CDC Injury Center 20 YEARS | Celebrating the past, protecting the future

Naloxone Use by EMS Providers

Exploring Naloxone Uptake and Use

Food and Drug Administration

July 2, 2015

Mark Faul, PhD, MA
Division of Unintentional Injury Prevention
National Center for Injury Prevention and Control

Disclosures:

-

Nothing to Disclose

-

Note: The findings and conclusions in this article are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention or the Agency for Toxic Substances and Disease Registry.

Overall Goal of Session

- Participants will better understand the barriers of Naloxone administration in the EMS setting

- Background on Naloxone Use and EMS:
  - General Practice
  - Barriers to Administration

Naloxone Use and EMS

- Many Naloxone distribution programs exist.

- EMS use is unique:
  - EMS is part of the health care system
  - Governed by Scope of Practice Model Policy (NHTSA)
  - Also overseen by State and Local EMS Directors

- According to one study, Naloxone is the drug most commonly administered to adolescents in the prehospital setting (Seidel JS. Emergency medical services and the adolescent patient. J Adolesc Health. 1991;12(2):95---100).

- Research Question: What were the barriers to Naloxone use among EMS providers

Disparity in Naloxone Administration by Emergency Medical Service Providers and the Burden of Drug Overdose in US Rural Communities

Mark Faul, PhD, MA, Michael W. Dailey, MD, David E. Sugerman, MD, MPH, Scott M. Sasser, MD, Benjamin Levy, MD, and Len J. Paulozzi, MD, MPH

Objectives. We determined the factors that affect naloxone (Narcan) administration in drug overdoses, including the certification level of emergency medical technicians (EMTs).

Methods. In 2012, 42 states contributed all or a portion of their ambulatory data to the National Emergency Medical Services Information System. We used a logistic regression model to measure the association between naloxone administration and emergency medical services certification level, age, gender, geographic location, and patient primary symptom.

Results. The odds of naloxone administration were much higher among EMT-intermediates than among EMT-basics (adjusted odds ratio [AOR] = 5.4; 95% confidence interval [CI] = 4.5, 6.5). Naloxone use was higher in suburban areas than in urban areas (AOR = 1.41; 95% CI = 1.3, 1.5), followed by rural areas (AOR = 1.23; 95% CI = 1.1, 1.3). Although the odds of naloxone administration were 23% higher in rural areas than in urban areas, the opioid drug overdose rate is 45% higher in rural communities.

Conclusions. Naloxone is less often administered by EMT-basics, who are more common in rural areas. In most states, the scope-of-practice model prohibits naloxone administration by basic EMTs. Reducing this barrier could help prevent drug overdose death. (*Am J Public Health.* Published online ahead of print April 23, 2015: e1–e7. doi:10.2105/AJPH.2014.302520)

Drug overdose is a major cause of injury-related death in the United States.[1] In 2011, the number of deaths associated with opioid prescription pain relievers was 16 917,[2] and an additional 4397 deaths were heroin-related.[3] In addition to death, the burden of lost productivity and medical costs associated with opioid-related poisoning is $20.4 billion annually (in 2009 dollars).[4] The growing number of overdose deaths suggests that primary prevention efforts need to be strengthened and augmented. In an effort to reduce deaths through any means available, recent attention has focused on the ability of emergency medical services (EMS) providers to save lives at the scene of an opioid drug overdose.

In addition to life support measures to ensure adequate airway support, breathing, and circulation, many EMS providers are equipped with an opioid antagonist medication,

Data Source

Data Used:

- National EMS Information System: 2012
- 19.8 million records of EMS events
- Includes non injury
- Includes Inter-facility transfers
- 42 States participate
- 12 States give all data

Research Dataset:

- Most variables were publically available
- The National Highway Transportation Safety Administration granted Special Permission to use Level of Service Provider variable (EMT Basic, EMT Intermediate, EMT Paramedic, Nurse and Physician)

Emergency Medical Services

Levels of Certification:

- Basic EMT: ~ 80-120 hours of training, Basic Life Support, driving the ambulance
- Intermediate EMT:~ 120-500 hours of training, Basic Life Support, basic medications, driving the ambulance
- Paramedic: 1200-1500 hours of training, Basic Life support, managing patient care. Trained in use of 30-40 different medications to keep patients breathing.
- Nurse: Professional certification (usually dispatched in air medical services)
- Physician: Professional certification (usually dispatched in air medical services)

Emergency Medical Services: Rural

❑ Rural Paramedic Paradox*:

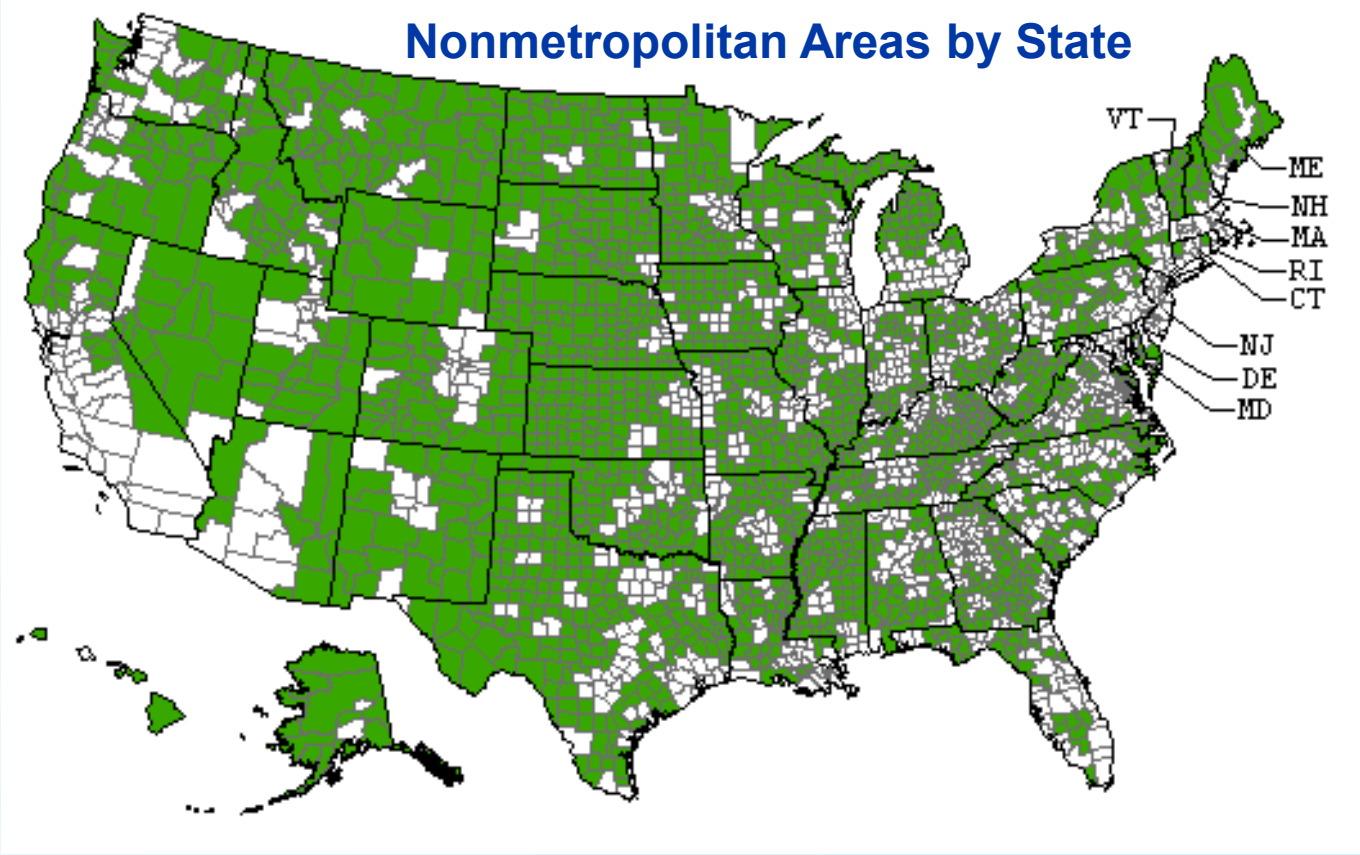
- The further one moves from an emergency medical facility
- The more one needs a higher level of local EMS capability
- And the less likely that that EMS capability will be available

