



## Topic: Declining transport to hospital for paramedic-attended overdose events

Date: October 25, 2019

Data Source: BC EHS Surveillance Data

### Key Findings:

- The proportion of paramedic-attended overdose events where persons declined transportation to the hospital has been increasing in all regions of the province.
- Urban areas have the largest number of paramedic-attended overdose events where persons declined transport, however, some mid-size cities and rural areas have also experienced large increases in persons declining transportation to the hospital in the past two years.
- Additional studies are needed to understand the reasons why persons are declining transportation to the hospital after a non-fatal overdose, and the implications of declining transportation on the frequency and severity of future overdose events, mortality, and development of chronic conditions, including neurologic injury.

### Background:

- The number of paramedic-attended overdose events has increased in recent years as overdose incidence has grown. The objective of this analysis was to identify time series and geographic trends in paramedic-attended non-fatal overdose events where transportation to the hospital by an ambulance was declined.

### Sample:

- Any overdose events attended by the British Columbia Emergency Health Services (BC EHS) from January 1, 2010 - May 31, 2019 where transportation to the hospital was required and the disposition record indicated received or declined. Drug-related overdose events where transportation to the hospital was not required were excluded from the analysis. Transportation to hospital status (i.e. “transported” or “not transported”) for an overdose event is assigned according to the destination facility name and time of arrival. If either one of those fields were missing, then “not transported” was assigned to that event.

### Methods:

- BC EHS records were grouped by Local Health Area (LHA) and Health Authority (HA) for analysis by year and region. Cells with less than or equal to five records are suppressed.



## Findings & Interpretation

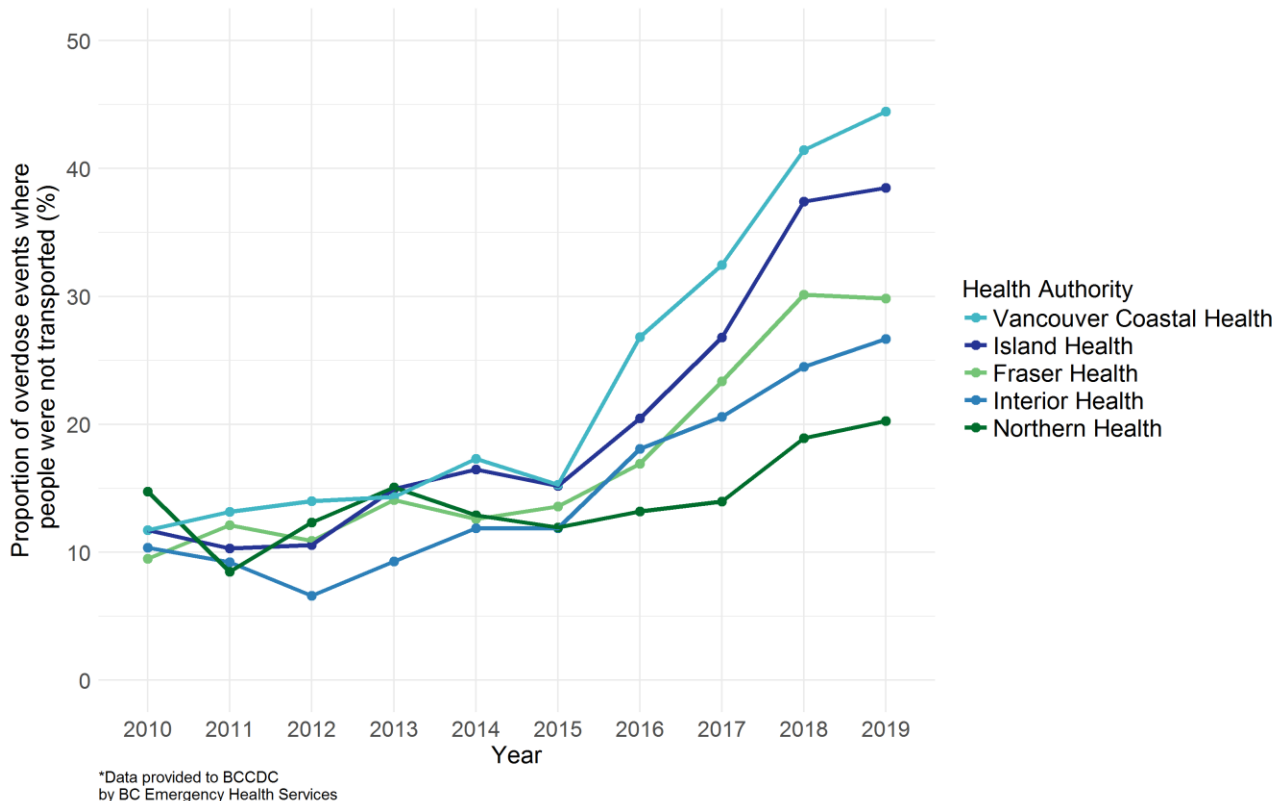
### Time Series Trends in People *Not* Transported to Hospital

