BC Centre for Disease Control
Provincial Health Services Authority

TAKE HOME NALOXONE PROGRAM REPORT

REVIEW OF DATA TO DECEMBER 2018

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BC Centre for Disease Control (BCCDC)

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Table of Contents

Naloxone saves lives.

Since program inception in 2012 until December 31, 2018, the Take Home Naloxone (THN) program has resulted in:

- 1,448 active THN distribution locations in BC
- 398,167 naloxone kits shipped across BC
- 147,359 naloxone kits reported distributed across BC
- 40,903 naloxone kits reported as used to reverse an overdose across BC.

Data extracted July 15, 2019

BC Centre for Disease Control
PROVINCIAL OVERDOSE COHORT

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Introduction

Background

Distribution of naloxone has been identified as a key emergency measure to prevent opioid-related overdoses and overdose deaths (1). Naloxone is a mu-opioid receptor antagonist drug, and when used appropriately, is effective at reversing the symptoms of opioid toxicity and life-threatening respiratory depression.

Since August 31, 2012, the British Columbia Centre for Disease Control (BCCDC) has overseen a provincial Take Home Naloxone (THN) program. As one of the first of its kind in Canada (2), the BC THN program aims to train individuals at risk of experiencing or witnessing an opioid overdose to respond to a suspected overdose event and administer naloxone. Since its inception, the program has expanded dramatically, particularly after BC's provincial health officer declared a public health emergency on April 14, 2016 due to an unprecedented increase in overdose deaths(3,4). In September 2016, the College of Pharmacists of BC unscheduled naloxone so that it may be distributed without a prescription (5).

The BCCDC is the central distributor of naloxone kits for the THN program. Kits include a carrying case, non-latex gloves, alcohol swabs, a one-way rescue breathing mask, three safety syringes, three 0.4 mg/mL naloxone ampoules (each with an ampoule breaker), a naloxone overdose response information or 'administration form', and an instructional overdose response infographic. Naloxone kits are shipped to hundreds of 'distribution sites' including community-based sites, such as peer-led and non-governmental organisations, treatment centres, housing sites, hospitals and health centres, provincial correctional facilities, and pharmacies across the province. Individuals can receive a kit and overdose response training free of charge at any distribution site. Alongside kit distribution, the BCCDC provides a number of training and information resources to equip individuals in overdose recognition, response, and prevention. An overview of the program, an online site finder, and other resources are available on the BCCDC's harm reduction website, https://towardtheheart.com/.

In December 2016, the BCCDC also launched the Facility Overdose Response Box (FORB) program, which functions in parallel with the THN program to provide boxes containing several doses of naloxone and other supplies to non-profit community-based organisations. FORB was launched alongside the THN program to enable staff to respond to overdoses that occur on site. Registration as a FORB site requires a commitment to train staff, implement an overdose response protocol, and provide supports for staff responding to overdose situations. An evaluation of the FORB program has been published (6).

While naloxone is also available in intranasal form from the First Nations Health Authority (FNHA) and through the First Nations Non-Insured Health Benefits (NIHB), the vast majority of naloxone distribution in BC occurs through the BC THN and FORB programs, which provide the injectable form of naloxone. Any mention of naloxone and naloxone kits in this report refer to injectable naloxone and injectable naloxone kits.

Report Objectives

Three previous evaluations of the BC THN program have been published; in 2014, 2015, and 2016. The current report aims to update previously published data to the end of 2018, and has three specific aims :

1. Describe trends in naloxone kit shipment, distribution, and use;

2. Describe characteristics of self-reported naloxone administration events;

3. Provide recommendations for program and policy improvements.

Methods

Data sources

The BC Take Home Naloxone (THN) program draws on three key sources of data for monitoring and evaluating naloxone distribution and use in BC. Each of these sources captures different information at different points in the process – see Figure 1. Data from January 1, 2015 to December 31, 2018 inclusive is used in this report. Data was retrieved in July 2019 and analyses were conducted in September 2019. The three sources of data used to populate this report are described below:

1 Supply order forms

'Supply order forms' are used at the BCCDC to track the number of kits sent out to participating distribution sites. Information provided by this data source includes number of kits ordered and shipped to distribution sites, site type, and site location.

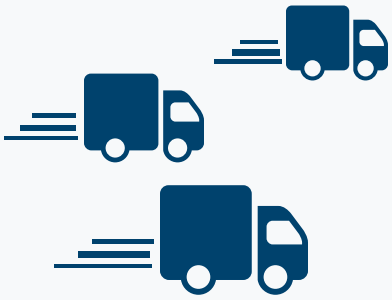
2 Distribution forms

A 'distribution form' is used by distribution sites when individuals come to collect a naloxone kit. This form collects voluntary demographic data including the date of receiving a kit, the recipient's overdose risk (at risk of overdose or at risk of witnessing an overdose), gender, age group, whether the kit was the recipient's first kit or replacement kit, and the reason for replacement i.e. last kit was used or replaced for another reason (lost, stolen, expired, or confiscated). Distribution sites are asked to return completed distribution forms to the BCCDC on a monthly basis.

3 Overdose response information or administration forms

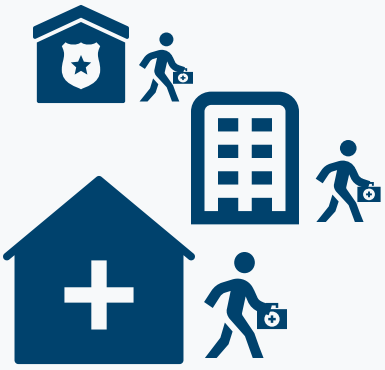
An 'overdose response information form', or 'administration form', is made available online, at distribution sites, and is included in each naloxone kit for individuals to complete and return to the BCCDC after administering naloxone. This form collects information on the date of overdose, the community and location the overdose event occurred, a description of the person who overdosed (gender, age), whether 911 was called, which first responders arrived on scene, whether rescue breathing was administered, how many naloxone ampoules were used, and whether the person who overdosed experienced any adverse effects.

Figure 1 - Infographic of Take Home Naloxone distribution and points of data collection. Data collection occurs through different means, at different points in the naloxone kit life cycle, and relies on the cooperation of partners and communities across British Columbia (BC).



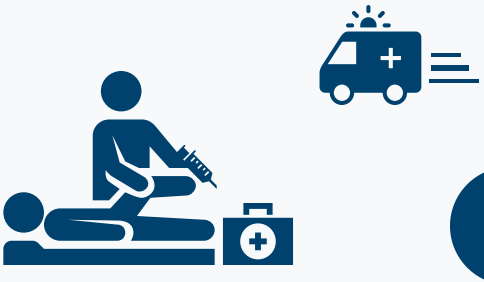
1

The British Columbia Centre for Disease Control (BCCDC) processes naloxone **supply order forms** and arranges distribution of naloxone kits to hundreds of distribution sites across BC.



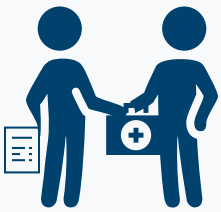
2

After completing overdose response training in person or online, individuals collect naloxone kits from participating distribution sites. Sites complete **distribution forms**, which include basic demographic information of individuals receiving a kit, and whether it is the individual's first kit or a replacement. These are sent back to the BCCDC on a monthly basis.



3

Individuals use naloxone kits to respond to a suspected opioid overdose while awaiting emergency services.



4

After responding to an overdose, individuals are asked to return an **overdose response form** by email or fax to the BCCDC, and to return to any distribution site to replace their used naloxone kit.

5

Data from the **supply order forms, distribution forms, and overdose response forms** are processed at the BCCDC to inform practice and program improvement.

Important limitations in interpreting the data

In distributing naloxone to the public for use in the event of an opioid overdose, creating a low barrier environment and protecting the anonymity of individuals receiving overdose response training, collecting naloxone kits, and seeking other supports is of the highest priority. While this has allowed for the program to get naloxone into the hands of those at the highest risk of experiencing or witnessing an opioid overdose, it may compromise the robustness and timeliness of health data collected.

This report is based largely upon reported data from the BCCDC's distribution forms and overdose response information (administration) forms. Both of these reporting components have varying response and return rates. Some high-traffic sites distribute hundreds of naloxone kits per week and may not complete and send distribution forms accordingly. Hence under-reporting of kits distributed occurs differentially between sites.

Additionally, the rate of return of administration event information, as collected through the overdose response information or 'administration' forms, is known to be low and may not be generalizable to all naloxone administration events in BC. These forms rely on recall from individuals who responded to an overdose, and are susceptible to recall bias – due to inaccurate or incomplete recollections. Administration forms are also likely affected by participation bias, where a higher proportion of engaged individuals are more likely to complete and return forms, which may skew results.

Finally, self-reported data used in both distribution and administration forms are susceptible to response bias. Stigma around drug use may discourage high-risk individuals from providing information or self-identifying as being at risk of experiencing or witnessing an overdose, which may in turn bias results.

The proportions reported in the results section represent the total responses for a given question, unless otherwise specified. Interpretation of results with consideration of the limitations above is provided throughout the report.

Results

SECTION 1: REACH OF NALOXONE DISTRIBUTION IN THE CONTEXT OF AN OVERDOSE EMERGENCY IN BC

Naloxone Distribution Sites

Registered Take Home Naloxone (THN) distribution sites include many types of organisations. Most of these organisations have employees or staff members who can provide overdose response training (including how to use naloxone kits to respond to an overdose), or else are given information to direct individuals to training resources online.

Figure 2 shows the cumulative number of distribution sites on-boarded between January 2015 and December 2018 by Health Authority. Counts shown for 2015 reflect the number of sites since program inception to 2015. By the end of 2018, there were 1,448 active THN distribution sites across BC.

Figure 3 shows the cumulative number of distribution sites by site type. Sites categorized as 'other' include a variety of community organisations and locations, including harm reduction sites, housing sites, health care organisations, and post-secondary institutions. The increase in the total number of sites seen between 2016 and 2018 was largely in response to the sudden and severe increase in overdose deaths beginning in 2016. The province declared a public health emergency in April 2016, the College of Pharmacists of British Columbia unscheduled naloxone in September 2016, and the THN program removed the requirement to report individual naloxone kit IDs and/or patient names in October 2016. This meant that naloxone could be distributed by institutions and organisations without medical staff on site and without additional reporting barriers. In addition, the THN program on-boarded nearly 600 community pharmacies starting in December 2017. An evaluation of naloxone distribution through pharmacies in BC was recently published (7).

Figure 2 - Number of Take Home Naloxone distribution sites (cumulative) by Health Service Delivery Area (HSDA), January 1, 2015 - December 31, 2018.

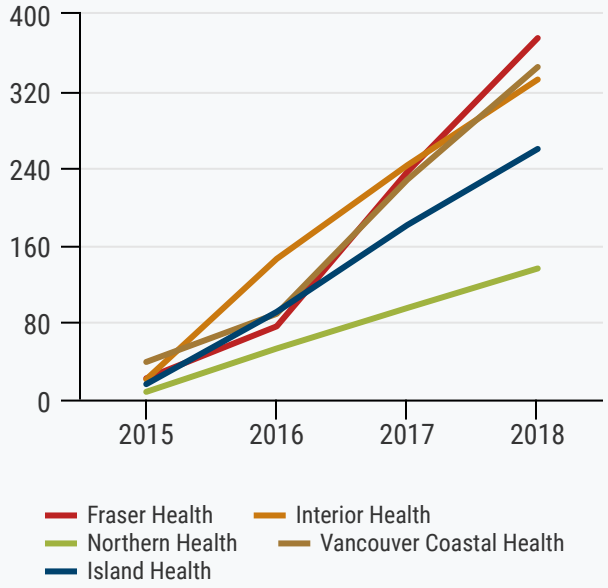
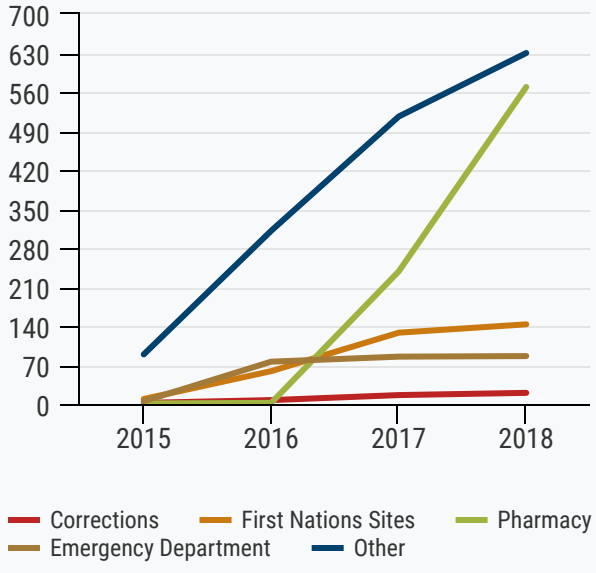


Figure 3 - Number of Take Home Naloxone distribution sites (cumulative) by site type (Pharmacies, First Nations, Emergency Departments, Correctional Facilities, Other sites), January 1, 2015 – December 31, 2018.



