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OVERDOSE RECOGNITION AND RESPONSE IN THE BC TAKE HOME NALOXONE PROGRAM

Review of data from Sep 2012 – Mar 2015

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Background

The BC Take Home Naloxone Program (THN) was implemented August 31st 2012 and provides training and kit distribution in all of BC's geographic health authorities. Opioid overdose reversals through community naloxone administration using THN kits have been reported in each health authority. The initial evaluation of the BC THN program, published in 2014, found that clients were more confident responding to overdoses and that naloxone was easy to administer1. Challenges identified included reluctance to call 911 during administration events because of concern of police involvement or a belief that the person would recover, and misconceptions among police regarding naloxone kits. This report collates the program records including training and dispensing information and data reported in the overdose event administration forms as of March 31st 2015. It also assesses progress with regard to the previous findings and identifies continuing challenges related to use and carriage of kits; overdose response; and calling 911.

Evaluation objectives

1. Summarize the number of sites, the number and types of individuals trained by the program and number of overdose events reported where naloxone administered
2. Describe characteristics of administration events and of individuals who overdosed or who responded to overdose
3. Describe ways in which individuals recognize and respond to overdoses where naloxone is administered and assess fidelity of responses to program training
4. Identify barriers and facilitators to naloxone administration and appropriate overdose response, including calling 911
5. Provide recommendations for program improvements

Methods

Characteristics of persons receiving overdose prevention, recognition and response training and kits dispensed are collected on standardised reporting forms which are sent to BCCDC. Following naloxone administration events, naloxone kit holders are asked to complete and return an "administration information" form to the THN program, which comprises questions regarding the individual overdosing or responding, the circumstances of the overdose, naloxone administration, and actions taken in response to overdoses. THN site staff are encouraged to assist in completing the forms with participants when they request a replacement kit. All data are entered into the program's MS ACCESS database. Data were extracted from the database on April 10th 2015 to capture program activities and naloxone administration events occurring from August 31st 2015 and March 31st 2015.

Analysis of participant information, training, and administration event characteristics was conducted in MS Excel and R-Studio. Time of program was divided into four equal time periods.

[1] Banjo et al. 2014. A quantitative and qualitative evaluation of the British Columbia Take Home Naloxone program. CMAJ Open, 2(3): E153 - E161. Accessible at http://cmajopen.ca/content/2/3/E153.full

Results

Interpretation of results

Response rates varied by question; the proportions reported are based on the total responses for a given question, unless otherwise indicated. Many response categories contain small numbers of responses, therefore proportions for these categories should be interpreted cautiously and in conjunction with response numbers which are also presented. Administration event reporting is known to be incomplete so results may not be representative of unreported naloxone administration events.

Program participants and kits distributed

Since the program's implementation until March 31st 2015 (31 months), the program trained 3132 people in overdose prevention, recognition and response; 41% were people who use opioids and 47.9% were staff and volunteers, see Table 1. During the same period 2083 kits were dispensed, 74% of kits dispensed were to first time recipients, while 22.1% were replacement kits.

Table 1: Participants trained and kits dispensed

Participants Trained	3132	
Description of Trainees		
People who use opioids	1284	41.0%
Staff and Volunteers	1501	47.9%
Friends and family	347	11.1%
Kits dispensed	2083	
Received for the first time	1541	74.0%
Replacement Kit	461	22.1%
Unspecified	81	3.9%
Reason for Replacement Kits	461	
Used	192	41.6%
Lost	94	20.4%
Stolen	40	8.7%
Confiscated	21	4.6%
Expired	11	2.4%
Broken/destroyed	5	1.1%
Given away	4	0.9%
Unspecified	94	20.4%

Replacing kits

The most frequently cited reasons for replacing kits were that the kit had been used (41.6%); lost or stolen (29.1%). The first evaluation of the THN program noted that some kits had been confiscated by police. These data show a small proportion of confiscations since the program's implementation. Of 21 confiscations reported when clients sought replacement kits, 8 were reported in 2013, 9 in 2014 and 4 in first 3 month of 2015; over time the number of kits in the community have increased. Also, these dates reflected the date of replacement; the dates of actual confiscation may have been earlier.

