

CDC Influenza Division Summary & Technical Key Points

November 26, 2018

Summary Key Points

- *Despite low levels of flu activity across the United States, CDC today reported the third flu-associated pediatric death of the 2018-2019 season.*
- *This is a somber reminder of how serious flu can be.*
- *While flu vaccine has been shown to be life-saving in children, about 80% of reported flu deaths each season occur in children who have not been fully vaccinated against flu.*
- *Flu activity is expected to increase in the coming weeks.*
- *It's not too late to get vaccinated. CDC recommends that everyone 6 months and older who has not been vaccinated yet this season, get vaccinated now.*
- *Next week is National Influenza Vaccination Week (NIVW), an event to encourage people who have not yet gotten vaccinated, to get their vaccine now, and to remind people that flu vaccination is still a good idea through the holiday season and beyond. A number of promotional activities will take place during NIVW. (See [NIVW](#) section for more information.)*
- *Annual flu vaccination is the best way to reduce the risk of flu and its potentially serious complications.*
- *There are many flu vaccine options. As of November 9, 2018, more than 159 million doses of flu vaccine had already been distributed in the U.S.*
- *Visit www.cdc.gov/flu for more information.*

Technical Key Points

In this document

- [Call to Action for 2018-2019 & Vaccine Benefits](#)
- [Key Flu Indicators \(Updated\)](#)
- [Flu-Related Pediatric Deaths \(Updated\)](#)
- [National Influenza Vaccination Week \(NIVW\) \(New\)](#)
- [Summary of CDC 2018-2019 Flu Guidance](#)
- [Influenza Antiviral Baloxavir Marboxil](#)
- [CDC & AAP Influenza Vaccination Recommendations for Children](#)
- [Waning Immunity & Optimal Timing of Vaccination](#)
- [“Take 3” Framework \(Vaccine, Everyday Preventive Actions, Appropriate Antiviral Use\)](#)

Call to Action for 2018-2019 & Vaccine Benefits

- It's not too late to get vaccinated!
- CDC recommends a yearly flu vaccine as the best way to protect against influenza and its potentially serious complications.
- There are many **benefits of flu vaccination**.
 - Flu vaccination can keep you from getting sick with flu.
 - Flu vaccination can reduce your risk of flu-associated hospitalization.
 - Flu vaccine can be life-saving in children.
 - Vaccination helps protect women during and after pregnancy and can protect the baby from flu illness for several months after birth.

CDC Influenza Division Summary & Technical Key Points

November 26, 2018

- Most recently, a paper published in Clinical Infectious Diseases on October 11, 2018 showed that over the course of six flu seasons, getting a flu shot reduced a pregnant woman's risk of being hospitalized from flu by an average of 40 percent.
- Flu vaccination helps prevent serious medical events associated with some chronic conditions (heart and lung disease, diabetes).
 - Vaccination can reduce the risk of heart attack in people with heart disease.
 - Flu vaccination also has been shown in separate studies to be associated with reduced hospitalizations among people with diabetes and chronic lung disease.
- Flu vaccination prevents millions of flu illnesses and doctors' visits and tens of thousands of hospitalizations each season.
- Some people who get vaccinated do get sick, but vaccination has been shown to make illness less severe.
 - A 2017 study showed that flu vaccination reduced deaths, intensive care unit (ICU) admissions, ICU length of stay, and overall duration of hospitalization among hospitalized flu patients.
 - A 2018 study showed that among adults hospitalized with flu, vaccinated patients were 59 percent less likely to be admitted to the ICU than those who had not been vaccinated. Among adults in the ICU with flu, vaccinated patients on average spent 4 fewer days in the hospital than those who were not vaccinated.
- More detailed information on flu vaccine benefits can be found at <https://www.cdc.gov/flu/prevent/vaccine-benefits.htm>.
- Flu vaccines this season have been updated to match the viruses research suggest will be most common.
- There are [many different flu vaccine options](#), including nasal spray flu vaccine.
 - Other options include high dose and adjuvanted vaccine for people 65 and older.
 - While there are many different flu viruses, flu vaccines protect against the 3 or 4 viruses that research suggests will be most common.
 - Get vaccinated now.
- Manufacturers have projected that as many 163 million to 168 million doses of flu vaccine will be available in the United States this season; as of November 9, 2018, more than 159 million doses of flu vaccine had already been distributed.
- For the latest information on flu vaccine supply, including regular updates on the number of influenza vaccine doses distributed, visit <https://www.cdc.gov/flu/about/qa/index.htm>.
- It is not possible to predict what this flu season will be like.
- While flu spreads every year, the timing, severity, and length of the season varies from one season to another.
- We do know that flu season is coming and we will likely have co-circulation of H1N1, H3N2 and B flu viruses and that flu vaccines offer important protection against all of these.
- In recent weeks, H1N1 viruses have been most common.
- Recently circulating H1N1 viruses are antigenically like the H1N1 viruses that circulated last season.
- This season's vaccine contains the same H1N1 vaccine virus.
- Vaccine effectiveness against H1N1 last season was 65 percent overall and 82 percent among children 6 months to 17 years of age.

