Missouri Weekly Influenza Surveillance Report
2016-2017 Influenza Season\(^1\)

Week 4: January 22 – January 28, 2017

All data are preliminary and may change as more reports are received.

Summary:

- The estimated influenza activity in Missouri is Widespread\(^2\).

- A season-to-date total of 15,378 laboratory-positive\(^3\) influenza cases (12,970 influenza A, 2,085 influenza B, and 323 untyped) have been reported in Missouri as of Week 4. The influenza type for reported cases season-to-date includes 84% influenza A, 14% influenza B, and 2% untyped. The highest season-to-date rate of reported laboratory-positive influenza cases is among children aged 0-4 years (534 cases per 100,000 population). Twenty-three laboratory-confirmed cases of influenza [21 influenza A (H3) and two influenza B (Yamagata)] were reported by the Missouri State Public Health Laboratory (MSPHL) during Week 4.

- The Centers for Disease Control and Prevention (CDC) has antigenically characterized one influenza isolate from Missouri, to date, this influenza season. The virus was antigenically similar to the A/Hong Kong/4801/2014-like (H3N2) virus included in the 2016-2017 Northern Hemisphere vaccine formulation.

- Influenza-like illness (ILI) activity is above baseline for both the Missouri Outpatient ILI Surveillance Network (ILINet) and the hospital emergency room visit chief complaint data reported through ESSENCE. The reported percentage of visits for ILI was 4.93% and 3.28% through ILINet and ESSENCE respectively.\(^4\) The percentage of respiratory specimens testing positive for influenza in clinical laboratories also increased during Week 4.

- Four influenza-associated deaths have been reported in Missouri as of Week 4. During Week 3, 98 deaths involving Pneumonia and Influenza (P&I) were reported to the Bureau of Vital Records, resulting in a season-to-date total of 965 P&I associated deaths in Missouri.\(^5\)

- Nineteen influenza or ILI-associated outbreaks have been reported in Missouri as of Week 4. Three influenza or ILI-associated school closures have been reported in Missouri as of Week 4.

- Influenza activity increased in the U.S. during Week 3. National influenza surveillance information is prepared by CDC and is included in the weekly FluView report, which is available online at [http://www.cdc.gov/flu/weekly/fluactivitysurv.htm](http://www.cdc.gov/flu/weekly/fluactivitysurv.htm).

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\(^1\)The 2016-2017 influenza season begins CDC Week 40 (week ending October 8, 2016) and ends CDC Week 39 (week ending September 30, 2017).

\(^2\)Widespread is defined as: Outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in at least half the regions of the state with recent laboratory evidence of influenza in the state.

\(^3\)Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

\(^4\)Influenza-like illness (ILI) is defined by ILINet 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. Influenza-like illness (ILI) is defined by ESSENCE as Emergency Department chief complaints that contain keywords such as “flu”, “flulike”, “influenza” or “fever” plus “cough” or “fever” plus “sore throat”.

\(^5\)The P&I data are available one week later. The P&I data for the CDC Week provided is the most current data available.
Surveillance Data:

Interactive Maps

The county specific influenza data are provided through interactive maps available at http://arcg.is/2kpWcrP. Click on the county to view the influenza data specific to that county.

- Reported Laboratory-positive Influenza Cases by Influenza Type by County, CDC Week 4
- Reported Laboratory-positive Influenza Cases by Influenza Type by County, Season-to-Date
- Reported Rate per 100,000 Population, CDC Week 4

Data Figures

Figure 1. Number of Laboratory-positive† Influenza Cases by Influenza Type, Missouri, CDC Week 4 (January 22 – January 28, 2017)‡

<table>
<thead>
<tr>
<th>Influenza Type</th>
<th>Week 2</th>
<th>Week 3</th>
<th>Week 4</th>
<th>2016-2017* Season-to-Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza A</td>
<td>2,137</td>
<td>3,068</td>
<td>3,528</td>
<td>12,970</td>
</tr>
<tr>
<td>Influenza B</td>
<td>275</td>
<td>478</td>
<td>570</td>
<td>2,085</td>
</tr>
<tr>
<td>Influenza Unknown Or Untyped</td>
<td>46</td>
<td>93</td>
<td>95</td>
<td>323</td>
</tr>
<tr>
<td>Total</td>
<td>2,458</td>
<td>3,639</td>
<td>4,193</td>
<td>15,378</td>
</tr>
</tbody>
</table>

