

HAI Surveillance Enhancement within EpiCenter by Utilization of Triage Notes

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Objective

Evaluate the usage of triage note data from EpiCenter, a syndromic surveillance system utilized by New Jersey Department of Health (NJDOH), to enhance Healthcare-Associated Infections (HAIs) surveillance for infections following a surgical procedure.

Introduction

In New Jersey, Health Monitoring Systems Inc.'s (HMS) EpiCenter collects chief complaint data for syndromic surveillance from 79 of 80 emergency departments (ED). Using keyword algorithms, these visits are classified into syndrome categories for monitoring unusual health events.

HAIs are infections that patients acquire while they are receiving treatment for a health condition in a health care setting. Following the 2014 Ebola outbreak in West Africa, the New Jersey Department of Health (NJDOH) Communicable Disease Service (CDS) started recruiting EDs to include triage note data in addition to chief complaint data to enhance surveillance capability for Ebola and other HAIs. Research by the University of North Carolina suggests triage note data improve the ability to detect illness of interest¹. Currently, there are three NJ EDs with triage note data in EpiCenter along with ICD 10 codes which can be used for comparison.

This pilot study will assess whether infections following a surgical procedure can be captured in triage note data along with ICD codes. Also, this evaluation will determine if triage note data can be used to create HAI custom classifications for syndromic surveillance. These classifications can potentially be used by surveillance and/or preparedness personnel and local health departments, as well as hospitals, to better prepare for detecting and preventing HAIs that are a significant cause of morbidity and mortality in the U.S.²

Methods

Three NJ facilities with triage notes information sending to EpiCenter were included in this study. ED visits occurred from 10/23/2015 to 10/29/2015 and from 2/2/2016 to 2/10/2016 in these facilities with available ICD 10 codes information in EpiCenter were evaluated.

This analysis focused on sepsis and post-surgery infections related ICD 10 codes: A400, A401, A402, A403, A408, A409, A410, A411, A412, A414, A4150, A4151, A4152, A4158, A418, A419, R571, R578, R579, T811, T81.4³. The keywords tested in triage notes are abdominal pain, redness, fev, fver, pyrexia, temp, elev temp, elevated temp, temp elev, hi temp, high temp, temp hi, temp10, temp 10, feeling hot, feels hot, feel hot, fuo, febr, cloudy fluid, cfluid, drainage, abscess, wound, tenderness, swelling, erythema, red, pain, post surgery, fever.

The sensitivity, specificity and positive predictive value (PPV) of selected keywords applied in the triage notes were evaluated by comparing to patient's ICD 10 codes.

Results

There were 2757 ED visits with triage notes and ICD 10 codes from 10/23/2015 to 10/29/2015 and from 2/2/2016 to 2/10/2016. During these time frames, one ED visit matched with both selected keywords and ICD codes, five matched with ICD 10 codes only, 59 matched

with keywords only, and 2692 did not match with either keywords or ICD 10 codes. In Table 1, it indicates that selected keywords have a high specificity (97.9 %) but with a relatively low sensitivity (16.7 %) and PPV (1.7%).

Conclusions

Selected keywords and ICD 10 codes from facilities sending triage notes were used to evaluate the surveillance system on identifying infections following a surgical procedure through analysis of ED triage note field. We also reviewed all NJ ED data during the same study period for other facilities not sending triage notes. It indicated that several key ICD codes, e.g. ICD code T81.4, infections following a surgical procedure, have been included in many facilities. This analysis will be repeated as more EDs participate in EpiCenter with triage notes and other data fields to refine the keywords and to improve the sensitivity and PPV.

		ICD 10		
		Matched	Not Matched	Total
Keywords	Matched	1	59	60
	Not Matched	5	2692	2697
Total		6	2751	2757

Table 1: Sensitivity, specificity and PPV calculations of selected keywords applied in triage notes based on the ICD 10 codes related to infections following a surgical procedure.

Keywords

Healthcare-Associated Infections; Surgical Site Infections; EpiCenter; New Jersey

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