- From 2010-2018, the number of paramedic-attended overdose events where people were not transported increased from 299 of 2,718 (11%) in 2010 to 4,573 of 13,284 (34%) in 2018.
- Data from January 1, 2019- May 31, 2019 indicates that the proportion of paramedic- attended overdoses where people were not transported increased to 37%. This represents an absolute increase of 2% from 2018 to 2019.

### Time Series Trends in Declining Transportation to Hospital

- From 2010-2018, the number of paramedic-attended overdose events where people declined transportation increased from 59 of 2,691 (2%) in 2010 to 2,518 of 12,881 (20%) in 2018.
- From January 2019 to the end of May 2019, 1,660 people declined transportation of 6,242 (27%) paramedic- attended overdoses events. This represents an absolute increase of 7% from 2018 to 2019.

**Figure 1:** The proportion of paramedic-attended drug-related overdose events where people were not transported to the hospital by Health Authority (2010-2019)





### Demographic and Overdose Event Characteristics

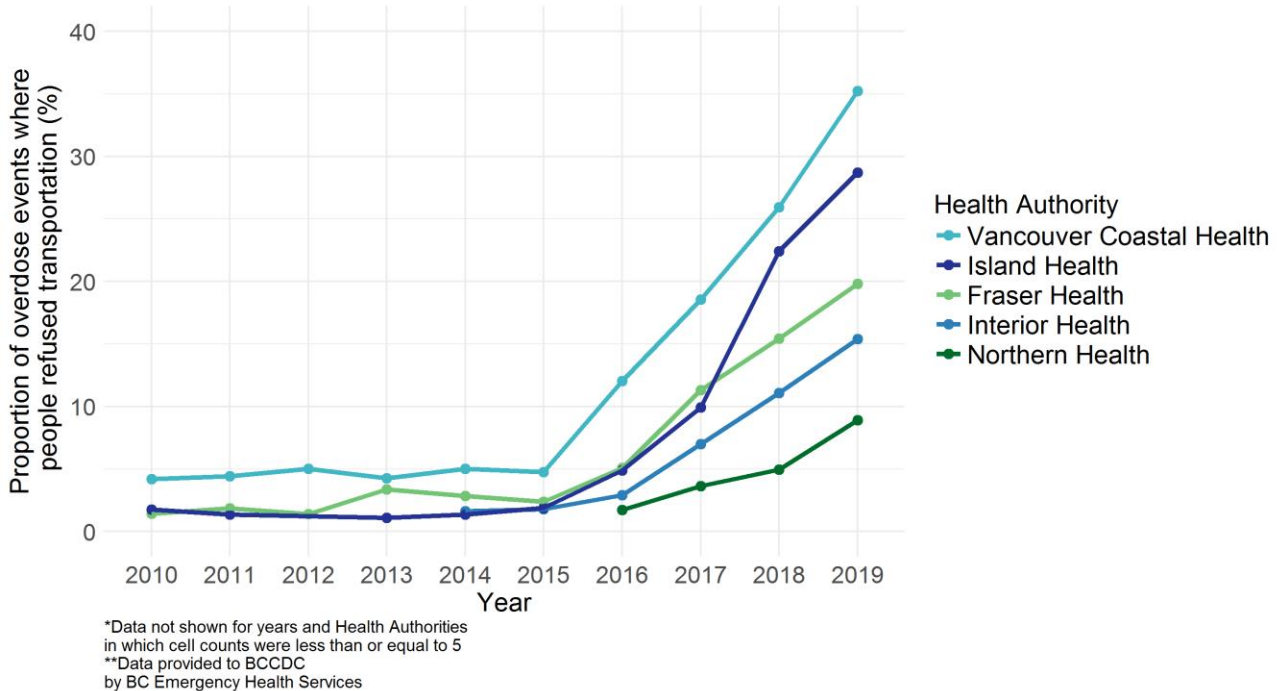
- 73% of people who declined transportation to hospital (2010-2019) were men. The average age of people who declined transportation was 37 years (median: 35 years; interquartile range: 27, 47 years) (Table 1).
- A higher proportion of people who were transported to hospital had a Glasgow Coma Score (GCS) of “Severe” (GCS 3 to 8) or “Moderate” (GCS 9-12)
- A lower proportion of people who declined transportation were administered naloxone by paramedics compared to people who were transported to hospital. Naloxone administration by non-paramedics (e.g. bystanders) is not collected in BC EHS data.

