



BC Centre for Disease Control



## The BC Public Health Opioid Overdose Emergency

Illicit drug deaths in BC have increased each year since 2012 and, by mid-2015, provincial rates of illicit drug deaths surpassed those seen in 1997–98 when a public health emergency in Vancouver's Downtown Eastside was declared in response to an epidemic in HIV infection rates and illicit drug fatalities. This recent epidemic is characterized by the increasing proportion of deaths in which illicit fentanyl – an opioid substance - has been detected. Fentanyl was detected in 5% of illicit drug deaths in 2012 and this has increased annually reaching 60% in 2016 (based on toxicology data to the end of October, 2016).

On April 14, 2016, Dr. Perry Kendall, Provincial Medical Health Officer declared a public health emergency under the *Public Health Act* in response to increasing overdoses and overdose deaths in our province. Details are available in the Ministry of Health News Release (<https://news.gov.bc.ca/releases/2016HLTH0026-000568>).

In response to this emergency declaration, The BC Centre for Disease Control (BCCDC) is collaborating with the BC Ministry of Health, BC Observatory for Population and Public Health (BCOPPH), Regional Health Authorities\*, Provincial Overdose Surveillance and Naloxone Task Groups, BC Emergency Health Services, BC Coroners Service, and other stakeholders to support the response. (See Appendix 1 for a complete listing of partner organizations)

BCCDC's priorities are overdose surveillance and implementing expanded harm reduction activities, including the expansion of Take Home Naloxone sites in emergency departments, correctional facilities, and communities.

\*There are five geographic Health Authorities in BC: Interior, Fraser, Vancouver Coastal, Island, and Northern Health. Health Authorities are further subdivided into Health Services Delivery Areas (HSDA) and Local Health Regions (LHA). See Appendix 2 for reference map.

### Key Points

- In 2016, 914 British Columbians died from an *illicit drug overdose*. Illegal fentanyl was detected in 60% of these fatalities (based on data to October, 2016)
- Overdoses tend to occur in those in their 20's, 30's, and 40's, with males at higher risk than females, although regional variation was noted.
- During the first six months of enhanced data collection in the EDs in Interior, Island, and Northern Health, ~1/4 of Emergency Department (ED) patients interviewed had *no fixed address*. Unstable housing was more common in males than females.
- Overdoses occur in private residences and in public spaces (e.g. street). Restaurant, bars, and nightclubs are reported in less than 5% of cases.
- Those who attended ED for an overdose most commonly self-report use of heroin. Most reported that they did not intentionally take fentanyl.
- Using drugs alone increases the risk of not receiving help in time. Information about using drugs alone was not recorded in 1/3 of ED case reports; of those with information, 40% indicated he/she was alone at the time of the overdose.
- During the first six months of enhanced data collection in the EDs in Interior, Island, and Northern Health, 10% of individuals attended for a repeat overdose. Those with no fixed address were more likely to experience a repeat overdose
- Rates of ambulance-attended overdose are highest in Vancouver Coastal Health. Rates of overdose deaths are highest in Vancouver Coastal and Interior Health.
- Since fentanyl emergence, there has been a small increase in the proportion of individuals experiencing a repeat overdose attended by paramedics.
- Repeat overdoses are more common in males; during 2015–2016, 20% of male and 15% of female patients experienced a repeat overdose.

Last Updated: January 17<sup>th</sup>, 2017



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## How do we track overdose events and deaths?

This report summarizes the provincial drug overdose situation based on BC Emergency Health Services 911 Dispatch Calls and Paramedic data (BCEHS); Emergency Department (ED) data from three Regional Health Authorities, and BC Coroners Service (BCCS) data on illicit drug deaths.

It is important to understand that each data source captures overdose differently.

BCCS defines *apparent illicit drug overdose deaths* as unintentional death involving street drugs and/or medications not prescribed to the deceased person.

BCEHS uses the Medical Priority Dispatch System to categorize 911 calls for *Ingestion Poisoning*. A separate Patient Care Report is completed by Paramedics on assessment and treatment of overdose. In cases of suspected opioid overdose, naloxone is administered to reverse the overdose. Naloxone is an antidote opioid which, when administered in a timely manner, reverses overdose. BC Emergency Health Services tracks the administration of naloxone by paramedics.

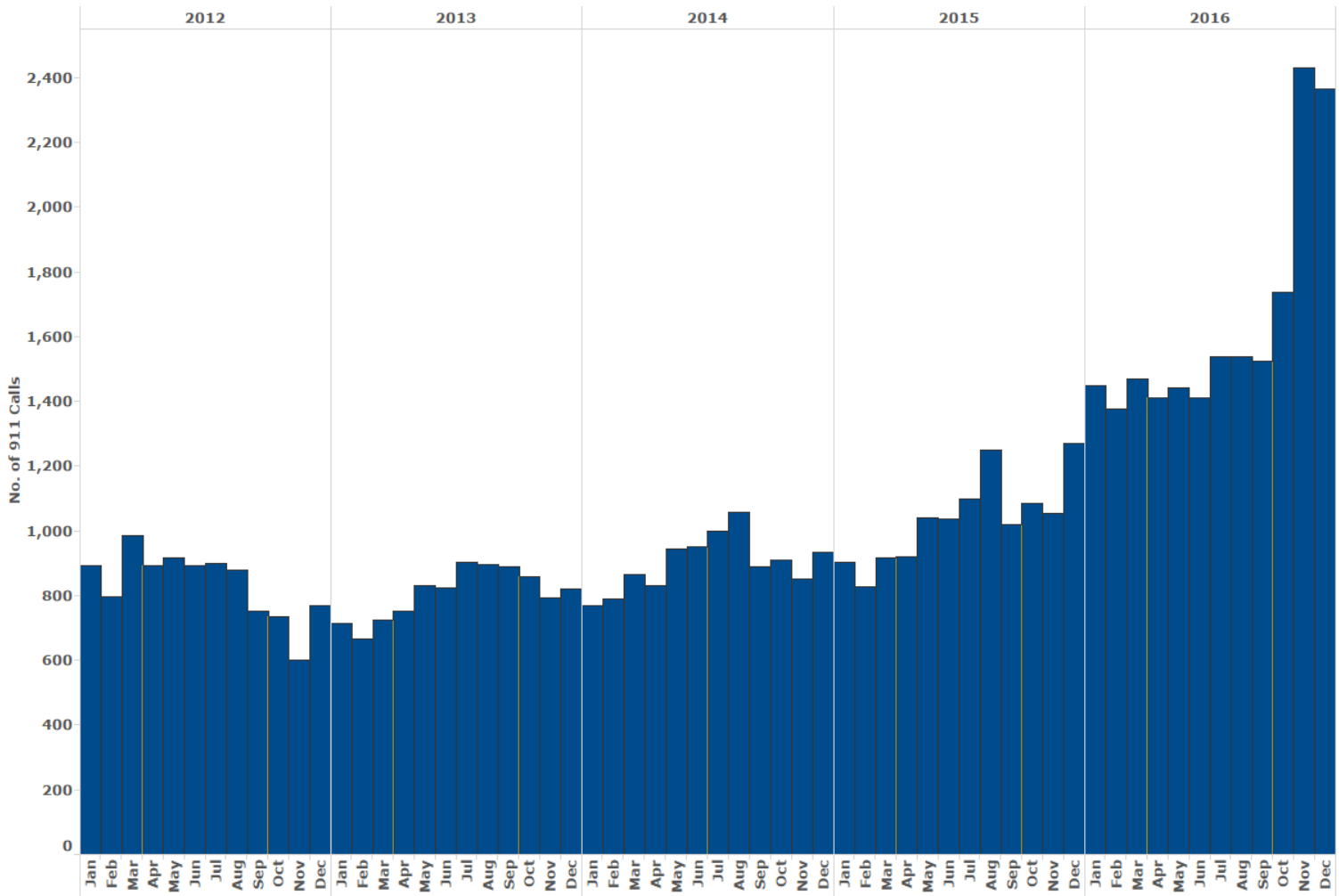
Emergency Departments complete case reports on those patients with *suspected or confirmed opioid-related overdose*.

