Correlation between Influenza and Respiratory Syncytial Virus Isolates and Emergency Department Visits, Los Angeles County, 2005–2006

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OBJECTIVE

This study describes the ability by which total volume of ED visits correlate with influenza and respiratory syncytial virus (RSV) activity in the community.

BACKGROUND

The ReddiNet® system surveys total daily volume of emergency department (ED): visits, intensive care unit (ICU) admissions, hospital admissions, and deaths from participating hospitals throughout Los Angeles County (LAC). The system has been utilized to facilitate the early detection of large, sudden increases in volume of ED visits. Currently, ReddiNet® is a complementary system to enhance influenza surveillance in the community.

METHODS

An electronic poll collects ED volume data for the previous day from 65 participating hospitals throughout LAC. Utilizing total volume of ED visits collected by the ReddiNet® system, hospitals with >90% daily reporting (39 hospitals) during the 2005–06 influenza season were selected for this retrospective analysis. Selected hospitals were well-distributed geographically, representing 57.7% of total licensed beds. Positive influenza and RSV isolate counts were obtained from the LAC Influenza Surveillance project. LAC ED Syndromic Surveillance data was utilized to stratify influenza-like illness (ILI)-categorized ED visits into age groups for verification of RSV trend observed in ED volume data.

RESULTS

The distribution of total emergency department visits for the selected hospitals revealed a first peak corresponding with total volume of laboratory positive influenza isolates and a second peak corresponding with total volume of laboratory positive RSV isolates. Due to the biphasic nature of this trend, a correlation coefficient ($r=0.73$; $p<0.0001$) was calculated between total ED volume and total number of laboratory positive isolates (influenza and RSV), suggesting the two temporal trends are strongly correlated. Taken separately, a strong correlation was found between total ED visits and influenza ($r=0.63$; $p=0.001$); however, the correlation observed between total ED visits and RSV was not statistically significant ($r=0.26$; $p=0.2160$).

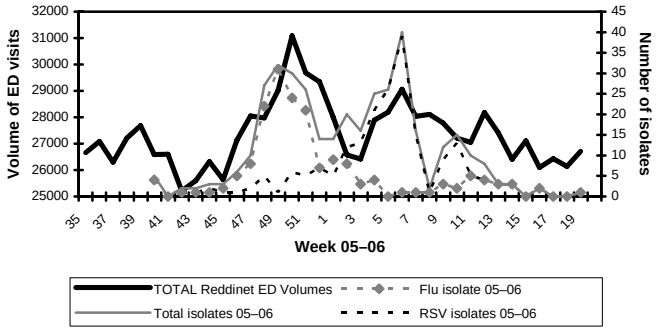

Figure 1 – Distribution of total emergency department visits, positive influenza isolates, positive RSV isolates, and total (RSV and influenza) positive isolates by week from September 2005–May 2006.

CONCLUSIONS

ED volume surveillance systems strongly correlate with virologic test results. Future studies will evaluate additional algorithms for assessment of ED volume data to further enhance detection of influenza prospectively. Results may be beneficial to local health departments for the early detection and notification of influenza and RSV activity in the community.

The main limitation of the study was the lack of information regarding total number of influenza and RSV isolate tests conducted. In addition, increasing the number of sentinel influenza surveillance sites could capture a more representative population of LAC.

REFERENCES

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