### Geographic Trends in Declining Transportation to Hospital

- 34 of the 87 LHAs had more than five paramedic-attended overdose events where persons declined transportation to hospital between January 1 2019 to May 31 2019 (Figure 3). Similar geographic trends were observed in 2018 (maps available by request).
- LHAs with the highest proportion of paramedic-attended overdose events where transportation was declined were located in urban areas (Figures 4 and 5).
- From 2018 to 2019, one LHA (Kamloops) had a decrease in the proportion of paramedic-attended overdose events where transportation was declined.
- The largest increases in the proportion of paramedic-attended overdose events where transportation was declined were in Quesnel, Vancouver North East, Chilliwack, and New Westminster (Table 2).



**Figure 2:** The proportion of paramedic-attended drug-related overdose events where transportation was declined by Health Authority (2010-2019)



### Limitations:

- The case definition used to identify paramedic-attended drug-related overdose events is based on a cluster analysis algorithm, and it is possible that events were incorrectly coded and omitted or included in error. For more information on the cluster algorithm, please see the [Surveillance Case Definition Change Knowledge Update](#).
- The transport disposition variable used to identify whether persons were transported or declined transportation to hospital was missing for 19% of cases. Therefore, the number of persons who declined transportation is likely underestimated. The proportion of missing transport disposition data ranged from 13% in Northern Health to 20% in Vancouver Coastal Health. It is also possible that there is miscoding of the transportation disposition, declined transportation, and transportation-required variables. The extent of the miscoding is unknown.
- Data likely underestimate the absolute number of overdose events because not every overdose event has an associated 9-1-1 call and a person may have left the overdose location when the ambulance arrives. The extent of the undercount is unknown. Additionally, if naloxone is administered by a bystander, paramedics may not be called as there is no longer a need for naloxone to be administered.



*For more information on the Outcomes Working Group or the Provincial Overdose Cohort, please contact Amanda Slaunwhite [amanda.slaunwhite@bccdc.ca](mailto:amanda.slaunwhite@bccdc.ca)*

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*All inferences, opinions, and conclusions drawn in this Knowledge Update are those of the authors, and do not reflect the opinions or policies of the Data Steward(s).*

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**Table 1:** Demographic, overdose and health authority of paramedic-attended overdose events by transportation disposition (2010-2019)