(See Appendix 3 for a complete description of each data source, associated case definitions, and data limitations)

**How big is BC's increase in overdoses?**

911 calls for *ingestion poisoning* began increasing in mid-2015 to the highest volumes seen to date in the fall of 2016 (Figure 1). The category is assigned based on the information available at the time of the call. The number *ingestion poisoning* calls is a timely and useful indicator of overdose trends. While this category captures a strong proportion of paramedic-attended illegal drug overdose events it also includes poisoning due to alcohol, prescription drugs, or other toxic substances (Appendix 3).

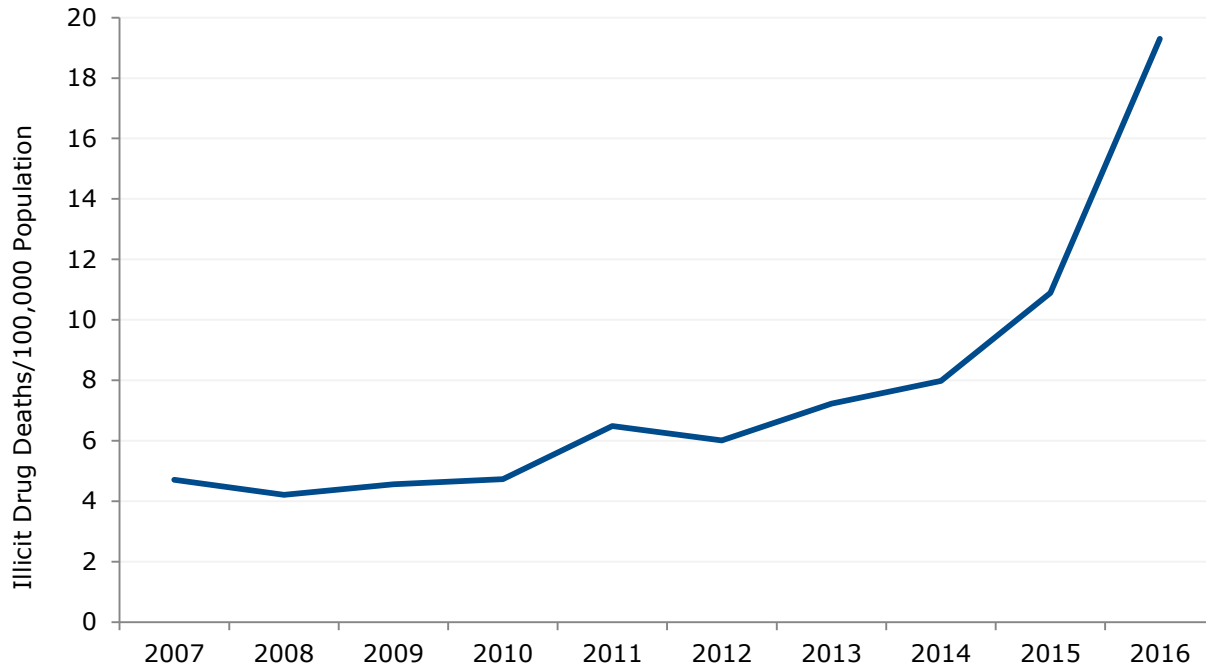
**Figure 1.** 911 Calls for Ingestion Poisoning, BC, BC Ambulance Service, Medical Priority Dispatch System Data, January, 2012 – December, 2016



SOURCE: British Columbia Emergency Health Services, BC Ambulance Service, Ambulance Dispatch Data.

*Illicit drug overdose deaths* in BC have increased each year since 2012, particularly 2015 and 2016 (Figure 2) (Appendix 3).

**Figure 2.** Rates of Illicit Drug Overdose Deaths, BC Coroners Service, British Columbia, 2007 – 2016



**SOURCE:**

Numerator Data: British Columbia Coroners Service, *Illicit Drug Overdose Death in BC*, Report, January 1, 2007 – December 31, 2016, <http://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/death-investigation/statistical/illicit-drug.pdf>

2016 Denominator Data: BC Statistics PEOPLE 2016, <http://www.bcstats.gov.bc.ca/StatisticsBySubject/Demography/PopulationProjections.aspx>

2007 – 2015 Denominator Data: BC Statistics Population Estimates, <http://www.bcstats.gov.bc.ca/StatisticsBySubject/Demography/PopulationEstimates.aspx>



**Where are overdoses occurring in 2015 - 2016?**

In cases of suspected opioid overdoses, naloxone is administered to reverse the overdose. Currently, naloxone can be administered by paramedics, some firefighters, and enforcement personnel as well as by trained by-standers. BC Emergency Health Services data track the administration of naloxone by paramedics and, while this does not capture all administrations of the antidote, it is a useful marker of overdose activity.

Rates of ambulance-attended illegal drug overdoses are highest in Vancouver Coastal Health. Rates of overdose deaths are highest in Vancouver Coastal Health and Interior Health (Table 1).

**Table 1.** Rates of Illegal Drug Overdoses Attended by BC Paramedics and Rates of Illicit Drug Deaths, BC, by Health Authority, 2016

Health Authority	<b>2016 Estimated Rates of Illegal Drug Overdose* January to November, 2016</b>  Illegal Drug Overdose Events Attended by BC Paramedics / 100,000 Population	<b>2016 Rates of Illicit Drug Overdose Deaths** January to December, 2016</b>  Illicit Drug Overdose Deaths / 100,000 Population
Interior Health	161.8	21.0
Fraser Health	164.7	17.0
Vancouver Coastal Health	226.5	21.7
Island Health	164.9	20.0
Northern Health	152.0	17.3
British Columbia	178.8	19.3

\*The Estimated Number of Illegal Drug Overdoses are defined as paramedic attended events indicating the patient experienced an overdose of illegal substances, excluding alcohol or the patient’s own prescription drugs, and who may or may not have received naloxone.