Naloxone Kits Shipped and Distributed

Since program inception in 2012 to December 31st 2018, a total of 398,167 naloxone kits were shipped from BCCDC to distribution sites across BC, 147,359 naloxone kits were reported by sites to be distributed to members of the public, and a total of 40,903 kits have been reported used in cases of opioid overdose. Figure 4 shows the number of naloxone kits shipped, reported distributed, and reported used by year, between January 1, 2015 and December 31, 2018. In 2018 alone, there were 195,696 kits shipped, 58,547 kits reported distributed, and 20,901 kits reported used to reverse an overdose. The proportion of kits reported distributed to replace a used kit (to reverse an overdose) has risen from 12.6% of kits were reported used in 2015, to 35.7% in 2018 (Table 1).

Shipment and distribution numbers may not accurately reflect naloxone kits in public circulation. Firstly, newly enrolled sites order kits to ensure they have sufficient stock to distribute without knowing the potential demand. Secondly, reported distribution may be inaccurate due to a delay in the completion and return of distribution forms, or lack of forms being returned. Sites are requested to record every kit distributed with information voluntarily provided by the client, and subsequently to send the forms to the BCCDC by email or fax, either when the form is full or at regular intervals (e.g. monthly). Uneven response rates across sites, delays in returning distribution forms, and delays in entering data means that the true count of naloxone kits distributed to the public likely exceeds the reported kits distributed.

Figure 5 presents the number of naloxone kits shipped, and Figure 6 the number of naloxone kits reported distributed, by Health Authority. Between 2015 and 2018, naloxone kits ordered and shipped to distribution sites throughout the province have steadily increased. While shipment data shows a consistent increase in kits shipped, the number of kits reported distributed leveled off or decreased in some jurisdictions in 2018. The observed drop in reported kit distribution is likely due to a lower return rate of distribution forms over time and not a true decrease in naloxone kits distributed to the public. Operationally, the program has confirmed with high volume sites, which have low reported distribution forms, that kits ordered are being distributed and not held in inventory.

Based on the average proportion of kits distributed to kits shipped from prior years, we have estimated that at least 97,848 kits were distributed in 2018 (dashed line, Figure 4). While we are aware of substantial under-reporting of distribution data, there is no indication that demographics or reported reasons for kit replacement differ at sites from which distribution forms are not received.

Table 1 - Total number of Take Home Naloxone shipped, reported distributed, and reported used (counts), January 1, 2015 – December 31, 2018.

	2015	2016	2017	2018
Kits shipped	5,886	52,262	140,748	195,696
Kits distributed	3,153	21,293	62,445	58,547
Kits distributed to replace a used kit	397	3,941	15,496	20,901
Proportion kits distributed to replace a used kit	12.6%	18.5%	24.8%	35.7%

Figure 4 – Total number of Take Home Naloxone shipped, reported distributed, and reported used by year (counts), January 1, 2015 – December 31, 2018. Estimated distribution for 2018 also shown.

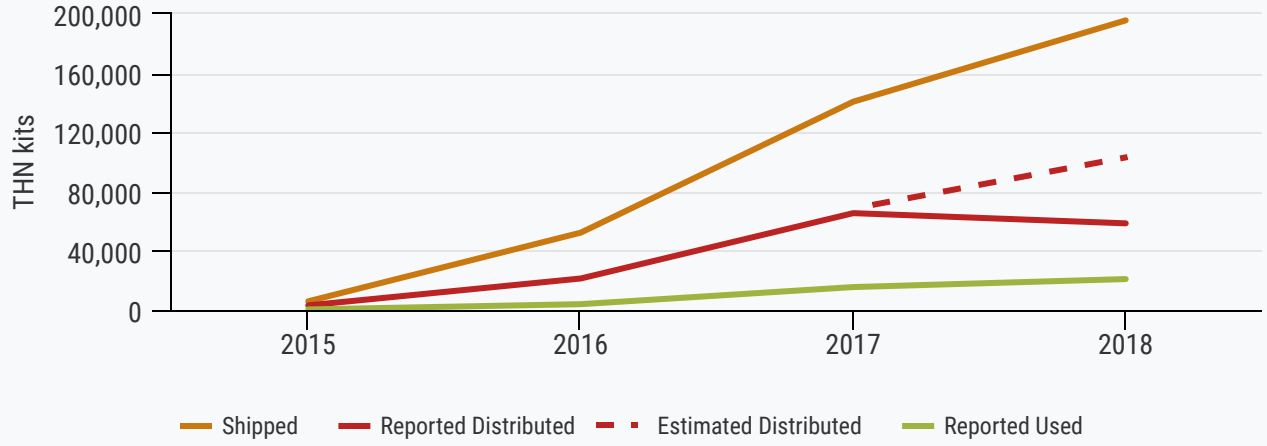


Figure 5 - Number of Take Home Naloxone kits shipped by Health Authority (counts), January 1, 2015 – December 31, 2018.

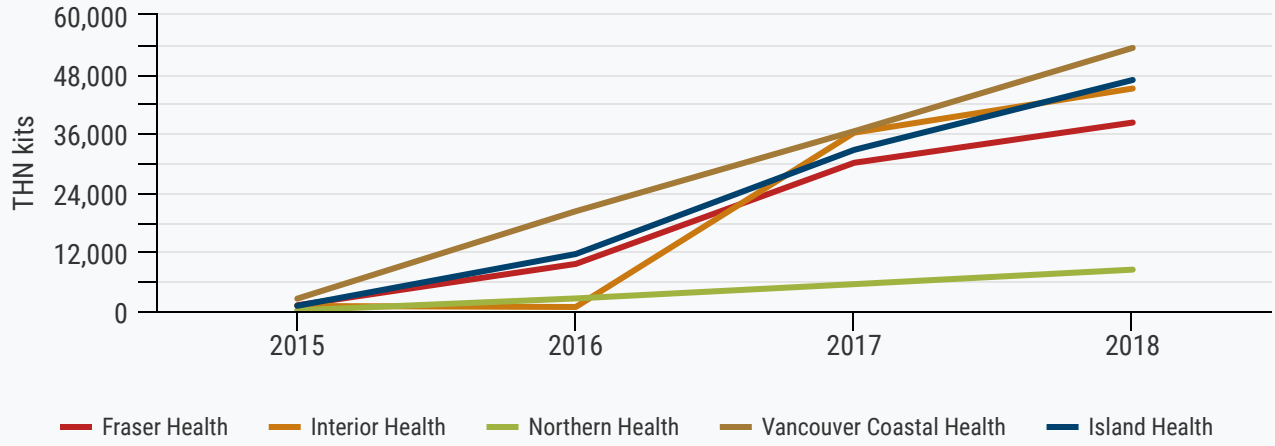
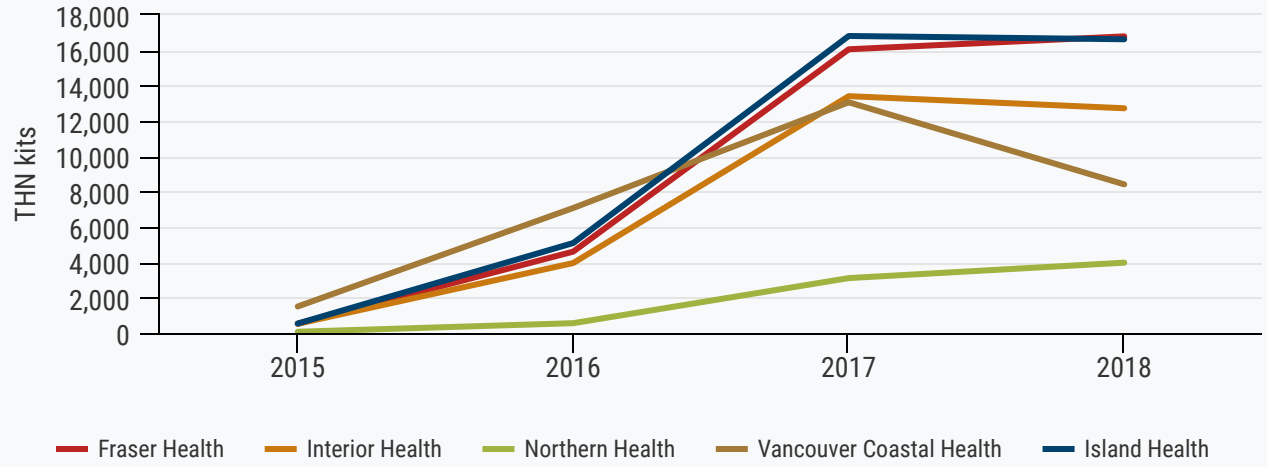


Figure 6 - Number of Take Home Naloxone kits reported distributed by Health Authority (counts), January 1, 2015 – December 31, 2018.



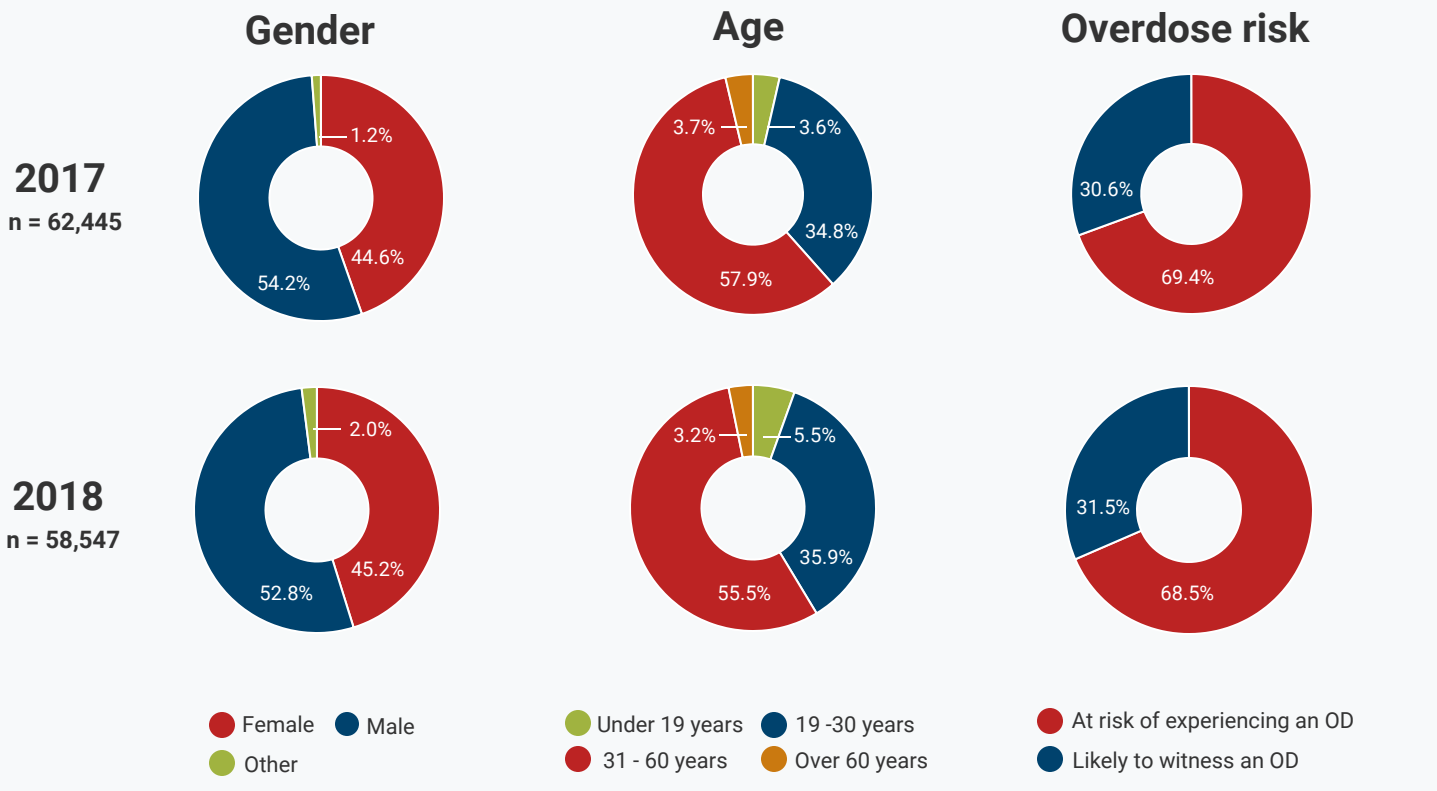
Characteristics of naloxone kit distribution

