

CDC Influenza Division Key Points

April 1, 2016

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Summary Key Points

- Flu activity decreased slightly in the United States, but remains 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 fell for the second week.
- The number of states reporting widespread flu activity went from 39 to 29.
- Influenza activity may have peaked for the season.
- This would be one of the later season peaks on record.
- This does not mean that flu season is over.
- There are still several weeks of flu activity to come.
- H1N1 flu viruses have been most common in recent weeks.
- In the past, H1N1 flu viruses have caused severe illness in some children & young- and middle-aged adults.
- CDC has received reports of serious flu illnesses, including hospitalizations and intensive care unit admissions this season, however, severity indicators are not excessively high this season.
- The Centers for Disease Control and Prevention has reported preliminary overall flu vaccine effectiveness (VE) of 59 percent this season.
- This finding is comparable to [past estimates for seasons when](#) most circulating flu viruses have been similar to the seasonal flu vaccine. (<http://www.cdc.gov/flu/professionals/vaccination/effectiveness-studies.htm>)
- CDC recommends a yearly flu vaccine as the first and most important step in protecting against flu viruses.
- Manufacturers report having shipped more than 146.4 million doses of flu vaccine as of February 26, 2016.
- Go to <http://vaccine.healthmap.org> or <http://www.cdc.gov/flu> to find a location near you where you can get vaccinated.

- While getting vaccinated is the best way to prevent the flu, flu antiviral drugs can treat flu illness.
- CDC recommends that patients suspected of having influenza who are at high-risk or who are very sick 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>
- Also reported this week is the detection of one new influenza A(H1N1)pdm09 virus which is resistant to oseltamivir and peramivir, two neuraminidase inhibitor (NI) antiviral medications. The virus is sensitive to zanamivir, a third NI.
- Rare instances of resistance to the neuraminidase inhibitors have been detected in H1N1 viruses. (See section "[Antiviral Drug-Resistant Influenza Virus](#)" for more information.)

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, but is still elevated overall nationally in the United States. Influenza-like-illness (ILI) may have peaked nationally for this season and be winding down, but there are still 29 states reporting widespread activity at this time. Flu activity will likely continue for several more weeks. 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 March 26, 2016:

- For the week ending March 26, the proportion of people seeing their [health care provider](http://www.cdc.gov/flu/weekly/#S4)(<http://www.cdc.gov/flu/weekly/#S4>) for influenza-like illness (ILI) decreased for the second week from 3.2% to 2.9%. This is still above the national baseline of 2.1%. Nine of 10 regions (Regions 1, 2, 3, 4, 5, 7, 8, 9, and 10) 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 14 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.
- Puerto Rico and 2 states (New Jersey and New Mexico) experienced high ILI activity. This is a decrease from 7 states with high ILI activity last week. New York City and 7 states (Alabama, Arizona, Georgia, Kentucky, North Carolina, Pennsylvania, and Virginia) experienced moderate ILI activity. 15 states (Alaska, Colorado, Connecticut, Illinois, Kansas, Louisiana, Massachusetts, Mississippi, Missouri, Nevada, New York, Oklahoma, South Carolina, Utah, and Wyoming) experienced low ILI activity. 26 states (Arkansas, California, Delaware, Florida, Hawaii, Idaho, Indiana, Iowa, Maine, Maryland, Michigan, Minnesota, Montana, Nebraska, New Hampshire, North Dakota, Ohio, Oregon, Rhode Island, South Dakota, Tennessee, Texas, Vermont, Washington, West Virginia, and Wisconsin) 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 Guam, Puerto Rico and 29 states (Alaska, Arizona, California, Colorado, Connecticut, Delaware, Idaho, Iowa, Kentucky, Maine, Maryland, Massachusetts, Michigan, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New York, North Carolina, North Dakota, Ohio, Pennsylvania, Rhode Island, Vermont, Virginia, Wisconsin, and Wyoming). This is a decrease from 39 states with widespread activity last week. Regional flu activity was reported by 18 states (Arkansas, Florida, Georgia, Hawaii, Illinois, Indiana, Kansas, Louisiana, Minnesota, Mississippi, New Mexico, Oklahoma, Oregon, South Carolina, South Dakota, Texas, Utah, and Washington). Local flu activity was reported by the District of Columbia and two states (Alabama and Tennessee). Sporadic influenza activity was reported by one state (West Virginia). The U.S. Virgin Islands did not report. Geographic spread data show how many areas within a state or territory are seeing flu activity.
- Since October 1, 2015, 5,915 laboratory-confirmed [influenza-associated hospitalizations](http://www.cdc.gov/flu/weekly/#S6)(<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 21.4 hospitalizations per 100,000 people in the United States. This is significantly lower than the hospitalization rate at this time last season (60.7 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 (54.5 per 100,000), followed by adults 50-64 years (31.4 per 100,000) and children younger than 5 years (29.3 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\(http://www.cdc.gov/flu/weekly/#S2\)](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.
- Three additional influenza-associated [pediatric deaths\(http://www.cdc.gov/flu/weekly/#S3\)](http://www.cdc.gov/flu/weekly/#S3) were reported to CDC this week:
 - One death occurred during week 11 (the week ending March 19, 2016) and was associated with an influenza A (H1N1)pdm09 virus.
 - One death was associated with an influenza A virus for which no subtyping was performed and occurred during week 11.
 - One death was associated with an influenza B virus and occurred during week 8 (the week ending February 27, 2016).
- This brings the total number of flu-associated pediatric deaths reported this season to 33 children.
- Nationally, the percentage of [respiratory specimens\(http://www.cdc.gov/flu/weekly/#S1\)](http://www.cdc.gov/flu/weekly/#S1) testing positive for influenza viruses in clinical laboratories during the week ending March 26 was 18.3%. For the most recent three weeks, the regional percentage of respiratory specimens testing positive for influenza viruses in clinical laboratories ranged from 10.3% to 29.4%.