\*\*Illicit Drug Overdose Deaths are defined as unintentional death involving street drugs and/or medications not prescribed to the decedent

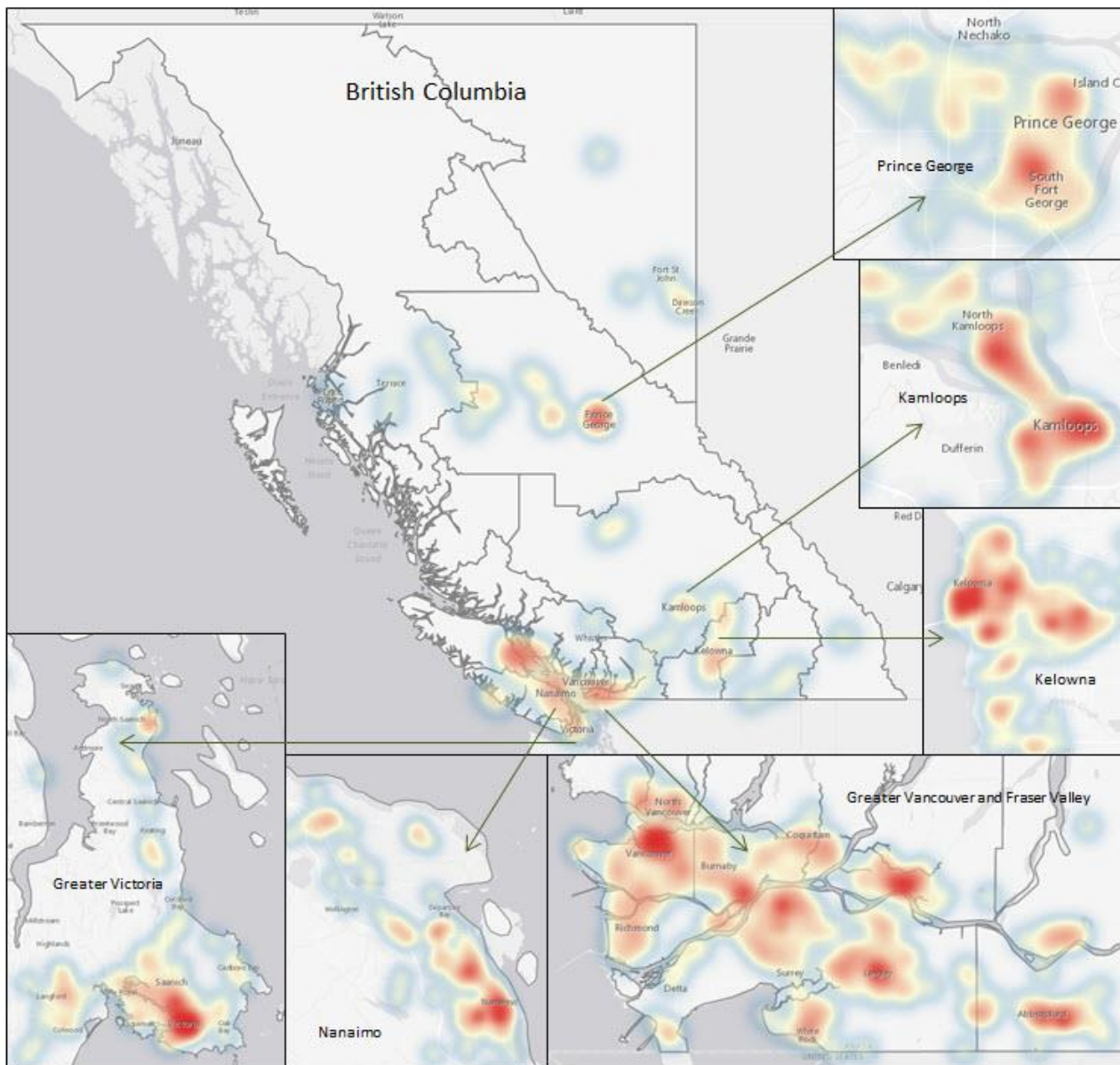
(See Appendix 3 for complete definitions of above)

SOURCE: 2016 Estimated Rates of Illegal Drug Overdose: Numerator Data: British Columbia Emergency Health Services, BC Ambulance Service, Patient Care Record Data. At time of this report, data was complete up to the end of November, 2016. The 2016 annual rate was adjusted to account for 11/12 months of data. Denominator Data: BC Statistics PEOPLE 2016, <http://www.bcstats.gov.bc.ca/StatisticsBySubject/Demography/PopulationProjections.aspx>

SOURCE: 2016 Rates of Illicit Drug Deaths: Numerator Data: British Columbia Coroners Service, Illicit Drug Overdose Death in BC, Report, January 1, 2007 – December 31, 2016, <http://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/death-investigation/statistical/illicit-drug.pdf>. Denominator Data: BC Statistics PEOPLE 2016, <http://www.bcstats.gov.bc.ca/StatisticsBySubject/Demography/PopulationProjections.aspx>

The BC Ambulance Service paramedics administered naloxone an average of approximately 180/month in 2014; 250/month in 2015 (a 40% increase over 2014); and 380/month in 2016 up to November 30<sup>th</sup>, 2016 (a 50% increase over 2015). However, these numbers of naloxone administrations are an underestimate as firefighters, enforcement personnel, and community members are increasingly administering naloxone as well. Figure 3 is a heat map of paramedic administrations of naloxone in which the intensity of colour (red=most intense) corresponds to the intensity of activity. Prince George, Kamloops, Kelowna, Greater Victoria, Nanaimo, and parts of Greater Vancouver and the Fraser Valley are seen as 'hot spots'. While urban centres with larger populations and concentrations of drug use have a higher intensity of overdose events, overdoses are also occurring in suburban, rural, and remote settings.

**Figure 3.** Heat Map of BC Paramedic Administrations of Naloxone, BC, January, 2016 – November, 2016



SOURCE: British Columbia Emergency Health Services, BC Ambulance Service, Patient Care Record Data. Map created by BCCDC.

Mapping rates of Illicit Drug Overdose Deaths by Health Services Delivery Area (HSDA)\* or Local Health Area (LHA)\* assists in local and regional overdose prevention activities and resource allocation. The BC Coroners reports are updated and release publicly on monthly basis and include mortality maps at the HSDA level. Mortality maps can also be found at: <http://www.bccdc.ca/health-professionals/clinical-resources/harm-reduction/overdose-data-reports>

Health Services Delivery Areas with 2016 overdose mortality rates greater than 15 deaths per 100,000 population are Thompson Cariboo Shuswap and Okanagan in Interior Health; Northeast in Northern Health; Vancouver in Vancouver Coastal Health; North Vancouver Island, Central Vancouver Island, and South Vancouver Island in Island Health; and Fraser East and Fraser South in Fraser Health.