When individuals receive a free Take Home Naloxone (THN) kit at any distribution site across BC, site representatives collect self-reported information on the age, gender, and risk (personally at risk of experiencing an overdose vs. likely to witness an opioid overdose) of the individual receiving a kit. Sites also record information on whether the kit is the recipient's first kit or a replacement kit, and the reason for replacement (1. reported used, or 2. lost, stolen, expired, or confiscated). Figure 7 presents these demographic statistics for the years 2017 and 2018, where details on 62,445 and 58,547 recipients respectively were collected. Demographic questions were introduced to distribution forms in late 2016, so data before January 2017 is excluded due to small sample size.

In 2017 and 2018, a higher proportion of kit recipients were male. Most individuals who received a THN kit were aged 31 – 60 years, followed by those 19 – 30 years, and more than two-thirds reported being at risk of an overdose. The population most likely to receive naloxone kits mirrors the population at the highest risk of overdose (8).

Figures 8 and 9 further describe demographic differences among those who self-reported being at risk of an overdose compared with those reporting being likely to witness an overdose. In both 2017 and 2018, a larger proportion of those collecting a replacement naloxone kit identified as being at risk of experiencing an overdose, whereas a larger proportion of those collecting a 1st kit reported being likely to witness an overdose. This indicates that those at risk of experiencing an overdose are also more likely to use their naloxone kits – either by themselves on someone else experiencing an overdose, or by someone in their community using the kit to reverse the original owner's overdose. In both 2017 and 2018, around 90% of kits collected to replace a previously used kit were by individuals who reported being at risk of overdose.

Figure 7 – Self-reported gender, age and overdose risk of of individuals who collected naloxone kits, January 1, 2017 – December 31, 2018.



In both 2017 and 2018, corrections sites and 'other sites' (including housing sites, treatment facilities, healthcare centres, and community organisations) reported a larger proportion of distribution to those being personally at risk of an overdose. Conversely, the majority of kits distributed at pharmacy sites and post-secondary institution were to those reporting being likely to witness an opioid overdose. This is consistent with the recently published pharmacy evaluation, which reports that the majority of THN kits distributed at pharmacy sites in 2018 were to individuals more likely to witness an opioid overdose (7).

Figure 8 – Naloxone distribution to those self-reporting being at risk of experiencing an overdose vs. likely to witness an overdose, by whether this is their first kit, a replacement kit due to being used, or a a replacement kit due to having a previous kit stolen, lost, expired, or confiscated, January - December 2017 and 2018.

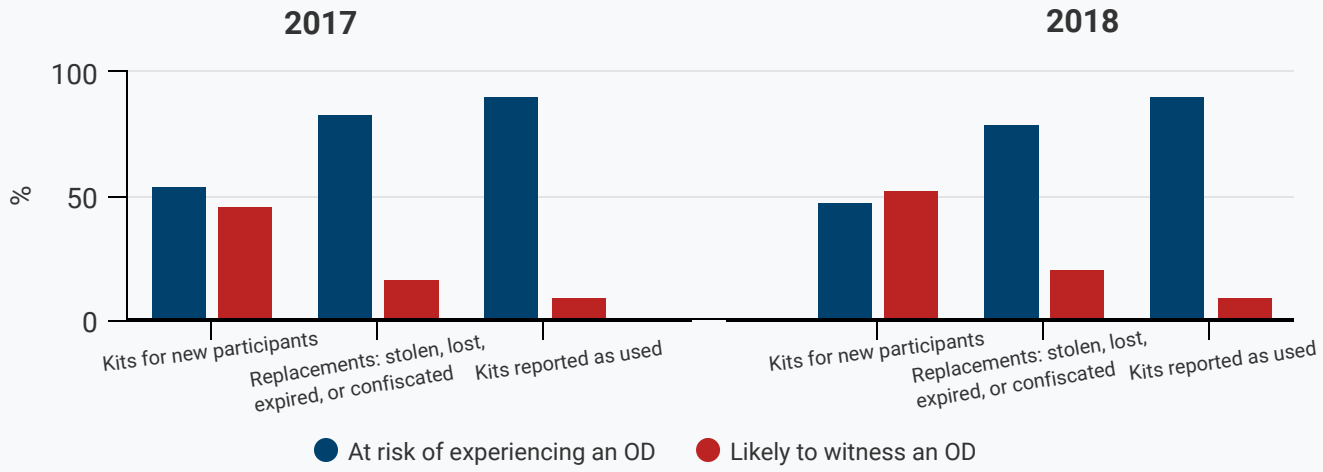
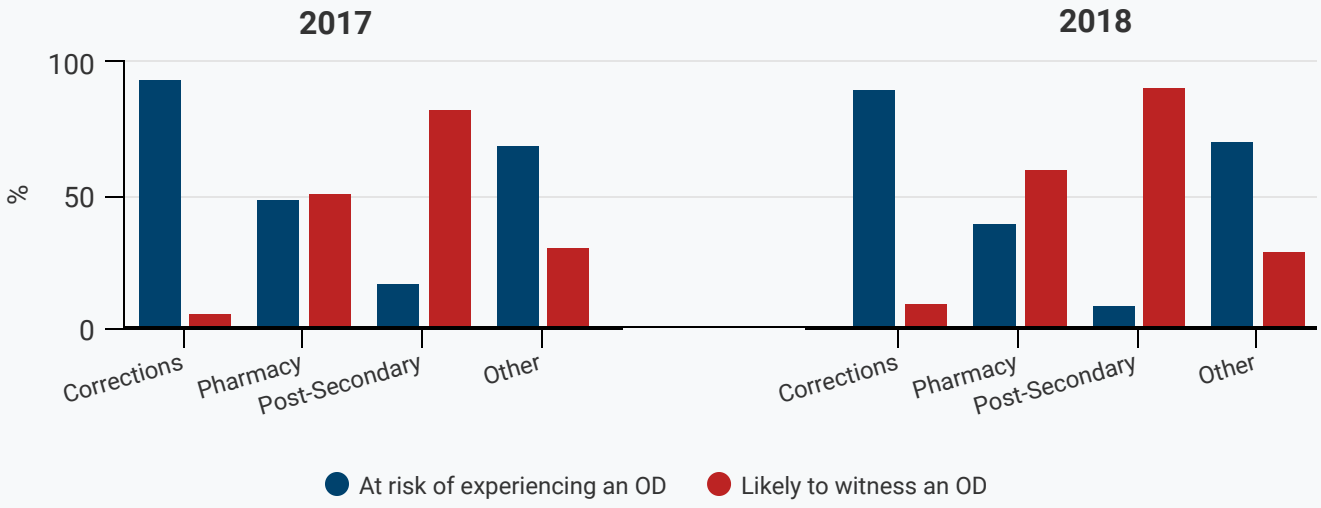


Figure 9 – Naloxone distribution to those self-reporting being at risk of experiencing an overdose vs. likely to witness an overdose, by Take Home Naloxone distribution site type, January - December 2017 and 2018.



*Take Home Naloxone distribution sites were expanded to pharmacies in December 2017. Data from pharmacy sites represent only the month of December in 2017.

Comparing Take Home Naloxone distribution to overdose events in British Columbia

Other jurisdictions have published comparisons of naloxone distribution to distribution targets (9). Notably, Bird et al. in 2015 suggested that Take Home Naloxone (THN) programs should aim to distribute up to 20 kits per overdose death annually (10). In 2018 there were 1,533 coroners confirmed overdose deaths in BC (8); Bird et al.'s benchmark calls for 30,660 naloxone kits to be distributed accordingly, whereas a total of 58,547 naloxone kits, or 38 kits per overdose death, were distributed across BC in 2018 (see Table 1). Naloxone distribution and shipment per coroner confirmed overdose death are also shown for each Health Authority (HA) and Health Service Delivery Area (HSDA).

While Bird et al.'s targets represent an important step in standardizing naloxone distribution across jurisdictions, these numbers were set prior to the rise of synthetic opioids in the illicit market, including fentanyl and carfentanil, and are likely inadequate given the unpredictability and toxicity of the fentanyl-era drug supply.

In this report, we use paramedic-attended overdoses as opposed to coroners confirmed overdose deaths. Paramedic-attended overdose events provide an estimate of non-fatal and fatal drug overdose events in BC, not including prescription drugs or alcohol. They are based on paramedic impression codes as well as 911 dispatch codes, and provide a more reliable estimate of overdose incidents where naloxone is beneficial and can be used to save a person's life in BC. Many opioid overdose deaths occur among people who use alone. In many of these cases, the presence of a naloxone kit is unfortunately not useful as the person overdosing cannot administer naloxone on themselves. A similar report on naloxone distribution in Ontario used a comparable metric, where they similarly broadened their definition of an 'opioid-related harm' to include emergency department visits and overdose deaths in the province, as opposed to confirmed overdose deaths only (9).

As mentioned previously in this report, neither naloxone distribution nor shipment numbers provide a perfect estimate of naloxone kits in circulation at any given time. Naloxone shipment numbers likely overestimate the number of naloxone kits in public hands, while naloxone distribution numbers likely underestimate the number of naloxone kits handed out. These effects may also be variable across Health Authorities. Shipment and distribution numbers are shown in Table 1, as well as naloxone kits shipped and distributed per paramedic-attended overdose event in 2018 for each HA and HSDA. Across BC, there were a total of 13,284 paramedic attended overdoses in 2018, which translates to 4.4 THN kits distributed and 14.4 naloxone kits shipped per paramedic attended overdose event.

While the THN program has proven to be indispensable in the province's response to the current overdose epidemic, it runs parallel to several other programs which mitigate overdose risk and provide essential supports to people who use drugs. Across the province, there is variation in the availability of these services, which are accessed to varying degrees by subgroups of people who use drugs. For example, some Health Service Delivery Areas (HSDA) may have much higher numbers of observed consumption sites, including overdose prevention services and supervised consumption service facilities (OPS/SCS), where individuals use drugs and naloxone is available. While it does not eliminate the need for naloxone distribution, OPS and SCS sites provide an alternative and a safe environment for people who choose to access them.

Coroners confirmed overdose death data comes from the Coroners Service of BC (8), and paramedic-attended overdose data is provided by BC Emergency Health Services. Both were extracted for this report on November 6, 2019 (11). These numbers are updated periodically and are subject to change as new information becomes available.

