

## **CDC Influenza Division Key Points**

**November 30, 2012**

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### **Summary Key Messages**

- Influenza activity in the United States continues to increase and climbed sharply from the previous week, according to the most recent FluView report.
- Current indications are that we will have an early influenza season.
- Right now, influenza A H3N2 viruses are predominant. Typically "H3N2 seasons" are more severe, with higher numbers of hospitalizations and deaths.
- The good news is that so far this season, most (90%) of the influenza viruses that have been antigenically characterized are well-matched to the 2012-2013 influenza vaccine; this should mean that the vaccine will offer good protection.
- People who have not already gotten a flu vaccine this season should do so now. It is not too late to get vaccinated to protect you and your family against influenza.
- National Influenza Vaccination Week is December 2-8, 2012 in the United States.
- CDC recommends that everyone 6 months of age and older get a seasonal flu vaccine each year. For more information, see <http://www.cdc.gov/flu/protect/whoshouldvax.htm>.
- Some children 6 months through 8 years of age require 2 doses of influenza vaccine. The second dose should be given at least 28 days after the first dose. Your child's health care provider can tell you whether two doses are recommended for your child.
- It takes about two weeks after vaccination for the body's immune response to fully respond and for you to be protected.

- You need this season's influenza vaccine to protect against the influenza viruses most likely to circulate and cause illness this season.
- Nearly 124 million doses of influenza vaccine had been delivered in the United States as of early November, with manufacturers projecting total production of 135 million doses this season.
- People have several options in terms of where they can get vaccinated and the type of influenza vaccine to choose.
- While doctor's offices and health departments continue to provide influenza vaccinations, vaccine also is available at many pharmacies, work places and other retail and clinic locations.
- In addition to the traditional seasonal flu shot available for people 6 months and older, a nasal spray influenza vaccine is available for non-pregnant, healthy people between 2 and 49 years of age, and a high dose flu shot is available for people 65 and older.
- An intradermal flu shot, which uses a needle 90% smaller than the regular flu shot, also is approved for people 18 to 64 years of age.

### **Key Flu Indicators/FluView Summary**

- According to this week's FluView, flu activity in the United States has increased substantially throughout the nation, most notably in the south central and southeast regions of the country.
- This FluView update reports on influenza activity for November 18-24, 2012 of the 2012-2013 influenza season.
- Below is a summary of these key indicators:
  - The proportion of visits to doctors for influenza-like illness (ILI) was at the national baseline. This is the earliest in the regular season that influenza activity has reached the national baseline level since the 2003-2004 season. This week, 5 U.S. regions reported ILI activity above region-specific baseline levels and 5 states (Alabama, Louisiana, Mississippi, Tennessee and Texas), experienced high ILI activity.
  - Four states reported widespread influenza activity (Alaska, Mississippi, New York, and South Carolina). Regional influenza activity was reported by 7 states (Alabama, Idaho, Iowa, Maine, Massachusetts, North Carolina,

- and Ohio). Nineteen states reported local influenza activity. This is an increase from the 8 states that reported local influenza activity last week.
- Data regarding influenza-associated hospitalizations for the 2012-2013 influenza season will be reported starting with the December 7, 2012 FluView.
  - The proportion of deaths attributed to pneumonia and influenza (P&I) based on the 122 Cities Mortality Reporting System was below the epidemic threshold.
  - No influenza-related pediatric deaths were reported for November 18-24, 2012. Two influenza-associated pediatric deaths have been reported during the 2012-13 season.
  - Nationally, the percentage of respiratory specimens testing positive for influenza viruses in the United States during the week of November 18-24 was 15.2%. This is an increase from last week and remains relatively elevated for this time of year. The regional percentage of respiratory specimens testing positive for influenza viruses ranged from 3.8% to 20.6%.
  - Both influenza A (H3N2 and 2009 H1N1) and influenza B viruses have been identified this season. During the week of November 18-24, 571 of the 812 influenza positive tests reported to CDC were influenza A and 241 were influenza B viruses. Among the 571 influenza A viruses identified that week, approximately 35% were H3 viruses and less than 1% were 2009 H1N1 viruses; 65% were not subtyped.
  - Since October 1, 2012, CDC has antigenically characterized 140 influenza viruses, including two 2009 influenza A (H1N1) viruses, 90 influenza A (H3N2) viruses and 48 influenza B viruses.
  - The 2009 influenza A (H1N1) viruses were characterized as A/California/7/2009-like. This is the influenza A (H1N1) component of the Northern Hemisphere vaccine for the 2012-2013 season.
  - All 90 of the influenza A (H3N2) viruses were characterized as A/Victoria/361/2011-like. This is the influenza A (H3N2) component of the Northern Hemisphere influenza vaccine for the 2012-2013 season.
  - Approximately 71% of the 48 influenza B viruses belonged to the B/Yamagata lineage of viruses, and were characterized as B/Wisconsin/1/2010-like, the influenza B component for the 2012-2013 Northern Hemisphere influenza vaccine.

