Title: Police Officer Attitudes towards Intranasal Naloxone Training

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1. Introduction

The rate of fatal drug overdose has increased by nearly 600% over the past three decades and many of these overdoses are now attributed to opioid analgesics such as oxycodone, hydrocodone, and methadone (Calcaterra et al., 2013; Warner et al., 2011). Naloxone is an opioid antagonist that reverses the respiratory depression that occurs during an overdose. Many drug overdoses are witnessed by others and can be prevented if naloxone is used to intervene (Tracy et al., 2005; Sporer et al., 1996). For more than 40 years naloxone has been used by emergency medical personnel to reverse overdose (Clarke et al., 2005) though more recently there has been a growing trend in expanding those who can administer naloxone ranging from alternative public safety providers to community-based opioid overdose prevention programs providing naloxone (CDC, 2012; Beletsky, Rich, and Walley, 2012).

One example of public safety expansion has been training and distributing naloxone to law enforcement officers (Davis et al., 2014; Wermeling, 2010). Police are often at the scene of an overdose prior to emergency medical personal and so equipping officers with naloxone and training them to detect the signs of an opioid overdose could help to reduce rates of fatal overdose. While paramedics typically administer naloxone using a needle, police officers are generally being equipped with intranasal naloxone, an aerosol spray absorbed through the nasal mucosa which is just as effective, considered easier to administer, and eliminates the risk of needle exposure for police officers (Kerret al., 2009; McDermott and Collins, 2012).

Recent research suggests that police officers are concerned about opioid overdose and frustrated by their inability to help (Green et al., 2013). As police departments across the United States continue to implement naloxone training, no research has attempted to examine or assess

this training. Our research attempts to fill this gap by analyzing survey data of police officer attitudes of intranasal naloxone training

2. Methods

Over a two-week period in spring 2014, all of the officers in the Indianapolis Metropolitan Police Department's (IMPD) Southwest District were required to attend intranasal naloxone training. A total of 22 training sessions occurred after officer roll calls. Each officer attended only one training session, each session was approximately 20-25 minutes, and the number of officers ranged from 4-8 per session. All of the trainings were conducted by one of three trained emergency medics from Indianapolis Emergency Medical Services (IEMS). Training content included the pathophysiology of opioid overdose; the need for law enforcement naloxone delivery; the signs and symptoms of opioid overdose using images and videos; how naloxone works and a demonstration of how to administer it using the mucosal atomizer device; and the intended effects and rare incidence of combativeness following naloxone. Finally, trainers emphasized the importance of naloxone for respiratory failure and highlighted the safety of intranasal naloxone specifically addressing the minimal side effect profile.

Immediately following each training session officers were asked to complete a short survey. Officers were informed that responses are voluntary and anonymous. The survey was designed and administered by university researchers and was determined to be exempt from human subjects' regulations by IRB. The survey asked about prior experience with opioid overdose; perceived difficulty administering naloxone; and the importance of having police present at an opioid overdose scene (se Banta-Green et al. 2013). To capture attitudes following training we included items from the Opioid Overdose Attitudes Scale (OOAS) developed by

Williams et al. (2013). The OOAS was originally constructed to evaluate a take-home naloxone training provided to family members of drug users and consists of 28 Likert-scale items designed to measure three constructs: perceived ability to manage an overdose situation (competence), concerns dealing with an overdose (concerns), and willingness to intervene in overdose situations (readiness). We did not include all of the OOAS items due to restrictions on time and because some of the items were geared specifically toward the take-home syringe intervention.

3. Results

A total of 119 officers attended the training; however, two of them left without taking the survey, leaving 117 completed survey instruments. The number of years served as an officer ranged from 1 to 39; (M = 17.26; SD = 9.09). Nearly all of the officers (93.2%) had been at the scene of opioid overdose in the past year: 23.1% having seen less than 3, 29.9% between 3 and 5, 10.3% between 6 and 8, 10.3% between 9 and 11, and 22.2% having seen 12 or more overdoses in the past year. Half of the officers (49.6%) had been at the scene of an overdose in the past month; 46.2% had been at the scene sometime within the past three months, 1.7% more than a year ago, and 2.6% had never witnessed an overdose.

3.1 Perceived Difficulty and Importance of Naloxone

Responses to the survey items asking about the perceived difficulty and importance are displayed in Table 1 and show that all of the respondents indicated that the training was not difficult and vast majority reported that it would not be difficult to use naloxone at the scene of an overdose (89.7%). Among the importance questions respondents felt it was more important for officers to be at the scene of an overdose to project medical personnel (97.4%) than to

enforce the law (77.0%). Finally, a majority of the officers felt that it was important that other officers be trained to use naloxone (82.9%).