Table 2 – Distribution and shipment of naloxone kits by paramedic-attended overdose events and Coroners confirmed overdose deaths in BC, by Health Authority (HA) and Health Service Delivery Area (HSDA), January 1, 2018– December 31, 2018.

Health Authority (HA) and Health Service Delivery Area (HSDA)	THN kits distributed	THN kits shipped	Paramedic attended overdose events *	Naloxone kits distributed per paramedic attended overdose events **	Naloxone kits shipped per paramedic attended overdose events	Coroners confirmed overdose deaths ***	Naloxone kits distributed per Coroners confirmed overdose deaths **	Naloxone kits shipped per Coroners confirmed overdose deaths
FRASER HEALTH	16,790	38,199	3,682	4.6	10.4	522	32.2	73.2
Fraser East	5,655	11,057	697	8.1	15.9	99	57.1	111.7
Fraser North	3,560	10,857	1,033	3.4	10.5	149	23.9	72.9
Fraser South	7,575	16,285	1,952	3.9	8.3	274	27.6	59.4
INTERIOR HEALTH	12,721	45,098	1,674	7.6	26.9	232	54.8	194.4
East Kootenay	673	1,582	66	10.2	24.0	6	112.2	263.7
Kootenay Boundary	1,245	3,434	101	12.3	34.0	14	88.9	245.3
Okanagan	7,159	25,394	948	7.6	26.8	127	56.4	200.0
Thompson Cariboo Shuswap	3,644	14,688	559	6.5	26.3	85	42.9	172.8
NORTHERN HEALTH	3,981	8,384	618	6.4	13.6	98	40.6	85.6
Northeast	475	1,300	128	3.7	10.2	24	19.8	54.2
Northern Interior	2,374	4,920	366	6.5	13.4	60	39.6	82.0
Northwest	1,132	2,164	124	9.1	17.5	14	80.9	154.6
VANCOUVER COASTAL HEALTH	8,413	53,335	4,952	1.7	10.8	447	18.8	119.3
North Shore - Coast Garibaldi	1,147	2,305	267	4.3	8.6	41	28.0	56.2
Richmond	242	3,477	134	1.8	25.9	12	20.2	289.8
Vancouver	7,024	47,553	4,551	1.5	10.4	394	17.8	120.7
ISLAND HEALTH	16,627	46,829	2,392	7.0	19.6	242	68.7	193.5
Central Vancouver Island	6,993	15,967	710	9.8	22.5	88	79.5	181.4
North Vancouver Island	2,086	7,132	270	7.7	26.4	29	71.9	245.9
South Vancouver Island	7,548	23,730	1412	5.3	16.8	125	60.4	189.8
TOTAL	58,547	191,845	13,318	4.4	14.4	1,541	38.0	124.5

* Paramedic-attended overdose data is provided by BC Emergency Health Services (11).

** THN kits reported distributed likely underestimate true distribution across BC.

*** Overdose deaths are used in the original distribution benchmark by Bird et al. (10). Confirmed overdose death data provided by the Coroners Service of BC (8).

Results

SECTION 2: CHARACTERISTICS OF OVERDOSE EVENTS AND RESPONSE

Demographic characteristics

Section 2 of the results draws on data from overdose response information forms, or 'administration' forms. These forms collect information from individuals who used a kit and returned the administration form after responding to a suspected opioid overdose. A total of 3,529 forms, reporting events between January 1, 2015 and December 31, 2018, were retrieved for this analysis in July 2019 (see Table 2).

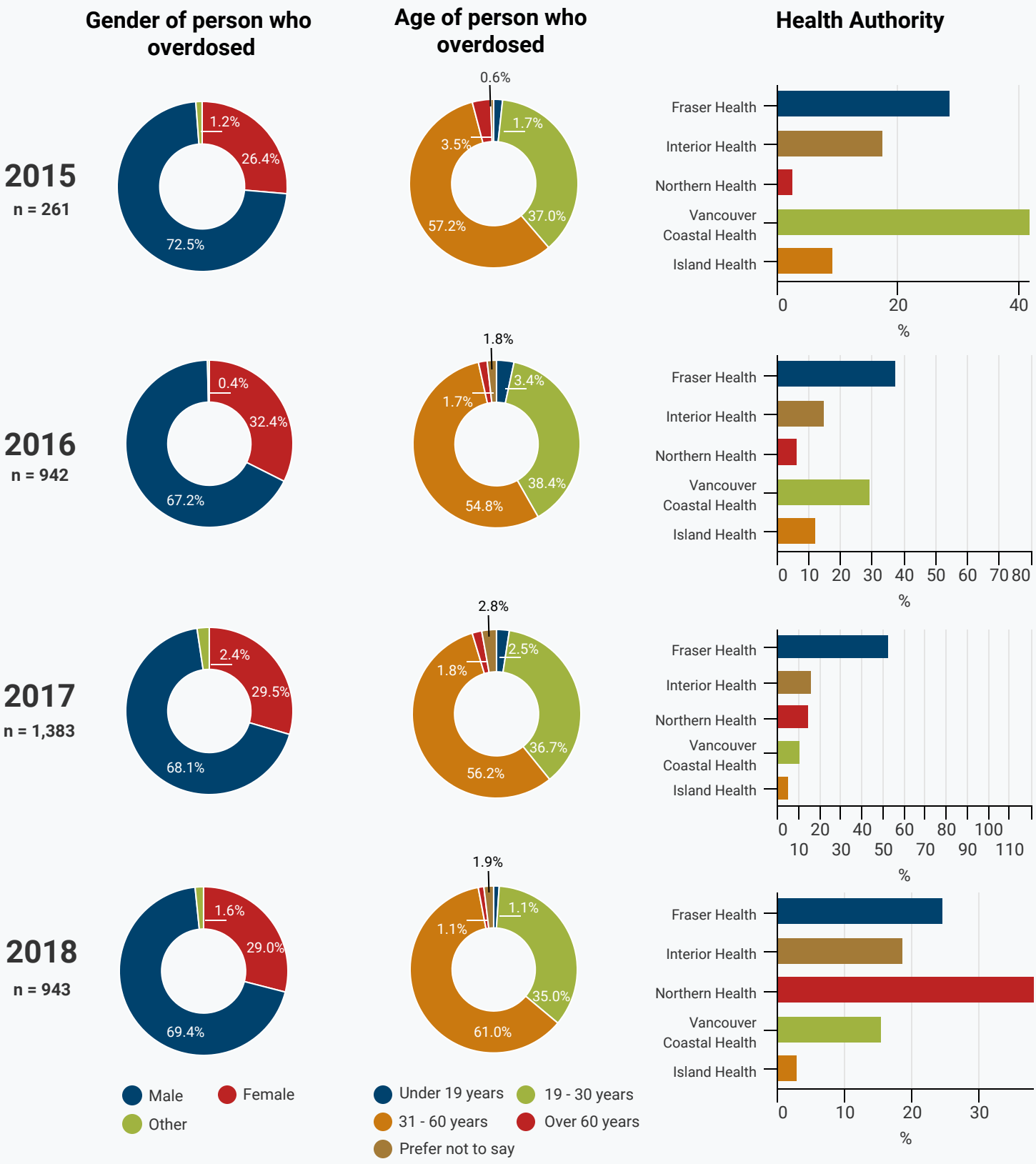
Figure 10 presents demographic variables obtained from administration events between January 1, 2015 – December 31, 2018. The administration forms collect the age range, gender, and health authority of the person **who overdosed**. Across all years, the majority (68.5%) of overdoses occurred among males. Most overdoses also occurred among individuals 31 – 60 years of age. A very small proportion (under 4.0% in all instances) of overdoses occurred among people under the age of 19 or over the age of 60.

The number of recorded overdoses differed across Health Authorities between 2015 and 2018. Changing trends may reflect a number of factors, including unscheduling of naloxone in September 2016 and differences in return rates over time and between Health Authorities.

Table 3 - Yearly number of administration forms returned, January 1, 2015 - December 31, 2018

	2015	2016	2017	2018	Total
Administration forms	261	942	1,383	943	3,529

Figure 10 - Demographic characteristics of individuals who overdosed, based on administration forms, January 1, 2015 - December 31, 2018.



Where do overdoses happen?

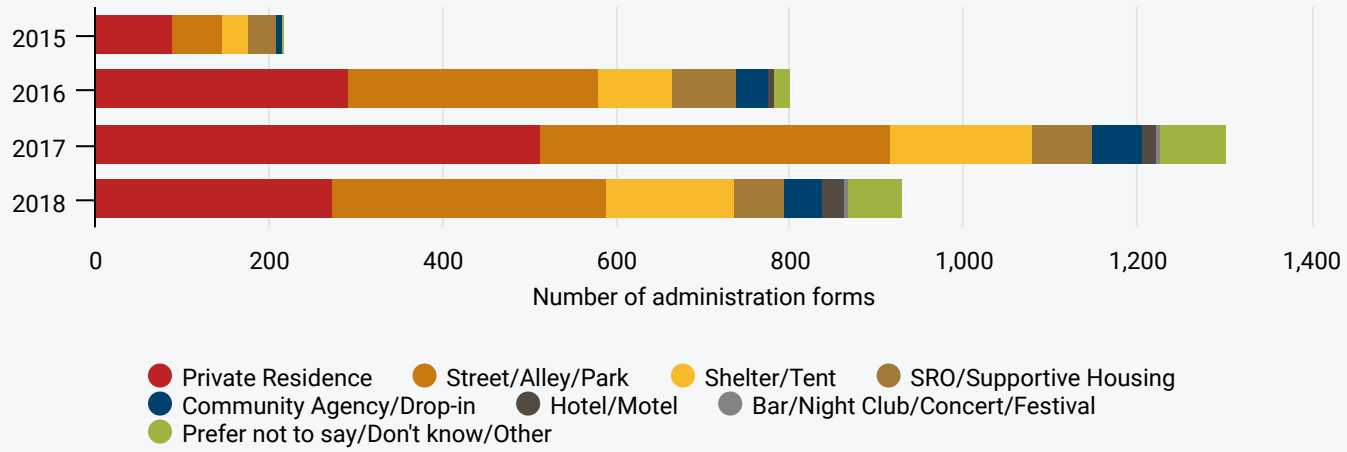
Figure 11 presents data on the location of all reported overdose events between January 1, 2015 and December 31, 2018.

Across all years, the largest proportions of reported overdoses were responded to in a private residence, followed by in a street, alley, or park. A large number of overdoses were also reported to have taken place in supportive housing, single room occupancies (SROs), shelters, or tents. Over time, fewer THN kits were reported being used in supportive housing and SROs to reverse an overdose. This may be due in part to the Facility Overdose Response Box (FORB) program, which equips staff to respond to overdoses in these contexts using FORB supplies as opposed to THN kits (6).

A smaller proportion of overdoses were reported in hotels, motels, community agencies, or drop-ins, and there were relatively few instances in bars, night clubs, or at concerts and festivals.

According to a 2018 report by the Coroners Service of BC, 69% of overdose deaths occurred among people who used drugs alone, 16% occurred among people who used drugs in the presence of others, and 15% were unknown (12). The administration form was updated in December 2018 to include an option to specify whether the 'person who overdosed was found alone', or whether the 'person overdosed in front of others'.

Figure 11 – Reported locations of overdose events, January 1, 2015 and December 31, 2018.