Carrying kits

Of 134 individuals who reported administering naloxone and who responded to the question "Do you experience any barriers carrying your naloxone kit?", 122 (91%) indicated that they did not experience any barriers, while 12 individuals (8.9%) said that they experienced a barrier. Reported barriers included that it was too big to carry around (n=2); that a soft kit design would be preferable (n=1); and that the kit could be stolen because it might appear to contain valuable goods (n=1). Two people indicated that it attracted the attention of the police and one person said they were identified as a drug user because of the kit.

Characteristics of administration events & individuals reporting them

Characteristics of participants

Table 2 summarizes the characteristics of individuals who reported 182 administration events to the program. The majority of individuals submitting administration information forms (92.1%) said they were the person who responded to the overdose, while 7.9% said that they were the person who overdosed. Most people who reported their gender were male (57.8%) and the mean age of people submitting forms was 39.6 years. Gender and age fields on the administration forms corresponded to the gender and age of the person completing the form. Accordingly, gender and age by reported role are reported in table 2.

Table 2: Characteristics of participants who reported events

Characteristic	No. Responses*	% Responses*
Role indicated by respondents (n=126)		
person who responded	116	92.1%
person who overdosed	10	7.9%
No response	56	
Gender, all respondents (n=147)		
Male	85	57.8%
Female	62	42.2%
Gender, responders to overdose (n=97)		
Male	57	58.8%
Female	40	41.2%
Gender, persons having an overdose (n=9)		
Male	5	55.6%
Female	4	44.4%
Age of all respondents, mean (range)[a]	39.6	(20-80)
Age of responders to overdose [b]	39.3	(21-80)
Age of people who overdosed [c]	37	(28-59)
Age, role unspecified [d]	40.8	(20-60)
* Except where otherwise indicated [a] 84 missing responses [b] 49 missing responses [c] 5 missing responses [d] 28 missing responses		

Overdose setting

Table 3 presents the health authority, location, and period of the program of the reported events. The majority of naloxone administration events (41.3%) were reported from Vancouver Coastal Health Authority, followed by Interior Health, Fraser Health and Island Health respectively. Northern Health accounted for only one event. 53.7% and 27.4% occurred in private residences and on the street respectively, while the remaining 24.6% were reported to have occurred within hotels, shelters, supportive housing and other settings. The majority of events were reported within the fourth quarter of the program. Each consecutive program period shows an increase in the number of events reported, possibly reflecting an increase in the availability and distribution of naloxone kits.

Factors related to naloxone administration

Table 4 presents reported withdrawal symptoms, reported aggression and number of naloxone ampoules administered. The vast majority (86.8%) of those who indicated whether or not the victim experienced withdrawal symptoms said that the person experienced no or mild withdrawal symptoms. Approximately 1/5 of respondents (19.6%) indicated that the person who received naloxone displayed aggression. One ampoule of naloxone was administered in 59% of responses; 2 were administered in 41.5% and 3 ampoules were reported to be administered in one event