	Declined Transport (N=7,101)	Transported (N=56,873)	Total (N=63,974)	<i>P</i>
<b>Sex</b>				<0.001
Men	5200 (12%)	38621 (88%)	43821 (100%)	
Women	1652 (9%)	17545 (91%)	19197 (100%)	
Unknown	249 (26%)	707 (74%)	956 (100%)	
<b>Age</b>				0.023
Mean (SD)	37 (12)	38 (15)	38 (15)	
Median (IQR)	35 (28, 46)	35 (26, 47)	35 (27, 47)	
Unknown	846	2235	3081	
<b>Glasgow Coma Score (GCS) Category</b>				<0.001
Mild (13 – 15)	4446 (14%)	27058 (86%)	31504 (100%)	
Moderate (9 – 12)	235 (4%)	6318 (96%)	6553 (100%)	
Severe (3 – 8)	1631 (7%)	21021 (93%)	22652 (100%)	
Unknown	789 (24%)	2476 (76%)	3265 (100%)	
<b>Naloxone administration by paramedics</b>				<0.001
Naloxone administered	1908 (6%)	30037 (94%)	31945 (100%)	
Naloxone not administered	5193 (16%)	26836 (84%)	32029 (100%)	
<b>Health Authority</b>				<0.001
Interior Health	474 (6%)	7807 (94%)	8281 (100%)	
Fraser Health	1647 (8%)	17780 (92%)	19427 (100%)	
Vancouver Coastal Health	3818 (16%)	19474 (84%)	23292 (100%)	
Island Health	1065 (11%)	8740 (89%)	9805 (100%)	
Northern Health	97 (3%)	3072 (97%)	3169 (100%)	

SD=Standard Deviation



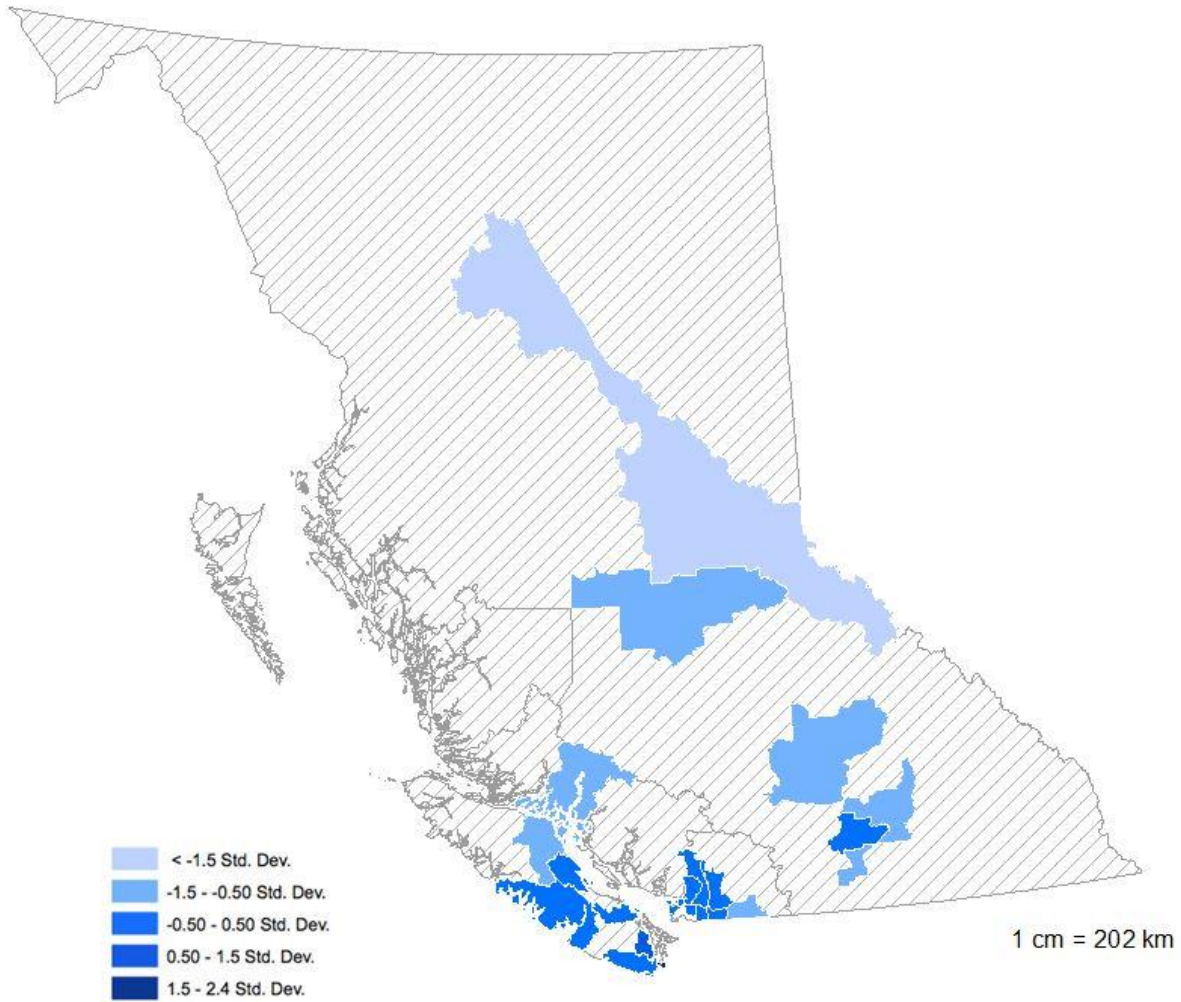
**Table 2:** Proportion of paramedic-attended overdose events where transportation was declined by Local Health Area (LHA) (2018-2019)^