Location type	2015	2016	2017	2018
Private Residence	90 (41.3%)	293 (36.6%)	514 (39.4%)	275 (29.6%)
Street/Alley/Park	57 (26.1%)	287 (35.8%)	402 (30.9%)	315 (33.9%)
Shelter/Tent	30 (13.8%)	86 (10.7%)	164 (12.6%)	146 (15.7%)
SRO/Supportive Housing	32 (14.7%)	74 (9.2%)	70 (5.4%)	59 (6.3%)
Community Agency/Drop-in	7 (3.2%)	36 (4.5%)	56 (4.3%)	43 (4.6%)
Hotel/Motel	1 (0.5%)	6 (0.7%)	17 (1.3%)	26 (2.8%)
Bar/Night Club/Concert/Festival	0 (0.0%)	0 (0.0%)	5 (0.4%)	5 (0.5%)
Prefer not to say/Don't know/Other	1 (0.5%)	19 (2.4%)	75 (5.8%)	61 (6.6%)
Total	218 (100.0%)	801 (100.0%)	1,303 (100.0%)	930 (100.0%)

911 calls and emergency response to overdoses

Overdose response training includes calling emergency services, providing rescue breaths, and titrating naloxone doses according to the response.

Individuals are trained to call 911 as a first step when responding to a suspected opioid overdose. Figure 12 shows the proportion of events where 911 was called to the scene of an overdose by Health Authority. Across BC, 61.4% of individuals reported calling 911 in 2016, 49.9% in 2017, and 60.6% in 2018. For all figures in this report, associated counts can be found in the Appendix.

There are a number of factors that may contribute to trends related to calling 911 during overdose events. First, BC Emergency Health Services (BC EHS) introduced a police non-attendance policy at non-fatal overdose events in June 2016 (13). Second, the Good Samaritan Drug Overdose Act (GSDOA) was introduced in September 2017 (14), which is a law that guarantees that individuals at the scene of an overdose will not be charged with simple possession of an illegal substance (i.e. possession for personal use), or for breach of probation or parole related to simple possession. These policies have likely contributed to increased willingness in calling 911 during overdose events.

Of the individuals who called 911, Figure 13 presents the proportion of overdose cases which were reported to have been transported to hospital by ambulance. The question regarding ambulance transportation was introduced to administration forms in late 2016, and therefore 2016 data are not shown due to small sample size. In 2017, 46.9% of individuals for who 911 was called to the overdose scene were not transported to hospital, while 59.8% were not transported to hospital in 2018.

Figure 14 presents the proportion of cases where police were reported to attend the overdose incident when 911 was called, which has decreased over time. In 2016, police attended 42.1% of overdose cases when 911 was called, 31.8% in 2017, and 23.3% in 2018.

Figure 15 presents the reasons given for not calling emergency services during an overdose incident over time. Across the time period, the most common reason for not calling 911 was individuals reporting that they 'thought the person who overdosed would get better or that the person was OK', which increased from 40.2% in 2016 to 59.6% in 2018. The second most common reason for not calling 911 was that they were 'worried police would arrive', which decreased from 29.9% in 2016 to 8.3% in 2018. Other common reasons included that the 'person who overdosed requested that 911 not be called' and 'other', including citing legal issues and 'already having naloxone'.

The trends seen in Figures 14 and 15 are likely related to policies previously mentioned, including the GSDOA and the BC EHS police non-attendance policy. An evaluation is currently underway to further assess the impact of these policies.

Figure 12 – Proportion of reported calls made to 911 by Health Authority, January 1, 2016– December 31, 2018.

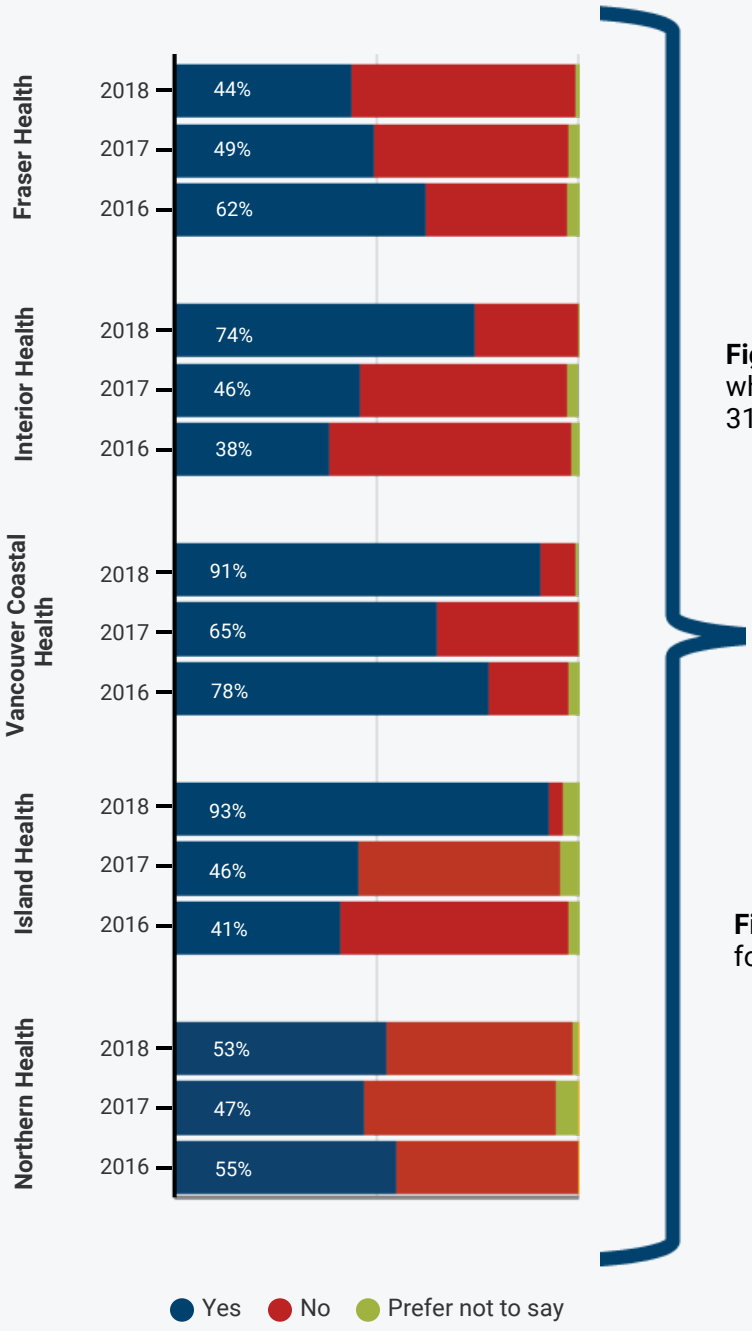


Figure 13 – Of overdoses where 911 was called, proportion of people who went to hospital in ambulance, January 1, 2017– December 31, 2018.

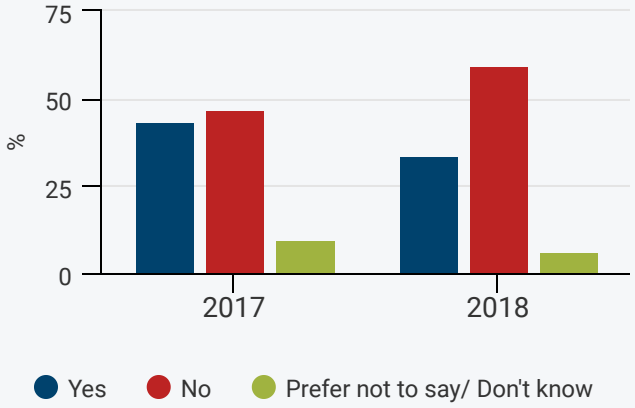


Figure 14 – Of overdoses where 911 was called, proportion where police arrived on scene, January 1, 2016– December 31, 2018.

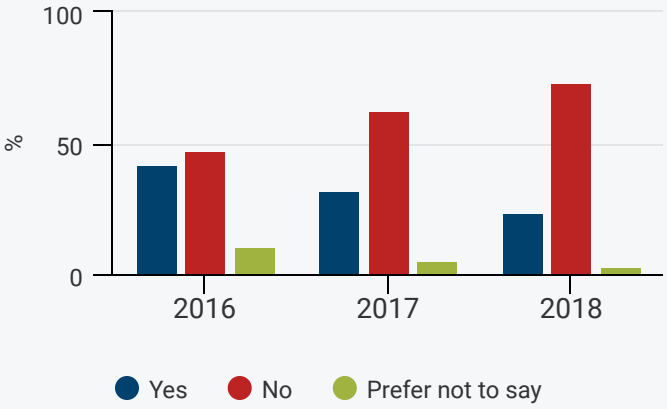
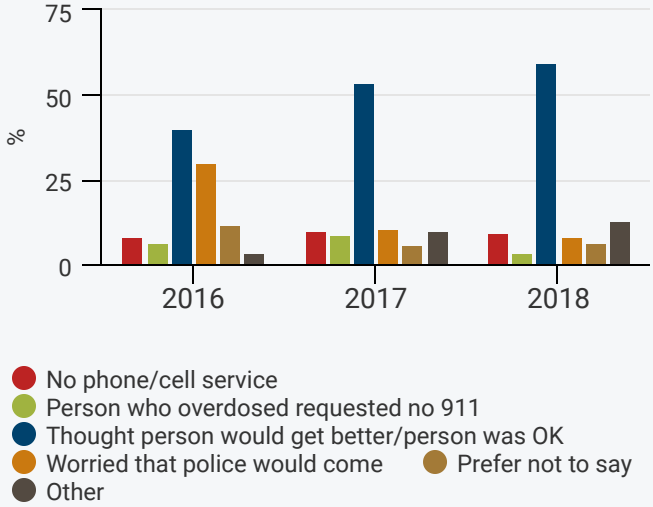
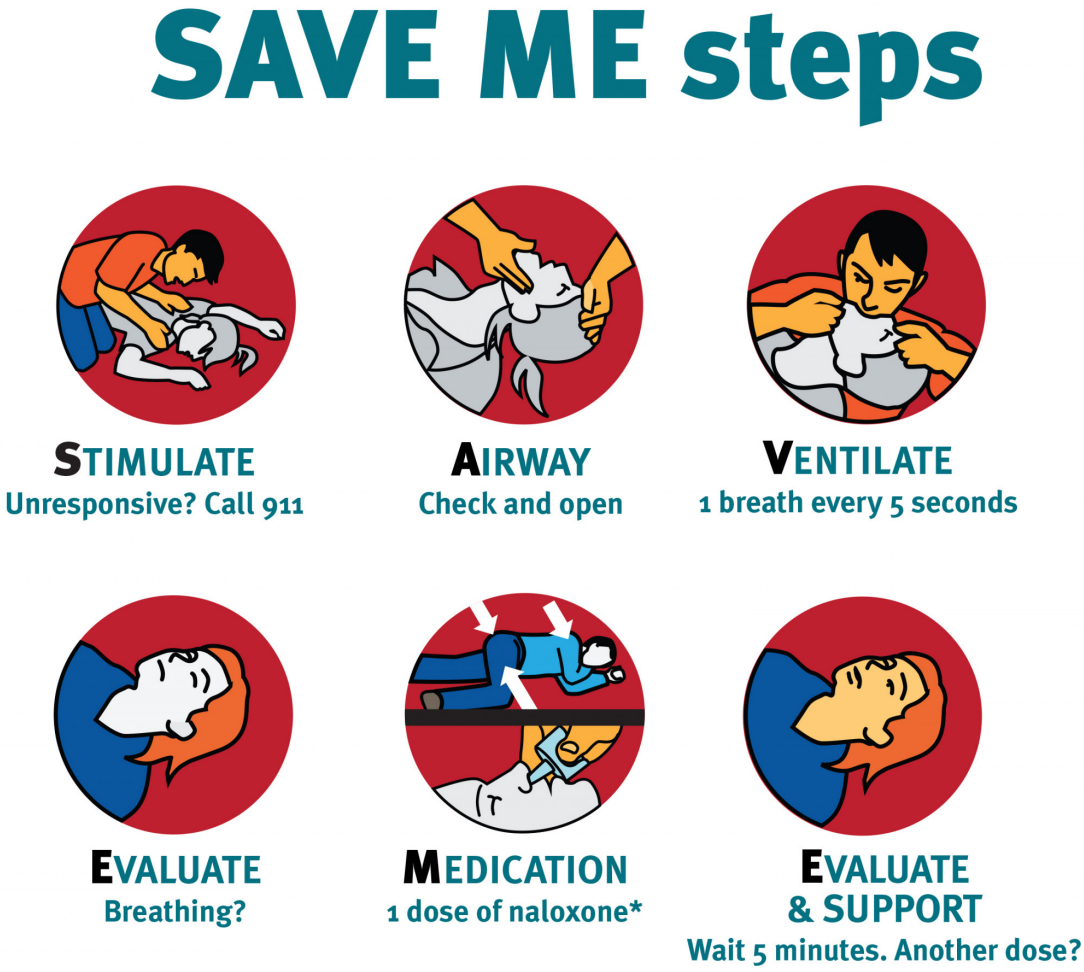


Figure 15 – Of overdoses where 911 was not called, reason for not calling, January 1, 2016– December 31, 2018.