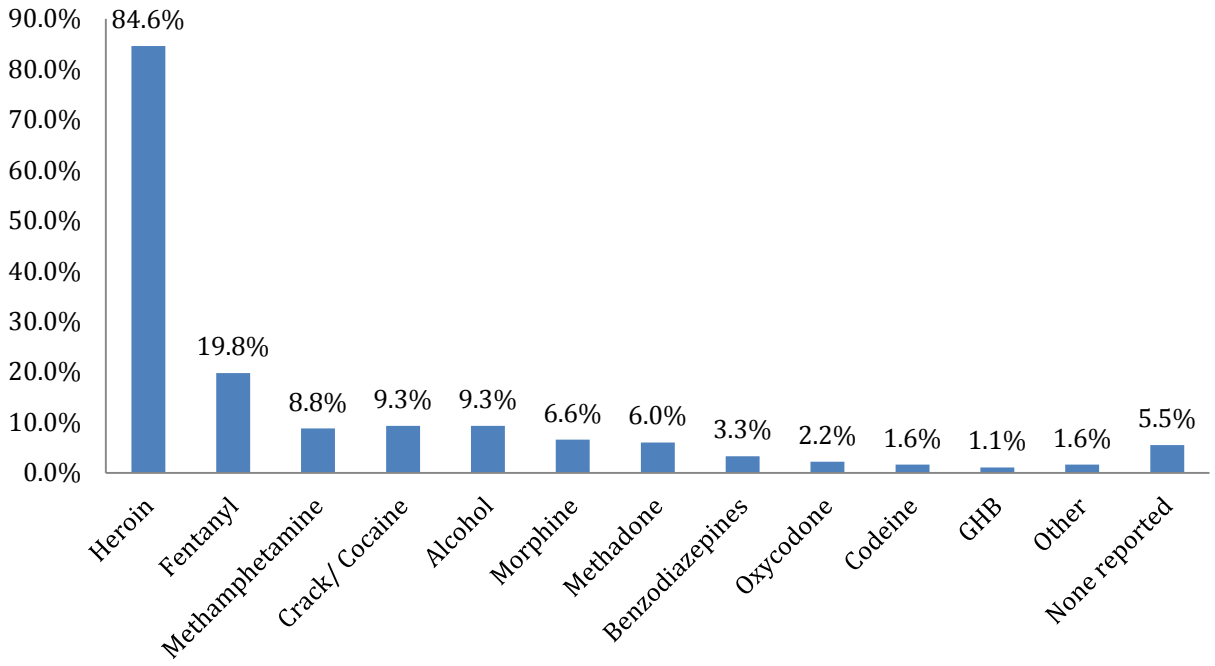
Table 3: Overdose setting

	No. of events	% of events
Health Authority	**179**	
Vancouver Coastal	74	41.3%
Interior	49	27.4%
Fraser	41	22.9%
Island	14	7.8%
Northern Health	1	0.6%
No response	3	
Location of overdose	**175**	
private residence	94	53.7%
on the street	38	21.7%
hotel	14	8.0%
other	12	6.9%
shelter	9	5.1%
supportive housing	8	4.6%
no response	7	
Program Period	163	
< 34.7 wks	14	8.6%
≥34.7 wks < 69.4 wks	31	19.0%
≥69.4 wks < 104.1 wks	54	33.1%
≥ 104.1 wks	64	39.3%

Table 4: Factors related to administration of naloxone

	No. Responses	% Responses
Withdrawal Symptoms	152	
none	78	51.3%
mild	54	35.5%
severe	20	13.2%
No response	30	
Aggression	143	
No	115	80.4%
Yes	28	19.6%
No response	39	
No. Ampoules Administered	164	
1	95	57.9%
2	68	41.5%
3	1	0.6%
No response	18	

Figure 1: Substances reported to have been used by the person experiencing the overdose (n=172)

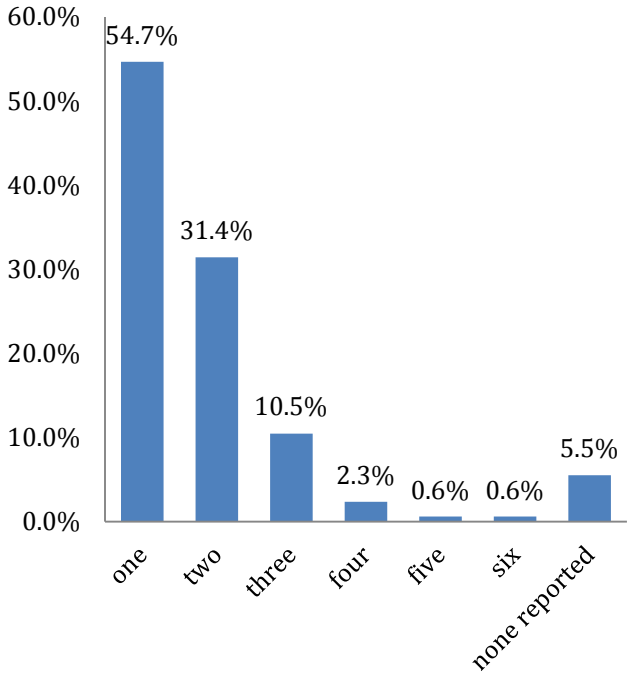


Substances reported to be involved

Figure 1 above presents substances reported to have been used by the person experiencing the overdose. Heroin was the most frequently reported drug - involved in 84.6% of overdose events. "Other" included Dilaudid (hydromorphone) (n=1) and "pharmaceuticals" (n=2). No substances were reported for 10 events; 32 reported use of a stimulant (methamphetamine or cocaine) and 24 reported use of a non-opioid respiratory depressant.