CDC Influenza Division Summary & Technical Key Points

November 26, 2018

Key Flu Indicators

According to this week's FluView report, overall flu activity remains low nationally although small increases in flu activity were reported. Fifteen states and Guam are now reporting regional or local flu activity (Arizona, Connecticut, Georgia, Idaho, Kentucky, Louisiana, Massachusetts, New Hampshire, New Jersey, Ohio, Oklahoma, Oregon, Texas, Utah, and Vermont). That means those states are seeing flu outbreaks and laboratory-confirmed flu in at least one but less than half of the regions of the state. However 35 states, the District of Columbia, Puerto Rico, and the U.S. Virgin Islands continue to report only sporadic flu activity, which means those states are seeing small numbers of flu or one laboratory confirmed flu outbreak. Influenza A(H1N1)pdm09 viruses have been the most commonly identified flu viruses since September 30, 2018. CDC also reported an additional flu-associated pediatric death for the 2018-2019 flu season.

An annual flu vaccine is the best way to protect against influenza and its potentially serious complications. There are many benefits to vaccination, including reducing the risk of flu illness, doctor's visits, hospitalization, and even death in children. CDC recommends that everyone 6 months and older get vaccinated now. Below is a summary of the key flu indicators for the week ending November 17, 2018:

- **Influenza-like Illness Surveillance:** For the week ending November 17 (week 46), the proportion of people seeing their health care provider for influenza-like illness (ILI) was 1.9% and remains below the national baseline of 2.2%. Two of 10 regions (Regions 2 and 8) reported a proportion of outpatient visits for ILI at or above their region-specific baseline level. Additional ILINet data, including national, regional, and select state-level data for the current and previous seasons, can be found at <http://gis.cdc.gov/grasp/fluview/fluportaldashboard.html>.
- **Influenza-like Illness State Activity Indicator Map:** Three states (Georgia, Louisiana, and Oklahoma) experienced moderate ILI activity. New York City and eight states (Alabama, Colorado, Kentucky, Mississippi, New Jersey, South Carolina, Utah, and Virginia) experienced low ILI activity. The District of Columbia and 39 states experienced minimal ILI activity. Data were insufficient to calculate an ILI activity level from Puerto Rico. Additional data, including data for previous seasons, can be found at <https://gis.cdc.gov/grasp/fluview/main.html>.
- **Geographic Spread of Influenza Viruses:** Regional influenza activity was reported by one state (Kentucky). Local influenza activity was reported by Guam and 14 states (Arizona, Connecticut, Georgia, Idaho, Louisiana, Massachusetts, New Hampshire, New Jersey, Ohio, Oklahoma, Oregon, Texas, Utah, and Vermont). Sporadic influenza activity was reported by the District of Columbia, Puerto Rico, the U.S. Virgin Islands and 35 states (Alabama, Alaska, Arkansas, California, Colorado, Delaware, Florida, Hawaii, Illinois, Indiana, Iowa, Kansas, Maine, Maryland, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Mexico, New York, North Carolina, North Dakota, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Virginia, Washington, West Virginia, Wisconsin, and Wyoming). Geographic spread data show how many areas within a state or territory are seeing flu activity. Additional data are available at: <https://gis.cdc.gov/grasp/fluview/FluView8.html>.

