

CDC Influenza Division Key Points

November 21, 2014

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Summary Key Messages

- This week's [FluView](#) report indicates that seasonal influenza activity is still low in the United States.
- Flu activity is expected to increase in the coming weeks.
- Surveillance shows that most circulating viruses so far this season are influenza A (H3N2) and influenza B viruses. To date, there is very little circulation of influenza A (H1N1). (See the [FluView Activity Update](#) below.)
- While most of the viruses analyzed in recent months are like the 2014-2015 vaccine viruses, there are some influenza A (H3N2) viruses that are antigenically drifted from the H3N2 virus component used in this season's vaccine. (See the section "[H3N2 Match and Vaccination](#).")
- CDC recommends a three-pronged approach to fighting flu:
 - First, take time to get a flu vaccine.
 - Second, take everyday preventive actions like covering coughs and sneezes, staying away from sick people and washing your hands often to help stop the spread of respiratory viruses like flu, respiratory syncytial virus (RSV), rhinovirus and enterovirus D68.
 - Third, antivirals should be used as recommended as a second line of defense to treat flu illness.
- Annual flu vaccination is the first and most important step in protecting against flu and its potentially serious complications.
- Getting vaccinated before influenza activity begins helps protect you once the flu season starts in your community.
- It takes about two weeks after vaccination for the body's immune system to fully respond and for you to be protected.
- People who have not been vaccinated yet this season should get vaccinated now.
- Patients should get immunized with whatever flu vaccine is immediately available and indicated.
- Influenza vaccination should not be delayed to procure a specific vaccine preparation.

- The [HealthMap Vaccine Finder](#) can be used to locate vaccine.
- You need this season's influenza vaccine for optimal protection against the flu. (Immunity from vaccinations declines over time.)
- While how well the flu vaccine works can vary, vaccination has been shown to reduce flu illnesses, doctors' visits, and missed work and school due to influenza, as well as prevent flu-related hospitalizations and deaths.
- Flu vaccination can help protect people who are at greater risk of getting seriously ill from flu, like older adults, people with chronic health conditions and young children (especially infants younger than 6 months old who are too young to get vaccinated).
- Seven influenza vaccine manufacturers have projected that as many as 151 million to 156 million doses of influenza vaccine will be available for use in the United States during the 2014-2015 influenza season.
- As of November 14, [139.7 million doses of influenza vaccine](#) had been distributed in the United States, which means that more vaccine has been distributed so far than at this time last season.
- There are several flu vaccine options available for the 2014-2015 flu season.
- Flu shots made to protect against three different flu viruses (called "trivalent" vaccines) are available this season.
- There also are flu shots and nasal spray vaccines made to protect against four different flu viruses (called "quadrivalent" vaccines).
- About half of the total influenza vaccine supply will be quadrivalent, while the other half will be trivalent.
- There is some evidence to suggest that the nasal spray vaccine may not protect children against H1N1 viruses during the 2014-2015 season. (See the section "[LAIV Effectiveness and Vaccination of Children](#)".)
- CDC recommends that parents should get their children immunized with whatever vaccine is immediately available and indicated.
- Some children 6 months through 8 years of age getting vaccinated for this first time will require two doses of flu vaccine. The second dose should be given at least 28 days after the first dose. Your child's doctor or other health care professional can tell you whether two doses are recommended for your child.
- And remember that [influenza antiviral drugs](#) are a second line of defense to treat flu illness.
- Antiviral drugs can treat flu illness and prevent serious flu complications. These drugs work best when started soon after influenza symptoms begin (within two days), but persons with high-risk conditions can benefit even when antiviral treatment is started after the first two days of illness.

- A doctor or health care professional can determine if a patient needs flu antiviral drugs.
- Influenza vaccination and rapid antiviral treatment are especially important for people at high risk for flu complications.
- People at high risk for serious flu complications include: people with underlying chronic medical conditions such as asthma, diabetes, heart disease, or neurological conditions; pregnant women; those younger than 5 years or older than 65 years of age; or anyone with a weakened immune system. A full list of high risk factors is available at http://www.cdc.gov/flu/about/disease/high_risk.htm.
- As always, people who are at high risk for influenza complications should see a health care professional promptly if they get flu symptoms, even if they have been vaccinated this season.
- More information about everyday preventive actions that help fight flu is available at <http://www.cdc.gov/flu/protect/habits.htm>.
- Flu symptoms include fever, cough, sore throat, runny or stuffy nose, muscle or body aches, headache, chills and fatigue.

