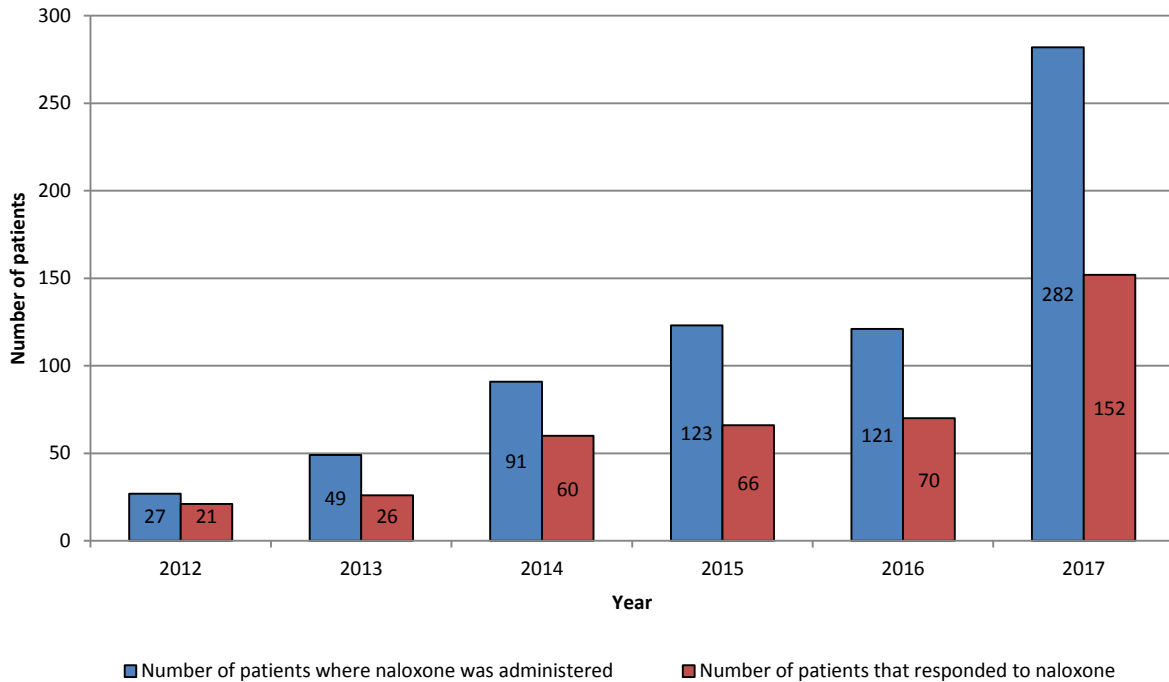
- **ANB patients treated for a suspect opioid overdose:** First responder (paramedic) who attended the event suspects the patient might be experiencing symptoms compatible with an opioid overdose, resulting in the decision to administer naloxone.
- **ED non-suicidal opioid or suspected opioid overdose:** A physiological event induced by the suspected introduction of an opioid (either prescribed or illicit) into the body of a person for a non-suicidal intent that results in a life-threatening situation and requires emergency medical assistance. Suspected opioid overdoses of undetermined intent are also included.
- **Apparent opioid overdose death:** A death caused by intoxication/toxicity (poisoning) as a result of drug use, where one or more of the drugs is an opioid. The data include both open (preliminary) and closed (certified) cases. The data do not include deaths due to chronic substance use, medical assistance in dying, or trauma where an exogenous substance contributed to the circumstances of the injury, or deaths classified as homicides.

- **Accidental death:** A death considered to be unintentional in nature.
- **Undetermined death:** A closed death investigation where the intent of death was deemed unknown by the coroner.
- **Intentional death:** A death classified as a suicide based on the coroner investigation.
- **Death with pending intent:** An open investigation where the intent of death is yet to be determined.
- **Non-fentanyl opioids:** Includes but 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.
- **Fentanyl and fentanyl analogs:** Includes but not limited to fentanyl, norfentanyl, acetylfentanyl, 3-methylfentanyl, carfentanil, butyrylfentanyl, furanyl-fentanyl, despropionyl-fentanyl.
- **Any opioid:** Either non-fentanyl opioids or fentanyl and fentanyl analogs.
- **Prescription opioid/fentanyl:** A medically prescribed opioid/fentanyl to the same patient/deceased person.
- **Illicit opioid/fentanyl:** Street opioid/fentanyl or opioid/fentanyl medically prescribed to a person other than the patient/deceased person.

