Washington State Influenza Update

Week 42: October 15, 2017-October 21, 2017
Washington State Department of Health, Communicable Disease Epidemiology

Please note all data are preliminary and may change as data are updated

State Summary: Flu activity remains low

- Zero lab-confirmed influenza deaths have been reported for the 2017-2018 season to date.
- During week 42, 14 out of 585 specimens (2.4%) tested by the World Health Organization/National Respiratory and Enteric Virus Surveillance System (WHO/NREVSS) collaborating laboratories in Washington were positive for influenza, 1 influenza A (2009 H1N1), 2 influenza A (H3N2), 10 influenza A (subtyping not performed), and 1 influenza B.
- During week 42, the proportion of outpatient visits for influenza-like illness (ILI) was 0.4 percent, below the baseline of 1.1 percent.
- Influenza is characterized as sporadic in Washington.

Influenza Laboratory Surveillance Data

Laboratory Data: World Health Organization (WHO) & National Respiratory and Enteric Virus Surveillance System (NREVSS) Data Reported to CDC

For the 2016-2017 influenza season, CDC has generated separate graphs of data reported to CDC by public health laboratories (Figure 1) and commercial laboratories (Figure 2). Table 1 combines the data from the public health and commercial laboratories.

Table 1: WA Influenza Specimens Reported to CDC, Public Health Laboratories and Commercial Laboratories

<table>
<thead>
<tr>
<th>Week</th>
<th>A (H1)</th>
<th>A (2009 H1N1)</th>
<th>A (H3N2)</th>
<th>A (Unable to subtype)</th>
<th>A (Subtyping not performed)</th>
<th>B</th>
<th>BYam</th>
<th>BVic</th>
<th>Total Tested</th>
<th>% Flu Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>39</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>418</td>
<td>1.4</td>
</tr>
<tr>
<td>40</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>7</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>629</td>
<td>2.7</td>
</tr>
<tr>
<td>41</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>11</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>619</td>
<td>1.9</td>
</tr>
<tr>
<td>42</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>10</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>585</td>
<td>2.4</td>
</tr>
</tbody>
</table>

Figure 1: Influenza Positive Tests Reported to CDC, WA Public Health Laboratories
Antigenic Characterization

Antigenic characterization has not yet been conducted by CDC for the 2017-2018 season. Antigenic characterization results on a subset of influenza specimens collected in Washington during the 2016-2017 season are as follows.

Twenty-two influenza A (H3N2) specimens were characterized as A/Hong Kong/4801/2014-like, the influenza A (H3N2) component of the 2016-2017 vaccine.

Three influenza B specimens were characterized as B/Brisbane/60/2008-like, the B Victoria lineage component of the 2016-2017 trivalent and quadrivalent influenza vaccines.

Sixteen influenza B specimens were characterized as B/Phuket/3073/2013-like, the B Yamagata lineage component of the 2016-2017 quadrivalent influenza vaccine.

Three influenza A specimens were characterized as A/Michigan/45/2015 (H1N1)pdm09-like.

Antiviral Resistance Testing

No testing has yet occurred on specimens collected during the 2017-2018 influenza season.

Novel, Avian and Unsubtypable Influenza Viruses

In March 2017, influenza H7N9 was identified in Tennessee commercial poultry and low pathogenic avian influenza was identified in Alabama poultry.

In December 2016 influenza H7N2 was identified in cats in New York City, with one human infection reported. For more about avian influenza, see CDC's materials.
Outpatient Influenza-like Illness Surveillance

Outpatient Influenza-like Illness Surveillance Network (ILINet) Data
ILI is defined as fever (temp 100°F/37.8°C or higher) plus cough and/or sore throat. During week 42, 44 sentinel providers in Washington reported data through the U.S. Outpatient Influenza-like Illness Surveillance Network Surveillance Network (ILINet). Of 9,870 visits reported, 44 (0.4%) were due to ILI, below the baseline of 1.1%.

Note that for this figure the baseline is determined by calculating the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons and adding 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 in public health laboratories. See http://www.cdc.gov/flu/weekly/overview.htm

Figure 3: Percentage of ILI Visits Reported by Sentinel Providers, Washington, 2015-2017

Table 2: Number of ILI Visits Reported by Sentinel Providers by Age Group, Washington

