CDC Influenza Division Key Points

April 22, 2016

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Summary Key Points

- Flu activity is decreasing in the United States, but remains slightly elevated according to the most recent FluView report. (http://www.cdc.gov/flu/weekly)
- Influenza-like-illness activity and the percent of laboratory specimens testing positive for influenza in clinical laboratories fell for the fifth week.
- The number of states reporting widespread flu activity went from 18 to 14.
- While flu activity has peaked nationally for this season, some parts of the country are still experiencing widespread flu activity and an increasing proportion of influenza B viruses have been detected.
- Second waves of influenza B activity occur during many flu seasons.
- The peak week of flu activity for the 2015-2016 season was week 10 ending March 12, 2016.
- This is one of the later season peaks on record.
- This does not mean that flu season is over.
- There are still a number of weeks of flu activity to come.
- CDC recommends influenza vaccination as long as influenza viruses are circulating.
- CDC also recommends that patients suspected of having influenza who are at high-risk or who are very sick (http://www.cdc.gov/flu/about/disease/high_risk.htm) should receive prompt treatment with influenza antiviral drugs without waiting for confirmatory testing.
- More information about flu antiviral medications is available at: http://www.cdc.gov/flu/antivirals/index.htm

Timing of Flu Seasons

- Flu most commonly peaks in February.
- Over the last 18 seasons (including this season), only three seasons have peaked in March (2015-2016, 2011-2012 and 2005-2006).
- No season has peaked later than March.

FluView Activity Update

According to this week's FluView report, flu activity continues to decrease in the United States but remains slightly elevated. While flu activity has peaked nationally for this season, some parts of the country are still experiencing widespread flu activity and an increasing proportion of influenza B viruses have been detected. Second waves of influenza B activity occur during many flu seasons. Ongoing activity is expected to continue for a number of weeks. Six additional pediatric deaths were reported this week. CDC continues to recommend influenza vaccination as long as influenza viruses are circulating. In late February, CDC reported flu vaccine effectiveness of nearly 60% this season. CDC also recommends that patients suspected of having influenza who are at high-risk of flu complications or who are very sick with flu-like symptoms should receive prompt treatment with influenza antiviral drugs without waiting for confirmatory testing. Below is a summary of the key flu indicators for the week ending April 16, 2016:

- For the week ending April 16, the proportion of people seeing their health care provider(http://www.cdc.gov/flu/weekly/#S4) for influenza-like illness (ILI) remained at 2.1%. This percentage is at the national baseline of 2.1%. Five of 10 regions (Regions 1, 2, 3, 4, and 8) reported ILI at or above their region-specific baseline levels. One way that CDC measures the duration of the influenza season is the number of consecutive weeks during which ILI is at or above the national baseline. ILI has been at or above the national baseline for 17 consecutive weeks so far this season. For the last 13 seasons, the average duration of a flu season by this measure has been 13 weeks, with a range from 1 week to 20 weeks.
- 1 state (New Jersey) experienced high ILI activity. The same state reported high ILI activity during the previous week. Puerto Rico and one state (Minnesota) experienced moderate ILI activity. 11 states (Arizona, Arkansas, Connecticut, Georgia, Kentucky, Michigan, Mississippi, New York, North Carolina, Pennsylvania, and Virginia) experienced low ILI activity. New York City and 37 states experienced minimal ILI activity. The District of Columbia did not have sufficient data to calculate an activity level. ILI activity data indicate the amount of flu-like illness that is occurring in each state.

- Widespread flu activity was reported by Puerto Rico and 14 states (Colorado, Connecticut, Delaware, Kentucky, Maine, Massachusetts, Nebraska, New Hampshire, New York, Ohio, Pennsylvania, Vermont, Virginia, and Wisconsin). This is a decrease from 18 states with widespread activity last week. Regional flu activity was reported by Guam and 19 states (Alaska, Arizona, Arkansas, California, Idaho, Iowa, Kansas, Michigan, Minnesota, Missouri, Montana, Nevada, New Jersey, New Mexico, North Dakota, Oklahoma, South Carolina, South Dakota, and Utah). Local flu activity was reported by the District of Columbia and 13 states (Alabama, Hawaii, Illinois, Louisiana, Maryland, North Carolina, Oregon, Rhode Island, Tennessee, Texas, Washington, West Virginia, and Wyoming). Sporadic flu activity was reported by the U.S. Virgin Islands and four states (Florida, Georgia, Indiana, and Mississippi). Geographic spread data show how many areas within a state or territory are seeing flu activity.
- Since October 1, 2015, 7,850 laboratory-confirmed influenza-associated hospitalizations(http://www.cdc.gov/flu/weekly/#S6) have been reported through FluSurv-NET, a population-based surveillance network for laboratory-confirmed influenza-associated hospitalizations. This translates to a cumulative overall rate of 28.4 hospitalizations per 100,000 people in the United States. This is significantly lower than the hospitalization rate at this time last season (63.4 per 100,000). More data on hospitalization rates, including hospitalization rates during other influenza seasons, are available at http://gis.cdc.gov/GRASP/Fluview/FluHospRates.html and http://gis.cdc.gov/grasp/fluview/FluHospChars.html.
    - The highest hospitalization rates are among people 65 years and older (75.0 per 100,000), followed by adults 50-64 years (41.1 per 100,000) and children younger than 5 years (38.8 per 100,000). During most seasons, adults 65 years and older and children younger than 5 years have the highest hospitalization rates.
    - FluSurv-NET hospitalization data are collected from 13 states and represent approximately 8.5% of the total U.S. population. The number of hospitalizations reported does not reflect the actual total number of influenza-associated hospitalizations in the United States.
- The proportion of deaths(http://www.cdc.gov/flu/weekly/#S2) attributed to pneumonia and influenza (P&I) was below the system-specific epidemic threshold in