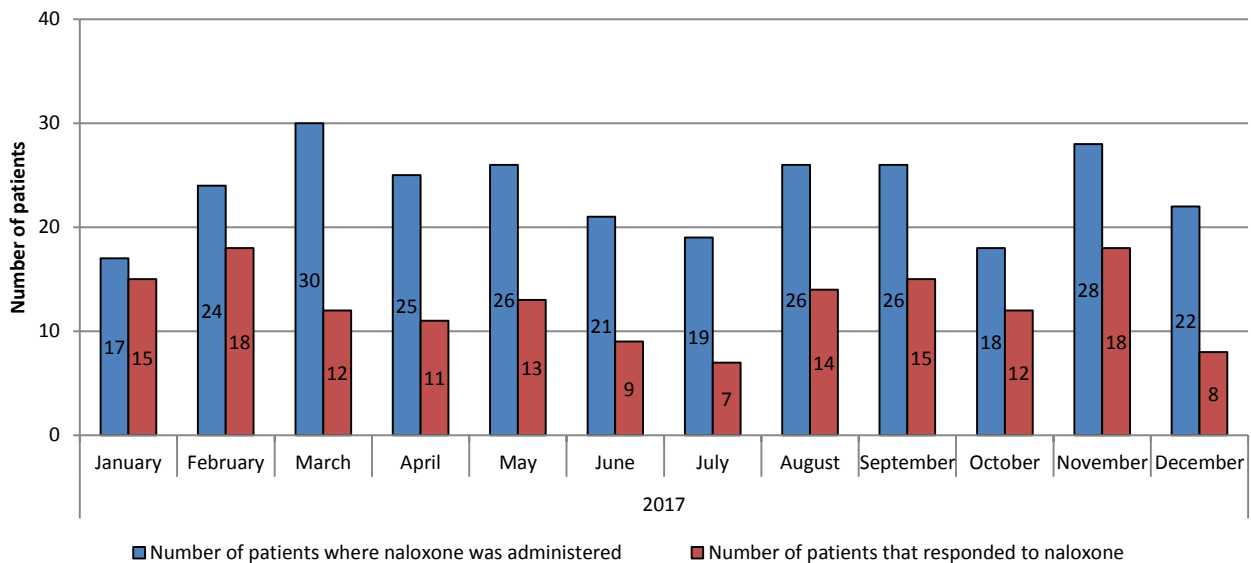
## Suspect opioid overdoses: Ambulance New Brunswick, 2017

- Both the number of suspect opioid overdose patients who were administered naloxone and those who responded to naloxone have increased almost every year since 2012 (Graph 1).
- As of November 2016, there was an expansion of the naloxone administration protocol which included an increase in naloxone dosage from 0.4 mg to 0.8 mg as well as an increase in repeat doses. This may explain some of the increases in the number of patients receiving and responding to naloxone between 2016 and 2017. However, there has been no known policy or administrative changes to explain the increases from 2012 to 2015.
- In 2017, naloxone was administered for 282 suspect opioid overdoses, with an average of 23.5 per month (range: 17 to 30) (Graph 2).
- Of the 282 suspect opioid overdoses, 152 responded to naloxone (53.9%) which corresponds to an average of 12.7 per month (range: 7 to 18).
- Of the 152 patients who responded to administered naloxone in 2017:
  - Approximately half (54.6%) were males which is similar to the five-year historical average (2012-2016) (54.3% males) (Table 1).
  - There was a shift to the younger age groups with 44.7% between the ages of 20-39 compared to 34.6% for the five-year historical average (2012-2016).
  - There has been an increase in all age groups compared to the five-year historical average (2012-2016), except among those <15 years (Graph 3).
  - The estimated annual crude rate of suspect opioid overdoses that responded to naloxone in New Brunswick overall was 18.9 per 100,000 population and ranged from 9.5 to 28.7 per 100,000 population among Health Regions (Table 2). The highest crude rate was reported in the Bathurst Health Region with 28.7 suspect overdoses per 100,000 population. However, regional rates need to be interpreted with caution because of the small numbers involved which can lead to unstable rates.

**Graph 1.** Number of suspect opioid overdoses where naloxone was administered and number of patients that responded to naloxone, yearly in New Brunswick, 2012-2017 (Data source: ANB, January 16, 2018).