CDC Influenza Division Summary & Technical Key Points

November 26, 2018

- **Flu-Associated Hospitalizations:** Reporting of influenza-associated hospitalization data from the Influenza Hospitalization Surveillance Network (FluSurv-NET) for the 2018-2019 influenza season will begin later this season. Additional data, including hospitalization rates during previous influenza seasons, can be found at <http://gis.cdc.gov/GRASP/Fluview/FluHospRates.html> and <http://gis.cdc.gov/grasp/fluview/FluHospChars.html>.
- **Mortality Surveillance:** The proportion of deaths attributed to pneumonia and influenza (P&I) was 5.6% during the week ending November 10, 2018 (week 45). This percentage is below the epidemic threshold of 6.3% for week 45 in the National Center for Health Statistics (NCHS) Mortality Surveillance System. Additional P&I mortality data for current and past seasons and by geography (national, HHS region, or state) are available at <https://gis.cdc.gov/grasp/fluview/mortality.html>
- **Pediatric Deaths:** One influenza-associated pediatric death was reported to CDC during week 46. This death was associated with an influenza A(H1N1)pdm09 virus and occurred during week 46 (the week ending November 17, 2018). A total of three influenza-associated pediatric deaths have been reported for the 2018-2019 season. Additional information on influenza-associated pediatric deaths reported during past seasons, including basic demographics, underlying conditions, bacterial co-infections, and place of death is available on FluView Interactive at: <https://gis.cdc.gov/GRASP/Fluview/PedFluDeath.html> . More detailed information about pediatric deaths reported during the current season will be available later in the season.
- **Laboratory Data:**
 - Nationally, the percentage of respiratory specimens testing positive for influenza viruses in clinical laboratories during the week ending November 17 was 1.7%.
 - Regionally, the three-week average percent of specimens testing positive for influenza in clinical laboratories ranged from 0.2% to 6.2%.
 - During the week ending November 17, of the 277 (1.7%) influenza-positive tests reported to CDC by clinical laboratories, 233 (84.1%) were influenza A viruses and 44 (15.9%) were influenza B viruses.
 - The most frequently identified influenza virus type reported by public health laboratories was influenza A(H1N1)pdm09 virus.
 - During the week ending November 17, 78 (98.7%) of the 79 influenza-positive tests reported to CDC by public health laboratories were influenza A viruses and 1 (1.3%) was an influenza B virus. Of the 60 influenza A viruses that were subtyped, 11 (18.3%) were H3N2 viruses and 49 (81.7%) were (H1N1)pdm09 viruses.
 - The majority of the influenza viruses collected from the United States during May 20 through November 17, 2018 were characterized antigenically and genetically as being similar to the cell-grown reference viruses representing the 2018–2019 Northern Hemisphere influenza vaccine viruses.

CDC Influenza Division Summary & Technical Key Points

November 26, 2018

- None of the viruses tested from May 20-November 17, 2018 were found to be resistant to oseltamivir, zanamivir, or peramivir. Antiviral resistance data will be updated weekly starting later in the season.
- FluView (<https://www.cdc.gov/flu/weekly/>) is available – and past issues are archived (<https://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 2018-2019 season can be found on the current FluView(<http://www.cdc.gov/flu/weekly/>) and FluView Interactive (<https://www.cdc.gov/flu/weekly/fluviewinteractive.htm>).

