

Development and Use of a New Opioid Overdose Surveillance System, 2016

MEGHAN McCORMICK, MPH; JENNIFER KOZIOL, MPH; KELLY SANCHEZ

Rhode Island is experiencing an epidemic of overdose deaths.^{1,2,4} Overdose deaths have occurred from illicit drugs, prescription medications, and combinations of both.^{2,3} Since 2011, overdose deaths have increased by almost one third.³ At least 329 people died of drug overdoses in 2016, up 13 percent from 2015.³ This public health crisis has affected the lives of men, women, and children, from all walks of life, and from communities all over the state.

The Rhode Island Department of Health (RIDOH) in conjunction with lawmakers and stakeholders in the overdose epidemic have taken measures to improve surveillance of this problem. In April 2014, RIDOH passed emergency regulations that require all hospitals and emergency departments to report cases of opioid overdose within forty-eight (48) hours to RIDOH.⁴ In October 2014, the legislation became final. Hospitals and emergency departments were first asked to fax reports to RIDOH.⁴ In October 2015, RIDOH transitioned to an electronic reporting system.⁵ The development of the Opioid Overdose Reporting System was a recommendation made by the Centers for Disease Control and Prevention (CDC) staff during a site visit to RIDOH. The intent of the Opioid Overdose Reporting System is to identify clusters of overdoses in near real time to target interventions in high-risk areas and to vulnerable populations.⁴ The development of this reporting system provided information about overdose patients so that specific risk factors could be identified and referral to counseling or other substance abuse services could be made. The information collected can be modified at any time to meet the surveillance needs of the epidemic. The availability of near real time data allows for prompt interventions and responses.

METHODS

We used 2016 data from the Opioid Overdose Reporting System. Reports were made by hospital staff through an online form. 2016 was the first full year in which the electronic reporting system was used. RIDOH staff met with all Emergency Departments individually in early 2016 to ensure consistent reporting criteria among all hospitals and to improve compliance with the regulation.

Reporting methods varied by hospital. Two methods were most common. The first method was centralized reporting. The electronic health record was used to generate a report daily and a designated staff member then entered the

overdose cases into the reporting system. The next most common method had Emergency Department clinical staff report in real time when an overdose case presented to the Emergency Department.

The overdose report requires information about patient demographics, risk factors, co-morbidities, and patient outcome. If a patient was discharged at time of reporting, the reporting system also requires information about connection to follow-up services and naloxone distribution.

There were 1,567 overdose case reports in 2016. Reports were removed from this analysis if the report date was before the listed admission date (n=5), the patient was younger than 18 years old (n=24), and if the overdose was attributed to a non-opioid substance (n=15). 1,523 overdose events remained for analysis.

Although this analysis focused on adults aged 18 and older, we do receive overdose case reports for those aged less than 18. During 2016, there were 24 overdose case reports among children aged less than 18.

Demographic variables of age, ethnicity and sex were reported as collected. Asian, Native American and Other race responses were grouped into one category labeled "Other" due to low numbers of reports in these categories. Risk factors were excluded from reporting if less than twenty cases had been reported.

The patient outcome variable initially only collected whether the patient had died or had been discharged. Due to programmatic needs, the patient outcome question was modified in March of 2016 to include additional outcomes, including transfer to another facility.

Primary substance is defined as the substance suspected to have caused the overdose. Due to low numbers, "Opium," "Other synthetic narcotics" and "Other" responses were combined into one "Other" category.

RESULTS

Demographics of reported overdose cases are displayed in **Table 1**. The 70.5% of overdoses occurred in men. More than one-third (34.1%) of overdose reports occurred in ages 25 to 34. White (83.5%) and Non-Hispanic (78.5%) were the most prevalent race and ethnicity, respectively.

Patient characteristics and outcomes are found in **Table 2**. 78.1% of cases were discharged, and only 4% of resulted in death. 58.2% of reported overdoses were attributed to heroin.