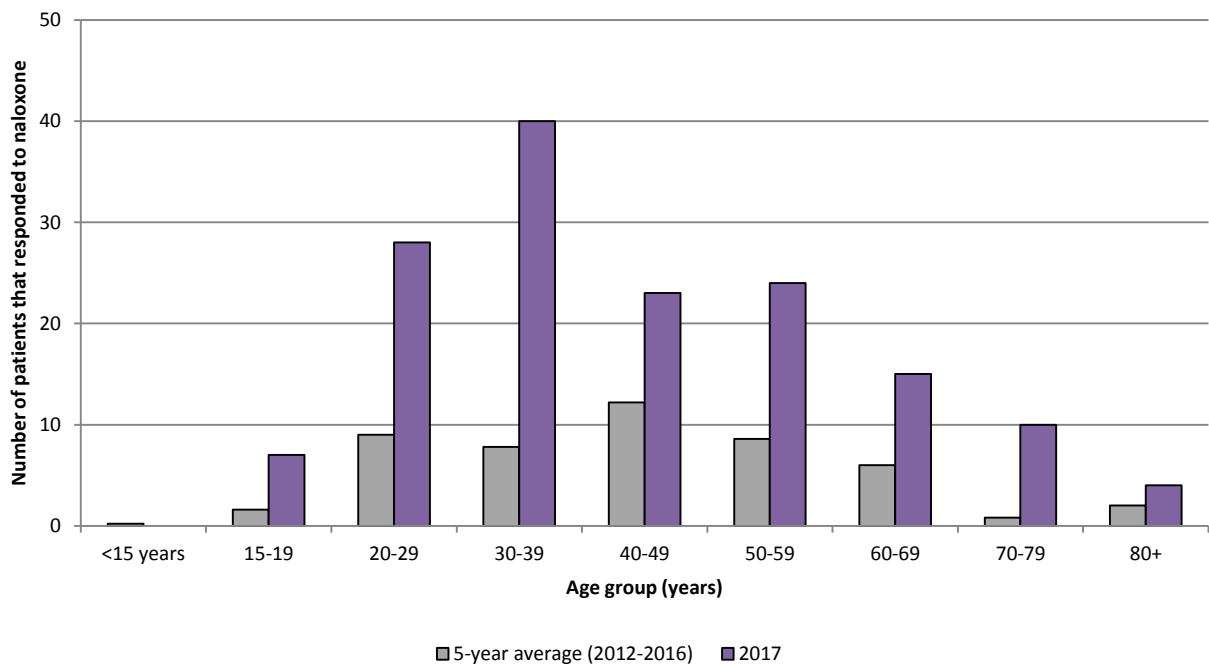
**Graph 2.** Number of suspect opioid overdoses where naloxone was administered and number of patients that responded to naloxone, monthly in New Brunswick, 2017 (Data source: ANB, January 16, 2018).



**Table 1.** Number and percentage of suspect opioid overdoses that responded to naloxone by age group and sex, yearly in New Brunswick, 2012-2017 (Data source: ANB, January 16, 2018).

Number (%) of suspect opioid overdoses that responded to naloxone						
Age groups (years)	2012	2013	2014	2015	2016	2017
<15	0 (0%)	1 (3.8%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
15-19	0 (0%)	0 (0%)	1 (1.7%)	4 (6.1%)	3 (4.3%)	7 (4.6%)
20-29	3 (14.3%)	5 (19.2%)	12 (20.0%)	11 (16.7%)	14 (20.0%)	28 (18.4%)
30-39	2 (9.5%)	5 (19.2%)	11 (18.3%)	10 (15.2%)	11 (15.7%)	40 (26.3%)
40-49	4 (19.0%)	8 (30.8%)	15 (25.0%)	14 (21.2%)	20 (28.6%)	23 (15.1%)
50-59	5 (23.8%)	3 (11.5%)	11 (18.3%)	14 (21.2%)	10 (14.3%)	24 (15.8%)
60-69	2 (9.5%)	3 (11.5%)	6 (10.0%)	11 (16.7%)	8 (11.4%)	15 (9.9%)
70-79	1 (4.8%)	0 (0%)	1 (1.7%)	0 (0%)	2 (2.9%)	10 (6.6%)
80+	3 (14.3%)	0 (0%)	3 (5.0%)	2 (3.0%)	2 (2.9%)	4 (2.6%)
Unknown	1 (4.8%)	1 (3.8%)	0 (0%)	0 (0%)	0 (0%)	1 (0.7%)
<b>Sex</b>						
Male	12 (57.1%)	17 (65.4%)	26 (43.3%)	32 (48.5%)	45 (64.3%)	83 (54.6%)
Female	9 (42.9%)	8 (30.8%)	34 (56.7%)	34 (51.5%)	25 (35.7%)	69 (45.4%)
Unknown	0 (0%)	1 (3.8%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
<b>Total</b>	<b>21</b>	<b>26</b>	<b>60</b>	<b>66</b>	<b>70</b>	<b>152</b>

**Graph 3.** Number of suspect opioid overdoses that responded to naloxone by age group in New Brunswick, 2017 and previous 5-year average (2012-2016) (Data source: ANB, January 16, 2018).





