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Impact of Patient Self-Registration in Emergency Departments on Syndromic Surveillance Data

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Objective

To assess the effect of patient self-registration methods in hospital emergency departments on data in a syndromic surveillance (SS) system and provide suggestions for analysis of these data.

Introduction

The Florida Department of Health electronically receives hospital emergency department (ED) data from 180 EDs located in 54 of its 67 counties through its Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE-FL). Florida EDs have begun to offer self-registration options to patients, which include ED self check-in kiosks, and pre-visit registration smartphone applications and websites. ESSENCE-FL receives ED data from multiple hospitals that use these patient self-registration methods. To date, limited investigation has been carried out to determine the impact of these self-registration methods on the data submitted to ESSENCE-FL. This project investigates and describes how SS data are affected by these options and provides possible best practices for identifying and analyzing these data.

Methods

The ESSENCE-FL system was queried by hospital with a weekly time resolution for chief complaints (CCs) containing the term "I" for the period of Week 1, 2006 to Week 31, 2014. This query assessed the CCs of visits for all hospitals reporting to ESSENCE-FL to target potential patient-entered CCs. Hospitals with a dramatic and sustained increase of visits with "I" in the CC over the time period were identified as hospitals of interest that may be using patient self-registration. CC and discharge diagnosis (DD) data were analyzed for each hospital of interest to investigate potential disparities in the data for the time periods before and after implementation of self-registration, including changes to ED visits flagged by the system as Visits of Interest (VOI) and to visits binned in the influenza-like illness (ILI) syndrome category. ED visits are binned in the VOI category when a term of epidemiological significance is found in the concatenated CC-DD field. Efforts were made to contact hospitals to confirm their use of self-registration methods. The results for one hospital using the iNotify by iTriage smartphone application and website are given below.

Results

Data from one of the 16 hospitals of interest were compared for time periods before and after the estimated date the hospital ED implemented the iNotify self-registration feature. During the period before implementation (Week 1, 2007 to Week 8, 2011), 0.60% of all ED visit CCs contained the term "I" (median 2 visits per week, range 0-12). During the period after implementation (Week 9, 2011 to Week 31, 2014), 1.18% of all ED visit CCs contained the term "I" (median 4 visits per week, range 0-31). For ED visits binned in the ILI Syndrome category, 0.76% of ED visit CCs contained the term "I" before implementation compared to 0.89% of ED visit CCs after implementation. There was a negligible difference in ED visits in the VOI category when comparing the before and after implementation periods (0.20% vs. 0.23%, respectively). A qualitative analysis of the CC field before and after implementation of patient self-registration will also be discussed.

Conclusions

Preliminary analysis indicates that, although not exhaustive, the simple query used to find increases in visits with CCs containing "I" proved a sufficient method to find hospitals potentially using patient self-registration methods with minimal resource investment. There is a discernable difference in the use of CC terms after the implementation of a patient self-registration method, but the change does not appear to negatively affect the ability to successfully query the data for VOI. How a hospital decides to store and use the patient self-entered responses directly impacts the content of the CC data submitted to a SS system. Understanding the internal business processes of a hospital is essential to providing context for the data received in a SS system, which sometimes necessitates communication with the hospital. Implementing a rigorous data field documentation process for each hospital submitting data to a SS system could greatly ease the burden of both hospital and public health staff in performing such data field investigations and analyses in the future.

Weekly ED Visits Containing "I" in CC for Hospital of Interest
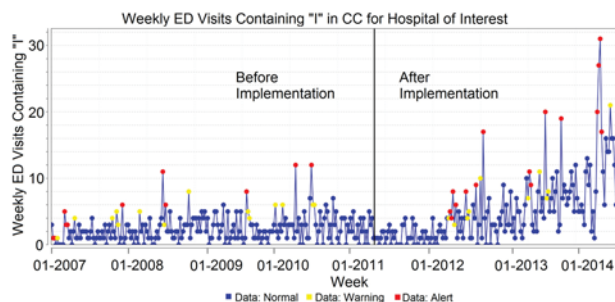
Keywords

ESSENCE-FL; Emergency department data; Patient self-registration; Syndromic surveillance

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