3.2 Officer Responses to the Opioid Overdose Attitudes Scale

The responses to the OOAS items are presented in Table 2. Each of statements is on a 5-point Likert scale though for presentation the agreement (completely agree and agree) and disagreement (completely disagree and disagree) categories on the survey are combined (see Williams et al., 2013). For the competency items the results suggest that the majority of officers felt that they did not need additional naloxone training (Item 1) and that they knew how to help someone who is overdosing (Items 2-4). The items measuring concern had similarly positive responses with officers suggesting that would not fear aggression or withdrawal symptoms as a result of naloxone (Item 5- 6) nor worry they concerned about injuring the overdosing victim or doing something wrong during the overdose (Items 7-8). Among the readiness items there was a general consensus among the officers in towards wanting and being able to help overdose victims (Items 10-11 and 13-15); however, the readiness items asking officers how others should act—rather than those that ask how they themselves would react—had less consensus. Specifically, less than three-quarters agreed (Item 12) that family and friends should be prepared to deal with an overdose and only one-quarter (Item 9) felt that everyone at risk of witnessing an overdose should have access to naloxone.

For each OOAS construct we conducted exploratory factor analysis to determine how closely the items related as a group and then created an additive scale value for the construct based on the items selected in the factor analysis. Each of the OOAS statements are scored on a 5-point Likert scale with completely agree coded as a 5 and completely disagree coded as a 1.

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When necessary items were reverse coded so that higher values indicated a greater amount of each construct. The competency items had a Cronbach's alpha of 0.72 and a mean score of 16.43 (SD = 2.78). The concern items had a Cronbach's alpha of 0.85 and for this scale higher values mean greater concern; therefore, the low mean of 7.24 (SD = 2.83) suggests that officers had little concern about administering naloxone. The Cronbach's alpha for all seven readiness items was 0.61. This is relatively low and so to examine this further, we conducted an exploratory Varimax rotation procedure to see which of the items loaded best and found that extracting Items 9 and 12 resulted in a Cronbach's alpha of 0.80. This five item readiness scale has a mean of 20.58 (SD = 3.32).

3.3 Officer Attitudes by Experience with Opioid Overdose

Using the additive scale values of the OOAS constructs described above, we examined differences in attitudes by the officer's experience with overdose. We created dichotomous measures of officer frequency (1 = 6 or more, 0 = 5 or less) and recentness (1 = within past month, 0 = within past 12 months, more than a year, and never) to conduct *t*-tests by each of the three constructs. Officers who had more frequently been at the scene of an opioid overdose (42.7%; $n = 50$) had significantly higher competency scores than those who had not (17.36 and 15.73, $t = 3.33$, $p < .001$) as did those who had more recently (i.e., within the past month) been at the scene of an overdose (49.6%; $n = 58$; 17.01 and 15.88, $t = 2.17$, $p < .01$). There were no significant differences in concern or readiness though. To examine this further we created a dichotomous variable that captured those officers with the most experience: those who had been at 6 or more opiate overdose scenes *and* within the past month (35.0%; $n = 41$). These officers

had significantly higher competency scores (17.51 and 15.84, $t = 3.32$, $p < .001$) and lower

concern scores than those with less experience (6.53 and 7.62, $t = 2.10$, $p < .05$).

4. Discussion

It has become increasingly common to equip law enforcement with naloxone though to-

date no study has attempted to capture officer attitudes following training. The present study

attempts to fill this gap by surveying a district of officers who had recently been trained to use

intranasal naloxone. While this survey was exploratory in scope, our analysis revealed several

noteworthy findings. First, responses overwhelmingly suggest that naloxone training was not

difficult and that trained officers felt it would be relatively simple to use naloxone at the scene.

Moreover, officers felt that others should be trained to use naloxone. Second, to capture

attitudinal outcomes we included several items from the OOAS of Williams et al. (2013). Results

show that officers had positive attitudes following naloxone training and exploratory factor

analysis found internal consistency among the three constructs. The only items that lacked

consensus were Items 9 and 12 which asked about how others, rather than the officers

themselves, should act regarding overdose. Third, we explored variation in the OOAS subscales

by officer's experience with overdose and found that those officers who had the most experience

with opioid overdose felt more competent and concerned following training than those with less

experience. As the distribution of naloxone to law enforcement continues to proliferate, this may

be important to consider as officers who have little experience with overdose (e.g. live in areas

where overdose occurs less frequently) may be reluctant regarding naloxone training.