- Differences in Rural EMS:
  - Geography
  - Population density
  - Call volumes
  - Availability of training and education
  - Transport times

* Rowley T. Solving the paramedic paradox. Rural Health News 2001; 8(3): 1–6.

Emergency Medical Services: Rural

- Rural Land Mass is 80% of the US
- Urban centers are served by 80% of the EMS population
- Only 20% of EMS workforce serves 80% of US land mass



Methods

❑ Defining a Drug Overdose within NEMSIS:

- Dispatch Complaint labeled as “Ingestion/Poisoning” or “Drug Poisoning.”
- Injury “Ingestion/Poisoning” or “Drug Poisoning.”

❑ Statistical Procedure:

- Logistic Regression
- Dependent Variable: Naloxone Administration (Yes or No)
- Independent Variables:
  - EMS Certification Level (EMT Basic, EMT Intermediate, EMT Paramedic, Nurse and Physician)
  - Age
  - Gender
  - Urbanicity
  - Primary symptom

Results

Logistic Regression analysis factors that were associated with Naloxone administration among EMS Providers. National EMS Information System 2012 (read=262,676, used in model =217,333)

		Odds Ratio Estimate	Lower CI	Upper CI	p value
Primary Symptom	None	1.000			
	Bleeding	0.700	0.297	1.384	0.356
	Breathing Problem	20.128	16.934	24.013	<.0001
	Change in responsiveness	13.703	11.898	15.880	<.0001
	Choking	2.176	0.355	7.029	0.282
	Death	23.344	17.861	30.408	<.0001
	Device/Equipment Problem	<0.001	.	7.964	0.968
	Diarrhea	<0.001	.	1.068	0.915
	Drainage/Discharge	<0.001	.	5.647	0.954
	Fever	5.046	1.939	10.815	0.000
	Malaise	1.945	1.497	2.507	<.0001
	Mass/Lesion	0.970	0.055	4.454	0.976
	Mental/Psych	1.585	1.351	1.867	<.0001
	Nausea/Vomiting	1.046	0.821	1.325	0.712
	Pain	0.609	0.450	0.812	0.001
	Palpitations	0.865	0.339	1.795	0.729
	Rash/Itching	<0.001	.	0.627	0.885
	Swelling	0.776	0.128	2.456	0.723
	Transport Only	0.446	0.211	0.822	0.019
	Weakness	1.812	1.485	2.211	<.0001
	Wound	0.492	0.081	1.550	0.320