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- During the week ending March 26, of the 4,022 influenza-positive tests reported to CDC by clinical laboratories, 2,915 (72.5%) were influenza A viruses and 1,107 (27.5%) were influenza B viruses.
- The most frequently identified influenza virus type reported by public health laboratories during the week ending March 26 was influenza A viruses, with influenza A (H1N1)pdm09 viruses predominating.
 - During the week ending March 26, 536 (75.0%) of the 715 influenza-positive tests reported to CDC by public health laboratories were influenza A viruses and 179 (25.0%) were influenza B viruses. Of the 527 influenza A viruses that were subtyped, 88 (16.7%) were H3 viruses and 439 (83.3%) were (H1N1)pdm09 viruses.
 - Cumulatively from October 4, 2015-March 26, 2016, influenza A (H1N1)pdm09 viruses were predominant in all four age groups (0-4 years age group (73.8%), 5-24 years age group (53.5%), 25-64 years age group (73.9%), and in ages 65 years and older (54.5%).
- CDC has characterized 1,341 specimens (550 influenza A (H1N1)pdm09, 336 influenza A (H3N2) and 455 influenza B viruses) collected in the U.S. since October 1, 2015.
 - All 550 (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 336 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 151 H3N2 viruses also were antigenically characterized; 143 of 151 (94.7%) H3N2 viruses were similar to A/Switzerland/9715293/2013 by HI testing or neutralization testing.
 - All 296 (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.
 - 155 of 159 (97.5%) 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 1,149 influenza A (H1N1)pdm09, 440 influenza A (H3N2), and 644 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, an additional six influenza A (H1N1)pdm09 viruses showing resistance to oseltamivir and peramivir were reported this week. This brings the total number of such viruses reported to 11 (1.0%) this season.

[FluView](http://www.cdc.gov/flu/weekly/fluactivitysurv.htm)(<http://www.cdc.gov/flu/weekly/fluactivitysurv.htm>) is available – and past issues are [archived](http://www.cdc.gov/flu/weekly/pastreports.htm)(<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/)(<http://www.cdc.gov/flu/weekly/>).

Influenza-Associated Pediatric Deaths

- Three pediatric deaths were reported this week, bringing the total number of flu-associated deaths to 33 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/>.
- 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.

Antiviral Drug-Resistant Influenza Virus

- Influenza viruses can sometimes develop resistance to antiviral medications.
- Antiviral resistance means that a virus has changed in such a way that the antiviral drug is less effective in treating or preventing illnesses caused by the virus.
- Influenza viruses constantly change as the virus makes copies of itself. Some changes can result in the viruses being resistant to one or more of the antiviral drugs that are used to treat or prevent influenza.
- Resistance of influenza A viruses to antiviral drugs can occur spontaneously or emerge during the course of antiviral treatment.
- Antiviral resistance is detected through laboratory testing.
- CDC reports specimens collected and tested through national surveillance as well as additional specimens tested at public health laboratories who share testing results with CDC.
- For the week ending March 26, 2016 (week 12), six additional resistant influenza A(H1N1)pdm09 viruses were reported, bringing the total number of antiviral drug-resistant viruses to eleven for this season.
- CDC tested the viruses and confirmed resistance to oseltamivir and peramivir, two neuraminidase inhibitor antiviral medications.
- Oseltamivir resistance and peramivir resistance are rare among influenza A (H1N1)pdm09 viruses.

- The majority of influenza A (H1N1)pdm09 viruses circulating in the United States remain susceptible to currently recommended neuraminidase inhibitor antiviral medications (oseltamivir, peramivir, and zanamivir).
- This virus has a single known mutation in the neuraminidase protein (referred to as 'H275Y') that is associated with resistance to neuraminidase inhibitor antiviral medications.
- This is a known mutation in H1N1 viruses, first detected in 2008, and continues to be rarely observed among H1N1pdm09 viruses.
- During the 2013-2014 and 2014-2015 seasons, of the influenza A (H1N1)pdm09 viruses that were tested for resistance to influenza antiviral drugs, <2% were resistant. All the resistant viruses have had the H275Y mutation.
- CDC and state and local partners will continue to watch influenza viruses closely for possible emerging patterns of antiviral resistance in addition to watching for antigenic and genetic changes.
- Three FDA-approved influenza antiviral medications are recommended for use in the United States during the 2015-2016 influenza season: oseltamivir (Tamiflu®), peramivir (Rapivab®), and zanamivir (Relenza®). More information about antiviral drug resistance can be found at <http://www.cdc.gov/flu/about/qa/antiviralresistance.htm> and <http://www.cdc.gov/flu/antivirals/index.htm>.
- Information on monitoring for antiviral drug-resistant influenza viruses is updated weekly in the CDC FluView surveillance report, which is available at: <http://www.cdc.gov/flu/weekly/>.