- The remaining 29% of the tested influenza B viruses belonged to the B/Victoria lineage of viruses.
- Since October 1, 2012, CDC has tested two 2009 influenza A (H1N1), 122 influenza A (H3N2), and 81 influenza B virus isolates for resistance to neuraminidase inhibitors this season. Each of the viruses showed susceptibility to the antiviral drugs oseltamivir and zanamivir. High levels of resistance to the adamantanes (amantadine and rimantadine) 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.

### **National Influenza Vaccination Week (NIVW)**

See a full list of 2012 NIVW key points at <http://www.cdc.gov/flu/pdf/nivw/2012-nivw-key-points.pdf>.

- CDC established National Influenza Vaccination Week (NIVW) in 2005 to highlight the importance of continuing flu vaccination through the holiday season and beyond. This flu season NIVW is scheduled for **December 2-8, 2012**.
  - Flu vaccination coverage estimates from past years have shown that influenza vaccination activity drops quickly after the end of November. CDC and its partners want to remind you that even though the holiday season has arrived, it is not too late to get your flu vaccine.
  - As long as flu viruses are spreading and causing illness, vaccination can provide protection against the flu and should continue. Even unvaccinated people who have already gotten sick with one flu virus can still benefit from vaccination since the flu vaccine protects against three different flu viruses that are predicted to be the ones that will circulate each season.
- CDC recommends a yearly flu vaccine for everyone 6 months of age and older as the first and most important step in protecting against influenza disease.
- The flu vaccine is the best way modern medicine currently has to protect against this potentially serious disease.
  - While how well flu vaccines work can vary, the findings of many studies from multiple countries across age groups support the benefits of vaccination, especially during years when the vaccine is well-matched to circulating viruses.

- NIVW efforts will focus on reaching people of all ages about the importance of ongoing flu vaccination.
- Another goal of NIVW is to communicate the importance of flu vaccination for people who are at high risk for developing flu-related complications.
  - People at high risk for developing serious flu complications include children younger than 5 years, people 65 years of age and older, pregnant women, and people with certain long-term medical conditions, such as asthma, diabetes, heart disease, neurological and neurodevelopmental conditions, blood disorders, morbid obesity, kidney and liver disorders, HIV or AIDS, and cancer.

For these people, getting the flu can mean more serious illness, including hospitalization, or it can mean a worsening of existing chronic conditions.

- A full list of "People at High Risk of Developing Flu-Related Complications" is available at [http://www.cdc.gov/flu/about/disease/high\\_risk.htm](http://www.cdc.gov/flu/about/disease/high_risk.htm).
- Find information about NIVW activities, products and key messages by visiting <http://www.cdc.gov/flu/nivw/index.htm>.

### **H3N2v Influenza Update: One Case Reported in Iowa**

- One infection with an influenza A (H3N2) variant virus (H3N2v) was reported to CDC during week 47 from Iowa.
- No contact with swine or other livestock in the week preceding illness was reported.
- Investigation into potential additional sources of infection is ongoing.
- No further cases have been identified in contacts of the case patient.
- This is the first H3N2v infection reported since September 28, 2012.
- Additional questions about this case should be directed to the Iowa Department of Public Health
- This brings the total number of H3N2v cases reported since July 2012 to 307.

### **H3N2v Background**

- Influenza viruses that normally circulate in pigs are called "variant" viruses when they are found in people.

- Influenza A H3N2 variant viruses (also known as “H3N2v” viruses) with the matrix (M) gene from the 2009 H1N1 pandemic virus were first identified in U.S. pigs in 2010.
- The viruses were first detected in people in July 2011.
- From July – December 2011, 12 cases of H3N2v infection (in people) were detected in the United States
- From January to September 2012, 307 cases of H3N2v infection across 11 states were detected.
- These infections were mostly associated with exposure to pigs.
- Limited human-to-human spread of this virus has been detected as well, but no sustained community spread of H3N2v has been identified at this time.
- It’s possible that sporadic infections and even localized outbreaks among people with this virus will continue to occur.
- The Centers for Disease Control and Prevention (CDC) continues to monitor this situation closely and will report cases of H3N2v and other variant influenza viruses weekly in FluView and on the case count tables on this website.
- More information about H3N2v is available at <http://www.cdc.gov/flu/swineflu/h3n2v-outbreak.htm>.
- In addition, CDC has developed guidance for the public to protect against H3N2v (<http://www.cdc.gov/flu/swineflu/h3n2v-factsheet.htm>), and guidance for public health (<http://www.cdc.gov/flu/swineflu/h3n2v-publichealth.htm>) and guidance for health care workers (<http://www.cdc.gov/flu/swineflu/h3n2v-healthcare.htm>).