FluView Activity Update

- According to this week's FluView report, overall seasonal flu activity remains low across the United States. Increases in flu activity are expected in the coming weeks.
- Below is a summary of the key flu indicators for the week ending November 15, 2014:
 - For the week ending November 15, the proportion of people seeing their [health care provider](#) for influenza-like illness (ILI) was below the national baseline. All 10 U.S. regions reported ILI activity below region-specific baseline levels.
 - Puerto Rico experienced high [ILI activity](#). Two states (Alaska and Louisiana) experienced low ILI activity. New York City and 48 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.
 - Puerto Rico and five states (Alaska, Florida, Louisiana, Massachusetts and Texas) reported regional [geographic influenza activity](#). 21 states reported local activity. The U.S. Virgin Islands, the District of Columbia, and 23 states reported sporadic influenza activity. One state (Rhode Island) reported no influenza activity. Guam did not report. Geographic spread data show how many areas within a state or territory are seeing flu activity.
 - The [proportion of deaths](#) attributed to pneumonia and influenza (P&I) based on the 122 Cities Mortality Reporting System is below the epidemic threshold.

- No [influenza-associated pediatric deaths](#) were reported to CDC during the week ending November 15. One influenza-associated pediatric death has been reported for the 2014-2015 season and occurred during the week ending October 4, 2014.
- Nationally, the percentage of [respiratory specimens](#) testing positive for influenza viruses in the United States during the week ending November 15 increased once again to 9.3%. For the most recent three weeks, the regional percentage of respiratory specimens testing positive for influenza viruses ranged from 0.9% to 18.2%.
- [Influenza A \(H3N2\) and influenza B viruses](#) have been identified most commonly in the United States this season. Very few 2009 H1N1 viruses have been reported. During the week ending November 15, 836 (87.5%) of the 955 influenza-positive tests reported to CDC were influenza A viruses and 119 (12.5%) were influenza B viruses. Of the 257 influenza A viruses that were subtyped, all were influenza A (H3) viruses.
- CDC has [antigenically characterized](#) 52 influenza viruses, including one 2009 H1N1 virus, 34 influenza A (H3N2) viruses, and 17 influenza B viruses, collected in the United States since October 1, 2014.
 - The one 2009 H1N1 virus tested was characterized as A/California/7/2009-like. This is the influenza A (H1N1) component of the 2014-2015 Northern Hemisphere quadrivalent and trivalent influenza vaccine.
 - 19 (56%) of the 34 influenza A (H3N2) viruses tested have been characterized as A/Texas/50/2012-like. This is the influenza A (H3N2) component of the 2014-2015 Northern Hemisphere quadrivalent and trivalent influenza vaccine.
 - The remaining 15 (44%) influenza A (H3N2) viruses tested showed reduced titers with antiserum produced against A/Texas/50/2012. The majority of these 15 influenza A (H3N2) viruses were antigenically similar to A/Switzerland/9715293/2013, the influenza A (H3N2) component of the 2015 Southern Hemisphere influenza vaccine.
 - Ten (58.8%) of the 17 influenza B viruses tested belonged to the B/Yamagata/16/88 lineage and were characterized as B/Massachusetts/2/2012-like. This is an influenza B component of the 2014-2015 Northern Hemisphere trivalent and quadrivalent influenza vaccine.
 - The seven (41.2%) other influenza B viruses belonged to the B/Victoria lineage of viruses, and were characterized as B/Brisbane/60/2008-like. This is the recommended influenza B component of the 2014-2015 Northern Hemisphere quadrivalent influenza vaccine.

- Since October 1, 2014, CDC has tested one 2009 H1N1, 11 influenza A (H3N2), and five influenza B viruses for resistance to neuraminidase inhibitors (oseltamivir and zanamivir). All viruses showed susceptibility to both oseltamivir and zanamivir.
 - The neuraminidase inhibitors oseltamivir and zanamivir are currently the only recommended [influenza antiviral drugs](#).
 - As in recent past seasons, high levels of resistance to the adamantanes (amantadine and rimantadine) continue to persist among 2009 influenza A (H1N1) and A (H3N2) viruses. Adamantanes are not effective against influenza B viruses.
- [FluView](#) is available – and past issues are [archived](#) – 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 2014-2015 season can be found on the current [FluView](#).

