



## Original Contribution

# Intranasal naloxone administration by police first responders is associated with decreased opioid overdose deaths<sup>☆,☆☆</sup>



Jessica Rando, MD<sup>a,\*</sup>, Derek Broering, MD<sup>a</sup>, James E. Olson, PhD<sup>a</sup>,  
Catherine Marco, MD<sup>a</sup>, Stephen B. Evans, MD, PhD<sup>b</sup>

<sup>a</sup> Wright State University, 3640 Colonel Glenn Hwy, Dayton, OH, USA 45435

<sup>b</sup> Lorain County Coroner, 5 South Main St, Suite 304, Oberlin, OH, USA 44074

## ARTICLE INFO

## Article history:

Received 1 April 2015

Received in revised form 20 May 2015

Accepted 20 May 2015

## ABSTRACT

**Objective:** This study sought to answer the question, “Can police officers administer intranasal naloxone to drug overdose victims to decrease the opioid overdose death rate?”

**Methods:** This prospective interventional study was conducted in Lorain County, OH, from January 2011 to October 2014. Starting October 2013, trained police officers administered naloxone to suspected opioid overdose victims through a police officer naloxone prescription program (NPP).

Those found by the county coroner to be positive for opioids at the time of death and those who received naloxone from police officers were included in this study. The rate of change in the total number of opioid-related deaths in Lorain County per quarter year, before and after initiation of the NPP, and the trend in the survival rate of overdose victims who were given naloxone were analyzed by linear regression. Significance was established a priori at  $P < .05$ .

**Results:** Data from 247 individuals were eligible for study inclusion. Opioid overdose deaths increased significantly before initiation of the police officer NPP with average deaths per quarter of 5.5 for 2011, 15.3 for 2012, and 16.3 for the first 9 months of 2013. After initiation of the police officer NPP, the number of opioid overdose deaths decreased each quarter with an overall average of 13.4. Of the 67 participants who received naloxone by police officers, 52 (77.6%) survived, and 8 (11.9%) were lost to follow-up.

**Conclusions:** Intranasal naloxone administration by police first responders is associated with decreased deaths in opioid overdose victims.

© 2015 Elsevier Inc. All rights reserved.

## 1. Introduction

### 1.1. Background

Drug overdoses are a leading cause of preventable mortality. Unintentional poisoning, primarily due to drug overdose, is now the leading cause of injury-related death among Americans aged 25 to 64 years, surpassing deaths caused by motor vehicle accidents [1]. Approximately 45 deaths per day in the United States involve prescription painkillers. The

rapidly rising number of deaths secondary to drug overdoses constitutes an epidemic in the United States. Overdose of prescription opioids, such as oxycodone, hydrocodone, and methadone, is largely responsible for this epidemic, now killing more Americans than heroin and cocaine combined [2].

Ohio's death rate due to unintentional drug overdoses increased 372% from 1999 to 2010 [3,4] with 1544 deaths recorded in 2010 [3]. In large part, this increase in the number of drug overdose deaths is due to the rise in opioid-related overdose deaths (Fig. 1). In 2010, 63% of fatal drug overdoses involved an opioid, either prescription or heroin, an increase from 55% in 2009 [3]. Specifically, prescription opioid fatal overdoses as a percentage of the total number of overdose deaths were fairly constant at 37% from 2001 to 2009 but increased to more than 42% from 2010 to 2012. This increase represents an additional 261 deaths in Ohio. Similarly, the percentage of heroin overdose deaths nearly doubled from an average of 14% from 2001 to 2009 to more than 27% from 2010 to 2012 [3,5].

Naloxone hydrochloride (Narcan), an opioid antagonist, is a medication that can be safely administered via intravenous, intramuscular, subcutaneous, or intranasal routes. Within minutes, naloxone blocks the central effects of opioids, thus reversing respiratory depression and

<sup>☆</sup> Financial support: Mercy Regional Medical Center in Lorain, OH; University Hospitals Elyria Medical Center in Elyria, OH; and various local police departments in Lorain, OH, provided funding for the Narcan rescue kits.

<sup>☆☆</sup> Meetings: Abstract poster presented at Ohio American College of Emergency Physicians, ACEP, meeting in Columbus, OH, on August 14, 2014.

\* Corresponding author at: 3525 Southern Blvd, Kettering, OH, USA 45429. Tel.: +1 937 395 8839.

E-mail addresses: [Jessica.rando718@gmail.com](mailto:Jessica.rando718@gmail.com) (J. Rando), [broering.15@wright.edu](mailto:broering.15@wright.edu) (D. Broering), [james.olson@wright.edu](mailto:james.olson@wright.edu) (J.E. Olson), [Catherine.marco@wright.edu](mailto:Catherine.marco@wright.edu) (C. Marco), [coronerloraincounty@hotmail.com](mailto:coronerloraincounty@hotmail.com) (S.B. Evans).

