Attitudes of Emergency Medical Service Providers Toward Naloxone Distribution Programs

Karin E. Tobin, Wade R. Gaasch, Carla Clarke,
Ellen MacKenzie, and Carl A. Latkin

ABSTRACT *Training and distributing naloxone to drug users is a promising method for reducing deaths associated with heroin overdose. Emergency Medical Service (EMS) providers have experience responding to overdose, administering naloxone, and performing clinical management of the patient. Little is known about the attitudes of EMS providers toward training drug users to use naloxone. We conducted an anonymous survey of 327 EMS providers to assess their attitudes toward a pilot naloxone program. Of 176 who completed the survey, the majority were male (79%) and Caucasian (75%). The average number of years working as an EMS provider was 7 (SD=6). Overall attitudes toward training drug users to administer naloxone were negative with 56% responding that this training would not be effective in reducing overdose deaths. Differences in attitudes did not vary by gender, level of training, or age. Providers with greater number of years working in EMS were more likely to view naloxone trainings as effective in reducing overdose death. Provider concerns included drug users' inability to properly administer the drug, program condoning and promoting drug use, and unsafe disposal of used needles. Incorporating information about substance abuse and harm reduction approaches in continuing education classes may improve the attitudes of provider toward naloxone training programs.*

KEYWORDS *Drug users, EMS providers, Naloxone, Overdose prevention.*

INTRODUCTION

Mortality among drug users is excessively high. Causes of mortality among drug users include infectious diseases such as AIDS and hepatitis, trauma due to violence such as homicide and suicide, and drug abuse related causes such as cirrhosis. Despite these causes of mortality, overdose remains one of the leading causes of death among drug users.¹⁻³ During the 1990s, rates of overdose fatalities increased in many US cities.⁴ In Baltimore city, the numbers of deaths due to drug overdose have consistently exceeded that of homicide from 2001 to 2003.^{5,6} Efforts are needed to prevent overdose related mortality.

Drs. Tobin, MacKenzie, and Latkin are with the Department of Health Policy and Management, Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland; Dr. Gaasch is with the Department of Surgery, Division of Emergency Medicine, University of Maryland School of Medicine, Baltimore, Maryland; and Ms. Clarke is with the School of Public Health, Morgan State University, Baltimore, Maryland.

Correspondence: Karin E. Tobin, PhD, Department of Health Policy and Management, Johns Hopkins Bloomberg School of Public Health, 1629 East Baltimore Street, Baltimore, MD 21231. (E-mail: ktobin@jhsph.edu)

Naloxone administration training and distribution programs that target drug users are a promising method for reducing deaths associated with heroin overdose. Naloxone is an opiate antagonist that reverses respiratory failure associated with acute narcosis.^{7,8} Naloxone can be injected intramuscularly or intravenously and can be administered intranasally through a spray.⁹ Naloxone has no abuse potential, and medical complications from its use are uncommon.⁸ One of the primary benefits of training drug users to administer naloxone is increasing the likelihood of rapid intervention after the onset of opiate overdose that restores respiration.

Pilot programs training drug users to administer naloxone in the United States have been conducted in Chicago¹⁰ and San Francisco.¹¹ Results from these studies suggest that training drug users to competently administer naloxone is feasible. Moreover, providing trained drug users with prescribed naloxone has prevented deaths from opiate overdose. Results from two pilot programs in Germany report no adverse effects from peer-administered naloxone,¹² and surveys conducted among injection drug users reveal favorable attitudes toward overdose prevention programs that involve naloxone.^{13,14} Additionally, Coffin et al.¹⁵ report a substantial number of health care providers in New York City who would prescribe drug users naloxone for overdose prevention.

Few studies have assessed the attitudes of EMS providers toward overdose prevention programs involving naloxone administration. As first responders to opiate overdose calls, EMS providers have clinical experience administering naloxone and evaluating other medical complications that may occur as because of the overdose such as hypotension, pulmonary edema, or neuropathy.¹⁶ As experts in opiate overdose management, EMS providers can provide guidance about the skills that drug users should be trained to perform during overdose.

We sought to assess the attitudes of a sample of urban EMS providers toward naloxone training programs and to identify their concerns. The goals of naloxone training programs are to provide injection drug users with naloxone after participants are trained in administration, rescue breathing, and reporting of overdose to emergency medical service providers.

METHODS

Sample

Data were collected for this study using self-administered anonymous surveys that were distributed to Baltimore area EMS providers who were attending a continuing education class from September 3, 2003 through September 30, 2003. Completion of the survey was not mandatory. EMS providers were not provided an incentive to complete the survey. Three hundred and twenty-seven EMS providers were given surveys and preaddressed stamped envelopes to return the survey to the investigators. The Johns Hopkins Bloomberg School of Public Health Committee on Human Research approved this study.