Flu-Related Pediatric Deaths

- The third flu-associated pediatric death occurring during the 2018-2019 flu season was reported by CDC during the week ending November 17, 2018.
- This brings the total number of flu pediatric deaths reported to CDC for the 2018-2019 season to three.
- Because of confidentiality issues, CDC does not discuss or give details on individual people.
- Since 2004, when pediatric deaths associated with influenza infection became nationally notifiable, the number of deaths reported to CDC each year has ranged from 37 (2011-2012 season) to 185 deaths (2017-2018 season).
- It's important to note that the actual number of flu deaths in children is thought to be higher than what is reported by states to CDC because not all flu deaths in children are detected/reported.
- CDC estimates the numbers of flu-related deaths using statistical models to account for likely under-reporting.
 - CDC estimates that the actual number of deaths associated with influenza in children during 2017-2018 was closer to 600, based on mathematical modeling.
 - The difference between reported flu deaths and estimated flu deaths in children last season is consistent with previously published reports that have found that the estimated numbers of flu-related deaths in children from statistical models may be two to three times higher than the number of reported deaths.
- During past seasons, approximately 80% of flu-associated deaths in children have occurred in children who were not vaccinated. This proportion was similar for the 2017-2018 season.
- Even otherwise healthy children can get very sick and die from flu.
 - Since the 2010-2011 season, between about 40% and 60% of pediatric deaths have occurred in children who were otherwise healthy and did not have an underlying medical condition.
- The single best way to protect against seasonal flu and its potentially severe consequences in children is to get a seasonal flu vaccine each year.
- Vaccination is important for children younger than 5 years old. It is especially important for those younger than 2 years old 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.

CDC Influenza Division Summary & Technical Key Points

November 26, 2018

- 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 old 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 old 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-associated 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 2018-2019 flu season will be updated each week and can be found at www.cdc.gov/flu/weekly/ and <https://gis.cdc.gov/GRASP/Fluview/PedFluDeath.html>.

National Influenza Vaccination Week (Dec. 2 - 8)

- National Influenza Vaccination Week (NIVW), scheduled for December 2-8, 2018, provides an opportunity to remind everyone 6 months and older that it's not too late to get a flu vaccine.
- NIVW is a national observance established in 2005 by CDC to highlight the importance of continuing influenza vaccination after the holiday season and beyond.
- NIVW provides an opportunity for public health and health care professionals, health advocates, communities and families across the country to work together to promote flu vaccination.
- Activities during NIVW will include:
 - [A #HowIRecommend Flu Vaccine webinar on 12/5/18](#), focused on speaking to health care providers (HCPs) about the importance of a strong flu vaccine recommendation and how to have these vital conversations with patients.
 - [Flu Fighter profiles](#), putting a human face on HCPs outside of the agency practicing flu prevention throughout the United States.
 - Compelling figures and illustrations connecting back to the benefits of flu vaccine will be posted on social media during NIVW. These posts will be featured [on Twitter](#), [Facebook](#), [Instagram](#).

Summary of CDC 2018-2019 Guidance

- CDC guidance for the 2018-2019 is published and available at:
- [‘Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices — United States, 2018–19 Influenza Season’](#) has been published.
- CDC recommends annual influenza vaccination for everyone 6 months and older with any licensed, age-appropriate flu vaccine (IIV, RIV4, or LAIV4) with no preference expressed for any one vaccine over another.