LAIV Effectiveness Last Season and Vaccination of Children This Season

- Since 2008, ACIP and CDC have recommended that all children 6 months and older (with rare exceptions) receive influenza vaccine annually, using any licensed age-appropriate vaccine.
- During the summer of 2014, [ACIP and CDC](#) recommended that beginning during the 2014-2015 influenza season, live attenuated influenza vaccine (LAIV, or the "nasal spray vaccine") should be used for healthy children 2 through 8 years of age when immediately available and when there are no contraindications or precautions against getting that vaccine.
- This decision was based on [previous data](#) showing that LAIV offered superior protection against influenza virus infection compared to IIV in young children.
- However, recently available CDC analyses showed that there was no measurable effectiveness for LAIV against influenza A (H1N1) among children enrolled in a CDC-sponsored study last season.
- There were not enough cases of infection in the CDC study with H3N2 or B viruses to calculate vaccine effectiveness against those viruses in children last season.
- The reasons behind the lack of effectiveness against H1N1 infections for LAIV during the 2013-2014 season are not fully understood.
 - It is possible that results may be specific to the H1N1 component of LAIV. Influenza H1N1 viruses predominated during the 2013-2014 season for the first time since their emergence in 2009 when they caused a pandemic.

- It also is possible – though less likely – that there is an unidentified issue with the study methods or analysis plan for measuring LAIV vaccine effectiveness.
- The 2013-2014 season LAIV VE estimates against H1N1 for children suggest that LAIV may not protect against H1N1 viruses during the 2014-2015 season because the same H1N1 vaccine virus from the 2013-2014 vaccine is included in the 2014-2015 vaccine.
- However, the nasal spray vaccine continues to be a recommended option for vaccination because:
 - All LAIV is designed to protect against four different influenza viruses: influenza A (H1N1), A (H3N2) and two influenza B viruses;
 - Surveillance shows that there is substantially more circulation of influenza A (H3N2) and B viruses and very little circulating H1N1 so far;
 - LAIV has been shown to offer good protection against influenza A (H3N2) and influenza B viruses in the past;
 - LAIV may offer better protection than IIV against antigenically drifted viruses that may circulate this season; and
 - Vaccine providers have received their vaccine for the 2014-2015 season and have likely administered a good proportion of it.
- People who have not been vaccinated yet this season should get vaccinated now.
- Parents should seek to get their children immunized with whatever vaccine is immediately available and indicated.
- Influenza vaccination should not be delayed to procure a specific vaccine preparation.
- The [HealthMap Vaccine Finder](#) can be used to locate vaccine.
- Children needing one dose of vaccine this season who got the nasal spray vaccine are considered fully vaccinated and do not need to be revaccinated.
- Children needing two doses of vaccine this season who have only gotten one dose can get either the nasal spray vaccine or the flu shot as their second dose, whatever is immediately available.
- See the CDC statement, "CDC Statement on LAIV Effectiveness and Vaccination of Children," at: <http://www.cdc.gov/flu/news/nasal-spray-effectiveness.htm>.

H3N2 Match and Vaccination

- Surveillance of influenza viruses shows that some of the influenza A (H3N2) viruses collected domestically and internationally in recent months are antigenically different ("drifted") from the H3N2 vaccine component.
 - An [October 3 Morbidity and Mortality Weekly Report "Influenza Update"](#) reported that of 141 influenza A (H3N2) viruses collected globally between May 18-

September 20, 2014 and characterized by CDC, 69 (49%) were antigenically similar to A/Texas/50/2012, the influenza A (H3N2) component of the 2014-2015 influenza vaccine for the Northern Hemisphere.