Measures

Participants reported their age, ethnicity, and gender. Participants specified the number of years they have worked in the Baltimore area and their highest level of training as an EMS provider (certified resuscitation technician, intermediate, or paramedic).

Attitudes Toward Naloxone Training Programs

Participants were asked if they had ever heard of naloxone training programs (yes vs. no). Participants were asked to rate how effective they thought that training drug users to administer naloxone and perform mouth-to-mouth resuscitation would be reducing overdose deaths, reducing calls to 911, and reducing drug use. Participants responded using a three-point scale (very effective, somewhat effective, or not effective). A dichotomous outcome variable was created to indicate where 0, "participant did not think that training drug users to administer naloxone was effective in reducing deaths," versus 1, "participant viewed training as effective."

The open-ended question, "What are your concerns about training drug users to administer naloxone during drug overdose?" was asked to all participants. Their responses were examined for common themes and then categorized into a nine-category nominal variable. Participants were asked whether they thought that EMS providers should be involved in training drug users on overdose prevention or to administer naloxone. Participants responded using a three-point scale (agree, neither, disagree).

Attitudes toward continuing education

Participants were queried about their interests in continuing education classes about drug users and their health issues and addiction. Participants were also asked about their interest in participating in a program to train drug users to prevent overdose. Participants used a three-point scale as responses (agree, neither, disagree).

Statistical Analyses

Univariate statistics were conducted. Bivariate statistics were used to compare the outcome variable, effectiveness of Narcan training in reducing deaths, on association with demographic and attitude correlates. Two-sided *t* tests were used to compare continuous variables, and the Fisher's χ^2 statistic was used to compare proportions.

RESULTS

The response rate was 54% ($n=176$). Of the 176 surveys that were returned, 22 cases were dropped because of missing data on attitudes toward naloxone training programs. The most of the remaining sample ($n=154$) was male (79%) and White (75%). The mean age was 34 ($SD=8$). The average number of years working as an EMS provider was seven ($SD=6$). Forty-three percent of the sample were trained at the paramedic level, 14% at the intermediate level and 42% at the certified resuscitation technician level. Approximately three quarters of the sample (74%) reported having heard of a naloxone program. Half of these participants cited the newspaper as their source of information, and one third reported having heard from a coworker (34%).

Table 1 presents the frequencies of attitudes toward the effectiveness of training drug users to administer naloxone. The majority did not view naloxone training with drug users as effective in reducing overdose deaths (56%), decreasing drug use (89%) or calls to 911 (69%). Few reported that EMS providers should be trained to teach drug users about overdose prevention or naloxone administration (Table 2). Two thirds of the sample (64%) reported no interest in participating in a program to train drug users to prevent overdose. However, approximately one third of the sample reported interest in a class about addiction or about drug users and their health issues.

TABLE 1. Attitudes of 154 Emergency Medical Service providers on the effectiveness of training drug users to administer naloxone

	Very effective N (%)	Somewhat effective N (%)	Not effective N (%)
How effective so do you think training drug users to <i>administer</i> naloxone will be in			
Reducing overdose deaths	9 (6)	55 (37)	84 (56)
Reducing drug use	3 (2)	14 (9)	137 (89)
Reducing 911 calls	10 (7)	38 (25)	105 (69)
How effective do you think training drug users to perform <i>rescue breathing</i> will be in reducing overdose deaths	13 (9)	31 (20)	110 (71)

TABLE 2. Attitudes of 154 Emergency Medical Service providers on naloxone training programs

Variable	Agree N (%)	Neither N (%)	Disagree N (%)
Emergency Medical Technicians (EMTs) should train drug users to administer naloxone	12 (8)	18 (12)	122 (80)
EMTs should be trained to teach drug users about overdose prevention	31 (21)	24 (16)	96 (64)
I would be interested in a continuing education course to learn more about drug users and their health problems	54 (36)	32 (21)	65 (43)
I would be interested in a continuing education course to learn more about addiction	47 (30)	33 (22)	72 (48)
I would be interested in participating in a program to train drug users to prevent overdose	23 (15)	31 (21)	97 (64)

Table 3 presents differences in provider attitudes toward the effectiveness of training drug users to administer naloxone on reducing overdose deaths. No differences were observed in attitude by age, gender, or level of EMS provider training. EMS providers who viewed naloxone training as effective in reducing deaths reported working in the city for more years (9 years vs. 6 years, $P=.02$). In a separate analysis, a greater proportion of those who viewed naloxone as effective in reducing deaths reported interest in participating in an overdose prevention program for drug users ($P<.01$) and agreed that EMS providers should train drug users in overdose prevention ($P<.05$).

