Arizona's Integrated Influenza Surveillance for School Children

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OBJECTIVE

1) Describe Arizona's integrated influenza surveillance for school children with a retrospective analysis of data from multiple sources including School-based Syndromic Surveillance Program (SSSP), laboratory-confirmed influenza case reports, sentinel influenza-like illness (ILI) reports, and hospital discharge data. 2) Demonstrate how ILI data collected from SSSP can be integrated into evidence from other data sources to prospectively monitor and detect early increases in influenza among school children.

BACKGROUND

Arizona uses a provider-based sentinel surveillance system for ILI and state-based laboratory reporting of influenza case reports to monitor influenza activity during flu seasons. During the last two school years, the SSSP has received influenza-like illness (ILI) data with the corresponding CDC ILI case definition in a near-real time manner from the school nurses' offices in participating schools. In the last influenza season, Arizona integrated the school-based syndromic ILI data with other flu surveillance components to enhance influenza surveillance among school children.

METHODS

Data from multiple data sources were examined for the 2006-2007 and 2007-2008 seasons: SSSP, laboratory-confirmed reports, sentinel provider ILI reports, and clinically-diagnosed influenza cases based on ICD-9 codes in hospital discharge data [1,2]. A retrospective analysis was conducted to assess the correlation of these influenza data by comparing overall seasonal patterns and the timeliness of each source by peak comparison [3].

To demonstrate how to integrate evidence from multiple data sources to prospectively monitor and detect aberrations of influenza among school children, aberration detection comparisons were made by applying the Early Aberration Reporting System (EARS) for CuSum analysis including C1, C2, and C3[4].

RESULTS

Comparisons of the overall seasonal patterns of influenza indicate a close correlation among multiple data sources (Figure 1). SSSP data suggest that the ILI season starts earlier than indicated by reported lab cases and sentinel ILI data, while the peaks shown by all sources are similar.

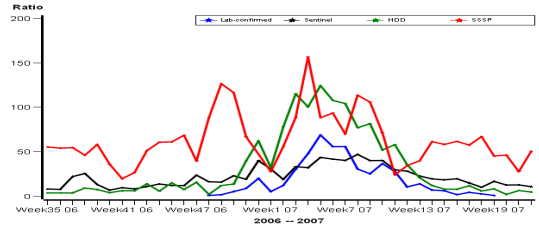

Figure 1– ILI among children from SSSP (red) compared with sentinel surveillance reports (black and blue) and hospital discharge database (green), September, 2006--May, 2007.

CuSum analysis of influenza data shows that integrating data from multiple systems, including SSSP, can help epidemiologists to prospectively monitor and detect early aberrations of influenza among school children (Figure2) by prompting closer examination of available data sources once aberrations are first detected in one system.

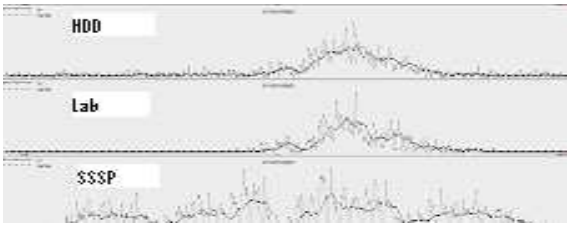

Figure 2– Comparisons of aberration detection of influenza among school children from SSSP, lab-confirmed reports, and hospital discharge database, September, 2006--May, 2007.

CONCLUSIONS

Arizona's integrated influenza surveillance for school children has been enhanced by analyzing evidence from multiple data sources.

The School-based Syndromic Surveillance ILI data may be used to alert early changes in influenza activity and integrated with evidence from other data sources for prospectively monitoring the influenza season. Further study to assess the correlation of influenza data of multiple data sources is underway.

REFERENCES

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