the NCHS Mortality Surveillance System and above the system-specific epidemic threshold in the 122 Cities Mortality Reporting System.

- Six additional influenza-associated pediatric deaths(http://www.cdc.gov/flu/weekly/#S3) were reported to CDC this week:
    - Three deaths were associated with an influenza A (H1N1)pdm09 virus and occurred during weeks 13 and 14 (the weeks ending April 2 and April 9, 2016).
    - Two deaths were associated with an influenza A virus for which no subtyping was performed and occurred during week 14 (the week ending April 9, 2016).
    - One death was associated with an influenza B virus and occurred during week 12 (the week ending March 26, 2016).
- This brings the total number of flu-associated pediatric deaths reported this season to 56 children.
- Nationally, the percentage of respiratory specimens(http://www.cdc.gov/flu/weekly/#S1) testing positive for influenza viruses in clinical laboratories during the week ending April 16 was 13.4%. For the most recent three weeks, the regional percentage of respiratory specimens testing positive for influenza viruses in clinical laboratories ranged from 8.4% to 18.1%.
- During the week ending April 16, of the 2,258 influenza-positive tests reported to CDC by clinical laboratories, 1,191 (52.7%) were influenza A viruses and 1,067 (47.3%) were influenza B viruses.
- The most frequently identified influenza virus type reported by public health laboratories during the week ending April 16 was influenza A viruses, with influenza A (H1N1)pdm09 viruses predominating.
    - During the week ending April 16, 189 (56.1%) of the 337 influenza-positive tests reported to CDC by public health laboratories were influenza A viruses and 148 (43.9%) were influenza B viruses. Of the 175 influenza A viruses that were subtyped, 34 (19.4%) were H3 viruses and 141 (80.6%) were (H1N1)pdm09 viruses.
    - Cumulatively from October 4, 2015-April 16, 2016, influenza A (H1N1)pdm09 viruses were predominant in all four age groups (0-4 years age group (71.9%), 5-24 years age group (51.9%), 25-64 years age group (71.9%), and in ages 65 years and older (54.0%).

- CDC has characterized 1,707 specimens (688 influenza A (H1N1)pdm09, 431 influenza A (H3N2) and 588 influenza B viruses) collected in the U.S. since October 1, 2015.
    - All 688 (100%) influenza A (H1N1)pdm09 viruses were antigenically characterized as similar to A/California/7/2009, the influenza A (H1N1) component of the 2015-2016 Northern Hemisphere vaccine.
    - All 431 H3N2 viruses were genetically sequenced and all viruses belonged to genetic groups for which a majority of viruses antigenically characterized were similar to cell-propagated A/Switzerland/9715293/2013, the influenza A (H3N2) component of the 2015-2016 Northern Hemisphere vaccine.
        - A subset of 193 H3N2 viruses also were antigenically characterized; 185 of 193 (95.9%) H3N2 viruses were similar to A/Switzerland/9715293/2013 by HI testing or neutralization testing.
    - All 359 (100%) of the B/Yamagata-lineage viruses were antigenically characterized as similar to B/Phuket/3073/2013, which is included in both the 2015–16 Northern Hemisphere trivalent and quadrivalent vaccines.
    - 223 of 229 (97.4%) of the B/Victoria-lineage viruses were antigenically characterized as similar to B/Brisbane/60/2008, which is included in the 2015-16 Northern Hemisphere quadrivalent vaccine.
- Since October 1, 2015, CDC has tested 1,579 influenza A (H1N1)pdm09, 533 influenza A (H3N2), and 814 influenza B viruses for resistance to the neuraminidase inhibitors antiviral drugs. While the vast majority of the viruses that have been tested are sensitive to oseltamivir, zanamivir, and peramivir, so far this season, 12 (0.8%) influenza A (H1N1)pdm09 viruses have showed resistance to oseltamivir and peramivir.
- The Food and Drug Administration's Vaccines and Related Biological Products Advisory Committee (VRBPAC) endorsed the WHO-recommended vaccine viruses for use in all U.S. seasonal flu vaccines for the 2016-2017 flu season. These recommendations were as follows:
    - It was recommended that trivalent vaccines for use in the 2016-2017 influenza season (Northern Hemisphere winter) contain the following:
        - an A/California/7/2009 (H1N1)pdm09-like virus;
        - an A/Hong Kong/4801/2014 (H3N2)-like virus;
        - a B/Brisbane/60/2008-like virus (B/Victoria lineage).