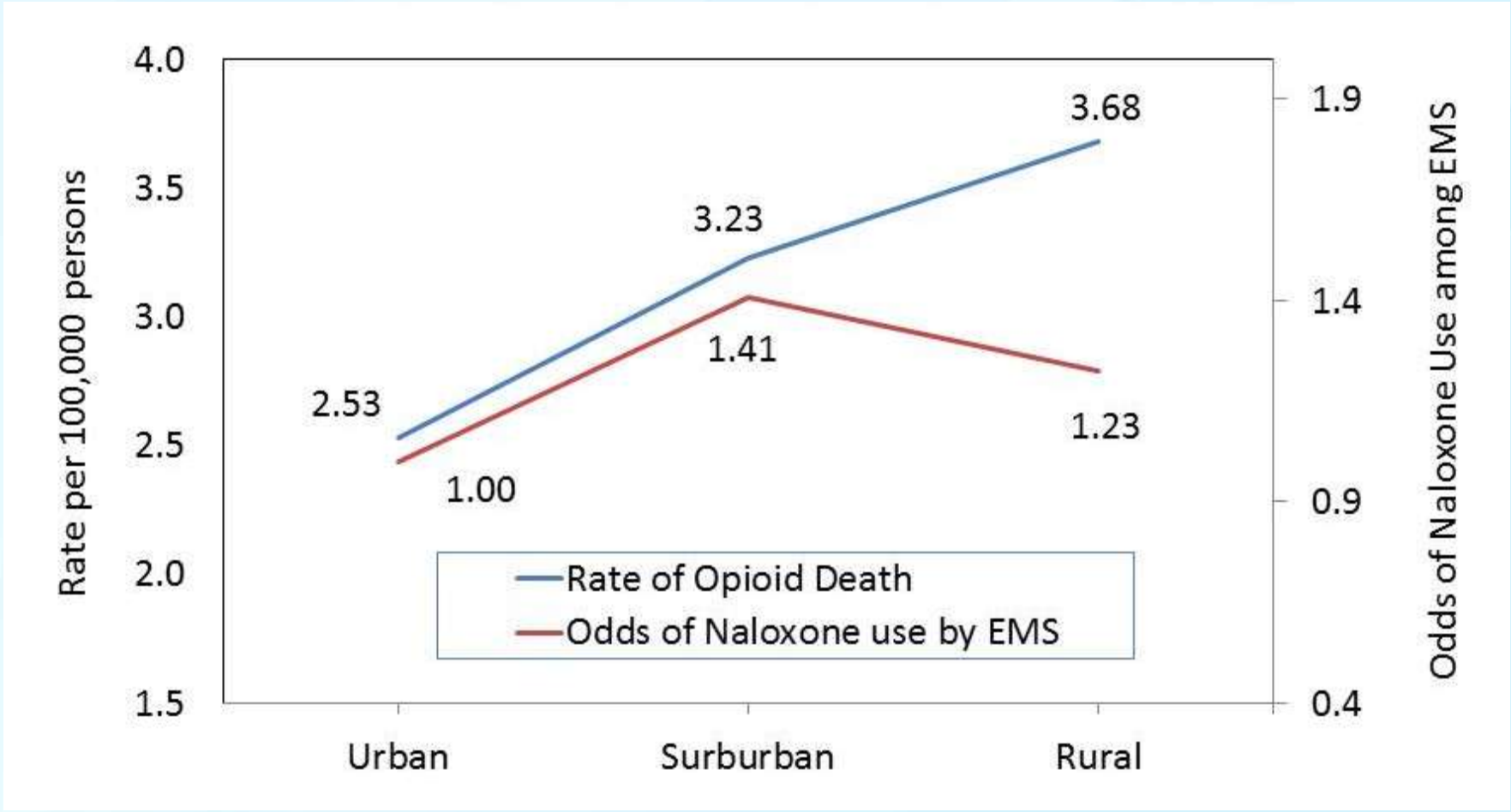
Results

Logistic Regression analysis factors that were associated with Naloxone administration among EMS Providers. National EMS Information System 2012 (read=262,676, used in model =217,333)

		Odds Ratio Estimate	Lower CI	Upper CI	p value
Gender	Female	1.000			
	Male	0.919	0.885	0.954	<.0001
Age	ages 0-19	1.000			
	ages 20-29	2.512	2.335	2.706	<.0001
	ages 30-39	2.380	2.205	2.570	<.0001
	ages 40-49	2.008	1.859	2.170	<.0001
	ages 50-59	1.940	1.791	2.102	<.0001
	ages 60-99	1.830	1.669	2.005	<.0001
Urbanicity	Urban	1.000			
	Rural	1.225	1.153	1.302	<.0001
	Suburban	1.410	1.321	1.505	<.0001
	Wilderness	1.123	0.990	1.270	0.0679
Level of Service	EMT-Basic	1.000			
	EMT-Intermediate	5.449	4.552	6.538	<.0001
	EMT-Paramedic	5.157	4.497	5.950	<.0001
	Nurse	3.568	2.916	4.364	<.0001
	Physician	3.158	2.183	4.463	<.0001