Ninety-seven participants (63% of the sample) responded to the question, “What are your concerns about training drug users to administer naloxone to an overdose victim?” Concerns included drug users’ lack of training to properly assess the victim, administer naloxone, perform rescue breathing, and monitor the victim for overdose relapse. Specifically, some respondents were concerned about a drug user’s ability to manage the airway, deal with air embolism, and inject naloxone into the victim’s heart instead of deltoid or gluteal muscle. Participants also reported concerns that naloxone programs condone drug use, do not address the problem of addiction, and increase the rate of overdose because of lack of fear

TABLE 3. Differences in Emergency Medical Service provider attitudes toward the effectiveness of training drug users to administer naloxone on reducing overdose deaths (n = 154)

Variable	How effective do you think training drug users to administer naloxone will be in reducing overdose deaths		Fisher's exact χ^2
	Not effective	effective	
Gender n (%)			
Male	63 (75)	59 (84)	0.17
Female	21 (25)	11 (16)	
Level of training n (%)			
EMT-Certified Resuscitation Technician	37 (45)	27 (40)	0.13
EMT-intermediate	15 (18)	6 (9)	
EMT-paramedic	31 (37)	35 (51)	
Mean years working (SD)	6 (5)	9 (7)	0.50*
Mean age (SD)	34 (7)	35 (9)	

*Two-sided *t* test.

about risk of death. Concern about theft of naloxone from the medic units, liability of paramedics who arrive at the scene after naloxone is administered, and the increase of dirty needles in the community were also mentioned.

DISCUSSION

Few studies have reported on the attitudes of EMS providers toward overdose prevention programs that involve naloxone. From this anonymous survey we report pessimistic attitudes toward the effectiveness of this type of program. Many of the concerns were related to the skill level of drug users in administering naloxone and evaluating the overdosed victim's condition. Some of this may arise from the extensive level of training that EMS providers receive administering naloxone intravenously, which differs from intramuscular injection. Pilot naloxone programs that have been implemented in San Francisco and Chicago have included thorough instruction and practice on giving intramuscular injections into the deltoid or gluteal muscles.¹¹ Intranasal naloxone is an alternative route of administration for drug users who are unable to properly use the intramuscular method, though it is likely that most injection drug users will be able to properly administer naloxone intramuscularly.^{10,11} Monitoring the overdose victim is discussed during trainings, and drug users are informed about the half-life of naloxone and the risk of relapse into overdose. Additionally, drug users are encouraged to call EMS after administering naloxone so that providers can evaluate for other medical complications. Calling EMS for an overdose is not a common response because of fear of police involvement and risk of arrest. It is unclear whether naloxone training programs will affect rates of utilizing EMS. On the one hand, drug users who have been provided with information about the medical consequences of overdose (e.g., pulmonary edema) may be more likely to seek medical evaluation by using EMS after an overdose. Alternatively, drug users may be less likely to utilize EMS if the victim regains

consciousness and resumes breathing. Future research evaluating naloxone training programs should monitor EMS-utilization rates for drug-overdose-related calls.

Although we did not directly assess how prepared providers feel in attending to drug users and issues of addiction, overall the survey results documented a general negative attitude toward drug users. For example, only 8% of the respondents agreed that EMS providers should train drug users in naloxone administration. This attitude is not surprising because of the usual types of encounters among drug users and EMS providers. Opiate use is illegal and many drug users fear arrest and therefore deny drug consumption to providers. Moreover, sudden resuscitation by use of naloxone from a drug overdose can be traumatic to the drug user resulting in hostile or erratic behavior. Providers may perceive that resuscitated victims are ungrateful for their life-saving services. The results of this study suggest that it may be beneficial to provide EMS providers training about behavioral and pharmacological aspects of addiction. EMS providers frequently treat drug users for many other medical conditions in addition to overdose. These interactions are unlikely to decrease; hence, improving the quality of these interactions, through enhanced education classes, may increase provider effectiveness and reduce burnout.

As this was a brief anonymous survey, several study limitations warrant attention. The generalizability of the results to the providers who did not respond to the survey is limited because of low response rate. Furthermore, we cannot generalize these results to providers in other cities. We did not collect detailed information about the attitudes of EMS providers toward drug users and experiences that lead to these attitudes which may modify attitudes toward programs targeting drug users.

In addition to preventing drug user fatalities, naloxone distribution programs have the potential to be mutually beneficial to providers by limiting physical complications from respiratory arrest, thus minimizing critical care situations. Incorporating information about substance abuse and harm reduction approaches in continuing education classes may improve provider's understanding about drug users and influence their attitudes toward the benefit of naloxone trainings. To improve EMS education, future research should document provider attitudes toward drug users, knowledge about addiction, and observe interactions between drug users and EMS providers.

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