### **Influenza Vaccine Match**

- It’s impossible to say what the “vaccine match” will be for the 2012-2013 influenza season at this time because we don’t know what viruses will circulate in what proportion.
- So far this season, however, most (90%) of the viruses that have been analyzed at CDC have been well-matched to vaccine viruses.
- To date, 140 influenza viruses have been analyzed to compare how closely related they are to the 2012-2013 vaccine viruses.

- 126 (90%) of the 140 influenza viruses looked at so far are well-matched to their respective vaccine viruses.
- Thus, the vaccine should offer good protection against most of the influenza viruses analyzed so far this season.
- Specifically:
  - Two of two 2009 H1N1 influenza A (H1N1) viruses tested so far this season have been characterized as A/California/7/2009-like (the H1N1 vaccine component).
  - All 90 influenza A (H3N2) viruses tested so far have been characterized as A/Victoria/361/2011 (H3N2)-like (the H3N2 vaccine component).
  - Of the 48 influenza B viruses tested so far this season, 24 (70.8%) belong to the B/Yamagata lineage of viruses (included in the 2012-2013 seasonal influenza vaccine).
  - However, 14 (29.2%) of the 48 influenza B viruses belong to the B/Victoria lineage of viruses.
  - These B/Victoria viruses are regular seasonal influenza viruses that have circulated in the U.S. population for many years.
  - However, B/Victoria viruses are significantly different from the B virus vaccine component in this season's vaccine, which is from the B/Yamagata "lineage" or family.
  - For that reason, this season's vaccine would not be expected to protect against B/Victoria viruses.
  - However, B/Victoria viruses circulated last season and a B/Victoria virus was included in last season's vaccine. There may be some residual immunity in the population against B/Victoria viruses.
- So far, no viruses that are significantly drifted from this season's vaccine viruses have been detected.

## **FDA Approves Influenza Vaccine Using Cell Culture Technology**

### ***What is the cell-based influenza vaccine and how is it made?***

- On November 20, 2012, the U.S. Food and Drug Administration approved the use of Flucelvax, which is the first U.S.-licensed (trivalent inactivated) influenza vaccine manufactured using cell culture technology.
- The manufacturing process for cell-based influenza vaccine is similar to the egg-based production method, but a significant difference is that the influenza A and B viruses included in the vaccine are grown in cultured cells of mammalian origin instead of in eggs.
- In place of fertilized chicken eggs, the cell-based vaccine manufacturing process for Flucelvax uses animal cells (Madin-Darby Canine Kidney, or MDCK) in liquid culture as a host for the growing influenza virus.
- Cell culture technology is an alternative to the egg-based manufacturing process used in manufacturing influenza vaccines. Cell culture technology is more flexible and reliable than the traditional technology.
- The cell-based vaccine is as safe and effective as traditional egg-based vaccine and requires all of the same regulatory requirements as egg-based vaccines.
- Clinical studies demonstrate that Flucelvax is safe and effective for use in individuals 18 years of age and older.
- General reactions to Flucelvax were typical of those seen with current influenza vaccines. Pain, redness and soreness at the injection site and headache and fatigue were the most common reactions.
- Cell culture technology has already been used to produce other U.S.-licensed vaccines, including the vaccines for the following diseases: rotavirus, polio, smallpox, hepatitis, rubella and chickenpox.
- Cell-based flu vaccines have been used in Austria and the Czech Republic and were approved and made available for the 2011-12 flu season in 13 European Union countries.

### **What are the possible benefits of using cell-based influenza vaccines?**

- A major advantage of cell culture technology includes the potential for a faster start-up of the vaccine manufacturing process in the event of a pandemic. The cells used to manufacture Flucelvax are kept frozen and "banked." Cell banking assures an adequate supply of well-characterized cells is readily available for vaccine production. Growing the influenza viruses in cell culture for the manufacture of Flucelvax is not dependent on an egg supply.