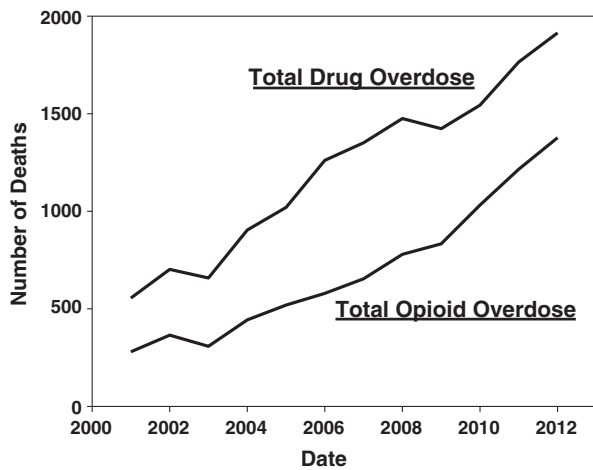


Fig. 1. Number of drug overdose-related deaths in Ohio by year.

restoring normal breathing [6]. Naloxone has been used by emergency medical professionals safely for over 40 years. Intranasal naloxone has shown to be an effective and safe alternative to intramuscular administration, as it is quick acting and offers a needleless option for administration [7]. Its only contraindication is known hypersensitivity to the medication [6].

### 1.2. Importance

Multiple programs have been initiated across the United States to reduce the incidence of opioid overdose-related deaths. Naloxone prescription programs (NPPs) provide training and take-home naloxone rescue kits to individuals at high risk of opioid overdose [4,8,9]. Since 1996, NPPs have reportedly trained more than 53 000 individuals and resulted in more than 10 000 overdose reversals using the naloxone rescue kits [4,8,9]. In Ohio, Project DAWN (Deaths Avoided with Naloxone) was initiated in 2012. Like other NPPs, Project DAWN trains at-risk individuals and provides them with home naloxone rescue kits [3].

Bystanders who witness a drug overdose often are reluctant to call emergency medical services (EMS) for fear of police involvement [1]. However, because police officers routinely patrol neighborhoods and are available for quick response, they frequently are the first to arrive at the scene. Thus, although the Project DAWN program could decrease drug overdose-related deaths, Lorain County Coroner, Stephen B Evans, MD, PhD, saw a means for further intervention against the current opioid overdose epidemic. He petitioned the Ohio State Senate to create a pilot project in Lorain County, which would allow first responders to carry naloxone rescue kits and intervene when necessary (police officer NPP). To implement this program, State Senator Gayle Manning petitioned for a change in Ohio law, which prohibited anyone from prescribing a medication to someone with the intended use by a third party [4]. This law had precluded police officers from carrying naloxone for the purpose of administering the medication to an overdose victim. The police officer NPP program described in this report sought to take advantage of the rapid police response to 911 calls as a means of providing early intervention through naloxone administration.

### 1.3. Goals of this investigation

This study sought to answer the question, “Can police officers administer intranasal naloxone to drug overdose victims to decrease the opioid overdose death rate?”

## 2. Materials and methods

### 2.1. Study design and setting

This prospective interventional study was conducted in Lorain County, OH, from January 2011 to October 2014. Data on countywide opioid deaths and naloxone administration by police officers were obtained from Lorain County Coroner's Office and the Alcohol and Drug Addiction Services Board of Lorain County.

### 2.2. Selection of participants

All individuals who tested positive for opioids at the time of death and were deemed by the coroner to have died as a result of opioid overdose plus those who received naloxone from police officers were included for analysis. This study was reviewed by the Wright State University Institutional Review Board and deemed exempt from human subjects research review.

### 2.3. Interventions

Local hospitals were enlisted to provide funding to defray the approximate \$20 cost of each naloxone rescue kit. Police units were trained by one of the authors (SBE) and volunteer nursing staff from the local county health department. Police officers attended a 2-hour training session in which they watched a demonstration video, learned basic lifesaving techniques, were taught how to identify victims who might benefit from naloxone administration, learned about naloxone's use and effect on victims, and practiced administration of the intranasal naloxone using expired kits on mannequins. Police officers were instructed to give 2 mg of naloxone to patients with suspected opioid overdose and were told to contact EMS for further medical care as warranted.

Starting October 2013, 511 Lorain County police officers from the county sheriff's office and city jurisdictions received training and began administering naloxone to suspected opioid overdose victims. Of the total 18 police units in Lorain County, 10 have received training since October of 2013. This training program is ongoing.

### 2.4. Methods and measurements

Participating police officers reported all cases of naloxone administration and results of the intervention to the Alcohol and Drug Addiction Services Board of Lorain County. Every time a police officer administered naloxone, he or she was responsible for reporting the demographics of the victim who received naloxone as well as the clinical outcome. To assess the effectiveness of this program, the Alcohol and Drug Addiction Services Board for Lorain County verified self-reports by the participating local police departments taking part in the program at monthly intervals. The number of patients who received naloxone from police officers and the clinical outcomes and demographics of the patients were abstracted from these records. Data were also collected from the Lorain County Coroner's Office at monthly intervals for all deaths in Lorain County, OH. Those deaths confirmed by laboratory tests and deemed by the coroner to be a result of an opioid overdose were included in this study. American Institute of Toxicology, Inc Laboratories was used by the coroner's office for testing of blood samples. American Institute of Toxicology, Inc screens all specimens by mass spectrometers and confirms all positives with an applicable secondary test. It can detect the following opioids and levels: morphine, 5 ng/mL; codeine, 5 ng/mL; hydrocodone, 5 ng/mL; hydromorphone, 0.5 ng/mL; oxycodone, 5 ng/mL; 6-monoacetylmorphine, 2.5 ng/mL; and oxymorphone, 0.5 ng/mL [10].

Download English Version:

<https://daneshyari.com/en/article/3223896>

Download Persian Version:

<https://daneshyari.com/article/3223896>

[Daneshyari.com](https://daneshyari.com)