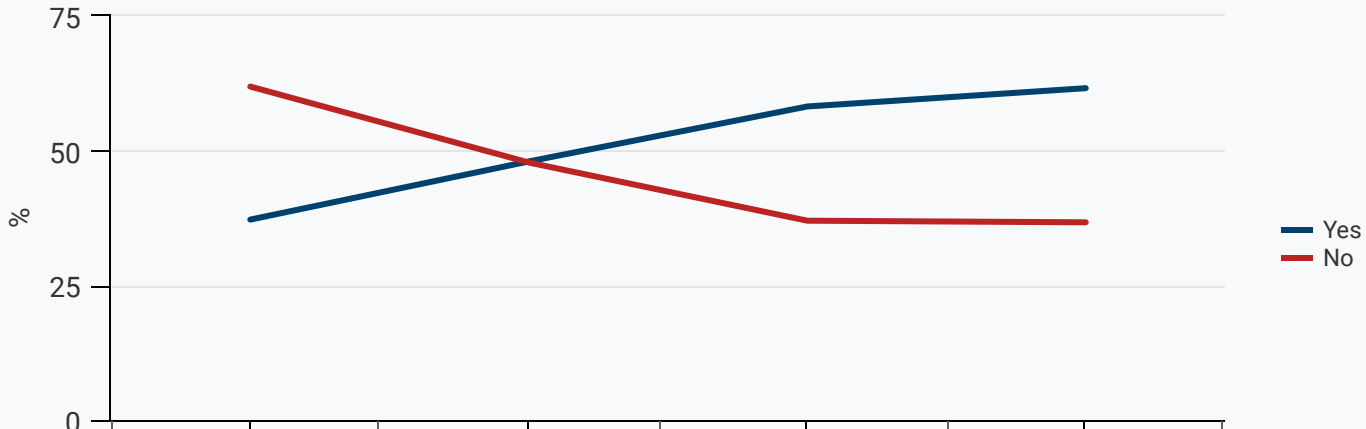


Bystander response to overdoses

Figure 16 presents data on the proportion of cases where rescue breathing was performed. The number of individuals reporting providing rescue breathing has risen steadily over time, from 37.2% in 2015 to 61.6% in 2018. This may reflect successful training and public health messaging efforts regarding the importance of rescue breaths when responding to an opioid overdose.

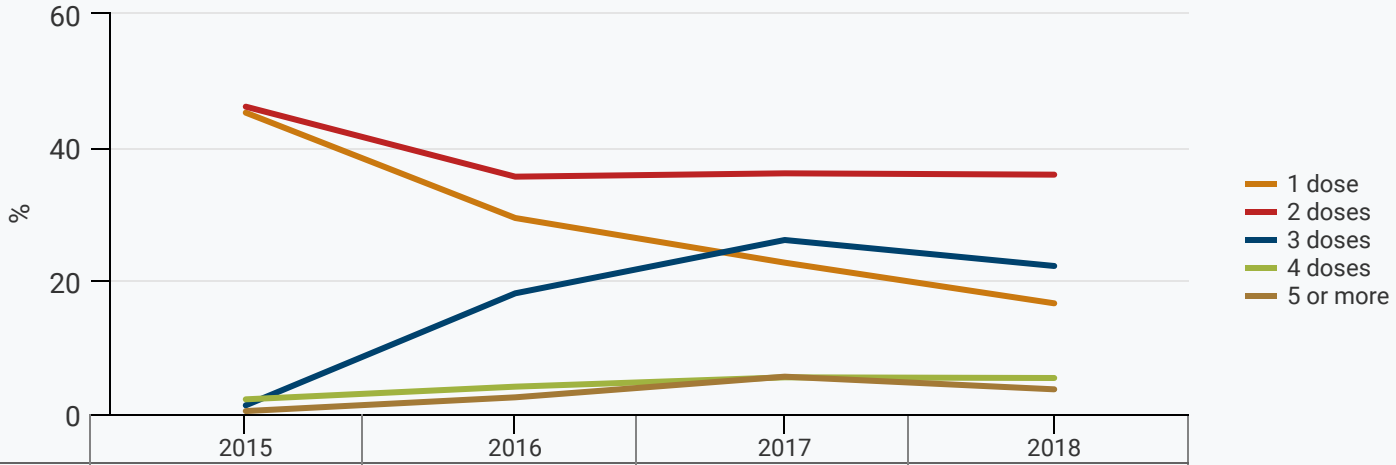
Figure 17 presents data on the number of doses of naloxone reportedly given during an opioid overdose incident. Prior to 2016, two naloxone vials were included in THN kits. A third dose of naloxone was added to kits in March 2016 in response to the rise of synthetic opioids, including fentanyl and carfentanil, on the illicit market. Even after the introduction of a third dose of naloxone, the majority of individuals (58.8% in 2017 and 52.5% in 2018) continued to use one to two doses of naloxone to reverse an overdose. The program continues to be responsive to overdose trends and community feedback to ensure that sufficient naloxone is included in THN kits.

Figure 16 - Reported cases where rescue breathing was performed, January 1, 2015– December 31, 2018.



	2015	2016	2017	2018
Yes	86 (37.2%)	388 (48.0%)	752 (58.2%)	482 (61.6%)
No	143 (61.9%)	386 (47.8%)	478 (37.0%)	287 (36.7%)
Prefer not to say	2 (0.9%)	34 (4.2%)	62 (4.8%)	14 (1.8%)

Figure 17 - Number of naloxone doses given, January 1, 2015 – December 31, 2018.



	2015	2016	2017	2018
1 dose	103 (45.2%)	245 (29.4%)	302 (22.7%)	156 (16.6%)
2 doses	105 (46.1%)	297 (35.6%)	481 (36.1%)	338 (35.9%)
3 doses	3 (1.3%)	151 (18.1%)	347 (26.1%)	209 (22.2%)
4 doses	5 (2.2%)	34 (4.1%)	73 (5.5%)	51 (5.4%)
5 or more	1 (0.4%)	21 (2.5%)	74 (5.6%)	35 (3.7%)

Adverse effects resulting from naloxone administration

Naloxone has a long history of safe and effective use in reversing opioid overdose. If a bystander or first responder is unsure as to the cause of the unresponsiveness, giving naloxone will not likely cause further harm and works to remove any opioids present in the individual's system. However, too much naloxone may cause withdrawal symptoms among people who use opioids. The practice of titration – administering a low dose of naloxone at first, and giving successive doses until an individual is responsive – is the most effective way to reduce withdrawal symptoms.

Figure 18 presents the proportion of individuals who reported witnessing any adverse effects upon administration of naloxone. Across all years, the majority of individuals reported no adverse effects or mild withdrawal symptoms only – increasing from 63.9% in 2015 to 82.4% in 2018.

Limiting the sample to those who reported experiencing any adverse effects, Figure 19 presents the type of adverse effects witnessed. As some individuals reported witnessing multiple concurrent symptoms, totals do not add up to 100%. Across all years, the most common adverse effects reported were aggressiveness and mild withdrawal symptoms. Reports of aggressiveness decreased over time – reported in 48.3% of cases in 2015 and 18.4% of cases in 2018 – and moderate and severe withdrawal symptoms were less common compared to other effects across all years. This possibly reflects

Figure 18 - Proportion of individuals who reported adverse effects, January 1, 2015– December 31, 2018.

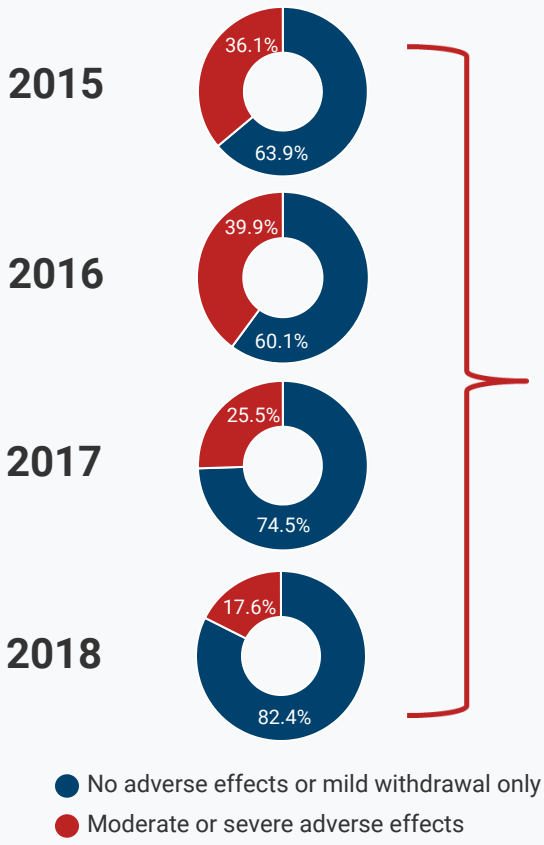
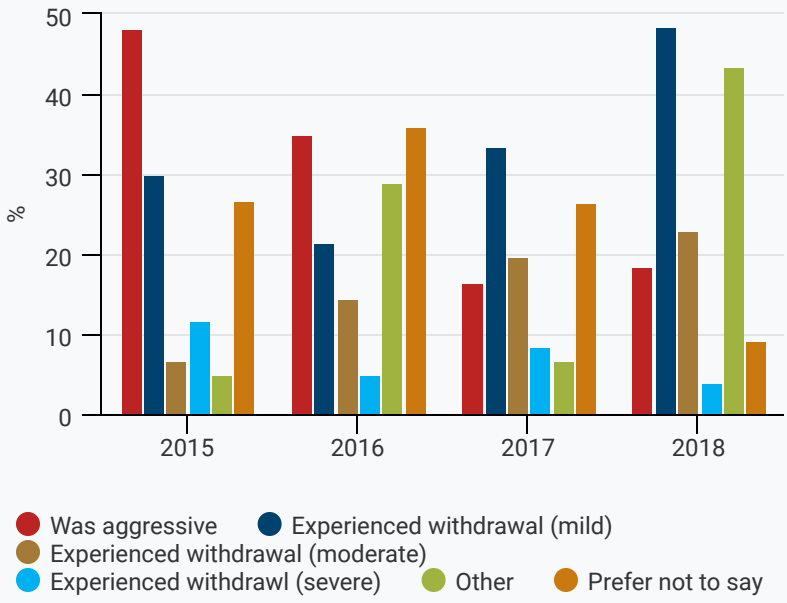


Figure 19 - Of those who did experience adverse effects, type of adverse effect experienced, January 1, 2015– December 31, 2018.



overdose training and education goals regarding titrating doses. 'Other' adverse effects included individuals who received naloxone feeling disoriented, agitated, confused, anxious, and nauseous.

Key Findings and Associated Recommendations

1. The THN program has expanded across BC.

Finding**:** The THN program expanded to a total of approximately 1,500 sites across BC by the end of December 2018, including nearly 600 pharmacy sites since December 2017.

Recommendation: With close to 1,500 sites across the province by the end of December 2018, it is important to identify new site locations strategically to support areas with high need and low service access.