**Table 2.** Estimated annual crude rate of suspect opioid overdose patients that responded to naloxone in New Brunswick, 2017 (Data source: ANB, January 16, 2018).

<i>2017 (Mar to Dec)</i>		
<b>Health Region</b>	<i>Number (%) of hospital referrals</i>	<i>Rate of patients that responded to naloxone per 100,000 population*</i>
<b>Moncton</b>	33 (28.2%)	18.5
<b>Saint John</b>	32 (27.4%)	22.1
<b>Fredericton</b>	14 (12.0%)	9.5
<b>Edmundston</b>	6 (5.1%)	15.3
<b>Campbellton</b>	5 (4.3%)	23.5
<b>Bathurst</b>	18 (15.4%)	28.7
<b>Miramichi</b>	9 (7.7%)	23.8
<b>New Brunswick<sup>†</sup></b>	<b>119</b>	<b>18.9</b>

Source for rate calculations: OCMOH, Communicable Disease Control Branch. The denominators used were 2016 population estimates received from Statistics Canada, Demography Division; March 2017.

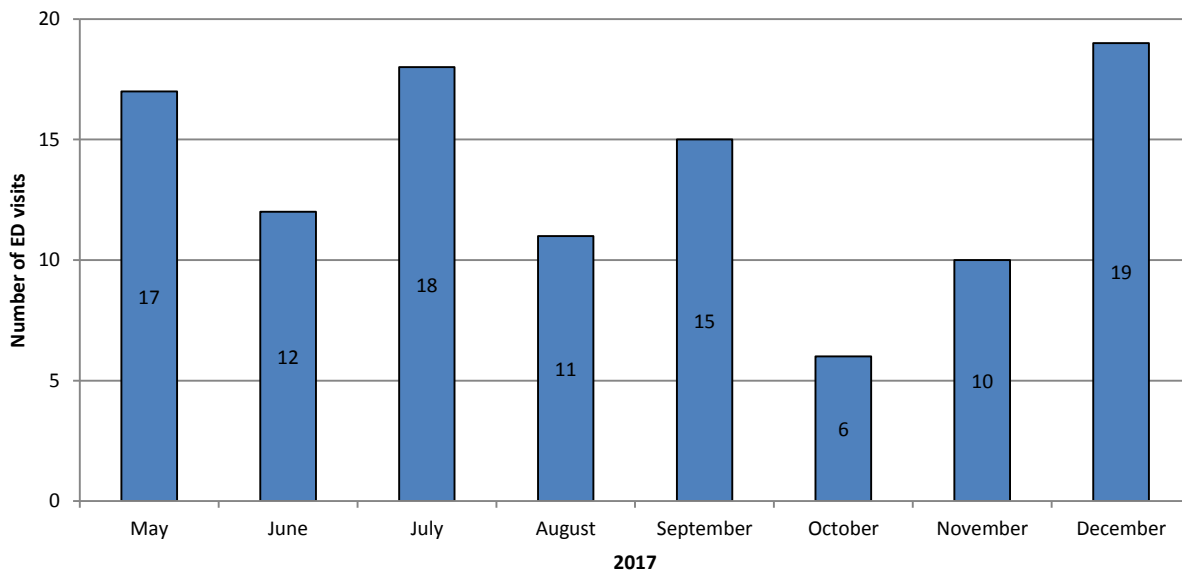
\* Caution should be used while interpreting region-specific rates because of the small numbers involved that can lead to unstable rates. The health region specific rates are estimated based on the hospital of referral as location of dispatch pick-up is not available.

† The total number of hospital referrals for New Brunswick also includes 2 suspect opioid overdoses where the hospital of referral is listed as other. A hospital may be listed as other if the patient was not transported to a hospital ER (e.g. cardiac arrest terminated on-scene or patient refused to be transported).

