

**Death by Suicide: The EMS Profession
Compared to the General Public**

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NO RELEVANT DISCLOSURES

IRB

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Suicide

- In 2012, ~ 40,000 suicides were reported in the US, making suicide the 10th overall reported cause of death.¹
- From 2000 to 2012, the national suicide rate increased **21.1%**, from 13.3 per 100,000 to 16.1 per 100,000.¹
- Suicide analyzed by occupation in 17 states showed the highest female suicide rates occurred in LE officers, firefighters, and EMTs.²

1. CDC MMWR 2011
 2. National Violent Death Reporting System 2012

Suicide and EMTs

- EMTs are exposed to high levels of occupational stress.¹
- Chronic stress is linked to substance abuse, depression, anxiety, burnout, and suicide.²
- EMTs are involved in critical incidents associated with overwhelming emotional reactions.³
- National survey data suggest EMTs have a 10-fold higher incidence of suicidal thoughts and attempts.⁴

1. Donnelly, PEC 2012
 2. Feskanich, JECH 2002
 3. Essex, PEC 2008
 4. NAEMT Mental Health Survey 2016

Mortality Odds Ratio (MOR)

- MOR is a statistic used to approximate the Standardized Mortality Ratio when death data are available but the population denominator is not known.¹
- A MOR greater than 1.0 indicates that a specified occupation (EMT) is associated with a higher odds of dying from a specific cause (Suicide) compared to another population.²

1. American Journal of Industrial Medicine 1988
 2. Centers for Disease Control/The National Institute for Occupational Safety and Health (NIOSH)

Suicide Data by Occupation

- Law Enforcement Officers have a significantly higher suicide PMR = 1.69, 95% CI = 150-191, $p < 0.01$.¹
- VA has reported a 21 percent higher odds of death for Veterans.
- EMT suicide MOR/PMR have not been published.

1. Violanti, IJEMH 2013
 2. US Dept of Veteran's Affairs

STUDY AIM

To determine the statewide MOR of suicide completions among EMTs compared to the general public (GP) in Arizona.

Methods

Observational Study Design

Data Source:

Arizona Vital Statistics Information Management System-Electronic Death Registry

Study Population:

Adults (18 +)
January 1st 2009-December 31st 2015

EMT vs Non-EMT Cohorts:

Manual review of decedent occupation free text field
EMT Cohort: any occupation related to Firefighter, Emergency Medical Technician (EMT), or Paramedic
Non-EMT Cohort: Aggregate of all other occupations

Outcome: Underlying Cause of Death

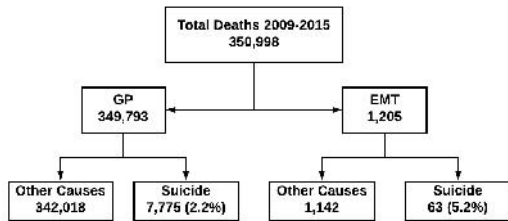
Suicide or other cause based on ICD-10 E-Code

STATISTICAL METHODS

The MOR for suicide was compared between EMTs vs. GP

– Logistic Regression Model: Adjusted for age, sex, race, and ethnicity.

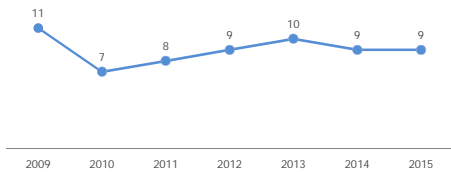
Results: Patient Population



Results: Demographics

	GP		EMT		Chi-square p-value
	N	%	N	%	
Total deaths from 2009 to 2015	349,793	100.0%	1,205	100.0%	
Age					
18-34	12,298	3.5%	102	8.4%	
35-54	36,194	10.3%	191	15.8%	<0.0001
55-74	110,621	31.6%	381	31.6%	
> 75	190,680	54.5%	531	44.0%	
Sex					
Male	184,987	52.8%	1,127	93.5%	<0.0001
Female	164,806	47.1%	78	6.4%	
Race					
White non-Hispanic	280,766	80.2%	972	80.6%	
Hispanic/Latino	41,383	11.8%	62	5.1%	
Black	10,331	2.9%	23	1.9%	<0.0001
Asian/PI	3,961	1.1%	4	0.3%	
AI/AN	13,352	3.8%	144	11.9%	
Cause of death					
Other cause	342,018	97.7%	1,142	94.7%	<0.0001
Suicide	7,775	2.2%	63	5.2%	

Results: EMT Suicides by Year in Arizona



Results: Method of Suicide

Method of Suicide	EMT	GP	Chi-square p-value
	%	%	
Firearm	66.7%	57.6%	0.1472
Suffocation	23.8%	20.6%	0.5312
Poisoning	9.5%	16.7%	0.1274

Results: MOR of Suicide

	Crude		Adjusted*	
	Rate	95% CI	Rate	95% CI
EMT vs. GP	2.43	(1.88-3.13)	1.39	(1.06-1.82)

* Adjusted for age, sex, race, and ethnicity

DISCUSSION

- Suicide is a leading cause of death in the US, is increasing, and EMTs may be at particularly high risk.
- Using AZ Vital Statistics - Electronic Death Registry we found a significantly higher suicide MOR for EMTs in Arizona compared to the general public, even after risk-adjustment.
- The reasons behind this finding require further investigation.

LIMITATIONS

- Reliance on determination of death as suicide
 - Suicides of EMTs may often be misclassified as “accidental” or “undetermined” in order to protect survivors from the stigma of suicide
- Reliance on text fields to determine decedent occupation
- Unknown if decedent was *active* field EMT
- Unknown if decedent was retired
- Unknown if decedent had comorbid suicide risk factors (e.g., previous attempts, substance abuse disorder, LE/VETERANS, or mental health issues)

CONCLUSIONS

- In a statewide evaluation, we found significantly higher crude and adjusted Mortality Odds Ratios for suicide among EMTs compared to the general public.
- Increased awareness is *urgently* needed to prevent EMT suicide.
- Further research is necessary to identify the underlying causes of EMT suicide and to develop effective prevention strategies.

We are grateful to all of the EMTs in Arizona
for their selfless dedication