Figure 2 shows the number of substances reported to be involved by percentage of observations. The majority of events (54.7%) reported only one substance, while 31.4% reported two s and 10.5% reported three. Four events reported that four substances were involved, and five and six substances were reported in one event each.

Figure 2: Number of substances reported by proportion of events



Overdose recognition, response and preparedness

Figure 3 summarizes ways in which respondents reported recognizing that an overdose was occurring. Of 157 events where at least one reason was indicated, I00 respondents (63.7%) noted that it was because the person did not wake up; 97 (61.8%) reported that it was because the person did not respond to a sternal rub or other stimulation; 84 (53.5%) indicated that it was because the person had turned blue; while 78 (49.7%) said that it was because the person had stopped breathing. 45 respondents (28.7%) indicated one or more other ways in which they recognized the overdose. Other reasons included that the person fell (n=10); that the person had irregular movements or lack of movement (n=9); that the person had slowed or irregular breathing (9); that the responder was notified by someone else that the overdose was occurring (n=10); irregular behaviour (n=3); foaming at the mouth (n=2); that the person could not stay awake or was losing consciousness (n=3); that the person was cold (n=2); and that the person was throwing up (n=1).

Figure 3: Ways overdose was recognized (n=157)

Overdose response

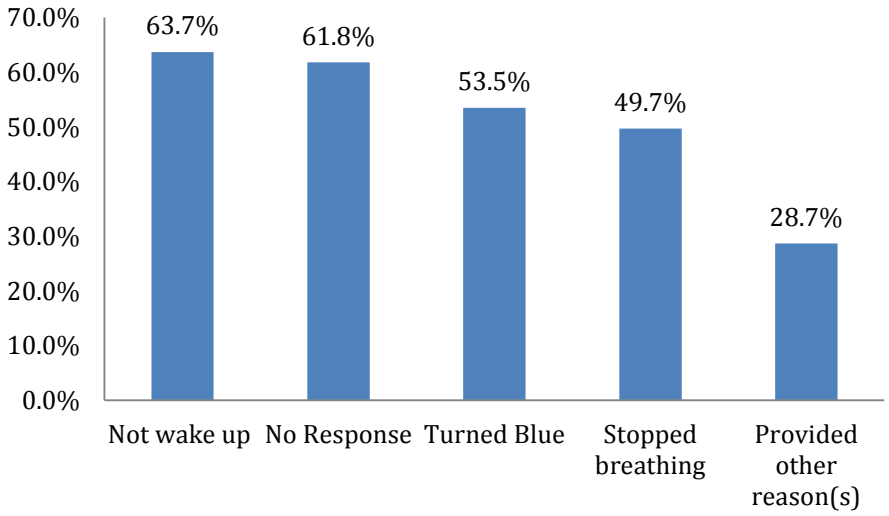
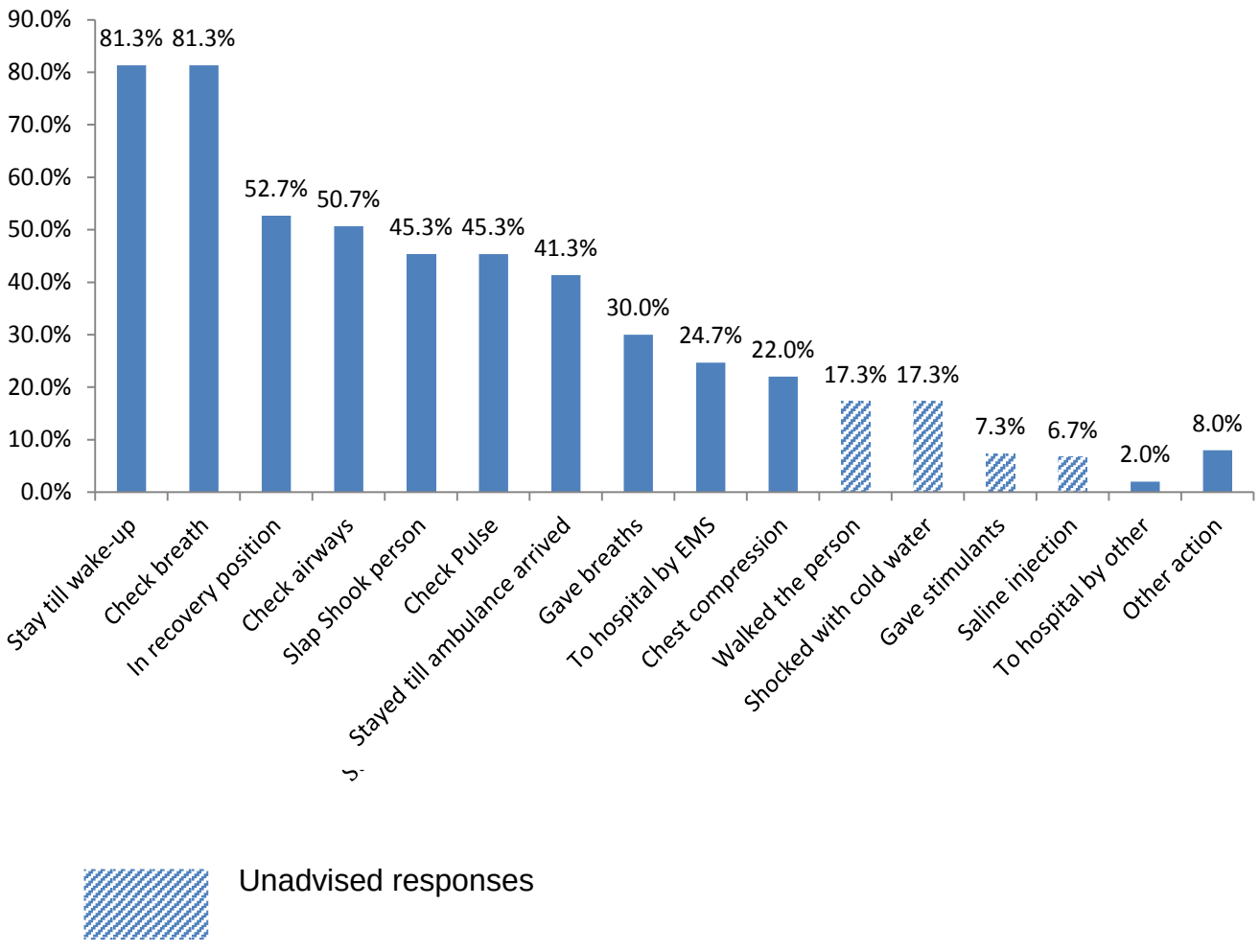


Figure 4: THN overdose response steps