Table 1. Opioid Overdose Reporting System Case Demographics, 2016

Demographics	No.	%
Patient Total	1523	100
Patient Age		
18-24	249	16.4
25-34	519	34.1
35-44	318	20.9
45-54	277	18.2
55-64	120	7.9
65+	40	2.6
Patient Sex		
Female	450	29.6
Male	1073	70.5
Patient Ethnicity		
Hispanic	150	9.9
Non-Hispanic	1196	78.5
Unknown	177	11.6
Patient Race		
White	1272	83.5
Black/African American	85	5.6
Other	115	7.6
Unknown	51	3.4

Table 2. Opioid Overdose Reporting System Case Characteristics and Outcomes, 2016

Characteristics	No.	%
Patient Total	1523	100
Patient Outcome		
Patient was discharged	1190	78.1
Patient was transferred to ICU	125	8.2
Patient was transferred to another facility	43	2.8
Patient did not survive	61	4.0
Patient was admitted to detox program	46	3.0
Unknown	58	3.8
Primary Substance		
Heroin	887	58.2
Opioids	375	24.6
Methadone	31	2.0
Other	166	10.9
Unknown	64	4.2
Receipt of Naloxone in Discharged Patients		
No	431	36.2
Yes, naloxone was dispensed on site at ED	414	34.8
Patient refused	226	19.0
Patient received prescription for naloxone	47	4.0
Unknown	72	6.0

A small percent (2.0%) of overdoses were attributed to methadone. Of the patients who were discharged (n=1190), about a third (34.8%) were discharged with a naloxone kit.

Reported risk factors in overdose cases are displayed in **Table 3**. Substance abuse was the most frequently reported risk factor, being reported in 71.6% of overdose cases. Depression was reported in a quarter of cases (25.1%), and 17.1% of reported cases had experienced a prior overdose that required medical care.

Table 3. Opioid Overdose Reporting System Case Risk Factors, 2016

Risk Factors	No.	%
Substance Abuse	1091	71.6
Depression	387	25.4
Prior Overdose Requiring Medical Care	261	17.1
Alcohol Abuse	208	13.7
Hepatitis or HIV Infected	174	11.4
Known Chronic Pain	126	8.3
Homeless	75	4.9
Liver/Renal Disease	62	4.1
ADD/ADHD	54	3.6
Incarcerated in Past 30 Days (Self Reported)	33	2.2
Chronic Obstructive Pulmonary Disease	32	2.1
Cancer or Other Malignancy	26	1.1

DISCUSSION

The Opioid Overdose Reporting System allows for near real time surveillance of an ongoing epidemic. The flexibility of the system allows for modification and addition of required information as the surveillance needs change. However, the system has significant limitations. Compliance with the reporting regulation has varied by hospital. As a result, these data are not well suited for geographic analysis of where overdoses occur. The amount of under-reporting in 2016 is not yet known. A future analysis comparing Opioid Overdose Reporting System data to the Emergency Discharge Dataset to determine the extent of under-reporting will occur when the discharge data for 2016 become available. Since identifying information is not collected, program interventions may be directed at the community level, but we are unable to target the individuals who have had a reported overdose. Despite these limitations, the reporting system is an important asset in surveillance of the opioid epidemic.

The regulation and reporting system do not distinguish between intentional and unintentional overdoses. As a result, these data likely include suicide attempts. The response and follow-up services needed for an intentional overdose differ from that of an unintentional overdose.

The high frequency of reporting prior overdoses requiring medical care as a risk factor suggests the importance of naloxone distribution at discharge. Nearly two-thirds of discharges

did not leave the emergency department with naloxone. The emergency department has an important opportunity to try to connect overdose patients with recovery services.

The overdose epidemic had mostly been defined by deaths as death data had been available sooner than emergency department discharge data. Overdose deaths represent only a small portion of overdoses. The development of a near real time surveillance system of emergency department usage due to overdose provides a greater picture of the epidemic.

References

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Authors

Meghan McCormick, MPH, is a Public Health Epidemiologist in the Drug Overdose Prevention Program, Division of Community Health and Equity at the Rhode Island Department of Health.

Jennifer Koziol, MPH, is the Drug Overdose Prevention Program Manager in the Division of Community Health and Equity at the Rhode Island Department of Health.

Kelly Sanchez is a Master's of Public Health student at Brown University.