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ISDS 2014 Conference Abstracts

ISDS INTERNATIONAL SOCIETY FOR DISEASE SURVEILLANCE

Unintentional Drug Overdoses in Virginia: Analysis of Syndromic and Death Data

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Objective

Determine if syndromic surveillance data can be used to provide a real-time picture of the drug using population by analyzing trends of emergency department (ED) visits for unintentional drug overdose (Overdose Visits) in conjunction with unintentional deaths that prescription or illicit opiates contributed to or caused (Overdose Deaths).

Introduction

Drug overdoses and related deaths have been escalating nationally since 1970[1]. In Virginia, the rate of drug overdose deaths increased 36% from 5.0 to 6.8 deaths per 100,000 population between 1999 and 2010[2]. While initiated for bioterrorism event detection, syndromic surveillance has shown utility when extended to other health issues. ED visits may complement information from Overdose Deaths investigated by the Office of the Chief Medical Examiner (OCME) in describing drug overdose trends. Due to its real-time nature, syndromic surveillance data could act as an early indicator for emerging drug problems in the community, serving as an alert to public health.

Methods

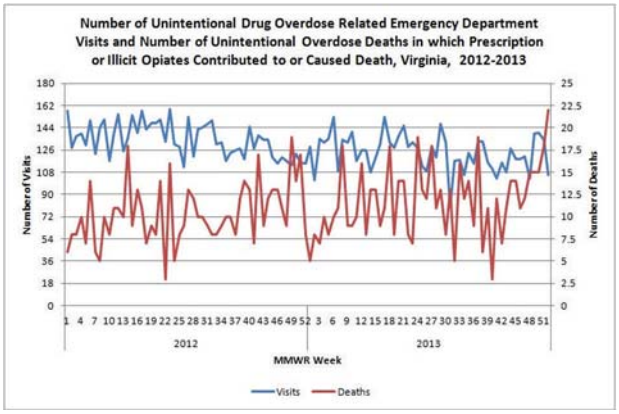
Virginia Department of Health (VDH) receives syndromic surveillance data comprised of ED visit chief complaints to monitor and detect public health events. Overdose Visits were compared to Overdose Deaths among Virginia residents from 2012-2013. Relevant text strings within chief complaints from 82 EDs were identified using Structured Query Language (SQL). Descriptive and geospatial analyses were performed to compare the data sources and describe the burden of unintentional drug overdoses in Virginia.

Results

The analysis found 13,443 (0.28%) Overdose Visits among 4,790,060 total ED visits for 2012-2013, for an estimated rate of 82 visits per 100,000 population. Women (7,972 visits, 59.3%) and individuals age 15-24 (3,937 visits, 29.3%) represented the greatest proportion. Of Virginia's 134 counties, 12 had rates more than double the statewide drug overdose visit rate. These counties are predominately located in northwest and southwest Virginia, corresponding to Central and South Central Appalachia[3], supporting previous findings of high drug use throughout the Appalachian region[4]. The OCME identified 1,151 (9.9%) Overdose Deaths among 11,576 total deaths investigated for 2012-2013. Overdose Deaths are predominately male (730 cases, 63.4%). The highest proportion of deaths was among individuals age 25-34 (309 cases, 26.8%), closely followed by those age 35-44 (281 cases, 24.4%). The mortality rate was 14.2 Overdose Deaths per 100,000 population, with the highest rates in southwest Virginia. Overdose Visits and Overdose Deaths were not significantly correlated (correlation coefficient of -0.08).

Conclusions

Both Overdose Deaths and Overdose Visits corroborate previously identified trends showing distribution of drug activity throughout the Appalachian region; however, the demographics of the population that experienced Overdose Visits differ from those with Overdose Deaths. Virginia's Overdose Deaths are consistent with nationally-observed trends showing increased drug and prescription overdose death rates driven by middle-aged individuals and males. Overdose Visits, however, are comprised of younger individuals and females. A simple predictive model using Overdose Visits was not pursued due to a lack of significant correlation with Overdose Deaths. Further study is ongoing to explore whether Overdose Visits represent an opportunity to implement public health or clinical interventions to prevent future Overdose Deaths.



Keywords

drug overdose; syndromic surveillance; drug overdose surveillance

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