Figure 5 summarizes responses reported for 150 events for which at least one response was reported. Responses promoted in THN overdose response training were among the most frequently reported. The responder checked the victim's airway in 50.7% of events; the victim's breathing was checked in 81.3%; 52.7% placed the victim in the recover position and in 81.3% events the person responding stayed with the victim until they woke up.

Responses which are not recommended in program training were reported less frequently. One or more inappropriate responses were reported in 38.7% of events. Saline injection was reported to be given in 10 cases (6.7%), while stimulants were given to the victim in 11 cases (7.3%). In 26 events (17.3%), respondents reported shocking the victim with cold water or walking the person. A large proportion of respondents indicated that the person who overdosed was slapped or shaken (45.3%). However, as there was no response option on the administration form which corresponded to sternal rub, this response category may reflect both indicated and inappropriate forms of stimulation. Twelve respondents indicated 15 other actions which were taken, including trying to verbally rouse the person (n=3), sternal rub (n=5), using a cold cloth (n=2), another form of physical stimulation (n=3), and leaving the person in the care of another party (n=2).

Figure 5: Overdose responses (n=150)



Training and preparedness

Of 152 individuals who responded to the question “did you feel you had enough training to give naloxone”, 147 respondents (96.7%) said that they felt they had received enough training to administer naloxone, while 5 (3.3%) said that had not. When asked what could be done to better prepare participants, 4 respondents stated that the person who administered had not received program training. Three respondents stated respectively that they would have benefited from practice administering on a dummy; from knowing that the victim can become violent and the duration of the violence; and from being more efficient at opening ampoules.

