

# Triage Note in Emergency Department-Based Syndromic Surveillance

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## OBJECTIVE

This study evaluates the addition of triage note (TN) to syndrome queries used in the North Carolina Bioterrorism and Emerging Infection Prevention System (NC BEIPS).

## BACKGROUND

NC BEIPS receives daily emergency department (ED) data from 33 (29%) of the 114 emergency departments (EDs) in North Carolina. These data are available via a Web-based portal and the Early Aberration Reporting System (EARS) [1] to authorized NC public health users for the purpose of syndromic surveillance (SS). Users currently monitor several syndromes including: gastrointestinal severe (GI-S), fever/rash illness (FRI) and influenza-like illness (ILI). The syndrome definitions are based on the infection-related syndrome definitions of the CDC [2] and search the chief complaint (CC) and, when available, TN and initial temperature (Temp) fields. Some EDs record a TN, which is a brief text passage that describes the CC in more detail. Most research on the utility of ED data for SS has focused on the use of CC [3-4]. The goal of this study was to determine the sensitivity (Se), specificity (Sp), and both positive (PPV) and negative predictive value (NPV) of including TN in the syndrome queries.

## METHODS

We selected a sample of 500 ED visits from the 2004 NC BEIPS data warehouse. Two hundred fifty records met at least one of three automated syndrome definitions (FRI, GI-S, and ILI), while the other 250 did not meet any automated syndrome definition. The gold standard was a clinical review by two clinical experts who individually reviewed the records and assigned each to one or more syndrome categories based on clinical case definition. All visits were electronically processed for SS twice, once using the CC, Temp, and TN, and once using only CC and Temp. SAS version 8 (Cary, NC) was used to analyze the Se, Sp, PPV and NPV of automated syndromes with and without TN as compared to the clinically assigned syndromes.

## RESULTS

Table 1 shows the Se, Sp, PPV and NPV by syndrome of the computer-based syndrome designations, without and with TN, as compared to clinical designations, used as the gold standard.

Syndrome	Se	Sp	PPV	NPV
FRI W/o TN	20%	100%	100%	99.20%
FRI W/ TN	100%	99.18%	35.71%	100%
GI-S W/o TN	40%	98.57%	84.21%	89.61%
GI-S W/TN	98.75%	82.14%	51.30%	99.71%
ILI W/o TN	17.05%	99.76%	93.75%	84.92%
ILI W/TN	80.68%	90.05%	63.39%	95.62%

*Table 1: Sensitivity, Specificity, Positive Predictive Value, and Negative Predictive Value of Syndromes, With and Without Triage Note*

For all syndromes, Se and NPV increased with the addition of TN, while Sp and PPV decreased. The computer-based syndrome designations generated false positives for some visits that did not meet the syndrome definitions according to the experts. False positives resulted from several different factors, including TN with negation terms (e.g., no fever), mistakes in keyword searches in SQL queries, and query terminology issues.

## CONCLUSION

This study found that the inclusion of TN in the syndrome queries improved the sensitivity of our syndrome definitions while somewhat decreasing specificity and positive predictive value.

## REFERENCES

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