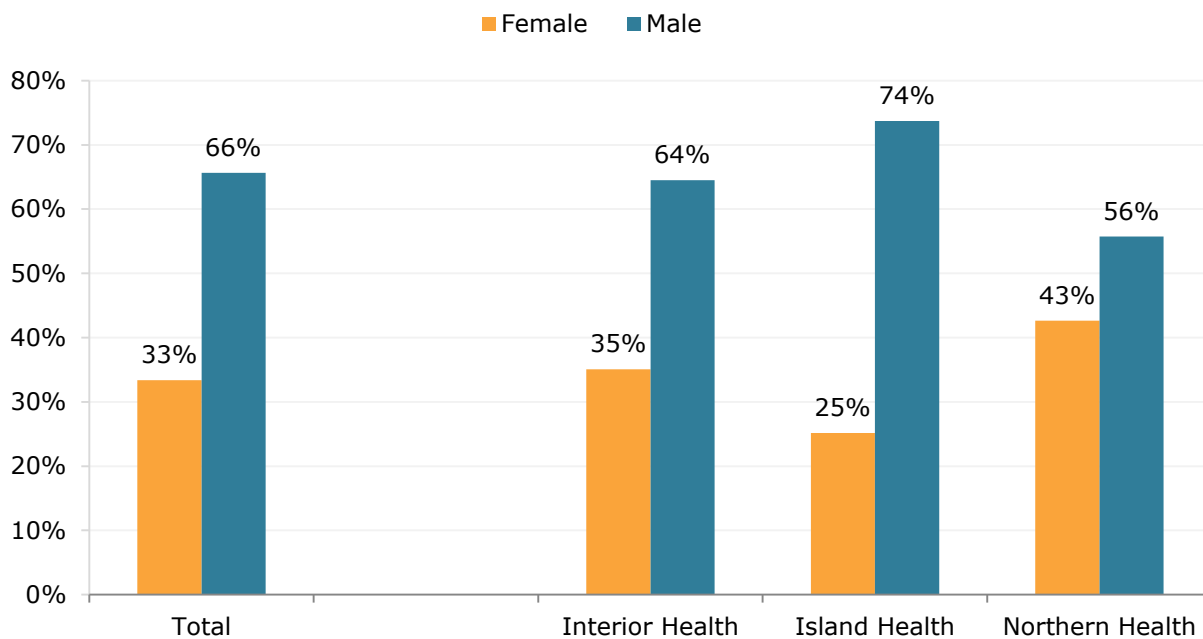
**What are the characteristics of those who are overdosing in the recent epidemic?**

Gathering information on the circumstances and context surrounding non-fatal overdoses requires asking questions of the patients themselves. Public health officials in three British Columbia health authorities (Interior, Island and Northern Health) asked healthcare providers to complete a case report for each patient seen in the emergency department because of a known or suspected opioid overdose. This information is used to understand how to design appropriate interventions and better target educational messages.

A total of 569 reports were received from 40 hospital and community health centre emergency departments across the three participating health authorities between June 5 and November 5, 2016. A number of patients had multiple encounters due to overdose; 36 had two encounters and eight had three or more visits. Therefore, 515 different individuals were seen at an emergency department because of a known or suspected opioid overdose during the five months under review.

Overall, two thirds of the patients were male (66%). Differences between health authorities were noted; males comprised 56% of the cases in Northern Health compared with 74% in Island Health.

**Figure 4:** Sex Distribution of Patients seen in Emergency Department for Opioid Overdose, by Health Authority, June 5 – November 5, 2016 (n=515)



SOURCE: Enhanced Emergency Department Case Reporting Data, Interior, Northern, and Island Health Authorities, BC, June 5<sup>th</sup> to November 5<sup>th</sup>, 2016. Analysis and figure by BC Observatory for Population and Public Health.

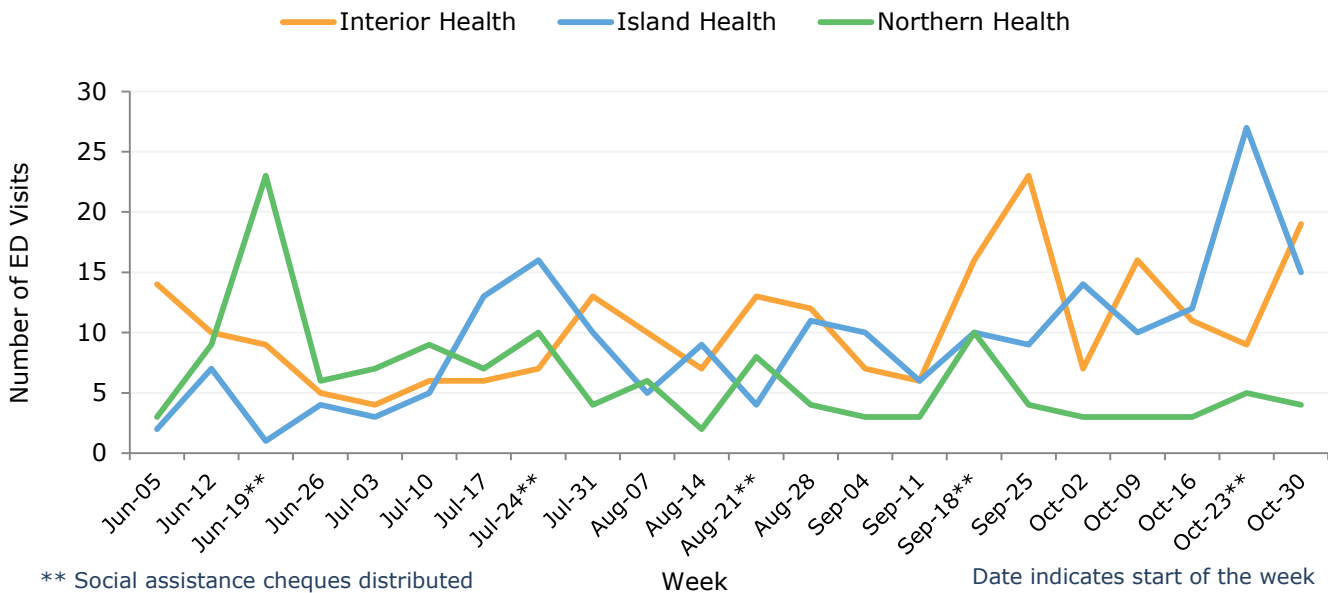


The mean age at the time of emergency department visit due to opioid-related overdose was 36 years in all Health Authorities. Nearly two-thirds of patients were between 20 and 39 years of age, and approximately 80% were between 20 and 49.

Nearly a quarter of patients had no fixed address and unstable housing was more common in males than females. Those seen at Island Health facilities were more likely than those at Northern and Interior Health to have no fixed address (38% versus 22% and 8% respectively). Northern Health results should be interpreted with particular caution as address information was not provided for 26% of the case reports received.

The number of reported opioid-related overdose cases varied from week to week, particularly at Interior and Island Health. Fluctuations are likely associated with changes in the composition of illicit drugs sold on the streets, and with the distribution of social assistance cheques near the end of each month. However, it is difficult to determine whether changes observed over time are also caused, at least in part, by deviations in the completeness of reporting by healthcare providers.