Calling 911 and police attendance

Rates of calling 911

Table 5 presents rates of calling 911 by selected variables. Higher rates of calling 911 were reported by females who completed administration forms, compared to males, while individuals aged 40 years and older reported higher rates of 911 being called during overdoses than those aged less than 40 years. Among the three health authorities where the majority of administration events were reported, 911 was called most frequently in Fraser Health (69.2%) and Vancouver Coastal Health (62.5%), while less often (21.7%) in Interior Health. 911 was less likely to be called during administration events which occurred in private residences (36.2%) compared to events that occurred on the street (78.9%) or in other settings, including shelters and supportive housing (77.8%). The rate of calling 911 has increased over time, 40.9% in first half of program compared to 69.6% in second half of the program.

The proportion of events where 911 was called were similar regardless of whether the victim was reported to have been using only one substance (46.7%) or multiple substances (50.6%). A lower proportion of events where the victim reportedly used a stimulant (37.5%) compared to those where no stimulant was used (56.0%), while events with use of depressants other than opioids reported that 911 was called more often compared to those cases without depressant use (62.5% and 51.0% respectively). 911 was called in a higher proportion of events where more naloxone ampoules were administered, perhaps reflecting perceived greater severity of the overdose or lack of response to the initial naloxone dose administered.

Multivariate logistic regression was conducted to compare the independent effects of some of the variables included in Table 5 (results not reported here). The overdose occurring in a location other than a private residence was associated with significantly higher odds of 911 being called after controlling for health authority, gender, reported withdrawal symptoms, program period, stimulant and the role of the person completing the administration form2. Health authority was not significant.

[2] This analysis was completed on a subset of observations which excluded those events where the person completing the administration form indicated they were the overdose victim, as the analysis was conducted to identify predictors of calling 911 among responders to the OD. “Role” referred to whether or not the person completing the form indicated that they responded or did not reply to this question.

Table 5: Rates of calling 911 by selected variables

	No. Responses	No. Called 911	No. Did not Call 911	% Called 911
Age categories (years)				
20-29	24	14	10	58.3%
30-39	22	12	10	54.5%
40-46	26	17	9	65.4%
47-80	24	16	8	66.7%
Gender				
Male	82	37	45	45.1%
Female	58	37	21	63.8%
Health Authority				
Vancouver Coastal	72	45	27	62.5%
Interior	46	10	36	21.7%
Fraser	39	27	12	69.2%
Island	13	8	5	61.5%
Northern	1	0	1	0.0%
Overdose Setting				
private residence	105	38	67	36.2%
on the street	38	30	8	78.9%
other	27	21	6	77.8%
Program Period				
< 69.4 weeks	44	18	26	40.9%
≥ 69.4 weeks	114	68	46	59.6%
Number of drugs				
1	90	48	42	46.7%
> 1	77	38	39	50.6%
Opioid use [a]				
Not reported	7	6	1	85.7%
Reported	166	85	81	51.2%
Stimulant use [b]				
Not reported	141	79	62	56.0%
Reported	32	12	20	37.5%
Depressant use [c]				
Not reported	149	76	73	51.0%
Reported	24	15	9	62.5%
No. ampoules administered				
< 2	94	46	48	48.9%
≥ 2	66	38	28	57.6%
Aggression				
no	112	65	47	58.0%
yes	28	12	16	42.9%

Withdrawal symptoms				
none	77	46	31	59.7%
mild	51	19	32	37.3%
severe	20	10	10	50.0%

[a] includes heroin, fentanyl, morphine, methadone, oxycodone, codeine, hydromorphone

