

## ABSTRACT

# Comparison of Distribute and ILINet for national influenza surveillance

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## Objective

To compare ILI data reported to the Distribute surveillance project to data from an existing influenza surveillance system, the US Outpatient Influenza-like Illness Network (ILINet).

## Introduction

During the spring of 2009, a public health emergency was declared in response to the emergence of the 2009 Influenza A (H1N1) virus. Owing to the response, timely data were needed to improve situational awareness and to inform public health officials. Traditional influenza surveillance is time-consuming and resource intensive, and electronic data sources are often more timely and resource saving. Collaboration began between the Centers for Disease Control and Prevention (CDC), the International Society for Disease Surveillance (ISDS), and the Public Health Informatics Institute (PHII) to expand syndromic Emergency Department (ED) surveillance through the Distribute project.

Distribute collects aggregate, daily or weekly reports of influenza-like illness (ILI) and total patient visits to EDs from participating health jurisdictions, stratified by age group and other variables. Additional variables included the three digit zip code of the patient's residence as well as the disposition and temperature, however not all jurisdictions collect these variables.<sup>1</sup> Distribute data are typically extracted from ED-based electronic health data systems. The ILI definition is determined by the participating jurisdiction that can be a city, county, or state. At the time of analysis, the network consisted of 33 jurisdictions.

Because ILI data reported to Distribute had not been systematically compared with data reported through other surveillance systems, CDC planned an evaluation of the Distribute data, which included a comparison to ILINet.

ILINet is a collaborative effort between the CDC, local and state health departments and primary health care providers. The network currently consists of approximately 3000

healthcare providers in all 50 states, Chicago, the District of Columbia, New York City, and the US Virgin Islands. Enrolled providers send CDC weekly reports via internet or fax that consist of the total number of patients seen for any reason and the number of those patients with ILI by age group. ILI is defined as fever (temperature of  $\geq 100^{\circ}\text{F}$  ( $37.8^{\circ}\text{C}$ )) and a cough and/or sore throat in the absence of a known cause other than influenza.<sup>2</sup>

## Methods

Data from Distribute and ILINet were obtained from 2 September 2007 through 31 October 2009 for all sites where data were available. The weekly percent of visits because of ILI were calculated for each system. For state-based Distribute jurisdictions comparisons were made using ILINet data from the same state. For local jurisdictions, a geographic area was defined using the appropriate city or county boundaries. ILINet facilities that fell into the defined boundaries were used for comparison. Comparisons were made using correlation coefficients as well as visually.

## Results

For state-based jurisdictions the correlation coefficients ranged from 0.64 to 0.96, with a mean of 0.83. For local jurisdictions, the correlation coefficients ranged from 0.38 to 0.91 with a mean of 0.76. For all state jurisdictions and all but one local jurisdiction, peaks in ILI tracked similarly in both systems. For areas known to have the same EDs contributing data to both systems, ED data were removed from the ILINet data, and comparisons were made again. Correlations among these sites changed very little when the ED data were removed from the ILINet data.

## Conclusions

Overall, the correlation between ILI data reported to the two systems was high. These results show that similar ILI data can be obtained using either electronic ED-based syndromic surveillance or traditional, provider-

based syndromic surveillance, and could be potentially useful in tracking and describing influenza activity at the national level. Differences in data collected through the two systems could be because of differences in the populations under surveillance, or potentially because of differences in illness seen in emergency departments compared with those seen in traditional primary care. Periodic evaluation of these systems should be conducted. Efforts to expand the Distribute network to a national network should be made.

### Acknowledgements

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### References

- 1 Distribute background at: <http://www.isdsdistribute.org/faq.php>.
- 2 Influenza Surveillance Background: <http://www.cdc.gov/flu/weekly/fluactivity.htm>.