CDC Influenza Division Summary & Technical Key Points

November 26, 2018

New Influenza Antiviral Baloxavir Marboxil

- Baloxavir marboxil (trade name Xofluza®) is a new influenza antiviral drug approved by the U.S. Food and Drug Administration (FDA) on October 24, 2018 for the treatment of influenza (flu) in this country.
- There are now 4 approved and recommended influenza antiviral drugs for the 2018-2019 season.
- Baloxavir is approved for the treatment of acute uncomplicated flu in outpatients 12 years and older who have had flu symptoms for less than 2 days.
- CDC does not recommend use of baloxavir in pregnant women, breastfeeding mothers, or hospitalized patients.
 - There are no available data on use of baloxavir for treatment of influenza more than 2 days after illness onset.
 - There are no available data on use of baloxavir in pregnant women, breastfeeding mothers, or hospitalized patients with influenza complications or severe disease.
 - There are no available data on use of baloxavir in children less than 12 years old.
- Baloxavir is a pill, given as a single-dose tablet by mouth. (There are 20 mg and 40 mg pills and dosage depends on patient weight.)
- Baloxavir blocks the replication of influenza A and B viruses.
 - Baloxavir functions as a cap-dependent endonuclease (CEN) inhibitor that interferes with influenza viral RNA transcription.
 - The mechanism for baloxavir is different from the mechanism of the other currently recommended neuraminidase inhibitor antiviral medications, which block the neuraminidase in influenza A and B viruses.
- In [randomized clinical trials](#) in otherwise healthy outpatients 12 to 64 years old with acute uncomplicated influenza, baloxavir treatment started within 2 days of onset of symptoms was better than placebo and similar to the influenza antiviral neuraminidase inhibitor oseltamivir in alleviating flu symptoms.
 - Baloxavir's treatment course shortened duration of flu symptoms by approximately one day compared with placebo, and was similar to oseltamivir's treatment course.
- CDC's Influenza Division has undertaken specific laboratory actions to incorporate baloxavir into routine virologic surveillance, including:
 - Conducting next-generation sequencing (NGS) and analysis to assess human seasonal influenza A and B viruses and zoonotic influenza A viruses for susceptibility to baloxavir;
 - Creation and validation of new assays to determine influenza virus susceptibility to baloxavir; and training of laboratorians to conduct baloxavir susceptibility testing.
- In addition to engaging in preparatory laboratory activities, CDC has been incorporating information and guidance surrounding the new antiviral drug into its public and clinician education and outreach activities materials, including a summary for clinicians available at <https://www.cdc.gov/flu/professionals/antivirals/summary-clinicians.htm>.

CDC & AAP Influenza Vaccination Recommendations for Children

- CDC and the American Academy of Pediatrics agree that a flu vaccine is the best way to prevent flu, and both recommend that children 6 months and older get an annual flu vaccine.

CDC Influenza Division Summary & Technical Key Points

November 26, 2018

- LAIV is a vaccine option in the recommendations of both organizations for the 2018-2019 flu season.
- CDC has no preferential recommendation for one flu vaccine over another.
- The AAP recommends inactivated influenza vaccine (flu shot) as the primary choice for children. The nasal spray vaccine is recommended for children who would not otherwise receive an influenza vaccine (e.g., refusal of a flu shot) and for whom it is appropriate.
- Clinicians should exercise their clinical discretion to ensure that as many people as possible are protected against influenza.

Waning Immunity & Optimal Timing of Vaccination

- Antibody levels increase after vaccination, but then gradually decline over time.
- The rate at which influenza vaccine effectiveness declines is the subject of ongoing studies.
- Some studies show sharp waning (for example, [Kissling 2016](#) observed that VE declined to zero by four months post-vaccination).
- Other studies have found no appreciable waning until more than six months after vaccination (for example, [Radin 2016](#)).
- Two more recent studies on this topic looked at change in vaccine benefit with time since vaccination:
 - [Ferdinands 2017](#) found about 7% absolute decline in VE per month after vaccination.
 - [Ray 2018](#) found that the odds of influenza infection were twice as high among people who had been vaccinated for more than 22 weeks (5.1 mos) compared to people who had been vaccinated for less than six weeks.
- Some studies have shown that the waning may be more pronounced against H3N2- and influenza B-specific antibodies than H1N1-specific antibodies.
- The rate at which influenza antibodies decline is important to help determine the optimal timing of influenza vaccination.
- In recent years, vaccine has been available earlier than it had in the past, raising the question about when is “too early” to get vaccinated.
- ACIP/CDC currently recommends that “vaccination should be offered by the end of October.” (Except for children who need 2 doses who should get vaccinated “as soon as possible after vaccine becomes available.”)
- There currently is no specified time to start influenza vaccination (and thus no definition of “too early.”)
- ACIP/CDC will continue to look at this issue as more information becomes available but the picture is not yet clear enough to support change in policy.