2. Naloxone shipment, distribution, and reporting.

Finding: In 2018, there were 195,696 kits shipped and 58,547 kits distributed. 35.7% of kits distributed were used to reverse an overdose (n = 20,901). High volumes of naloxone shipment, distribution, and reported use demonstrate a continued need for naloxone across communities.

Recommendation: Data provided through the distribution forms are essential to inform harm reduction services and evaluate the impact of the program (1). It is important that distribution sites and individuals likely to respond to an opioid overdose aim to complete forms as much as possible to help inform service and supply need; incomplete distribution information underestimates the burden, projected costs, and effectiveness of the program. The THN program should aim to collaborate and better support distribution sites in meeting program requirements.

3. Kits are going into the hands of those that need them most.

Key Finding: Records indicate that naloxone kits are predominantly being distributed to those at highest risk of overdose, including men aged 31 – 60 years, and those who identified as personally being at risk of opioid overdose.

Recommendation: The THN program should continue to evaluate naloxone accessibility, and identify any gaps or barriers in naloxone distribution among subgroups of people who use drugs, including capturing perceptions of youth and industry workers.

4. Pharmacy sites predominantly distribute to people likely to witness an opioid overdose, whereas community sites distribute to those likely to experience an overdose.

Key Finding: In 2018, a higher proportion of individuals likely to witness an opioid overdose accessed naloxone kits through pharmacies, compared to individuals personally at risk of opioid overdose (and most likely to respond to an overdose among their peers) who accessed naloxone through a variety of other community sites.

Recommendation: It is important to have a variety of community sites that are easily accessible and responsive to the needs of people who require access to naloxone. The program should continue to increase awareness of site accessibility and promote utilization of the online site finder.

5. Naloxone distribution and shipment are responsive to the need of the province.

Key Finding: While difficult to identify meaningful naloxone distribution targets as compared with opioid overdose incidents, naloxone distribution in BC meets or exceeds targets identified in other jurisdictions.

Recommendation: It is important to continue naloxone distribution as needed and to identify gaps in access through engagement with community stakeholders. More work is needed to develop meaningful distribution targets for fentanyl-endemic regions.

6. Overdose response information or 'administration' forms continue to provide important insight into overdose events and response.

Key Finding: Administration forms provide unique data

on the use of naloxone in opioid overdose situations. Demographic characteristics of people who overdose largely mirror data from other sources, including distribution records, paramedic attended overdoses, and Coroners illicit drug toxicity deaths data. Most overdose events happen among males aged 31 – 60 years, and largely occur in private residences, streets, alleys or parks, and shelters or tents.

7. Majority of people report calling 911 in overdose situations, and fewer people feel afraid to call 911 due to police presence.

Key Finding: Recent policies have made it so that police are not required to attend overdose events, and the Good Samaritan Drug Overdose Act may reduce fear of police presence during overdose events. This may have led to decreased police presence at overdose events over time as well as fewer people reporting 'fear of police presence' as the reason for not calling 911.

Recommendation: The program should continue to stress the importance of calling 911, particularly in areas where police presence continues to be a deterrent in calling for emergency response. Individuals responding to an overdose should remain at the scene to ensure that symptoms do not return. An evaluation is underway to determine whether the Good Samaritan Drug Overdose Act has had its intended impact on improving bystander response and encouraging individuals to call emergency services in overdose situations.

8. Rescue breathing continues to be a vital part of overdose response.

Key Finding: The proportion of participants reporting giving rescue breaths has increased over time, in line with standard overdose response training.

Recommendation: Whenever possible, individuals should seek in-person overdose response training in order to gain hands-on experience before having to respond to an overdose.

9. Transport to hospital by ambulance after overdose events may be decreasing.

Key Finding: Data shows that transport to hospital by ambulance after overdose events may be decreasing over time. This is likely due to individuals' decisions to not be taken to hospital after emergency responders arrive to the scene, particularly if naloxone has already been administered by bystanders or if the individual left prior to paramedic arrival.

Recommendation: While naloxone temporarily reverses the effects of opioid overdose, a period of observation is required to ensure that overdose does not reoccur when naloxone wears off. More strategies to allow peer support and withdrawal management, outside of transport to hospital, are needed.

10. Two naloxone doses are being used to reverse the majority of opioid overdoses.

Key Finding: The emergence of synthetic opioids on the illicit market raised concerns regarding the sufficiency of two doses of naloxone, and in response, a third dose of naloxone was added to naloxone kits in 2016. Two doses of naloxone continue to be most commonly administered, and an additional dose is available for response in more severe overdose situations.

Recommendation: The program is responsive to the needs of naloxone kit users through community advisories and regular program evaluations. It should continue to monitor changes in the drug supply and trends in naloxone kit distribution to evaluate whether current naloxone kits continue to provide an adequate supply of the antidote.

11. Most individuals don't experience adverse effects from naloxone administration.

Key Finding: In 2018, the majority of individuals who overdosed did do not experience adverse effects from naloxone administration. Of those who did, the most common adverse effects reported were aggressiveness and mild withdrawal symptoms.

Recommendation: Overdose response training sessions and materials should aim to communicate with responders about the risk of adverse effects when administering naloxone, and that titrating naloxone doses may help mitigate these risks.

References

1. Irvine MA, Kuo M, Buxton JA, Balshaw R, Otterstatter M, Macdougall L, et al. Modelling the combined impact of interventions in averting deaths during a synthetic-opioid overdose epidemic [Internet]. Addiction. 2019 [cited 2019 Aug 15]. Available from: https://onlinelibrary.wiley.com/doi/abs/10.1111/add.14664

2. Canadian Research Initiative in Substance Misuse (CRISM). Timeline of Naloxone Distribution in Canada [Internet]. Canadian Research Initiative in Substance Misuse (CRISM); 2019 [cited 2019 Jun 25]. Available from: https://crism.ca/wp-content/uploads/2019/06/Standalone-timeline_Jun18.pdf

3. Young S, Williams S, Otterstatter M, Lee J, Buxton J. Lessons learned from ramping up a Canadian Take Home Naloxone programme during a public health emergency: a mixed-methods study. BMJ Open. 2019 Oct 1;9(10):e030046.

4. Ministry of Health. Current Health Topics - Province of British Columbia [Internet]. Curr. Heal. Top. [cited 2019 Aug 20]. Available from: https://www2.gov.bc.ca/gov/content/health/about-bc-s-health-care-system/office-of-the-provincial-health-officer/current-health-topics

5. British Columbia Centre for Disease Control. The History of Take Home Naloxone in British Columbia [Internet]. British Columbia Centre for Disease Control; 2019 [cited 2019 Mar 26]. Available from: https://towardtheheart.com/resource/thn-program-timeline/open

6. Williams S, Lewis-King T, Buxton JA. Evaluaiton Report: Evaluation of British Columbia's Facility Overdose Response Box (FORB) Program [Internet]. British Columbia Centre for Disease Control; 2019 Jul p. 25. Available from: https://towardtheheart.com/assets/uploads/1567699601RYkP9vr38dQahSx9HVNHYvUY3704TSFJBTK5ZE4.pdf

7. Mamdani Z, Buxton JA. Evaluation of British Columbia's Take Home Naloxone Program in Community Pharmacies. [Internet]. Vancouver, BC: British Columbia Centre for Disease Control; 2019 p. 35. Available from: https://towardtheheart.com/assets/uploads/1571953664uujS4Wj82uoRg5EBNAHxsi87cDYPGkMRp2TyV9t.pdf

8. Coroners Service of BC. Illicit Drug Overdose Deaths in BC [Internet]. Vancouver, BC: Coroners Service of BC, Ministry of Public Safety & Solicitor Genera; 2019 Mar p. 1–21. Available from: https://www2.gov.bc.ca/assets/gov/birth-adoption-death-marriage-and-divorce/deaths/coroners-service/statistical/illicit-drug.pdf

9. Tadrous M, Shearer D, Martins D, Campbell T, Gomes T. Naloxone Distribution Across Ontario [Internet]. Toronto, ON: Ontario Drug Policy Research Network; 2019 Jun p. 9. Available from: https://odprn.ca/wp-content/uploads/2019/05/Naloxone-Distribution-Report-Final.pdf

10. Bird SM, Parmar MKB, Strang J. Take-home naloxone to prevent fatalities from opiate-overdose: Protocol for Scotland's public health policy evaluation, and a new measure to assess impact. Drugs Abingdon Engl. 2015 Feb;22(1):66–76.

11. British Columbia Centre for Disease Control, BC Emergency Health Services. Overdose Response Indicators [Internet]. Overdose Response Indic. 2019 [cited 2019 Nov 5]. Available from: http://www.bccdc.ca/health-professionals/data-reports/overdose-response-indicators

12. Coroners Service of British Columbia. Illicit Drug Overdose Deaths in BC: Findings of Coroners' Investigations [Internet]. Ministry of Public Safety and Solicitor General; 2018 Sep p. 34. Available from: https://www2.gov.bc.ca/assets/gov/birth-adoption-death-marriage-and-divorce/deaths/coroners-service/statistical/illicitdrugoverdosedeathsinbc-findingsofcoronersinvestigations-final.pdf

13. Karamouzian M, Kuo M, Crabtree A, Buxton JA. Correlates of seeking emergency medical help in the event of an overdose in British Columbia, Canada: Findings from the Take Home Naloxone program. Int J Drug Policy. 2019 Jan 25;

14. Good Samaritan Act [Internet]. [cited 2019 Sep 20]. Available from: http://www.bclaws.ca/civix/document/id/complete/statreg/96172_01

Appendix

Appendix A - Data used in this report

Figure 2 (Page 8) - Number of Take Home Naloxone distribution sites (cumulative) by Health Service Delivery Area (HSDA), January 1, 2015 - December 31, 2018.

Health Authority	2015	2016	2017	2018	Total
Fraser Health	22	76	236	375	375
Interior Health	21	146	243	332	332
Northern Health	8	53	95	136	136
Vancouver Coastal Health	39	89	228	345	345
Island Health	16	91	181	260	260
Total	106	455	983	1,448	1,448

Figure 3 (Page 8) - Number of Take Home Naloxone distribution sites (cumulative) by site type (Pharmacies, First Nations, Emergency Departments, Correctional Facilities, Other sites), January 1, 2015 – December 31, 2018.

Distribution Site Type	2015	2016	2017	2018	Total
Corrections	2	7	16	20	20
First Nations (FN) Sites	9	59	128	143	143
Pharmacy	1	2	238	569	569
Emergency Departments (ED)	5	76	85	86	86
Other	89	311	516	630	630
Total	106	455	983	1,448	1,448

Figure 4 (Page 10) - Total number of Take Home Naloxone shipped, reported distributed, and reported used by year (counts), January 1, 2015 – December 31, 2018. Estimated distribution for 2018 also shown.

	2015	2016	2017	2018	Total
Kits shipped	5,886	52,262	140,748	195,696	398,167
Kits distributed	3,153	21,293	62,445	58,547	147,359
Kits reported used	397	3,941	15,496	20,901	40,903
Estimated kits distributed				97,848	

Figure 5 (Page 10) - Number of Take Home Naloxone kits shipped by Health Authority (counts), January 1, 2015 – December 31, 2018.

Health Authority	Before 2015	2015	2016	2017	2018	Total
Fraser Health	361	1,166	9,542	30,046	38,199	79,314
Interior Health	876	1,016	8,152	36,154	45,098	91,296
Northern Health	100	148	2,546	5,440	8,384	16,618
Vancouver Coastal Health	1,650	2,502	20,223	36,443	53,335	114,153
Island Health	588	1,054	11,549	32,665	46,829	92,685
Total	6,562	10,718	92,475	248,831	336,861	695,447

Figure 6 (Page 10) - Number of Take Home Naloxone kits reported distributed by Health Authority (counts), January 1, 2015 – December 31, 2018.