## Emergency Department non-suicidal opioid overdoses: Regional Health Authorities (Horizon and Vitalité Health Networks), May to December 2017

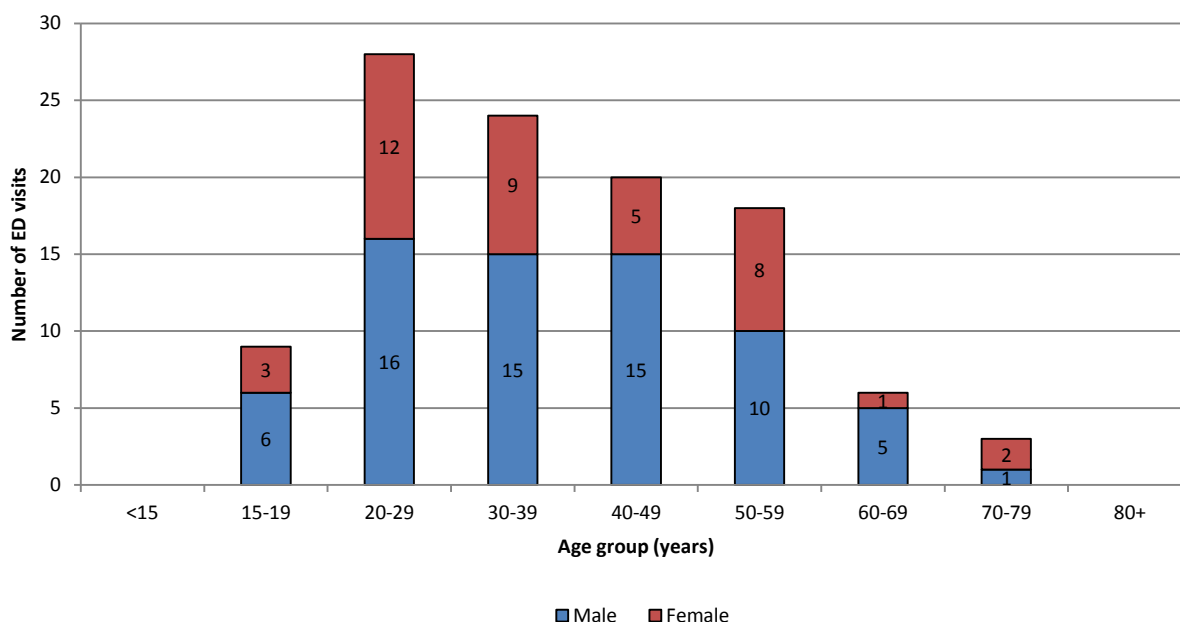
- 108 ED visits related to non-suicidal opioid overdoses were reported between May and December 2017, with an average of 13.5 visits per month (range: 6 to 19). The highest number of visits was reported in December (Graph 4).
- The estimated annual crude rate of ED visits related to non-suicidal opioid overdoses in NB was 27.0 per 100,000 population and ranged between 19.2 and 41.1 per 100,000 population among Health Regions (Table 3). Rates exclude Saint John as under reporting is suspected. The highest estimated annual crude rate was reported in the Campbellton Health Region with 41.1 visits per 100,000 population. However, regional rates need to be interpreted with caution because of the small numbers involved which can lead to unstable rates.
- Of the ED visits related to non-suicidal opioid overdoses (Graph 5):
  - 63.0% (68/108) were males.
  - 48.1% were between 20 and 39 years old.

**Graph 4.** Number of Emergency Department visits due to non-suicidal opioid overdoses, monthly\* in New Brunswick, May to December, 2017 (Data source: Horizon and Vitalité Health Networks, January 22, 2018).



\*Month is estimated based on weeks and therefore some ED visits may not appear in the same month as it actually occurred.

**Graph 5.** Number of ED visits due to non-suicidal opioid overdoses by age group and sex in New Brunswick, May to December, 2017 (Data source: Horizon and Vitalité Health Networks, January 22, 2018).



**Table 3.** Estimated annual crude rate of Emergency Department visits due to non-suicidal opioid overdoses in New Brunswick, 2017 (Data source: Horizon and Vitalité Health Networks, January 22, 2018).

Health Region	2017 (May to Dec)	
	Number (%) of ED visits	Rate of ED visits per 100,000 population*
<b>Moncton</b>	41 (38.0%)	28.8
<b>Saint John</b>	3 (2.8%)	-
<b>Fredericton</b>	29 (26.9%)	24.7
<b>Edmundston</b>	6 (5.6%)	19.2
<b>Campbellton</b>	7 (6.5%)	41.1
<b>Bathurst</b>	13 (12.0%)	25.9
<b>Miramichi</b>	9 (8.3%)	29.8
<b>New Brunswick<sup>†</sup></b>	<b>108</b>	<b>27.0</b>

Source for rate calculations: OCMOH, Communicable Disease Control Branch. The denominators used were 2016 population estimates received from Statistics Canada, Demography Division; March 2017.