- Only 34 influenza A (H3N2) viruses collected in the United States since October 1, 2014 have been characterized so far this season. Nineteen of these (56%) are like the A (H3N2) vaccine virus; of the 15 (44%) others, most have been characterized as A/Switzerland/9715293/2013, an antigenic variant virus which has been selected for the 2015 Southern Hemisphere influenza vaccine.
- A/Switzerland viruses were first collected in March 2014, after the vaccine viruses for the Northern Hemisphere vaccine had already been made in February. Initially, A/Switzerland viruses appeared only sporadically, but became more common over the summer.
- How well the vaccine works depends in part on the match between vaccine viruses and circulating flu viruses. If the viruses are well-matched, vaccine effectiveness tends to be higher. If they are not well-matched, vaccine effectiveness can be lower.
- If drifted influenza A (H3N2) viruses circulate broadly in the United States this season, this could translate into reduced vaccine effectiveness against circulating H3N2 viruses.
- Even when drifted viruses are found to be circulating, CDC continues to recommend influenza vaccination because:
 - Studies have shown evidence that seasonal influenza vaccination can sometimes induce antibodies and/or T cells capable of cross-reacting with antigenically distinct viruses. This is called cross-protection. While vaccine effectiveness may be reduced, the vaccine can still offer protection.
 - More than one type or subtype of influenza usually circulates during a single season and flu vaccines protect against three or four different influenza viruses, depending on which vaccine is given.
- Flu vaccination continues to offer the best protection against influenza infection, even when there are some antigenically drifted viruses circulating in the community.
- Influenza antiviral treatment is an important second line of defense to treat flu illness in the event of infection.
- Visit [the CDC website](#) for information about how antiviral medications can be used to prevent or treat influenza when influenza activity is present in your community.
- Further, everyday actions like covering your cough, staying away from sick people and washing your hands often can help prevent the spread of respiratory viruses like the flu.

Vaccine Effectiveness, General

- Influenza viruses are constantly changing – they can change from one season to the next or they can even change within the course of the same season. This kind of gradual change is called “antigenic drift.”
- It is because of drift that the composition of the flu vaccine is reviewed annually and updated as needed to keep up with circulating viruses.
- Each year experts pick which viruses to include in the vaccine many months in advance (usually February) in order for vaccine to be produced and delivered in time for the upcoming flu season.
- Because flu viruses are constantly changing and it takes a long time to manufacture flu vaccine, there is always the possibility of a sub-optimal match between circulating viruses and the viruses in the vaccine.
 - While a less than optimal virus match can reduce the vaccine’s effectiveness, vaccination can still protect enough to make illness milder and prevent flu-related complications.
 - Such protection is possible because antibodies created through vaccination with one strain of influenza viruses will often cross-protect against different influenza viruses.

Vaccine Supply

- Seven influenza vaccine manufacturers have projected that as many as 151 million to 156 million doses of influenza vaccine will be available for use in the United States during the 2014-2015 influenza season.
 - This projection is similar to that provided by manufacturers before influenza vaccine distribution began for this year, with the difference being that the high end of the range is reduced by approximately 4 million doses.
- Of the overall flu vaccine supply projected for the 2014-2015 season, manufacturers estimate that 76 million doses will be available as quadrivalent flu vaccines.
 - Of the total quadrivalent flu vaccine supply, as many as 18 million doses of the nasal spray influenza vaccine (LAIV) have been projected by the manufacturer to be available.
- In September, some manufacturers, including those who develop flu vaccines approved for children in the United States, reported delays in shipments that were originally anticipated for early fall.
- These early season shipping delays impacted certain vaccine products more than others, thus impacting some providers more than others. We understand that this can be very frustrating for providers and their patients who experienced these delays.

- Despite these early season shipping delays, however, approximately 85% of the total doses projected for the season were distributed by the end of October. Remaining flu vaccine doses are anticipated to be distributed during the month of November.
- As of November 14, 2014, manufacturers reported having shipped [139.7 million doses of flu vaccine](#).
- Some points to keep in mind:
 - All nasal spray flu vaccine offered during the 2014-2015 season will be quadrivalent vaccine.
 - Both quadrivalent and trivalent flu shots will be available.
 - Don't delay getting a flu vaccine if you want a quadrivalent vaccine and it is not available. Most of the flu vaccine offered this year will be trivalent. The important thing is to get vaccinated against the flu.
 - More quadrivalent flu vaccine is expected to be available during future seasons.
- For the latest information on flu vaccine supply, including projections and doses distributed, visit <http://www.cdc.gov/flu/professionals/vaccination/vaccinesupply.htm>.