It is also important to note the overall success of the naloxone training in terms of

implementation and officer reactions. This study suggests an entire police department was

overwhelmingly receptive towards a harm reduction policy aimed to reduce fatal opioid overdose. This is consistent with other studies examining collaborations between public health and law enforcement agencies which so that police are often receptive to harm reduction programs (see Silverman et al., 2012; Davis and Beletsky, 2009; Beletsky, Machalino, and Burris, 2005),

Although our study provides a benefit to the literature it is not without its limitations. We were unable to conduct a pre-post analysis, or have a comparison group, which are necessary to truly measure the effect of the training on attitudes. Given that this was a "pilot" intervention we focused on using this opportunity to validate the OOAS. Future research should consider incorporating the Opioid Overdose Knowledge Scale (OOKS)— true/false questions that measure knowledge about overdose risk factors, signs, actions to be taken, and aftercare procedures—to look at changes before and after training (see Williams et al., 2013).

In conclusion, distributing naloxone to police officers is trend that is likely to continue and this study represents a first step in understanding how officers are responding to this intervention. Future research should focus on understanding how often officers use naloxone and assessing the impact of this intervention on the rate of fatal overdose in the community.

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Table 1

Officer Responses to Survey Items Measuring Difficulty and Importance

	Not difficult at all *N* (%)	Not very difficult *N* (%)	Somewhat difficult *N* (%)	Very difficult *N* (%)
How difficult was the training to administer nasal naloxone that you received today?	85 (72.6)	32 (27.4)	0 (0.0)	0 (0.0)
How difficult will it be to use nasal naloxone at the scene of an opioid overdose?	50 (42.7)	55 (47.0)	12 (10.3)	0 (0.0)
How difficult would it be to train civilians to use nasal naloxone?	39 (33.3)	71 (60.7)	6 (5.1)	1 (0.9)
	Very important *N* (%)	Somewhat important *N* (%)	Not very important *N* (%)	Not important at all *N* (%)
How important is it for police to be at the scene of an overdose to keep medical personnel safe?	84 (71.8)	30 (25.6)	3 (2.6)	0 (0.0)
How important is it for police to be at the scene of an overdose to enforce the law?	43 (36.8)	47 (40.2)	22 (18.8)	5 (4.3)
In your opinion, how important is it that other police officers be trained to use nasal naloxone?	51 (43.6)	46 (39.3)	12 (10.3)	8 (6.8)

Table 2

Officer Responses to the Opioid Overdose Attitudes Scale

	Agree N (%)	Unsure N (%)	Disagree N (%)
Competency items			
1 I am going to need more training before I would feel confident to help someone.	8 (6.8)	8 (6.8)	101 (86.3)
2 I know very little about how to help someone who has overdosed.	10 (8.5)	5 (4.3)	102 (87.2)
3 If someone overdoses, I would know what to do to help them. [a]	101 (86.3)	4 (3.4)	12 (10.3)
4 I would be able to deal effectively with an overdose. [a]	97 (82.9)	11 (9.4)	9 (7.7)
Concern items			
5 I would be afraid of giving naloxone in case the person becomes aggressive afterwards.	6 (5.1)	7 (6.0)	104 (88.9)
6 I would be reluctant to use naloxone for fear of precipitating withdrawal symptoms.	4 (3.4)	4 (3.4)	109 (93.2)
7 If I tried to help someone who has overdosed, I might accidentally hurt them.	4 (3.4)	9 (7.7)	104 (88.9)
8 I would be afraid of doing something wrong in an overdose situation.	12 (10.3)	12 (10.3)	93 (79.5)
Readiness items			
9 Everyone at risk of witnessing an overdose should be given a naloxone supply. [a]	30 (25.6)	33 (28.2)	54 (46.2)
10 I couldn't just watch someone overdose, I would have to do something to help.	95 (81.2)	10 (8.5)	12 (10.3)
11 If someone overdoses, I would call an ambulance but I wouldn't be willing to do anything else.	2 (1.7)	0(0.0	115 (98.3)
12 Family and friends of drug users should be prepared to deal with an overdose. [a]	85 (72.6)	12 (10.3)	20 (17.1)
13 If I saw an overdose, I would panic and not be able to help.	11 (9.4)	5 (4.3)	101 (86.3)
14 I will do whatever is necessary to save someone's life in an overdose situation.	97 (82.9)	14 (12.0)	6 (5.1)
15 If someone overdoses, I want to be able to help them.	101 (86.3)	11 (9.4	5 (4.3

N = 117; a = reverse coded for scale