\* Caution should be used while interpreting region-specific rates because of the small numbers involved that can lead to unstable rates. The health region specific rates are estimated based on the location of the hospital visited.

† Rates exclude Saint John as under reporting is suspected.

## Apparent Opioid Overdose Deaths: Chief Coroner's Office

### 2016: Update

- Since the last report, an additional two deaths due to any type of drugs were reported for 2016 (one intentional and one underdetermined death), of which one was related to non-fentanyl opioids.
- The updated total deaths (including intentional and accidental) due to any type of drugs (opioids and non-opioids) for 2016 is 62 deaths (Graph 6).
- Thirty-three (53.2%) of total deaths due to any drugs were related to opioids, including four which were associated with fentanyl or fentanyl analogs (3 accidental and 1 intentional).
- Twenty-six (78.8%) of the 33 apparent opioid overdose deaths were classified as accidental, of which three were associated with fentanyl.
- Additional reports are expected for 2016 as not all death investigations have been concluded.

### 2017 Quarters 1-3 (January 1 to September 30)

- Forty-four deaths (including intentional, accidental, pending intent and undetermined) due to any type of drug (opioids and non-opioids) occurred between January and September 2017, of which 28 (63.6%) were related to opioids (Graph 6).
- Twenty-five (89.3%) of the 28 apparent opioid overdose deaths were classified as accidental or with pending intent at the time of reporting (Graph 7). The number of deaths where intent is pending is expected to change as additional information becomes available.
- Seven (28.0%) of the apparent opioid overdose deaths classified as accidental or with pending intent were associated with fentanyl or fentanyl analogs, whether detected alone (1 death) or mixed with other opioids (6 deaths) (Graph 7). Fentanyl was reported in 5 deaths and fentanyl-fentanyl in 2. Fentanyl or fentanyl analogs were not associated with any of the intentional deaths.
- Of the 25 apparent opioid overdose deaths classified as accidental or with pending intent:
  - Seventeen (68.0%) were males and 8 (32.0%) were females.
  - Seven (28.0%) were between 20 and 29 years old (Graph 8).
  - Eight deaths occurred in the first quarter of the year, 8 in the second quarter and 9 in the third quarter (Graph 7).
  - Ten (40.0%) were from illicit opioids, 9 (36.0%) were from prescribed opioids and 6 (24.0%) were from an undetermined source of opioids (Graph 8).
  - All ten deceased from reported illicit opioid overdoses were between 15 and 49 years old, with half of the victims being in the 20-29 years age group.
  - The estimated annual crude death rate for New Brunswick overall was 4.4 per 100,000 population and ranged from 0 to 6.9 deaths per 100,000 population among Health Regions (Table 4). These regional rates need to be interpreted with caution because of the small numbers involved which can lead to unstable rates.

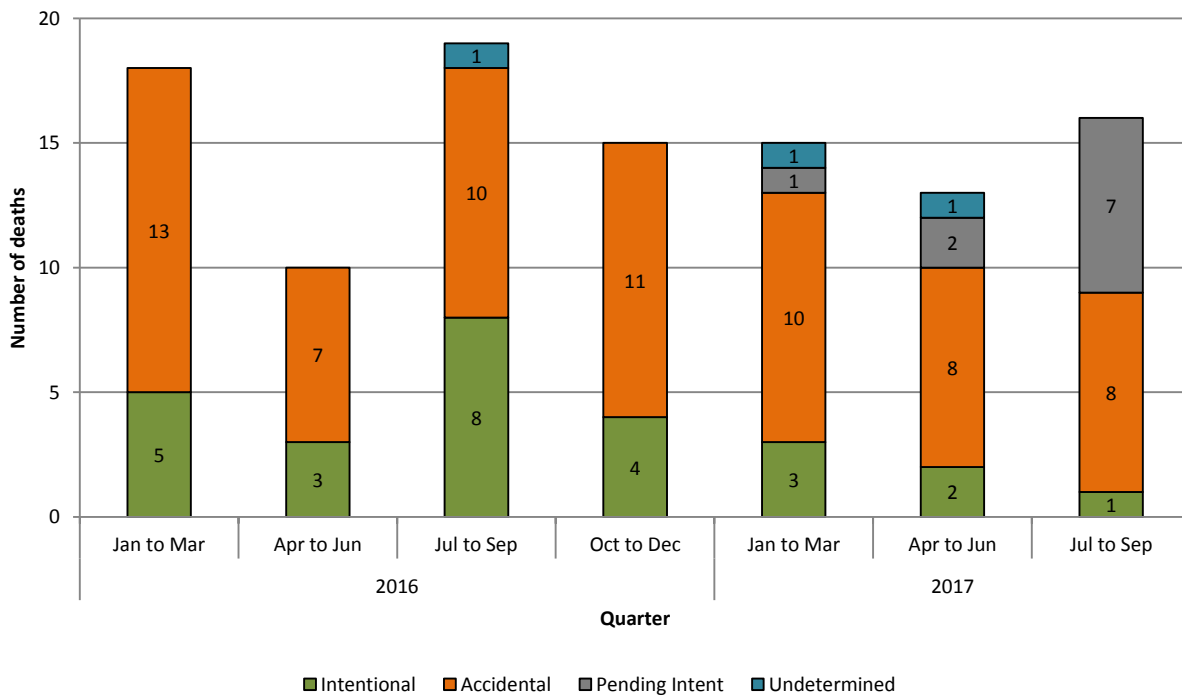
- Twenty-four (96.0%) of the accidental/pending intent apparent opioid overdose deaths were associated with mixed use of opioids with other substances, including but not limited to, alcohol, benzodiazepines, cocaine, and W-18.