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
‡Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 2. Number of Laboratory-positive† Influenza Cases and Case Rates by Age Group, Missouri, CDC Week 4 (January 22 – January 28, 2017)‡

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Week 4 Cases</th>
<th>Week 4 Rate‡</th>
<th>2016-2017* Season-to-Date</th>
<th>2016-2017* Season-to-Date Rate‡</th>
</tr>
</thead>
<tbody>
<tr>
<td>00-04</td>
<td>549</td>
<td>147</td>
<td>1,997</td>
<td>534</td>
</tr>
<tr>
<td>05-14</td>
<td>1,051</td>
<td>135</td>
<td>3,032</td>
<td>388</td>
</tr>
<tr>
<td>15-64</td>
<td>2,028</td>
<td>51</td>
<td>7,770</td>
<td>195</td>
</tr>
<tr>
<td>65+</td>
<td>564</td>
<td>61</td>
<td>2,577</td>
<td>276</td>
</tr>
<tr>
<td>Total</td>
<td>4,193</td>
<td>69</td>
<td>15,378</td>
<td>254</td>
</tr>
</tbody>
</table>

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
‡Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population
### Figure 3. Number of Laboratory-positive† Influenza Cases and Case Rates by Region, Missouri, CDC Week 4 (January 22 – January 28, 2017)‡

<table>
<thead>
<tr>
<th>District</th>
<th>Week 4 Cases</th>
<th>Week 4 Rate ‡</th>
<th>2016-2017* Season-to-Date</th>
<th>2016-2017* Season-to-Date Rate ‡</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE</td>
<td>520</td>
<td>79</td>
<td>1,767</td>
<td>267</td>
</tr>
<tr>
<td>EA</td>
<td>930</td>
<td>41</td>
<td>3,962</td>
<td>175</td>
</tr>
<tr>
<td>NW</td>
<td>1,877</td>
<td>118</td>
<td>5,581</td>
<td>351</td>
</tr>
<tr>
<td>SE</td>
<td>332</td>
<td>70</td>
<td>1,062</td>
<td>223</td>
</tr>
<tr>
<td>SW</td>
<td>534</td>
<td>50</td>
<td>3,006</td>
<td>279</td>
</tr>
<tr>
<td>Total</td>
<td>4,193</td>
<td>69</td>
<td>15,378</td>
<td>254</td>
</tr>
</tbody>
</table>

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)

‡Incidence Rate per 100,000 population

### Figure 4. Number of Laboratory-positive† Influenza Cases by CDC Week, Missouri, 2013-2017*

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

Figure 5. Percentage of Outpatient Visits for Influenza-like-Illness (ILI), Missouri Outpatient ILI Surveillance Network (ILINet) 2013-2017*†

*The ILINet Region 7 (MO, IA, KS, NE) baseline is the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons, plus two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season’s total number of specimens that tested positive for influenza.

Data Source: U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Centers for Disease Control and Prevention (CDC).

†2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of outpatient visits for ILI during Week 53 was 7.63.

Figure 6. Season-to-Date PCR (++) Tests for Influenza in Missouri

Data Source: National Respiratory and Enteric Virus Surveillance System (NREVSS), Centers for Disease Control and Prevention (CDC).

2016-2017 season-to-date through the week ending May 20, 2017 (Week 20).
Figure 7. Weekly Percentage of Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, for 2013-2017 Influenza Seasons*†

*The ESSENCE ILI Baseline is the mean percent of ILI visits for each week during the previous three years (2013-15) when percentage of ILI visits were less than 2% of total visits, plus two standard deviations.
†Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of visits for ILI in ESSENCE participating hospitals during Week 53 was 4.3.

Figure 8. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by Age-group, District and Statewide, CDC Week 4, 2017*

*Some of the ILI increase in the Northwest District may be due to surveillance changes implemented on January 16, 2017.

Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

*Some of the ILI increase in the Northwest District may be due to surveillance changes implemented on January 16, 2017.
Additional Influenza Data Sources:

Centers for Disease Control and Prevention: National Influenza Surveillance (FluView)
http://www.cdc.gov/flu/weekly/fluactivitysurv.htm

The National Respiratory and Enteric Virus Surveillance System (NREVSS):
https://www.cdc.gov/surveillance/nrevss/

World Health Organization: International Influenza Surveillance:
http://www.who.int/influenza/surveillance_monitoring/en/