<table>
<thead>
<tr>
<th>Week</th>
<th>Sentinel Providers</th>
<th>Age 0-4</th>
<th>Age 5-24</th>
<th>Age 25-49</th>
<th>Age 50-64</th>
<th>Over 64</th>
<th>Total ILI</th>
<th>Total Patients</th>
<th>Percent ILI</th>
</tr>
</thead>
<tbody>
<tr>
<td>39</td>
<td>34</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>14</td>
<td>3,131</td>
<td>0.4</td>
</tr>
<tr>
<td>40</td>
<td>42</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td>3</td>
<td>2</td>
<td>12</td>
<td>5,775</td>
<td>0.2</td>
</tr>
<tr>
<td>41</td>
<td>45</td>
<td>4</td>
<td>8</td>
<td>12</td>
<td>2</td>
<td>2</td>
<td>28</td>
<td>9,312</td>
<td>0.3</td>
</tr>
<tr>
<td>42</td>
<td>44</td>
<td>7</td>
<td>17</td>
<td>8</td>
<td>5</td>
<td>7</td>
<td>44</td>
<td>9,870</td>
<td>0.4</td>
</tr>
</tbody>
</table>
Influenza Hospitalization Data

Reported Laboratory-Confirmed Influenza Hospitalizations (Spokane County Only)
Spokane Regional Health District requires hospitals to report laboratory-confirmed influenza-associated hospitalizations. 9 lab-confirmed influenza hospitalizations have been reported since September 1, 2017, 9 influenza A, 0 influenza B, and 0 co-infections of influenza A and B.

Figure 4: Spokane Lab-Confirmed Influenza Hospitalizations by Week of Admission and Influenza Type

Reported Laboratory-Confirmed Influenza Hospitalizations (Snohomish County Only)
Snohomish Health District requires hospitals in Snohomish County to report laboratory-confirmed influenza-associated hospitalizations to the health district. See figure below, courtesy of Snohomish Health District.

Figure 5: Snohomish County Influenza Hospitalizations by Season 2009-CDC Week 39
Influenza-like Illness Syndromic Surveillance Data, Western Washington

ESSENCE Syndromic Surveillance Data

Figure 6 shows the proportion of visits at a sample of emergency departments in western Washington for a chief complaint of influenza-like illness, or discharge diagnosis of influenza, by CDC week. For this purpose, ILI is defined as "influenza" or fever with cough or fever with sore throat. Syndromic Surveillance ILI data are not available for eastern Washington facilities.


Figure 6: Syndromic Surveillance, Percentage of Hospital Visits for a Chief Complaint of ILI, or Discharge Diagnosis of Influenza, by CDC Week, Western Washington, 2013-2017

Influenza-like Illness Outbreaks in Long Term Care Facilities

Long term care facilities are required to report all suspected and confirmed outbreaks to their local health jurisdiction per Washington Administrative Code (WAC) 246-101-305. Long-term care facilities are required to report the following:

- A sudden increase in acute febrile respiratory illness over the normal background rate (e.g., 2 or more cases of acute respiratory illness occurring within 72 hours of each other) OR

- Any resident who tests positive for influenza

Recommendations for prevention and control of influenza outbreaks in long-term care facilities are available at: http://www.doh.wa.gov/Portals/1/Documents/5100/fluoutbrk-LTCF.pdf

Local health jurisdictions in turn report long-term care facility influenza-like illness outbreaks to the Washington State Department of Health.

Since Week 40 of 2017, 0 influenza-like illness outbreaks in long-term care facilities have been reported to the Washington State Department of Health.
Seasonal Baselines and Epidemic Thresholds


Figure 8 shows the percentage of specimens tested for influenza at WHO/NREVSS labs that are positive for influenza by week. For week 42, the percentage of specimens positive for influenza is below both the seasonal baseline and the epidemic threshold.

Figure 9 shows the percentage of visits that are for influenza like illness among ILINet providers. For week 42, the percentage of visits for ILI is below both the seasonal baseline and the epidemic threshold.

The seasonal baseline is calculated using data from the previous five years, and the epidemic threshold is 1.645 standard deviations above the seasonal baseline. This method is similar to that used by CDC when calculating pneumonia and influenza mortality, as described in http://www.cdc.gov/flu/weekly/overview.htm.

The intention of these models is to provide a data driven approach to determining when influenza has reached an epidemic level. Under these models, influenza is considered to be epidemic when the percentage of specimens positive for influenza is at or above the epidemic threshold, and the percentage of visits for ILI is also at or above the epidemic threshold.

Taken together, these figures show that influenza activity is below both the seasonal baseline and the epidemic threshold for week 42. Feedback on the use of these models is welcomed.

Figure 8: Percentage of Specimens Positive for Influenza, WHO/NREVSS labs

Figure 9: Percentage of Visits for ILI, Sentinel Providers
Other Causes of Respiratory Infections

During week 42, the following non-influenza respiratory viruses were identified (highest count listed first): Rhinovirus, Human Parainfluenza Virus, Respiratory Syncytial Virus, Adenovirus, Enterovirus, Human Metapneumovirus, and Rotavirus.

