Evaluation of ILI data use to augment traditional Influenza Surveillance

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Objective: The objective of this report is to evaluate the correlation between influenza-like illness (ILI) syndrome classification using chief complaint data and discharge diagnosis International Classification of Disease, Ninth Revision (ICD-9) code for influenza with the laboratory data from one hospital in North Dakota over a period of three influenza seasons.

Background: Previous reports from participating facilities in North Dakota illustrated that ILI syndrome data from syndromic surveillance data, which is based on chief complaints logs, had a close correlation to the traditional ILI surveillance and that frequency slope of the ILI syndrome was also closely correlated to that of the cases that tested positive for influenza. The facility used in this report submits ICD-9 codes to the North Dakota Department of Health (NDDoH). By comparing the NDDoH ILI syndrome to influenza laboratory testing data and ICD-9 code specific to influenza (487) we found that syndromic surveillance data for ILI closely followed the influenza testing trend as well as the ICD-9 code trend.

Methods: The NDDoH receives daily electronic files from one hospital's ED utilizing the commercial software RedBat® (ICPA Inc., Austin, TX). Frequency of symptom groupings translated from chief complaint data and ICD-9 code data were analyzed. We compared trends in weekly ILI detected from the syndromic surveillance data at this facility by correlating the ILI syndrome in a time series against the IDC-9 code 487 and the positive rapid influenza and total rapid influenza tests from September 1, 2005 to June 19, 2008.

Results: Figures 1, 2 and 3 show the trends of positive and total rapid influenza tests compared to ILI chief complaint data and ICD-9 code 487 in one facility in North Dakota between September 1, 2005 and June 19, 2008. It was noteworthy that influenza seasons peaks were correlated using the different data sources.

Discussion: Our analysis suggests that ILI syndromic surveillance data obtained by utilizing RedBat® software is consistent with the information coded using ICD-9. These two data sets seem to correlate to the positive influenza test trends. One limitation with RedBat® data was that ILI syndrome was assigned to cases that went to the facility to receive their flu shots. Based on these qualitative findings,

further analysis is needed to determine the statistical correlation between ILI syndrome, ICD-9 code data and positive influenza tests. The findings would improve NDDoH's syndromic surveillance by evaluating its threshold settings, symptom algorithms, and improve data quality at the facility.

Figure 1. 05-06 Influenza Season Trends using RedBat, ICD-9 Code, and Laboratory Testing
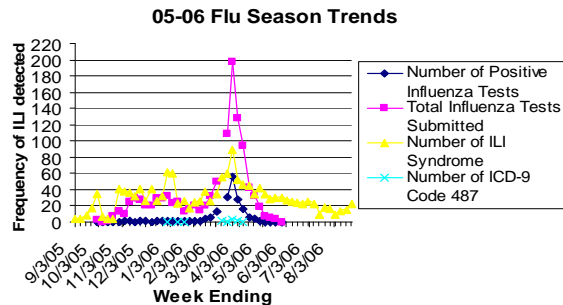

Figure 2. 06-07 Influenza Season Trends using RedBat, ICD-9 Code, and Laboratory Testing
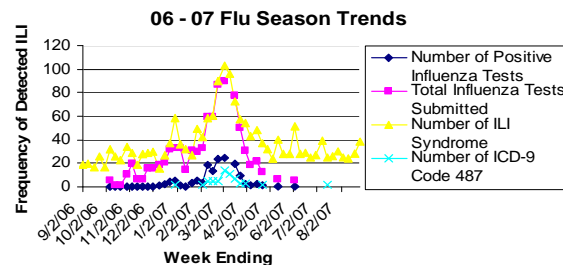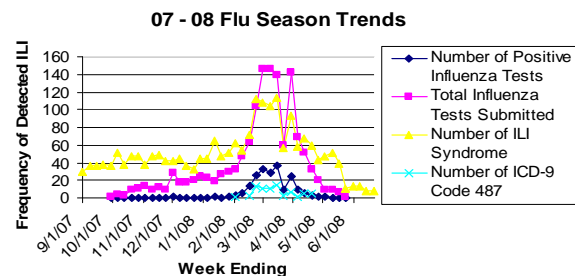

Figure 3. 07-08 Influenza Season Trends using RedBat, ICD-9 Code, and Laboratory Testing

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