**Figure 5:** Visits per Week to Emergency Department for Known or Suspected Opioid Overdose, by Health Authority, June 5–November 5, 2016 (n = 569)



SOURCE: Enhanced Emergency Department Case Reporting Data, Interior, Northern, and Island Health Authorities, BC, June 5<sup>th</sup> to November 5<sup>th</sup>, 2016. Analysis and figure by BC Observatory for Population and Public Health.

Most emergency department visits due to an opioid-related overdose occurred in larger urban centres. However, overdoses were reported in a large number of smaller communities in each Health Authority – a total of 15 communities in Interior Health, eight at Island Health, and 16 in Northern Health.

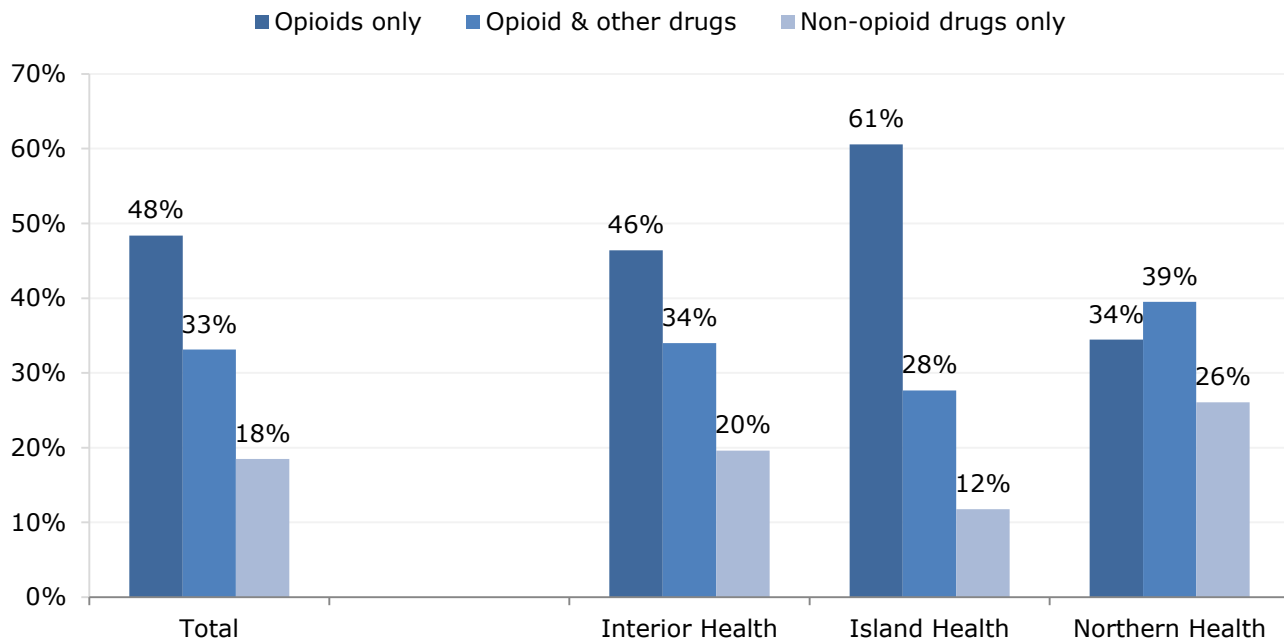
Information on location of drug use was not provided in approximately one-fifth of cases (18%). Among those with responses, approximately half indicated consuming the drug in a private residence and ~40% in a public space/street. Various other locations such as a shelter or hotel were also listed. Caution should be used when interpreting these results. Those who did respond to this question may not be representative of all patients seen due to an opioid overdose.



Healthcare providers were asked to record the substance(s) the patient stated using; polysubstance use was common. The largest proportion was using only opioids, most commonly heroin followed by other illicit opioids. In about one-third, opioids and another drug type, such as cocaine or alcohol, was reported. The smallest proportion of patients was taking only non-opioid drugs, most commonly an illicit stimulant such as cocaine or methamphetamine. Those taking only non-opioids are an important group, as these individuals may have little or no regular exposure to opioids but, due to contamination of a drug believed to be a non-opioid, are exposed. These individuals would have a low tolerance relative to a person with regular exposure and, thus, are at increased risk of experiencing an overdose. It is noted that this category may also include cases reported inappropriately to the surveillance system (no evidence of opioids associated with the overdose) and cases where an opioid was not recorded on the case report form.

Only 60% of cases reported on the frequency of their drug use, of those, two-thirds reported daily use and the remainder weekly or less often.

**Figure 6:** Categories of Drugs Reported Used by Emergency Department Patients with Known or Suspected Opioid Overdose, by Health Authority, June 5–November 5, 2016 (n = 569)



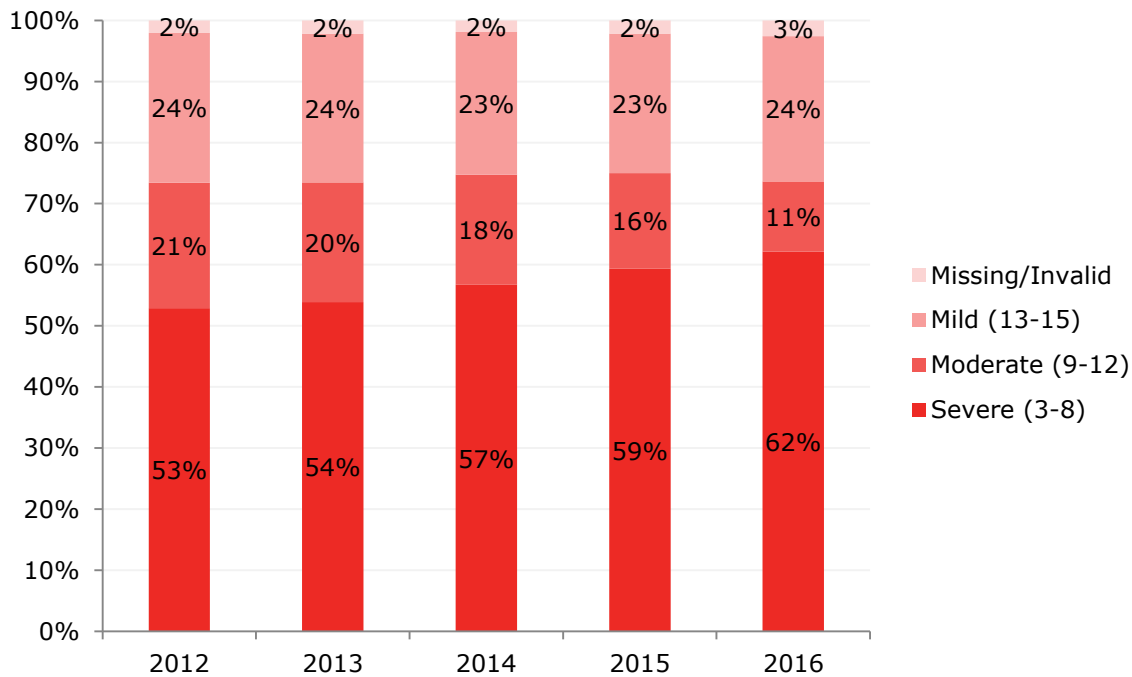
SOURCE: Enhanced Emergency Department Case Reporting Data, Interior, Northern, and Island Health Authorities, BC, June 5<sup>th</sup> to November 5<sup>th</sup>, 2016. Analysis and figure by BC Observatory for Population and Public Health.

