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# Comparison of ILINet and ESSENCE for Influenza Surveillance at the Local Level

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## Objective

To compare influenza-like illness (ILI) data reported to the Centers for Disease Control and Prevention (CDC) U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet) with discharge diagnosis data for influenza from the same reporting source obtained through the Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE) in Seminole County, Florida.

## Introduction

ILINet is used nationwide by sentinel healthcare providers for reporting weekly outpatient visit numbers for influenza-like illness to CDC. The Florida Department of Health receives urgent care center (UCC) data through ESSENCE from participating facilities. Seminole County is unique in that its four sentinel providers located in separate UCCs report into both systems, and all their discharge diagnoses are available through ESSENCE. However, the reported number of patients being discharged from those providers with diagnoses of influenza is not equivalent to the number of cases reported into ILINet. Data from the two systems were therefore compared both among and between the individual sentinel providers in order to determine the extent of the variation over four influenza seasons.

## Methods

Influenza-like illness is defined by the Centers for Disease Control and Prevention (CDC) for surveillance purposes as "fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a KNOWN cause other than influenza." [1] ILINet data from sentinel providers for percent ILI visits were extracted for each of the influenza seasons (reporting weeks 40 through 20 of the following year) from 2009 through 2013. ESSENCE data for patients with a discharge diagnosis of influenza were extracted from the same providers for the same seasons, and the percentage of influenza discharge diagnoses was calculcated based on total visit counts. Pearson correlation coefficients were calculated to compare ILINet and ESSENCE data for each influenza season and provider location, both for the entirety of the season as well as identified peak weeks (Table 1); for the few instances where ILINet data had not been reported, those weeks were not included in the calculations.

## Results

When data from all four providers were aggregated for each respective surveillance system, the correlation between ILINet and ESSENCE discharge diagnoses of influenza ranged from 0.53 to 0.89 over the entirety of each season, and from 0.45 to 0.86 for peak weeks (Table 2). By contrast, the correlation by individual provider between the two systems ranged from 0.02 to 0.77 over each season, and from -0.15 to 0.92 for peak weeks (Table 3).

## Conclusions

Although the correlations between the surveillance systems ILINet and ESSENCE were positive when viewed in aggregate, individual sites demonstrated inconsistency in reporting. This study demonstrates a need to identify the sources of differences that occur between making and reporting a determination of ILI versus those involved in a discharge diagnosis of influenza

Table 1

| Flu Season (Weeks 40-20) | Estimated Peak Weeks |
|---|---|
| 2005-2010 | 40-49 |
| 2010-2011 | 50-10 |
| 2011-2012 | 46-15 |
| 2012-2013 | 43-10 |

Table 2

| Flu Season | Seasonal Correlation | Peak Weeks Correlation |
|---|---|---|
| 2009-2010 | 0.89 | 0.83 |
| 2010-2011 | 0.85 | 0.86 |
| 2011-2012 | 0.53 | 0.45 |
| 2012-2013 | 0.80 | 0.75 |

Table 3

| Sentinel Provider | 2009-2010 Peak Weeks | 2010-2011 Peak Weeks | 2011-2012 Peak Weeks | 2012-2013 Peak Weeks |
|---|---|---|---|---|
| A | 0.30 | 0.29 | 0.43 | 0.45 |
| B | 0.71 | 0.44 | 0.26 | 0.55 |
| C | 0.92 | 0.41 | -0.15 | 0.40 |
| D | 0.53 | 0.39 | 0.16 | 0.35 |

## Keywords

ESSENCE; ILINet; Influenza surveillance; Influenza-like illness surveillance; Influenza

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## References

1) Centers for Disease Control and Prevention (US). Overview of Influenza Surveillance in the United States [Internet]. Atlanta. [updated 2013 October 24; cited 2014 August 29]. Available from: http://www.cdc.gov/flu/weekly/overview.htm

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