LHA Number	LHA	2018	January – May 2019	2018-2019 change in proportion
521	Quesnel	11.63 (5)	25.93 (7)	14.30
323	Vancouver - North East	19.00 (42)	30.39 (31)	11.39
221	New Westminster	13.79 (24)	23.75 (19)	9.96
212	Chilliwack	9.81 (21)	19.33 (29)	9.52
322	Vancouver - Centre North	30.97 (935)	39.83 (772)	8.86
137	Central Okanagan	14.49 (81)	22.86 (56)	8.37
231	Langley	15.95 (37)	23.77 (29)	7.82
326	Vancouver - South	11.66 (19)	18.87 (10)	7.21
421	Cowichan Valley South	20.33 (25)	27.54 (19)	7.21
431	Comox Valley	17.33 (13)	24.32 (9)	6.99
411	Greater Victoria	30.26 (122)	36.93 (364)	6.67
424	Greater Nanaimo	13.37 (52)	19.83 (23)	6.46
136	Vernon	8.29 (15)	14.06 (9)	5.77
321	Vancouver - City Centre	20.43 (132)	26.09 (66)	5.66
426	Alberni/Clayoquot	15.89 (17)	21.43 (6)	5.54
222	Burnaby	12.81 (36)	18.06 (26)	5.25
214	Mission	16.09 (14)	21.31 (13)	5.22
432	Greater Campbell River	8.98 (15)	13.95 (6)	4.97
132	Penticton	6.84 (8)	11.76 (6)	4.92
213	Abbotsford	13.16 (45)	17.72 (56)	4.56
233	Surrey	17.97 (257)	22.30 (134)	4.33
325	Vancouver - Midtown	23.88 (69)	27.27 (27)	3.39
324	Vancouver - Westside	14.29 (10)	16.67 (6)	2.38
524	Prince George	4.67 (14)	6.76 (10)	2.09
224	Tri-Cities	17.07 (56)	18.75 (27)	1.68
311	Richmond	15.38 (20)	16.67 (10)	1.29
223	Maple Ridge/Pitt Meadows	15.20 (31)	15.87 (20)	0.67
412	Western Communities	15.04 (17)	15.62 (5)	0.58
143	Kamloops	10.41 (41)	8.09 (11)	-2.32

^Data were suppressed for LHAs with less than five records where persons declined transportation to the hospital.

LHA= Local Health Area.

