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A Comparison of Fever Classified Chief Complaints and Diagnoses with Recorded Body Temperatures

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Objective

The Los Angeles County (LAC) Emergency Department (ED) Syndromic Surveillance System (SSS) classifies patients into syndrome categories based on stated chief complaints. In an effort to evaluate the accuracy of patient- stated chief complaints and final diagnoses, both "fever" chief complaints and diagnoses were compared with patient body temperature readings.

Introduction

The LAC SSS has been in existence since 2004. Currently, the system collects data from over 50 hospitals daily and performs a chief complaint-based syndrome classification analysis of all ED visits. The keyword "fever" is of special interest due to its inclusion within several syndrome category definitions such as influenza, meningitis, etc. However, inclusion of such terms in syndrome definitions may be a disadvantage as such keyword searches would depend upon the consistency in which the term "fever" is reported. In 2014, several LAC syndromic surveillance hospital data connections were upgraded to include notes recording patient body temperature. To evaluate the newly added temperature information, analyses were conducted on those observations that included body temperature, chief complaint, and diagnosis information.

Methods

For this study, emergency department admitting data from 9 hospitals were reviewed. A total of 24,402 observations from a five month period were categorized into groups by patient body temperature, those with fever classified chief complaints (n=1441) that included the terms "fever" or "febrile", or patients with a similarly defined fever classified diagnosis (n=970) and/or corresponding ICD9 code. Binary classification tests were conducted on this population to observe fever classified chief complaint and diagnosis outcomes against selected body temperature ranges.

Results

The sensitivities for fever classified chief complaints were 28.5%, 59.8%, and 73.9% for body temperatures ≥99°F, ≥100°F, and ≥101°F, respectively. Corresponding positive predictive values (PPV) were 60.7%, 43.2%, and 27.8% for the same groups. For fever classified diagnoses, sensitivities were found to be 22.2%, 47.5%, and 56.9% while PPVs were at 70.3%, 51.0%, and 31.8%, respectively, for the same temperature groups. The majority of fever classified chief complaints (81.4%) and diagnoses (75.7%) were categorized into the respiratory syndrome category with 54.3% of all fever classified chief complaints resulting in a consistent diagnosis. Furthermore, 55% of observations with both a fever classified chief complaint and diagnosis also recorded body temperatures at or above 100°F.

Conclusions

These preliminary findings have provided a basic understanding of the utilization of the term "fever" within the LAC SSS. In addition, the evaluation of body temperature versus fever classified chief complaints and diagnoses will be utilized to determine whether, and how, the body temperature variable may be included in future iterations of syndrome classification algorithms.

Keywords

fever; syndromic surveillance; temperature; chief complaint

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