OJPHI

ISDS 2015 Conference Abstracts

ISDS INTERNATIONAL SOCIETY FOR DISEASE SURVEILLANCE

From Ebola to Heroin; the Use of EMS Data for Near Real Time Alerting and Surviellance

Alexander Garza*

[1]Environmental and Occupational Health, Saint Louis University College for Public Health and Social Justice, Saint Louis, MO, USA; [2]FirstWatch Inc, Encinitas, CA, USA

Objective

The objective of this oral presentation is to describe the use of near real time 911 Emergency Medical Services data in looking for suspected cases of Ebola and heroin cases in the community.

Introduction

Arguably the two most significant public health issues over the past two years have been the outbreak of ebola in West Africa and the rising epidemic of heroin use and overdoses. In the case of Ebola, the CDC issued guidance for inpatient facilities to screen for potential cases, however, there was little guidance for screening patients that presented to EMS workers. The West African pateint aht presented to the Emergency Department in Dallas was transported, unknowingly, by EMS, potentially exposing them and others to this deadly disease. Likewise, heroin has become an exploding epidemic in the United States with deaths from overdoses skyrocketing across the country. There are few data sources for overdoses that can alert and track real time instances of heroin overdose which are arguably the highest risk patients in the community. This will make it difficult for interventions in the community as expressed recently by the White House.

Methods

This is a descriptive study of using multiple different EMS data sources for surveillance of emerging infectious disease and acute opoid overdose. For Ebola, data were reviewed over a six month period using search terms that reflected the definition used by health care facilities as issued by the CDC. Over 40 different EMS agencies agreed to have their data included in the surviellance program. The algorithm for identifying potential ebola cases included data from 911 dispatch, emergency medical dispatch codes, physical symptoms as documented by the treating paramedic and free text searches for countries of iterest. For the surviellance of opiod overdoses, data was reviewed for one month in a high volume urban EMS system. All calls were reviewed for key search terms including 911 dispatch data and emergency medical dispatch data for overdose codes. Likewise the patient care records were surveyed in real time for paramedic diagnosis of overdose, respiratory rate and glascow coma scale, whether the opiod reversal agent Nalaxone was used and a free text search for opiod drugs of abuse. Multiple logistic regression was used to identify the most predictive terms. Variables included dispatch code, narcan use, free text search, change in respiratory rate, change in glascow coma scale and paramedic impreesion of overdose

Results

For ebola, there were 1,532 unique cases identified from October 2014 – March 2015. None of these tested positive for Ebola. The range of cases per EMS agency was 1 – 1026 with the majority (42, 95%) having < 30 cases. Cases ranged from 107 to 331 cases per month. The most common documented physical complaint, area of travel and dispatch diagnosis were “fever”, “Africa” and “sick” respectively.

For heroin, there were 165 cases that fit the search criteria. All patient care records were reviewed by medical experts to determine whether there was, in fact, a suspected overdose. 96 cases were identified as true overdoses based on the patinet record. The most predictive model for identifying opiod overdose included Naloxone use (OR 5.51, $p< 0.005$), and free text search for opoids ((OR 3.890, $p< 0.005$))

Conclusions

For multiple different public health challenges, EMS data is a rich data source for specific information that can be delivered in near real time. Patients with emerging infectious disease and opiod overdose may first present to EMS personnel. It is important the EMS agencies be involved in surveillance activities. This study describes the EMS data used for surveillance to identify potential Ebola patients and opiod overdoses. This study shows that it is possible for EMS agencies to utilize unique data sources for near real-time identification of patients with an emerging infectious disease and opiod overdoses. This study was limited by the differences in definitions for identification of cases for ebola, however the majority used definitions resembling the CDC. The model used to identify opiod overdose cases was very predictive using search terms including use of Naloxone and a free text search. More research is required to better refine the abilities of EMS data to serve as a surveillance node for disease status within the population.

Keywords

ebola; heroin; EMS

Acknowledgments

Mr. Todd Stout at Firstwatch Inc

***Alexander Garza**
E-mail: agarza@slu.edu