Naloxone was given to patients in 73% of the overdose cases reported between June 5 and November 5, 2016. Most (65%) received naloxone from Emergency Health Services. Others received the antidote in the emergency department and/or from someone in the community before transport to the hospital.

**Are the reported overdoses becoming more severe in 2015–2016?**

The Glasgow Coma Scale is used by paramedics to evaluate and record the severity of patient presentation and ranges from mild (alert and responding/normal conscious) to severe (deep unconscious, blue) on a 15 point scale. Among paramedic attended events in which the patient received naloxone, the proportion being coded in the more severe categories has been increasing each year.

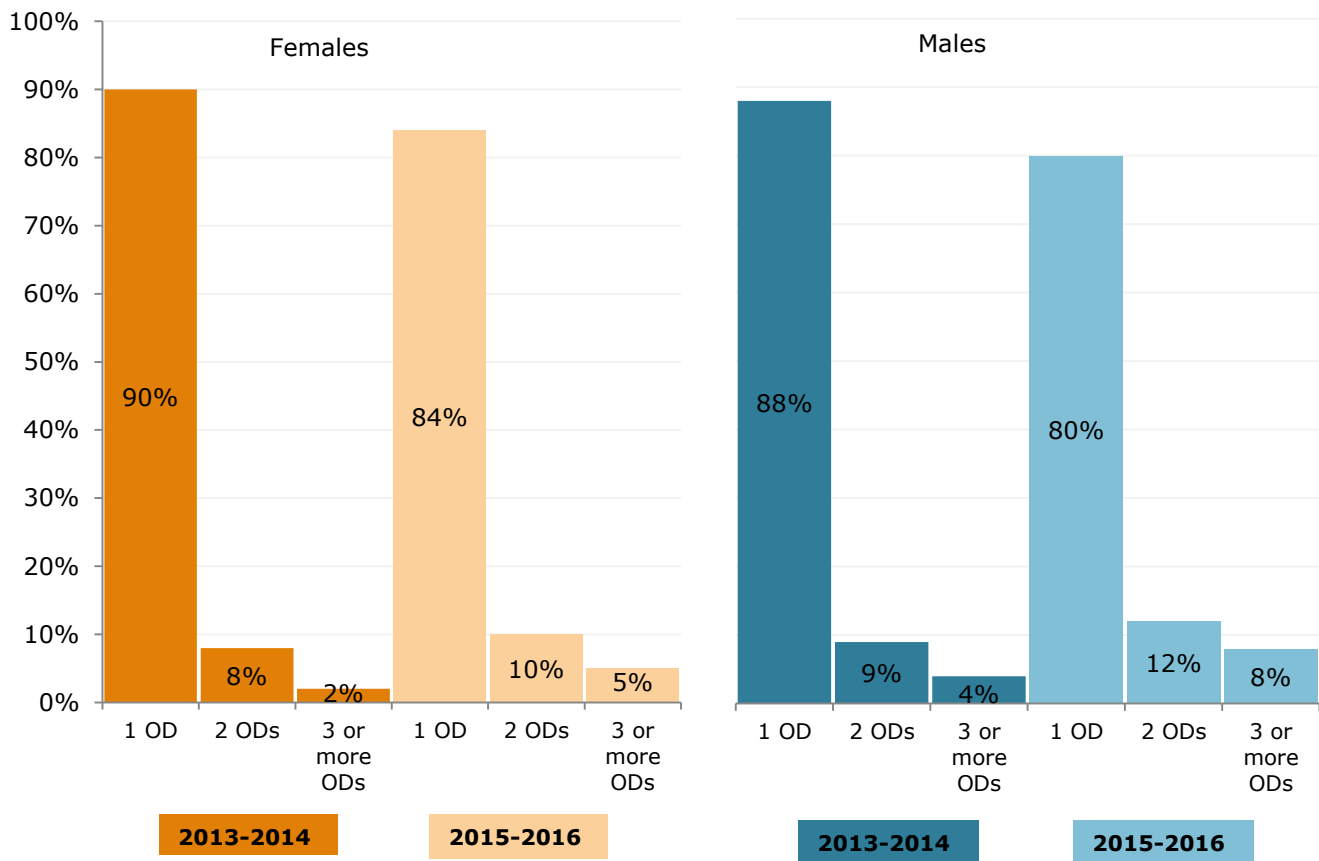
**Figure 7.** Proportion of Naloxone Administrations by Paramedics categorized by the Glasgow Coma Scale from Mild to Severe, BC, 2012–2016



SOURCE: British Columbia Emergency Health Services, BC Ambulance Service, Patient Care Record Data. Analysis and figure by BCCDC.

Comparing the two-year period prior to fentanyl emergence (2013-2014) with the two years since (2015-2016), the majority (80- 90%) of overdoses attended by BC paramedics were in people overdosing once in the period. Since fentanyl emergence, there has been an increase in repeat overdoses in both sexes. During 2015-2016, 20% of ambulance attended male patients and 15% of female patients experienced repeat overdose.