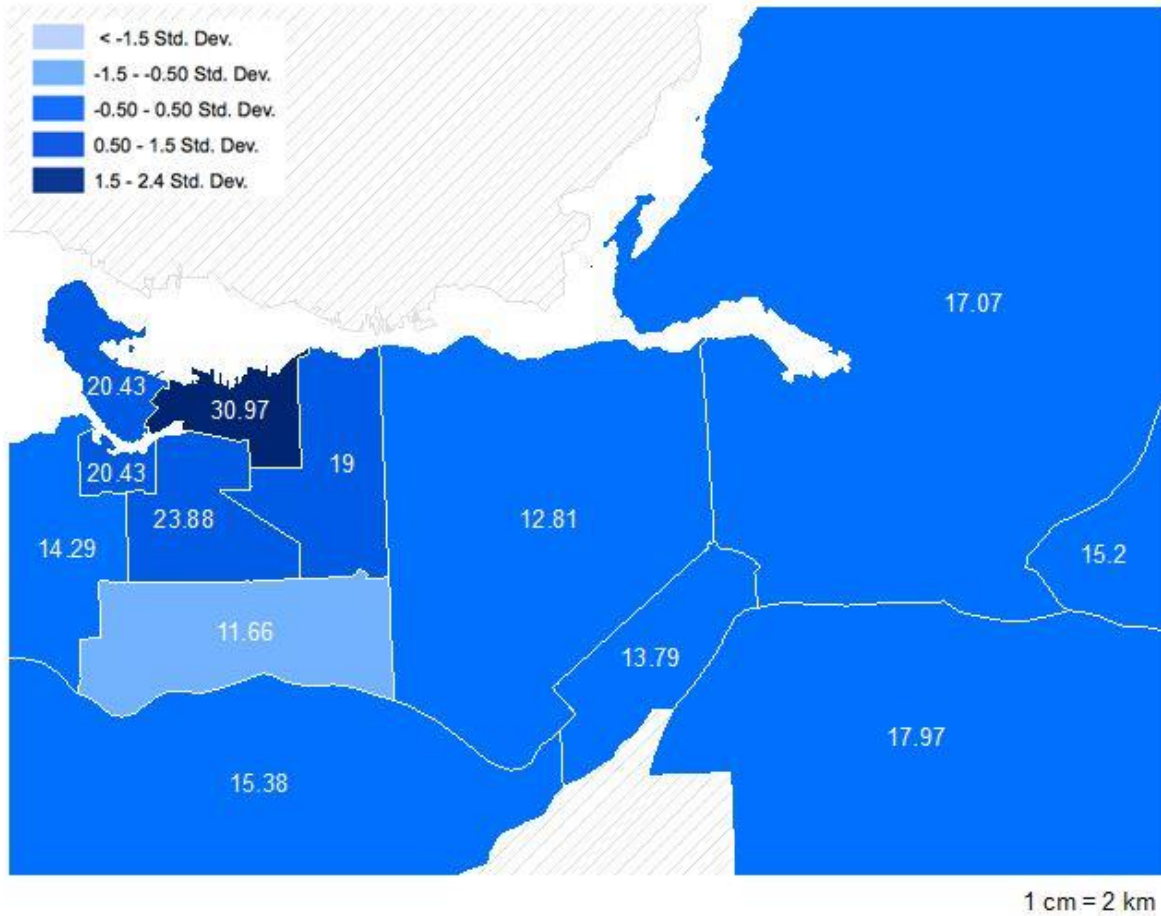
**Figure 3:** The proportion of paramedic-attended drug-related overdose events where transportation was declined by LHA (2019)<sup>^</sup>



<sup>^</sup>Data were suppressed for LHAs with less than five records where persons declined transportation to the hospital



**Figure 4:** Proportion of paramedic-attended drug-related overdose events where transportation was declined by LHA (Vancouver region) (2019)



**Figure 5:** Proportion of paramedic-attended drug-related overdose events where transportation was declined by LHA (Victoria region) (2019)

