ABSTRACT

The use of patient temperature data for biosurveillance in the emergency department

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Introduction

Biosurveillance systems commonly use emergency department (ED) patient chief complaint data (CC) for surveillance of influenza-like illness (ILI). Daily volumes are tracked using a computerized patient CC classifier for fever (CC Fever) to identify febrile patients. Limitations in this method have led to efforts to identify other sources of ED data. At many EDs the triage nurse measures the patient's temperature on arrival and records it in the electronic medical record (EMR). This makes it possible to directly identify patients who meet the CDC temperature criteria for ILI: temperature greater than 100 degrees F (T>100F).

Objective

To evaluate whether a classifier based on temperature >100F would perform similarly to CC Fever and might identify additional patients.

Methods

Design: Retrospective review of EMR data. *Setting*: Five EDs in New York and New Jersey from 10-1-07 to 5-31-09. *Protocol*: For patients with a measured temperature, we determined daily volumes for CC Fever and for T>100 and compared them using linear regression analysis and visual inspection of the time-series graphs. We also determined the additional
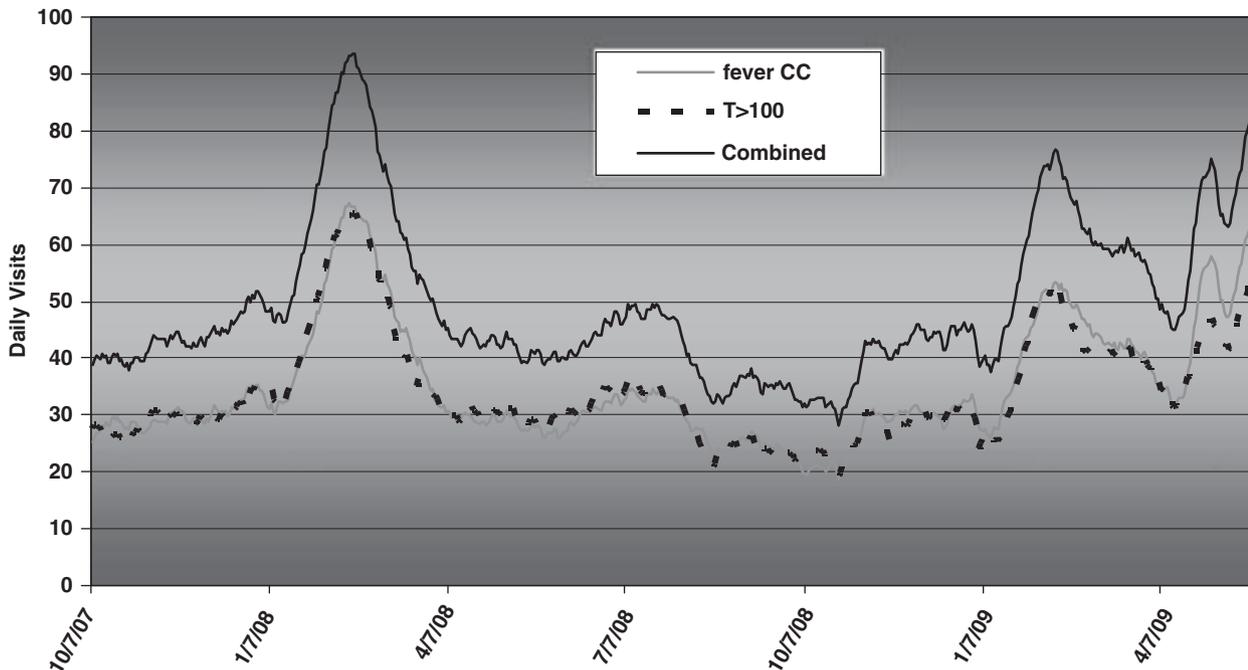

Figure 1 14-day moving average of visits for fever CC, T>100 and combined fever CC and T>100 classifiers.

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number of visits that were identified by adding T > 100 to CC Fever.

Results

There were a total of 352 742 ED visits, of which 265 099 (75%) had a measured temperature. Within that group, the total volumes were 21 411 for CC fever and 20 876 for T > 100. The correlation coefficient for the daily volumes was $r^2 = 0.94$, $P < 0.001$. Visual inspection of the time-series graphs (see Figure 1) showed a close match of seasonal peaks. The T > 100 classifier identified an additional 8959 patients not identified by the CC fever classifier alone (42% increase).

Conclusions

The classifier for measured temperature identified seasonal fever peaks similarly to the classifier based on CC fever and identified many additional patients. Further study is needed to determine the potential advantage of using measured temperature in ED surveillance for ILI.

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