**Figure 8.** Proportion of Ambulance Attended Repeat Overdoses, by time period and sex, BC, 2013-2016



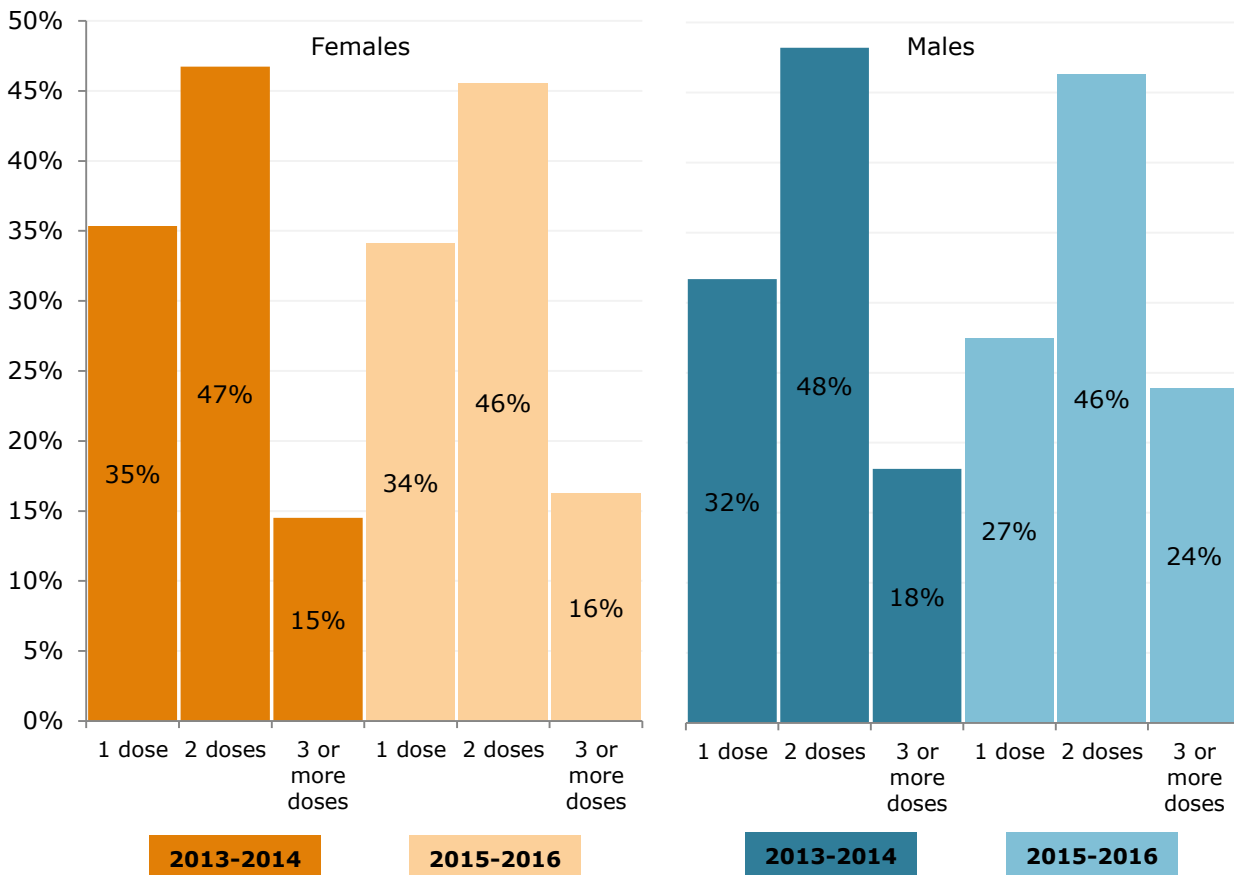
SOURCE: British Columbia Emergency Health Services, BC Ambulance Service, Patient Care Record Data. Analysis and figure by BCCDC.

Definitions:

- Only those with valid PHNs were considered in this analysis. Repeat overdoses are defined as unique individuals, based on PHN, with 2 OR  $\geq$  3 paramedic attended overdose events in the period of interest. The three categories (1, 2, 3 or more) are mutually exclusive; each individual is counted only once.
- Estimated illegal drug overdose events depicted above are defined as ambulance attended events for which patients were coded as receiving naloxone by paramedics or for which the paramedic impression codes indicated probable illicit drugs (but excludes misuse of prescription drugs or alcohol) and the corresponding dispatch code was consistent with probable drug overdose (MPDS cards 9,23,31)

In both males and females, the proportion of patients administered one and two 0.4mg doses of naloxone declined slightly in 2013–2014 as compared to 2015–2016, whereas the proportion receiving three or more doses has increased, most notably in males.

**Figure 9.** Distribution of Naloxone Doses Administered by Paramedics, by time period and sex, BC, 2013 – 2016



SOURCE: British Columbia Emergency Health Services, BC Ambulance Service, Patient Care Record Data. Analysis and figure by BCCDC.



**BC Take Home Naloxone Program:**

BC’s Take Home Naloxone Program (THN) began in late 2012 with the mandate to distribute free naloxone kits to individuals at risk of opioid overdose. Recently, the THN program expanded distribution to those who may witness and respond to an overdose. Up to October 2016, over 18,000 kits have been distributed. In 2016 alone, 294 distribution sites have come onboard and there are now over 400 THN distribution sites across BC. These sites are located in harm reduction sites, EDs, and correctional facilities. In December, 2016, the Facility Overdose Response Box Program was launched to provide multi-dose naloxone boxes to facilities. The most up-to-date information about this program can be found on the Toward the Heart website; <http://towardtheheart.com/>.

**Table 2.** BC Take Home Naloxone Program Information and Statistics from Inception (September, 2012) to January 15<sup>th</sup>, 2017

	Sept-Dec 2012	2013	2014	2015	2016	2017 (Jan 15 <sup>th</sup> )	Total
<b>Sites Enrolled</b>	6	27	64	17	294	9	417
<b>Kits Dispensed</b>	107	617	1,188	3,394	16,579	44	22,021*
<b>THN Kits administration events**</b>	5	36	125	428	3,165	6	3,765

\*92 dispensation records missing date

\*\*based on kit refills for reason given: used on self or other for to reverse an overdose

SOURCE: British Columbia Centre for Disease Control, Take Home Naloxone administrative data

**BC THN Program Statistics by Year:**

- Program Statistics to Date: <https://infograph.venngage.com/publish/2245254a-cca-461b-87ec-ec97a4840525>
- Find a harm reduction or naloxone site near you: <http://towardtheheart.com/site-locator>

**BC’s Response to the Opioid Overdose Crisis:**

On June 9<sup>th</sup>, 2016, BCCDC hosted the BC Overdose Action Exchange, a meeting that brought together a wide range of stakeholders to propose programs and policies that could strengthen BC’s response to the overdose crisis. A report about the outcomes is available at: <http://www.bccdc.ca/resource-gallery/Documents/BCOAE-Meeting-Report.pdf> and supplementary materials: <http://www.bccdc.ca/resource-gallery/Documents/BCOAE-supplementary-materials.pdf>.

To learn more about BC’s actions in response to the public health emergency, identifying achievements to date and next steps underway, see the bi-monthly progress reports available at: <http://www2.gov.bc.ca/gov/content/health/about-bc-s-health-care-system/office-of-the-provincial-health-officer/current-health-topics>.



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## Overdose Related Resources:

- If you suspect someone is overdosing, don't wait. Dial 911 right away.
  
- Carry a naloxone kit. Know how to use it to save someone's life. Make sure someone is nearby and knows how to use it to save yours. Naloxone is a temporary fix – you still need to call 911.
  