- It was recommended that quadrivalent vaccines containing two influenza B viruses contain the above three viruses and a B/Phuket/3073/2013-like virus (B/Yamagata lineage).
- This represents a change in the influenza A (H3) component and a change in the influenza B lineage included in the trivalent vaccine compared with the composition of the 2015-2016 influenza vaccine.

FluView(http://www.cdc.gov/flu/weekly/fluactivitysurv.htm) is available – and past issues are archived(http://www.cdc.gov/flu/weekly/pastreports.htm) – on the CDC website.

Note: Delays in reporting may mean that data changes over time. The most up to date data for all weeks during the 2015-2016 season can be found on the current FluView(http://www.cdc.gov/flu/weekly/).

Influenza-Associated Pediatric Deaths

- Six pediatric deaths were reported this week, bringing the total number of flu-associated deaths to 56 for the 2015-2016 season.
- Because of confidentiality issues, CDC does not discuss or give details on individual cases.
- These deaths are a somber reminder of the danger flu poses to children.
- The single best way to protect against seasonal flu and its potential severe consequences in children is to get a seasonal flu vaccine each year.
- Vaccination is especially important for children younger than 5 years of age and children of any age with a long-term health condition like asthma, diabetes and heart disease and neurological and neurodevelopmental diseases. These children are at higher risk of serious flu complications if they get the flu.
- Yearly vaccination also is especially important for people in contact with high risk children in order to protect the child (or children) in their lives from the flu. In particular, children younger than 6 months are too young to be vaccinated themselves but are at high risk of flu complications if they get sick so the people around them should get vaccinated to protect the infant.
- Some children 6 months through 8 years of age require two doses of influenza vaccine. Children in this age group who are getting vaccinated for the first time will

need two doses. Some children who have received influenza vaccine previously also will need two doses this season. A health care provider should be consulted to determine whether two doses are recommended for a child.

- Flu-related deaths in children younger than 18 years old should be reported through the Influenza-Associated Pediatric Mortality Surveillance System. The number of flu-associated deaths among children reported during the 2015-2016 flu season will be updated each week and can be found at http://www.cdc.gov/flu/weekly/ and http://gis.cdc.gov/GRASP/Fluview/PedFluDeath.html.
- Since 2004, when pediatric deaths associated with influenza infection became a nationally notifiable condition, the number of deaths reported to CDC each year has ranged from 37 (2011-2012 season) to 171 deaths (2012-2013 season).
- Last season, 148 influenza-associated pediatric deaths were reported to CDC.

Vaccine Strain Selection

- On March 4, 2016, VRBPAC met to review the WHO recommendations on the composition of 2016-2017 Northern Hemisphere seasonal flu vaccines, discuss the latest flu surveillance data and flu vaccine effectiveness studies, hear remarks from vaccine manufacturers, and select the composition for all U.S. seasonal flu vaccines for the 2016-2017 flu season.
- At the conclusion of the VRBPAC meeting, VRBPAC endorsed the WHO-recommended vaccine viruses for use in all U.S. seasonal flu vaccines for the 2016-2017 flu season. These recommendations were as follows:
    - It was recommended that trivalent vaccines for use in the 2016-2017 influenza season (Northern Hemisphere winter) contain the following:
        - an A/California/7/2009 (H1N1)pdm09-like virus;
        - an A/Hong Kong/4801/2014 (H3N2)-like virus;
        - a B/Brisbane/60/2008-like virus (B/Victoria lineage).
    - It was recommended that quadrivalent vaccines containing two influenza B viruses contain the above three viruses and a B/Phuket/3073/2013-like virus (B/Yamagata lineage).

- The vaccine viruses recommended for inclusion in the 2016-2017 Northern Hemisphere influenza vaccines are the same vaccine viruses that were chosen for inclusion in 2016 Southern Hemisphere seasonal flu vaccines.
- More information is available on the FDA VRBPAC web site and via FDA's summary minutes from the meeting.