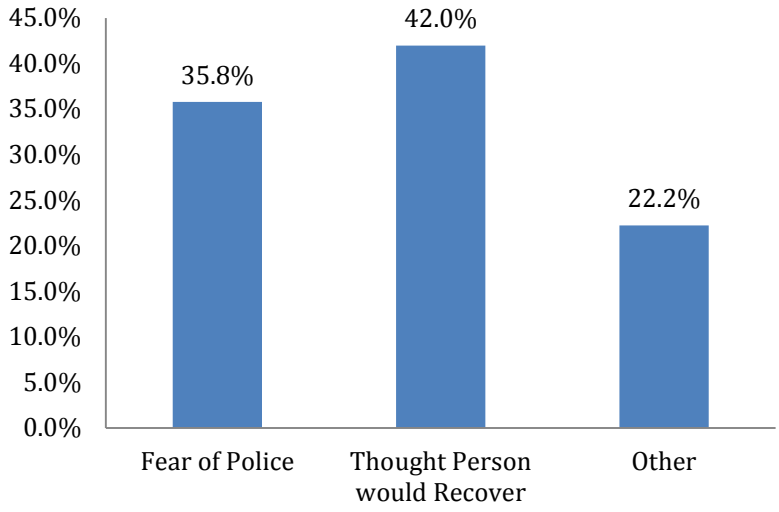
[b] includes methamphetamine, crack, cocaine

[c] includes alcohol, benzodiazepines, and GHB

Reasons indicated why 911 was not called

Reasons for not calling 911 were indicated in 81 out of 97 events in which 911 was not called and shown in figure 6. In 35.8% of events where a reason was provided, respondents indicated that they did not call 911 because they were afraid of police involvement. 42% of respondents indicated that they thought the person would recover, while in 22% of these events one or more reasons were provided. In five cases, respondents indicated that they did not perceive a need to call 911 because the situation was managed or because the person appeared to have recovered. In three cases, the overdose victim indicated that they did not want 911 called, and in two cases other bystanders prevented respondents from calling 911. Additional reasons cited included a concern about custody implications (n=1); that there were drugs at the location of the overdose (n=1); and that the person responding did not have a phone (n=1).

Figure 6: Reasons indicated why 911 was not called (n=81



Police attendance

Of 91 cases where 911 was called, police attended in 27 cases (45%) and did not attend in 33 cases (55%), while it was not indicated if police attended in 31 cases. Police were additionally reported to have attended one event in each of Island Health and Interior Health even where 911 was not reported to be called. Table 6 provides numbers and percentages of police attendance by health authority.

Table 6: Police attendance when 911 was called

	Attended	Did not attend	Not indicated	% Attended
Health Authority				
Vancouver Coastal	11	18	16	37.9%
Fraser Health	8	9	10	47.1%
Interior Health	5	3	2	62.5%
Island Health	3	3	2	50.0%

Recommendations

Based on the analysis of program data, we recommend the following:

- Four kits were reported confiscated in the first three months of 2015, and 9 in 2014. Continue to foster awareness regarding the program with law enforcement, particularly in areas of the province with new naloxone training sites.

- Participants reported that the overdose victim's airway was checked in approximately half of overdose events overall, and in 60% of overdoses that were recognized because the victim was not breathing. Consult with clients to identify barriers to these responses, which are emphasized in training and the program's SAVE ME overdose response model.

- At least one unadvised overdose response was reported in 38.7% of administration events. Emphasize that these responses have not been shown to be effective; that they may detract from appropriate responses in an emergency situation; and that some could be detrimental to outcomes (e.g. administering stimulants). In addition, encourage participants to discuss appropriate overdose responses with friends and family who are most likely to respond to potential overdoses.

- In 35.8% of cases where 911 was not called, participants indicated this was due to fear of police involvement. Remind program participants that they can say a person not breathing or is unconscious rather than indicating that a person is overdosing during 911 calls. Make participants in Vancouver aware of the Vancouver Police Department's policy of not attending apparent overdose calls.

- Several participants noted that another bystander at the scene of the overdose prevented the responder from calling 911. Encourage participants to discuss the importance of calling 911 with family and friends likely to witness overdoses, and ways to call 911 which minimize the likelihood of police involvement during calls.

- Create awareness regarding the program among law enforcement to avoid negative reactions among police if they attend overdose calls. Support strategies among law enforcement that encourage calling 911 among participants, such as policies limiting police attendance at apparent overdose calls.

- Rates of calling 911 were lower in private residences compared to other overdose settings, and setting of overdose was found to be independently associated with calling 911. In addition to supporting policies to address police involvement, consult with clients to identify other barriers to calling 911 when responding to overdoses in private residences.