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Surveillance of Overdose-related Emergency Department Visits in Rhode Island

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Objective

Determine if the Rhode Island (RI) Real-time Outbreak and Disease Surveillance (RODS) system (a syndromic surveillance system) identified an increase in overdoses during a known cluster of illicit drug overdose deaths in RI and characterize emergency department (ED) overdose visits during the 15 month period prior to and including the known cluster.

Introduction

During March–May 2013, 14 overdose deaths occurred in RI that were caused by acetyl fentanyl, a novel synthetic opioid about five times more potent than heroin[1]. Ten of these deaths were clustered in March, causing a significant increase over baseline of monthly illicit drug overdose deaths in RI[1]. Overdose deaths are well described in RI by forensic toxicology testing results. However, the overall number of ED visits associated with this event was unknown. We used RODS data retrospectively to characterize overdose related ED visits in RI and to analyze trends.

Methods

RODS receives near real-time chief complaint data from all 11 EDs in RI. We abstracted demographic, chief complaint and other data from RODS on all ED visits in RI between March 1, 2012 and May 31, 2013. This timeframe reflects the 15 months prior to and including the acetyl fentanyl overdose deaths. Chief complaint indicates both morbidity and mortality since final outcome is not determined.

We included all visits that contained the word "overdose" in the free text chief complaint field. We searched within chief complaint to characterize overdose cause. We calculated overdose rates (per 100,000 population) using 2010 U.S. Census ZIP code population estimates, and included persons aged >14 years. We stratified data by reporting ED and ZIP code. We created two ZIP code subgroups: those with residential ZIP codes matching the ZIP codes of the 14 acetyl fentanyl overdose deaths, and all other RI ZIP codes. We used Poisson regression to analyze overdose trends across Period 1 (March 2012 – February 2013) and Period 2 (March–May 2013).

Results

1,634,699 ED visits were reported to RODS between March 1, 2012 and May 31, 2013. Of those, 3,436 (0.2%) were aged >14 years and included "overdose" in the chief complaint. For most visits (n=3,145; 91.5%) overdose cause was not specified. Visits that did specify cause included: alcohol (n=90; 2.6%), heroin (n=71; 2.1%), and all other drugs (n=60; 1.7%). Among all overdose visits, 75 (2.2%) noted suicidal ideation or attempt in the chief complaint.

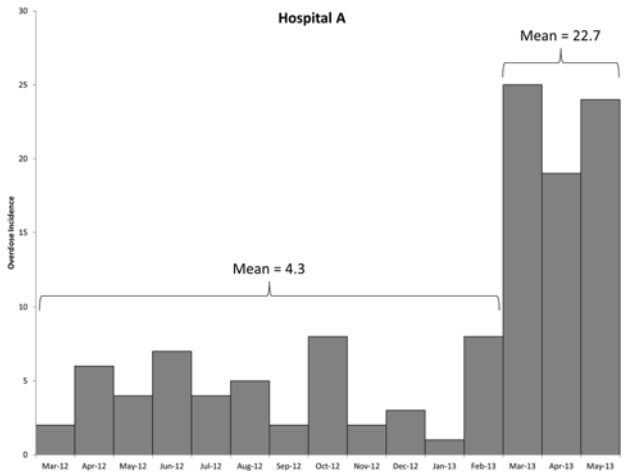
State-wide, there was no increase in overdose reports comparing Period 2 to Period 1. However, when stratified by ED, Hospital A, located in one of the cities where multiple acetyl fentanyl deaths occurred, reported 4.3 overdoses per month during Period 1, compared with 22.7 overdoses per month during Period 2 ($p<0.001$) (Figure 1). The other 9 EDs (data was incomplete for one facility) showed no significant changes or patterns in monthly overdose incidence.

There was a significant increase in overdose rates in the 6 ZIP codes associated with acetyl fentanyl overdoses. The average monthly overdose rate increased from 18 overdose visits per 100,000 during Period 1 to 30 during Period 2 ($p<0.0001$), while rates remained steady in the rest of the state.

Conclusions

Data from RODS can be used to evaluate non-specific overdose ED visits in RI. It is especially useful because it has state-wide coverage and includes demographic and location variables. State-wide data revealed no significant increase in overdose visits during March 2012 to May 2013. However, during March–May 2013 there was a significant increase in overdose visits to Hospital A. This corresponds with a significant increase in illicit drug overdose deaths in RI during March 2013.

Overdose reports to RODS are non-specific. Even minor additional details as to the suspected or known cause of the overdose could assist in assessing overdose ED visits. Syndromic surveillance systems provide an existing platform that could be used to better assess overdose ED visits and potentially provide a timely resource for overdose surveillance during drug overdose outbreaks.



Keywords

syndromic surveillance; drug overdose surveillance; overdose outbreak

References

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