- Need help finding naloxone? Need to review training materials on how to respond to an overdose?
  - <http://towardtheheart.com/site-locator>
  - <http://www2.gov.bc.ca/gov/content/overdose/what-is-naloxone>
  
- Overdose Information and Resources by Organization:
  - Vancouver Coastal Health: <http://www.vch.ca/your-health/health-topics/overdose-prevention-and-response/>
  - Fraser Health: <http://www.fraserhealth.ca/health-info/health-topics/harm-reduction/overdose-prevention-and-response/>
  - Interior Health: <https://www.interiorhealth.ca/AboutUs/Leadership/MHO/Pages/PHEmergency.aspx>
  - Island Health: <http://www.viha.ca/mho/overdose.htm>
  - Northern Health: <https://northernhealth.ca/YourHealth/OverdosePrevention.aspx>
  - First Nations Health Authority: <http://www.fnha.ca/what-we-do/mental-wellness-and-substance-use/overdose-information>
  - BC Coroners Service: <http://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/death-investigation/statistical/illlicit-drug.pdf>
  - BC Centre for Disease Control: <http://www.bccdc.ca/health-professionals/clinical-resources/harm-reduction/overdose-data-reports>
  
- Most importantly, know there are resources available to help you whether you are using drugs for the first time or have used them frequently. If you would like more information or you're concerned about your own or someone else's use of illicit drugs, explore <http://www2.gov.bc.ca/gov/content/overdose>. Resources include:
  - signs of an overdose
  - responding to an overdose
  - tips to prevent an overdose
  - services and treatment support
  - frequently asked questions
  - specific resources for parents and families
  
- Looking for alerts on what is happening with drugs?
  - <http://towardtheheart.com/> (alerts on right hand sidebar)
  - <https://redcap.mobilityandhealth.ca/redcap/surveys/?s=8WK9MDDTCX%20>
  - <http://towardtheheart.com/ezine/9/2015-substance-use-trends>



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## **Appendix 1:** BC Opioid Overdose Surveillance Task Group Partner Organizations

BC Coroners Service  
BC Centre for Excellence in HIV/AIDS  
BC Drug and Poison Information Centre  
BC Emergency Health Services  
BC Ministry of Health  
BC Observatory for Population and Public Health  
Interior Health  
First Nations Health Authority  
Fraser Health  
Vancouver Coastal Health  
Vancouver Island Health  
Northern Health  
Ministry of Public Safety & Solicitor General  
Surrey RCMP  
Vancouver Police Department

## **Appendix 2:** Reference Map for Geographic Health Authorities:

There are five geographic Health Authorities in BC: Interior, Fraser, Vancouver Coastal, Island, and Northern Health. Health Authorities are further subdivided into Health Services Delivery Areas (HSDA) and Local Health Areas (LHA). A reference map is available at:

<http://www.bcstats.gov.bc.ca/statisticsbysubject/geography/referencemaps/health.aspx>

## **Appendix 3:** list of data sources, definitions, caveats, interpretations

### Data Sources for Report:

- 1) British Columbia Coroners Service, Illicit Drug Overdose Death in BC, Report, January 1, 2007 – November 30, 2016
- 2) British Columbia Emergency Health Services, BC Ambulance Service, Ambulance Dispatch Data
- 3) British Columbia Emergency Health Services, BC Ambulance Service, Patient Care Record Data
- 4) British Columbia Statistics, PEOPLE 2016
- 5) British Columbia Statistics, Population Estimates
- 6) Enhanced Emergency Department Case Reporting Data, Interior, Northern, and Island Health Authorities, BC, June 5<sup>th</sup> to November 5<sup>th</sup>, 2016
- 7) British Columbia Centre for Disease Control, Take Home Naloxone administrative data





Information on Data Sources:

- 1) British Columbia Coroners Service, Illicit Drug Overdose Death in BC, Report, January 1, 2007 – November 30, 2016:  
Report summarizes all unintentional illicit drug overdose deaths in British Columbia (accidental and undetermined). It includes confirmed and suspected illicit overdose deaths. Data is subject to change as investigations are concluded.  
  
Inclusion Criteria: The *apparent illicit drug overdose* category includes:
  - Street drugs (controlled and illegal drugs: heroin, cocaine, MDMA, methamphetamine, illicit fentanyl, etc.)
  - Medications not prescribed to the decedent but obtained/purchased on the street or from unknown means
  - Origin of drug not known
  - Combinations of abovePlease note that this definition is not restricted to opioid-related deaths. However, in 2016, illegal fentanyl was detected in 60% of this category of fatalities.
  
- 2) British Columbia Emergency Health Services, BC Ambulance Service, Ambulance Dispatch Data:  
This data relies on the Medical Priority Dispatch System Data (MPDS). Information for all pre-hospitalization ambulance calls, provided by the person making the 911 call, is recorded according to one of 33 possible categories. As this is a layperson's assessment, it is subject to inaccuracies and lack of detail. These data are non-nominal (no patient names) and are sent weekly from BC Emergency Health Services (BCEHS) to the BC Centre for Disease Control (BCCDC). The weekly call volumes for code 23, Ingestion Poisoning, are tracked.
  
- 3) British Columbia Emergency Health Services, BC Ambulance Service, Patient Care Record (PCR) Data:  
Paramedics complete paper forms on each event including impression codes and whether naloxone was given and dosage. These paper forms are manually entered as electronic data; hence the lag time for information may be up to 2 months.  
BCCDC receives all records from the BCEHS PCR database where the Medical Procedure Code indicates Naloxone was administered OR the Primary Impression code indicates Poisoning/Overdose (1746, 1747, 1780, 1785, 1765, 1770, 1742, 1790, 1708, 1775) OR the MPDS code indicates overdose or ingestion poisoning.  
  
The Estimated Number of Illegal Drug Overdoses is based on an algorithm that defines probable opioid overdoses according to if naloxone was administered, and other probable illegal drug overdoses according to other data in situations where naloxone was not administered. This algorithm excludes events recorded as alcohol poisoning or overdoses due to prescription medications.
  
- 4) British Columbia Statistics, PEOPLE 2016:  
<http://www.bcstats.gov.bc.ca/StatisticsBySubject/Demography/PopulationProjections.aspx>  
At BC Centre for Disease Control, the practice is to use the Population Estimates dataset is for rates denominators for previous years and the current PEOPLE data is used for current and future years.
  
- 5) British Columbia Statistics, Population Estimates:  
<http://www.bcstats.gov.bc.ca/StatisticsBySubject/Demography/PopulationEstimates.aspx>  
At BC Centre for Disease Control, the practice is to use the Population Estimates dataset is for rates denominators for previous years and the current PEOPLE data is used for current and future years.



- 6) Enhanced Emergency Department Case Reporting Data, Interior, Northern, and Island Health Authorities, BC, June 5<sup>th</sup> to November 5<sup>th</sup>, 2016:  
In response to the BC public health emergency declaration, public health officials in three BC health authorities (Interior, Island and Northern Health) implemented an enhanced surveillance program in hospital and health center Emergency Departments. Healthcare providers were asked to complete a case report form for each patient seen in the ED with a known or suspected opioid overdose and provide the information to the local Medical Health Officer. All case report forms are entered into a secure database at each health authority and the information is reviewed by public health epidemiologists. Database extracts are forwarded each week to the British Columbia Centre for Disease Control (BCCDC) where the files are merged. Staff at the British Columbia Observatory for Population and Public Health analyze the merged data and provide regular reports.
  
- 7) British Columbia Centre for Disease Control, Take Home Naloxone administrative data is largely paper based with forms returned to BC Centre for Disease Control for data entry. Data lags 1-2 months.
  - Harm Reduction Sites and Take Home Naloxone Distribution Sites and Facility Overdose Response Box Sites registration information
  - Orders placed for harm reduction supplies, take home naloxone kits and separate supplies and boxes
  - THN training records
  - THN distribution records
  - Overdose Response Event Questionnaires