Health Authority	Before 2015	2015	2016	2017	2018	Total
Fraser Health	180	524	4,607	16,060	16,790	38,161
Interior Health	522	522	3,961	13,406	12,721	31,132
Northern Health	32	70	556	3,108	3,981	7,747
Vancouver Coastal Health	874	1,501	7,076	13,059	8,413	30,923
Island Health	313	536	5,093	16,812	16,627	39,381
Total	1,921	3,153	21,293	62,445	58,547	147,359

Figure 7 (Page 11) - Self-reported gender, age and overdose risk of of individuals who collected naloxone kits, January 1, 2017 – December 31, 2018.

	2017	2018
GENDER		
Female	25,326 (44.6%)	25,159 (45.2%)
Male	30,791 (54.2%)	29,395 (52.8%)
Other	690 (1.2%)	1,084 (1.6%)
AGE		
Under 19 years	1,999 (3.6%)	3,019 (5.5%)
19-30 years	19,408 (34.8%)	19,865 (35.9%)
31-60 years	32,322 (57.9%)	30,693 (55.5%)
Over 60 years	2,070 (3.7%)	1,772 (3.2%)
OVERDOSE RISK		
At risk of experiencing an overdose	22,971 (69.4%)	38,632 (68.5%)
Likely to witness an overdose	10,134 (30.6%)	17,771 (31.5%)

Figure 8 (Page 12) -Naloxone distribution to those self-reporting being at risk of experiencing an overdose vs. likely to witness an overdose, by whether this is their first kit, a replacement kit due to being used, or a a replacement kit due to having a previous kit stolen, lost, expired, or confiscated, January - December 2017 and 2018.

	2017			2018	
Overdose Risk	At risk of experiencing an overdose	Likely to witness an overdose		At risk of experiencing an overdose	Likely to witness an overdose
Kits for new participants	9,402 (52.7%)	8,097 (46.3%)		12,504 (47.5%)	13,838 (52.5%)
Replacements: Stolen, lost, expired or confiscated	5,438 (82.9%)	1,126 (17.2%)		7,499 (79.4%)	1,950 (20.6%)
Kits reported as used	8,131 (89.9%)	911 (10.1%)		18,627 (90.4%)	1,973 (9.6%)
Total	22,971 (69.4%)	10,134 (30.6%)		38,630 (68.5%)	17,761 (31.5%)

Figure 9 (Page 12) - Naloxone distribution to those self-reporting being at risk of experiencing an overdose vs. likely to witness an overdose, by take-home naloxone distribution site type, January - December 2017 and 2018.

	2017			2018	
Distribution Site Type	At risk of experiencing an overdose	Likely to witness an overdose		At risk of experiencing an overdose	Likely to witness an overdose
Corrections	453 (93.8%)	30 (6.2%)		1,229 (90.4%)	131 (9.6%)
Pharmacy	223 (49.2%)	230 (50.8%)		1,425 (40.0%)	2,141 (60.0%)
Post-Secondary	11 (17.5%)	52 (82.5%)		86 (9.0%)	866 (91.0%)
Other	22,284 (69.4%)	9,822 (30.6%)		35,892 (71.0%)	14,633 (29.0%)

Figure 10 (Page 16) - Demographic characteristics of individuals overdosed, based on administration forms, January 1, 2015 - December 31, 2018.

	2015	2016	2017	2018
GENDER				
Female	44 (26.4%)	281 (32.4%)	400 (29.5%)	271 (29.0%)
Male	121 (72.5%)	583 (67.2%)	922 (68.1%)	648 (69.4%)
Other	2 (1.2%)	3 (0.4%)	32 (2.4%)	15 (1.6%)
AGE				
Under 19 years	3 (1.7%)	9 (1.1%)	32 (2.4%)	30 (3.4%)
19-30 years	64 (37.0%)	296 (35.0%)	480 (36.7%)	341 (38.4%)
31-60 years	99 (57.2%)	515 (60.9%)	734 (56.2%)	487 (54.8%)
Over 60 years	6 (3.5%)	9 (1.1%)	24 (1.8%)	15 (1.7%)
HEALTH AUTHORITY				
Fraser Health	75 (28.7%)	352 (37.4%)	734 (53.1%)	233 (24.7%)
Interior Health	46 (17.6%)	142 (15.1%)	224 (16.2%)	176 (18.7%)
Northern Health	7 (2.7%)	60 (6.4%)	205 (14.8%)	359 (38.1%)
Vancouver Coastal Health	109 (41.8%)	275 (29.2%)	147 (10.6%)	147 (15.6%)
Island Health	24 (9.2%)	113 (12.0%)	73 (5.3%)	28 (3.0%)

Figure 11 (Page 17) - Reported locations of overdose events, January 1, 2015 and December 31, 2018.

Location type	2015	2016	2017	2018
Private Residence	90 (41.3%)	293 (36.6%)	514 (39.4%)	275 (29.6%)
SRO/Supportive Housing	32 (14.7%)	74 (9.2%)	70 (5.4%)	59 (6.3%)
Community Agency/Drop-in	7 (3.2%)	36 (4.5%)	56 (4.3%)	43 (4.6%)
Bar/Night Club/Concert/Festival	0 (0.0%)	0 (0.0%)	5 (0.4%)	5 (0.5%)
Hotel/Motel	1 (0.5%)	6 (0.7%)	17 (1.3%)	26 (2.8%)
Shelter/Tent	30 (13.8%)	86 (10.7%)	164 (12.6%)	146 (15.7%)
Street/Alley/Park	57 (26.1%)	287 (35.8%)	402 (30.9%)	315 (33.9%)
Prefer not to say/Don't know/Other	1 (0.5%)	19 (2.4%)	75 (5.8%)	61 (6.6%)
Total	218 (100.0%)	801 (100.0%)	1,303 (100.0%)	930 (100.0%)

Figure 12 (Page 19) - Proportion of reported calls made to 911 by Health Authority, January 1, 2016 – December 31, 2018.

	2016	2017	2018
British Columbia			
No	305 (37.1%)	614 (47.2%)	345 (37.6%)
Yes	498 (60.6%)	649 (49.9%)	564 (61.4%)
Prefer not to say	19 (2.3%)	38 (2.9%)	9 (1.0%)
Total	822 (100.0%)	1,301 (100.0%)	918 (100.0%)
FRASER HEALTH			
No	112 (37.1%)	335 (47.2%)	122 (37.6%)
Yes	199 (60.6%)	343 (49.9%)	97 (61.4%)
Prefer not to say	9 (2.3%)	18 (2.9%)	2 (1.0%)
INTERIOR HEALTH			
No	74 (60.2%)	106 (51.2%)	44 (25.6%)
Yes	47 (38.2%)	95 (45.9%)	128 (74.4%)
Prefer not to say	2 (1.6%)	6 (2.9%)	0 (0.0%)
VANCOUVER COASTAL HEALTH			
No	48 (19.7%)	48 (35.0%)	12 (8.6%)
Yes	190 (77.9%)	89 (65.0%)	126 (90.6%)
Prefer not to say	6 (2.5%)	0 (0.0%)	1 (0.7%)
ISLAND HEALTH			
No	47 (56.6%)	34 (50.0%)	1 (3.7%)
Yes	34 (41.0%)	31 (45.6%)	25 (92.6%)
Prefer not to say	2 (2.4%)	3 (4.4%)	1 (3.7%)
NORTHERN HEALTH			
No	23 (45.1%)	91 (47.4%)	162 (46.0%)
Yes	28 (54.9%)	90 (46.9%)	185 (52.6%)
Prefer not to say	0 (0.0%)	11 (5.7%)	5 (1.4%)

Figure 13 (Page 19) - Of overdoses where 911 was called, proportion of people who went to hospital in ambulance, January 1, 2017– December 31, 2018.

	2016	2017	2018
No	4 (17.4%)	350 (46.9%)	425 (59.8%)
Yes	5 (21.7%)	72 (9.7%)	44 (6.2%)
Prefer not to say	14 (60.9%)	324 (43.4%)	242 (34.0%)
Total	23 (100.0%)	746 (100.0%)	711 (100.0%)

Figure 14 (Page 19) - Of overdoses where 911 was called, proportion where police arrived on scene, January 1, 2016– December 31, 2018.

	2016	2017	2018
No	178 (47.5%)	504 (62.5%)	448 (73.6%)
Yes	158 (42.1%)	256 (31.8%)	142 (23.3%)
Prefer not to say	39 (10.4%)	46 (5.7%)	19 (3.1%)
Total	375 (100.0%)	806 (100.0%)	609 (100.0%)

Figure 15 (Page 19) - Of overdoses where 911 was not called, reason for not calling, January 1, 2016– December 31, 2018.

	2016	2017	2018
No phone/cell service	19 (8.1%)	35 (10.3%)	20 (9.2%)
Person who overdosed requested no 911	15 (6.4%)	30 (8.8%)	8 (3.7%)
Thought person would get better/person was OK	94 (40.2%)	182 (53.5%)	130 (59.6%)
Worried that police would come	70 (29.9%)	37 (10.9%)	18 (8.3%)
Prefer not to say	28 (12.0%)	21 (6.2%)	14 (6.4%)
Other reason	8 (3.4%)	35 (10.3%)	28 (12.8%)
Total	234 (100.0%)	340 (100.0%)	218 (100.0%)

Figure 16 (Page 21) - Reported cases where rescue breathing was performed, January 1, 2015 – December 31, 2018.

	2015	2016	2017	2018
Yes	86 (37.2%)	388 (48.0%)	752 (58.2%)	482 (61.6%)
No	143 (61.9%)	386 (47.8%)	478 (37.0%)	287 (36.7%)
Prefer not to say	2 (0.9%)	34 (4.2%)	62 (4.8%)	14 (1.8%)
Total	231 (100.0%)	808 (100.0%)	1,292 (100.0%)	783 (100.0%)

Figure 17 (Page 21) - Number of naloxone doses given, January 1, 2015 – December 31, 2018.

	2015	2016	2017	2018
1 dose	103 (45.2%)	245 (29.4%)	302 (22.7%)	156 (16.6%)
2 doses	105 (46.1%)	297 (35.6%)	481 (36.1%)	338 (35.9%)
3 doses	3 (1.3%)	151 (18.1%)	347 (26.1%)	209 (22.2%)
4 doses	5 (2.2%)	34 (4.1%)	73 (5.5%)	51 (5.4%)
5 or more	1 (0.4%)	21 (2.5%)	74 (5.6%)	35 (3.7%)
Prefer not to say/blank	11 (4.8%)	86 (10.3%)	54 (4.1%)	152 (16.2%)
Total	228 (100.0%)	834 (100.0%)	1,331 (100.0%)	941 (100.0%)

Figure 18 (Page 22) - Proportion of individuals who reported adverse effects, January 1, 2015– December 31, 2018.

	2015	2016	2017	2018
No adverse effects or mild withdrawal only	62 (63.9%)	146 (60.1%)	765 (74.5%)	560 (82.4%)
Moderate or severe adverse effects	35 (36.1%)	97 (39.9%)	262 (25.5%)	120 (17.6%)
Total	97 (100.0%)	243 (100.0%)	1,027 (100.0%)	680 (100.0%)

Figure 19 (Page 22) - Of those who did experience adverse effects, type of adverse effect experienced, January 1, 2015– December 31, 2018.

	2015	2016	2017	2018
Aggressive	29 (48.3%)	70 (35.0%)	82 (16.4%)	40 (18.3%)
Withdrawal (mild)	18 (30.0%)	43 (21.5%)	167 (33.5%)	106 (48.6%)
Withdrawal (moderate)	4 (6.7%)	29 (14.5%)	99 (19.8%)	50 (22.9%)
Withdrawal (severe)	7 (11.7%)	10 (5.0%)	42 (8.4%)	9 (4.1%)
Other	3 (5.0%)	58 (29.0%)	34 (6.8%)	95 (43.6%)
Prefer not to say	16 (26.7%)	72 (36.0%)	132 (26.5%)	20 (9.2%)
Total	60 (100.0%)	200 (100.0%)	499 (100.0%)	218 (100.0%)