**2017 Quarter 4 (October 1 to December 31)**

- Ten deaths due to any type of drug (opioids and non-opioids) have been reported for the fourth quarter of 2017, of which 9 were related to opioids.
- Eight (88.9%) of the nine apparent opioid overdose deaths were classified as accidental or with pending intent at the time of reporting.
- One of the accidental deaths was related to carfentanyl.

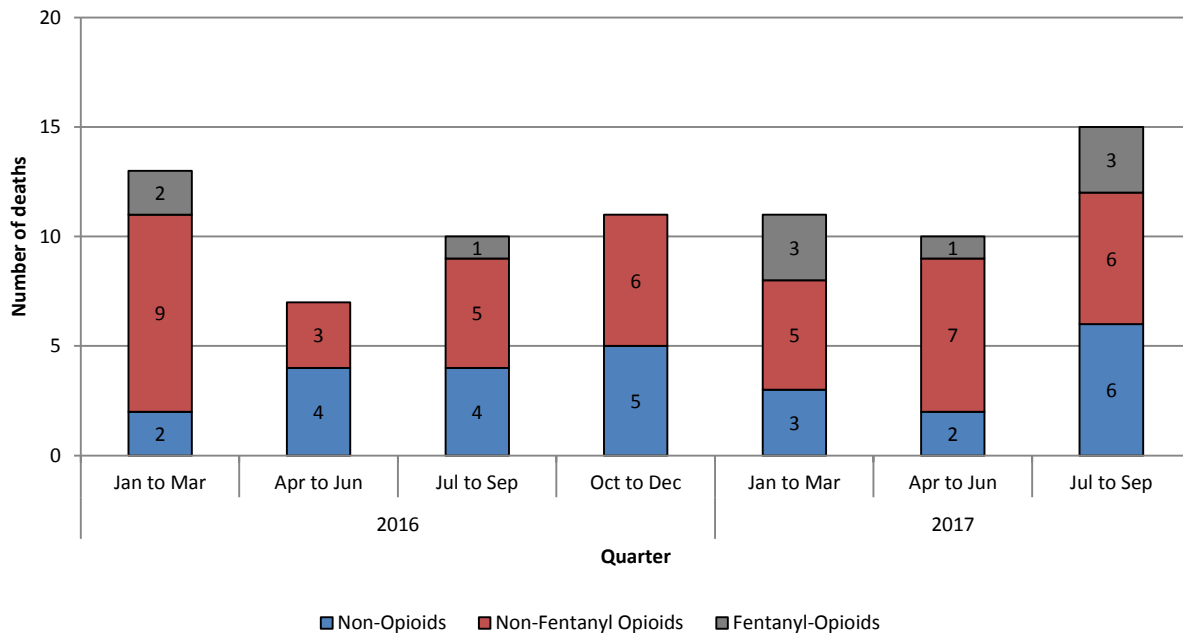
In general, there were more deaths classified as accidental or with pending intent in 2017 compared to 2016 (33 versus 26). Data for the fourth quarter are incomplete and numbers are expected to increase as coroner investigations continue.

**Graph 6.** Total apparent drug overdose (opioid and non-opioid) deaths by intent (intentional, accidental, pending intent\* or undetermined), quarterly in New Brunswick, January 2016 to September 2017 (Data source: Chief Coroner’s Office, February 13, 2018).