Take 3 Framework

1. Take time to get a flu vaccine each year.

- While there are many different flu viruses, flu vaccines protect against the 3 or 4 viruses that research suggests will be most common. Three-component vaccines contain an H3N2, an H1N1 and a B virus. Four component vaccines have an additional B virus component. (See Vaccine Virus Selection for this season’s vaccine composition.)

CDC Influenza Division Summary & Technical Key Points

November 26, 2018

- Flu vaccination can reduce flu illnesses, doctors' visits, and missed work and school due to flu, as well as prevent flu-related hospitalizations.
- Flu vaccination also has been shown to significantly reduce a child's risk of dying from influenza.
- Also, there are data to suggest that even if someone gets sick after vaccination, their illness may be milder.
- Everyone 6 months of age and older should get a flu vaccine every year before flu activity begins in their community. CDC recommends getting vaccinated by the end of October. Learn more about [vaccine timing](#).
- For the 2018-2019 flu season, CDC and its Advisory Committee on Immunization Practices (ACIP) recommend annual influenza vaccination for everyone 6 months and older with any licensed, age-appropriate flu vaccine (inactivated, recombinant or nasal spray flu vaccines) with no preference expressed for any one vaccine over another. (See Types of Flu Vaccines).
- Vaccination of high risk persons is especially important to decrease their risk of severe flu illness.
- People at high risk of serious flu complications include young children, pregnant women, people with chronic health conditions like asthma, diabetes or heart and lung disease and people 65 years and older.
- Vaccination also is important for health care workers, and other people who live with or care for high risk people to keep from spreading flu to them.
- Infants younger than 6 months are at high risk of serious flu illness, but are too young to be vaccinated. Studies have shown that flu vaccination of the mother during pregnancy can protect the baby after birth from flu infection for several months. People who live with or care for infants should be vaccinated.

2. Take everyday preventive actions to stop the spread of germs.

- Try to avoid close contact with sick people.
- While sick, limit contact with others as much as possible to keep from infecting them.
- If you are sick with flu-like illness, CDC recommends that you stay home for at least 24 hours after your fever is gone except to get medical care or for other necessities. (Your fever should be gone for 24 hours without the use of a fever-reducing medicine.)
- Cover your nose and mouth with a tissue when you cough or sneeze. After using a tissue, throw it in the trash and wash your hands.
- Wash your hands often with soap and water. If soap and water are not available, use an alcohol-based hand rub.
- Avoid touching your eyes, nose and mouth. Germs spread this way.
- Clean and disinfect surfaces and objects that may be contaminated with germs like flu.

3. Take antiviral drugs for treatment if your doctor prescribes them.

- If you get sick with flu, antiviral drugs can be used to treat your illness.
- Antiviral drugs are prescription medicines (pills, liquid or an inhaled powder) and are not available over the counter.

CDC Influenza Division Summary & Technical Key Points

November 26, 2018

- Antiviral drugs are different from antibiotics.
- Antiviral drugs can make illness milder and shorten the time you are sick. They may also prevent serious flu complications.
- CDC recommends prompt antiviral treatment of people who are severely ill and people who are at high risk of serious flu complications who develop flu symptoms.
- For people with high-risk factors, treatment with an antiviral drug can mean the difference between having a milder illness versus a very serious illness that could result in a hospital stay.
- Studies show that flu antiviral drugs work best for treatment when they are started within 48 hours of getting sick, but starting them later can still be helpful, especially if the sick person has a high-risk health condition or is very sick from flu. Follow your doctor's instructions for taking this drug.
- Influenza antiviral drugs are the only drugs approved to treat influenza infection.
- Four FDA-approved influenza antiviral drugs are recommended for use in the United States during the 2018-2019 influenza season: oseltamivir (Tamiflu® and generic formulations), zanamivir (Relenza®), peramivir (Rapivab®) and baloxavir marboxil (trade name Xofluza®).
- Antiviral drugs are not a substitute for getting a flu vaccine. The flu vaccine is the best way modern medicine currently has to reduce the risk of flu illness and it's potentially serious outcomes.