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## Validation of the RedBat® Software for Syndromic Surveillance

The RedBat software system was developed for syndromic surveillance and uses free text symptom data imported from emergency department (ED) software to calculate scores for 10 significant syndromes. The specific tools developed by ICPA physicians and epidemiologists for calculating the syndrome scores are *SymptomScan*<sup>™</sup> and the *SyndromicScoringIndex*<sup>™</sup>. *SymptomScan* translates the free text symptoms from the ED software into symptom codes. The *SyndromicScoringIndex* sorts the symptom codes into meaningful syndrome scores.

*SymptomScan* and *SyndromicScoringIndex* have been tested on emergency department records from numerous hospitals, including teaching, community, and public hospitals. Our studies have led us to the following conclusions:

1. RedBat is able to detect real outbreaks in real data sets. One study of 5 large hospitals in a major metropolitan area identified two overlapping "Flu-like" illness outbreaks. We confirmed with public health records that the first was an actual Influenza A outbreak and the second was an RSV outbreak.
2. Sensitivity & predictive value positive depend on the quality and quantity of symptom data provided by point-of-care sites. When key symptoms are entered consistently, both the sensitivity and specificity of our algorithms are high. This has been demonstrated with "seeding" tests where hypothetical outbreaks are introduced into real data sets.
3. Since we recognize that there may be large variations in the kinds of symptom data available from different hospitals, we allow the user to control 2 threshold parameters for each syndrome:
  - a. The user can set a different cutoff score for each syndrome
  - b. The user can set the number of daily cases that will trigger a flagBy modifying the above values, the customer can change both the sensitivity and specificity. In particular, the health department can control the number of flags generated, and thereby reduce the number of outbreak investigations required.
4. Our statistical studies of RedBat have also shown that it is helpful to have multiple levels of "flags," indicating their degree or severity. For this reason, RedBat currently produces white, yellow, orange and red flags in its automatic threshold analyses.

We continually test our products in-house through studies such as these, and refine and improve RedBat algorithms based on our findings. Look for future publications of our results.