For more information about NREVSS, see https://www.cdc.gov/surveillance/nrevss/index.html.

Figure 10: Respiratory and Enteric Viruses, Washington, 2017-2018 Season to Date

Table 3: Respiratory and Enteric Viruses, 2017-2018 Season to Date

<table>
<thead>
<tr>
<th>Week</th>
<th>Reporters</th>
<th>Respiratory Syncytial Virus</th>
<th>Human Parainfluenza Virus</th>
<th>Adenovirus</th>
<th>Coronavirus</th>
<th>Rotavirus</th>
<th>Enteric Adenovirus</th>
<th>Human Metapneumovirus</th>
<th>Rhinovirus</th>
<th>Enterovirus</th>
</tr>
</thead>
<tbody>
<tr>
<td>39</td>
<td>12</td>
<td>6</td>
<td>7</td>
<td>5</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>102</td>
<td>2</td>
</tr>
<tr>
<td>40</td>
<td>11</td>
<td>6</td>
<td>6</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>116</td>
<td>2</td>
</tr>
<tr>
<td>41</td>
<td>10</td>
<td>6</td>
<td>14</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>67</td>
<td>2</td>
</tr>
<tr>
<td>42</td>
<td>10</td>
<td>8</td>
<td>28</td>
<td>6</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>80</td>
<td>2</td>
</tr>
</tbody>
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Laboratory Confirmed Influenza-Associated Deaths

Reported Laboratory-Confirmed Influenza Associated Deaths

Note that these counts reflect only deaths officially reported to the Washington State Department of Health.

Note that each influenza season is reported as week 40 of one year through week 39 of the following year. Previously counts of death were reported from week 30 through week 29.

Zero laboratory-confirmed influenza deaths have been reported since week 40 of 2017, 0 influenza A and 0 influenza B.

Table 4: Count and rate of reported laboratory-confirmed influenza-associated deaths by age group, Washington, 2017-2018 season to date

<table>
<thead>
<tr>
<th>Age Group (in years)</th>
<th>Count of Deaths</th>
<th>Death Rate (per 100,000 population)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5-24</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>25-49</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>50-64</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>65+</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Reported Laboratory-Confirmed Influenza-Associated Deaths, Past Seasons

For reference, lab-confirmed influenza death totals reported to the Department of Health for past seasons are presented below in Table 5. Note that for the purposes of tables 4 and 5, each influenza season runs from week 40 of one year to week 39 of the next (roughly October to October).

Past season summaries are available: http://www.doh.wa.gov/DataandStatisticalReports/DiseasesandChronicConditions/CommunicableDiseaseSurveillanceData/InfluenzaSurveillanceData

Note that influenza deaths are likely under-reported. The reasons for this under-reporting vary. Influenza may not be listed as a cause of death, influenza testing may not have occurred in a timely fashion to identify the virus, or may not have been performed at all, and lab-confirmed influenza deaths may not have been appropriately reported to public health.

CDC has published information about estimating seasonal influenza-associated deaths: (http://www.cdc.gov/flu/about/disease/us_flu-related_deaths.htm?mobile=nocontent)

Table 5: Count of Reported Laboratory-Confirmed Influenza-Associated Deaths, Past Seasons to Week 42 and Total

<table>
<thead>
<tr>
<th>Season</th>
<th>Count of Deaths as of Week 42 of Season</th>
<th>Count of Deaths Reported for the Entire Season (week 40 to week 39)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017-2018, to date</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2016-2017</td>
<td>1</td>
<td>278</td>
</tr>
<tr>
<td>2015-2016</td>
<td>1</td>
<td>67</td>
</tr>
<tr>
<td>2014-2015</td>
<td>1</td>
<td>156</td>
</tr>
<tr>
<td>2013-2014</td>
<td>0</td>
<td>80</td>
</tr>
<tr>
<td>2012-2013</td>
<td>0</td>
<td>54</td>
</tr>
<tr>
<td>2011-2012</td>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td>2010-2011</td>
<td>0</td>
<td>36</td>
</tr>
</tbody>
</table>
Additional Resources

International Influenza Data: http://www.who.int/topics/influenza/en/


Washington Local Health Department Influenza Surveillance Reports:
Clark County: https://www.clark.wa.gov/public-health/flu
King County: http://www.kingcounty.gov/healthservices/health/communicable/diseases/Influenza.aspx
Kitsap County: http://www.kitsappublichealth.org/Respiratory.pdf
Pierce County: http://www.tpchd.org/providers-partners/influenza-medical-providers
Whatcom County: http://www.co.whatcom.wa.us/967/Influenza
Yakima County: http://www.yakimacounty.us/365/RSV-Flu-Stats