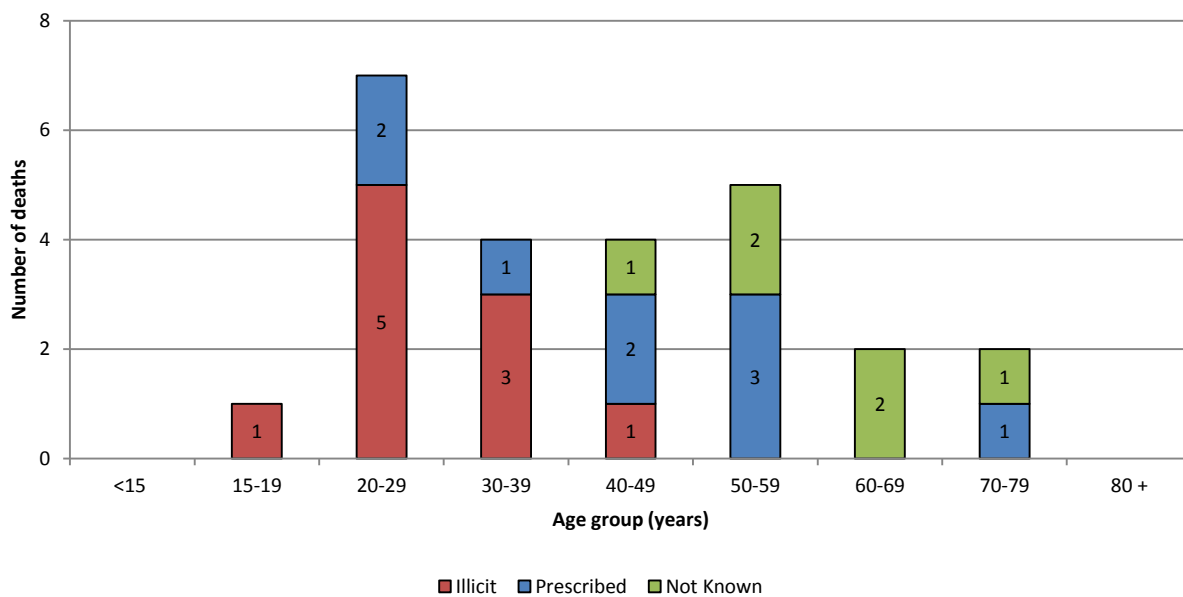
\*The number of deaths where intent is pending is expected to change as additional information becomes available.

**Graph 7.** Apparent drug-overdose deaths that are accidental or pending intent\* by drug type, quarterly, in New Brunswick, January 2016 to September 2017 (Data source: Chief Coroner's Office, February 13, 2018).



\*Number of deaths where intent was pending was 0 in 2016 and 10 in 2017 (Quarters 1-3 ). These numbers are expected to change as additional information becomes available

**Graph 8.** Age distribution of apparent opioid overdose deaths classified as accidental or with pending intent by drug source in New Brunswick, January to September 2017 (Quarters 1-3 ) (Data source: Chief Coroner's Office, February 13, 2018).



**Table 4.** Apparent opioid overdose estimated annual crude mortality rates\* for deaths that are accidental or with pending intent, by Health Region, New Brunswick, 2016 and 2017 (up to end of September) (Data source: Chief Coroner’s Office, February 13, 2018).

Health Region <sup>†</sup>	2016		2017 (Jan to Sep)	
	Number (%) of deaths reported	Death Rate per 100,000 population	Number (%) of deaths reported	Death Rate per 100,000 population
Moncton	10 (38.5%)	4.7	7 (28.0%)	4.4
Saint John	8 (30.8%)	4.6	9 (36.0%)	6.9
Fredericton <sup>‡</sup>	0 (0%)	0.0	5 (20.0%)	3.8
Edmundston	1 (3.8%)	2.1	0 (0%)	0.0
Campbellton	3 (11.5%)	11.7	0 (0%)	0.0
Bathurst	2 (7.7%)	2.7	2 (8.0%)	3.5
Miramichi	2 (7.7%)	4.4	2 (8.0%)	5.9
<b>New Brunswick</b>	<b>26</b>	<b>3.4</b>	<b>25</b>	<b>4.4</b>

Source for rate calculations: OCMOH, Communicable Disease Control Branch. The denominators used were 2016 population estimates received from Statistics Canada, Demography Division; March 2017.

\* Caution should be used while interpreting region-specific rates because of the small numbers involved that can lead to unstable rates.

<sup>†</sup> Health Region where death occurred or where the deceased was found.

<sup>‡</sup> Fredericton Health Region corresponds to both Fredericton and Woodstock judicial districts.