

Utility of the ESSENCE system for surveillance of Influenza-like Illness (ILI) in Miami-Dade County

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OBJECTIVE

Previous studies have examined the utility of different methods of syndromic grouping [1]. This study evaluates the utility of ESSENCE (Electronic Surveillance System for the Early Notification of Community-based Epidemics) for influenza-like Illness (ILI) surveillance.

BACKGROUND

The threat of pandemic and seasonal influenza has drawn attention to syndromic surveillance systems for early detection of influenza-like illness [2]. Since 2005, the Miami-Dade County Health Department has implemented ESSENCE to monitor emergency department data for ILI using chief complaint information. This study evaluates the ability of the ESSENCE ILI chief complaint grouping for identifying true ICD-9 diagnosed influenza.

METHODS

We analyzed emergency department data from one Miami-Dade County hospital from January-March 2005, comparing ILI and non-ILI chief complaints with influenza diagnostic codes 487.0 to 487.8. [3] In ESSENCE, ILI is a chief complaint of fever with either cough or sore throat. It can also be a chief complaint of flu. We calculated the sensitivity, specificity, positive predictive value, negative predictive value, and accuracy of the ESSENCE ILI syndrome category using the ICD-9 diagnosis as the gold standard.

RESULTS

From January-March 2005, there were 26,383 emergency department visits, of which 1489 (5.6%) were assigned to the ILI syndromic group. Of these 1,489 events, 26 (1.7%) were true positives and 1,463 (98.3%) were false positives. There were 24,894 (94.4%) syndromic events classified under other syndromic groups (ILI-negative events). Of them, 111 (0.04%) were false negatives and 21,013 (99.96%) were true negatives. Table 1 shows the sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), and accuracy of the ILI syndromic group.

Table 1. Performance of MCDHD ESSENCE system for ILI

Sensitivity	0.19
Specificity	0.94
PPV	0.02
NPV	0.99
Accuracy	0.94

PPV-Positive predictive value, NPV-Negative predictive value

CONCLUSIONS

The measured sensitivity of 19% and the specificity of 94% were unexpected [4]. We should expect a system with high sensitivity and at best moderate specificity and positive predictive value [4]. The low sensitivity seen in this study may be due to low diagnosis of influenza in the emergency department setting. This is probably due low laboratory testing for acute respiratory infection. Additionally studies using expert classification of cases based on chart review could be useful in better determining the sensitivity of syndromic surveillance systems for ILI.

REFERENCES

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