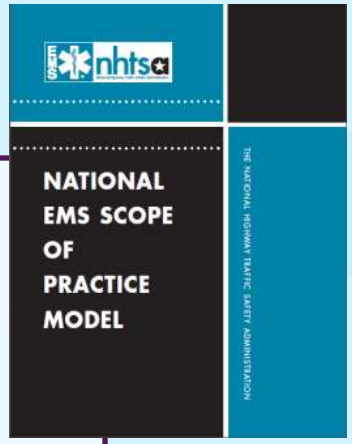
Opioid Overdose Mortality and Odds of Naloxone Administration by EMS within levels of Urbanicity

(rate source: Paulozzi, 2008)



Policy Implications: How do we Save More Lives?

- NHTSA published "Scope of Practice Model" Guidance governing EMT Basic ability to administer medicine:



Pharmacological Interventions

- Assist patients in taking their own prescribed medications
- Administration of the following over-the-counter medications with appropriate medical oversight:
  - Oral glucose for suspected hypoglycemia
  - Aspirin for chest pain of suspected ischemic origin

- Intranasal Naloxone is nearly as effective as intravenous Naloxone (Robertson 2009, Barton 2005, Merlin 2010).

Opportunities for Action: How do we Save More Lives?

❑ Rural Implications for Opioid Overdose:

- EMTs-Basic are more common in rural areas.
- Drug Overdose problem is higher in rural areas.
- EMS service in rural areas is markedly different than urban areas, for a variety of reasons (e.g., geography, population density, call volumes, availability of training and education, transport times…)
- Study suggests that rural communities suffer more from Naloxone restrictions.

❑ Manuscript provides support for the changing:

- Changing the “Scope of Practice Model” (February 2007)
- For States to develop policy/regulations/laws to allow intranasal naloxone use for EMTs Basic.
- Additional training for EMTs Basic.
- At the time of the study 12 States allowed, currently ~ 24 States now

Action: CDC Press Release

CDC Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™

SEARCH

CDC A-Z INDEX

CDC Newsroom

Newsroom Home
Press Materials
CDC Newsroom Releases
CDC Newsroom Archives
Expanding Naloxone use could reduce drug overdose deaths and save lives
Journal Summaries
Newsroom Image Library
Audio/Video
CDC Spokesperson
Facts About CDC
Contact Media Relations

Get Email Updates

To receive email updates about this page, enter your

CDC > Newsroom Home > Press Materials > CDC Newsroom Releases

Expanding Naloxone use could reduce drug overdose deaths and save lives

Where you live makes a difference

Press Release

For Immediate Release: Friday, April 24, 2015
Contact: Media Relations
(404) 639-3286

Allowing more basic emergency medical service (EMS) staff to administer naloxone could reduce drug overdose deaths that involve opioids, according to a Centers for Disease Control and Prevention (CDC) study, "Disparity in Naloxone Administration by Emergency Medical Service Providers and the Burden of Drug Overdose in Rural Communities," published in the *American Journal of Public Health*.

In 2013, more than 16,000 deaths in the United States involved prescription opioids, and more than 8,000 others were related to heroin. Naloxone is a prescription drug that can reverse the effects of prescription opioid and heroin overdose, and can be life-saving if administered in time.

According to the study findings, advanced EMS staff were more likely than basic EMS staff to administer naloxone. A majority of states have adopted national guidelines that prohibit basic EMS staff from administering the drug as an injection. As of 2014, only 12 states allowed basic EMS staff to administer naloxone for a suspected opioid overdose; all 50 states allow advanced EMS staff to administer the overdose reversal treatment.

- Recommendations:
  - More training for EMT Basics to get the additional certification.
  - Concentrate training effort in rural communities.

20 YEARS
Celebrating the past, protecting the future

Thank you!
Questions and Comments

For more information please contact Centers for Disease Control and Prevention

1600 Clifton Road NE, Atlanta, GA 30333
Telephone: 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348
E-mail: cdcinfo@cdc.gov Web: http://www.cdc.gov