CORRELATION OF INFLUENZA AND RESPIRATORY SYNCYTIAL VIRUS WITH TOTAL VOLUME OF EMERGENCY DEPARTMENT VISITS IN LOS ANGELES COUNTY
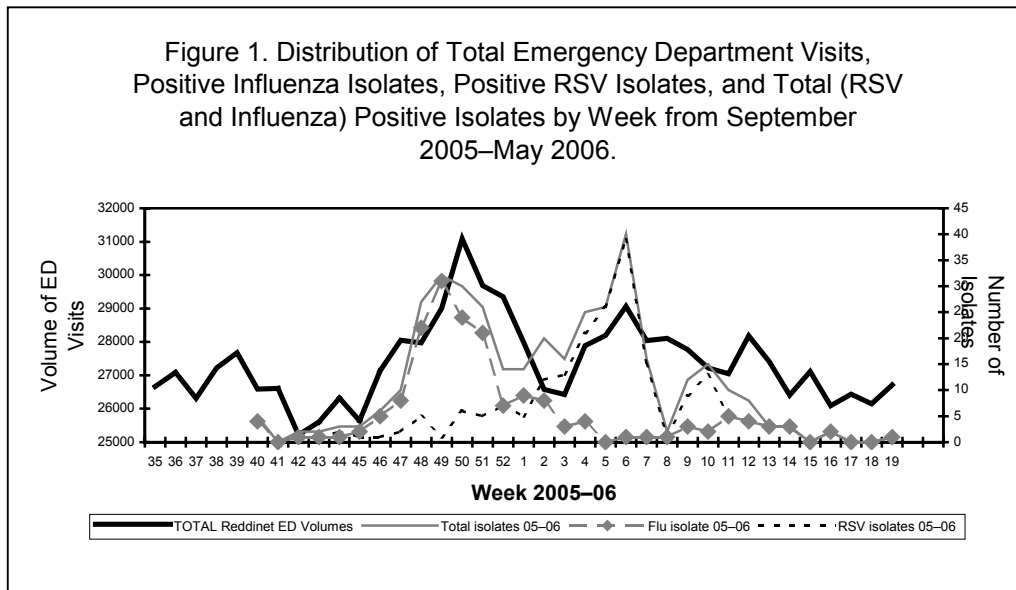
BACKGROUND

This study describes the ability by which total volume of emergency department (ED) visits correlate with influenza activity in the community. In Los Angeles County (LAC), the ReddiNet® system has been employed to survey: total daily volume of emergency department visits, intensive care unit (ICU) admissions, hospital admissions, and deaths from participating hospitals.[1] 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

For the ReddiNet system, 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 respiratory syncytial virus (RSV) isolate counts were obtained from the LAC Public Health Influenza Surveillance project for comparison.[2]

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 respiratory syncytial virus (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.

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1. Additional information abut the ReddiNet system is available at: www.reddinet.com
2. The methods for obtaining influenza and RSV isolates for Los Angeles County surveillance have been described previously at: http://159.225.130.92/acd/docs/flu%20special%20report.pdf

DISCUSSION

ED volume surveillance systems strongly correlate with virologic test results. Studies are under way to evaluate additional algorithms for assessment of ED volume data to further enhance detection of influenza prospectively. Future studies would profit from collaborative studies with syndromic surveillance systems to obtain syndrome and age categories of ED visits for further assessment of disease burden from RSV and influenza in LAC [1]. The main limitations of this study were the inability to stratify data by age or syndrome categories, and the lack of information regarding total number of influenza and RSV tests performed. In addition, increasing sentinel influenza surveillance sites could capture a more representative population of LAC.

REFERENCES

1. Mangtani P, Hajat S, Kovats S, Wilkinson P, Armstrong B. The association of respiratory syncytial virus infection and influenza with emergency admissions for respiratory disease in London: An analysis of routine surveillance data. Clinical Infectious Diseases. 2006; 42:640–6.