CDC Influenza Division Key Points

February 27, 2015

In this document:

Summary Key Messages

- This week's FluView report indicates that flu activity remains elevated overall, however most of the country has returned to low or minimal levels of flu-like illness.
- Two indicators used to track severity are declining or leveling off, however, hospitalizations and flu deaths in children continue to be reported.
  - The proportion of deaths attributed to pneumonia and influenza (P&I) based on the 122 Cities Mortality Reporting System is declining; it decreased from a high of 9.3% five weeks ago to 7.4% in the current week. (During recent previous flu seasons characterized as "moderately severe" with H3N2 viruses predominating, P&I has reached 10.4% [2003-2004] and 9.9% [2012-2013].)
  - The hospitalization rate for people 65 years and older is now 258.0 per 100,000 people, up slightly from 242.2 per 100,000 the prior week. The hospitalization rate for the ≥65 year old age group is always highest; this season's rate is the highest recorded since this type of record-keeping began in 2005. (During the 2012-2013 season—the last H3N2-predominant season—the hospitalization rate for week 7 was 161.1 per 100,000. The final hospitalization rate for that season was 183.2 per 100,000 people.)
  - This week, six pediatric deaths were reported, bringing the total number of flu-associated pediatric deaths reported so far this season to 92. (Since 2004 when flu-associated pediatric deaths became a nationally notifiable condition, the number of deaths reported to CDC each season has ranged from 37 to 171.)
- More hospitalizations and deaths are typical of H3N2 seasons, which tend to hit young children and older people harder. (CDC estimates that an average of 28,909 people have died from flu during H3N2-predominant seasons, compared to 10,648 people during non-H3N2 predominant seasons.)

- Flu activity so far this season continues to be most similar to the 2012-2013 season, the last season when H3N2 viruses predominated.
- Flu activity may continue in parts of the country for some time, however most states are on the downward curve of flu activity and nationally, flu activity has peaked.
- H3N2 viruses continue to be most common, though in parts of the country an increasing proportion of influenza B viruses have been detected.
- Second waves of influenza B activity occur during many seasons.
- About two-thirds of the H3N2 viruses circulating this season are different or "drifted" from the H3N2 vaccine virus, but most B viruses are like the vaccine viruses.
- The predominance of drifted H3N2 viruses is probably responsible for the reduced protection offered by this season's vaccine.
- The reduced protection offered by flu vaccine this season makes the appropriate use of influenza antiviral (or "anti-flu") medications more important than usual.
- Antiviral drugs are a second line of defense against influenza and can be used to treat flu illness. (See section "Antiviral Drugs" for more information.)
- CDC recommends that all hospitalized and high risk patients (either hospitalized or outpatient) with suspected influenza should be treated as soon as possible with one of three available influenza antiviral medications, without waiting for confirmatory influenza testing.
- While antiviral drugs work best when given early, therapeutic benefit has been observed even when treatment is initiated later.

Upcoming Noteworthy Dates

- The Vaccines and Related Biological Products Advisory Committee (VRBPAC) will meet in Washington, D.C. on March 4, 2015, to select the flu vaccine composition for the U.S. 2015-2016 season.
- The next Morbidity and Mortality Weekly Report (MMWR) Influenza Update will be published on March 5, 2015.

FluView Activity Update

- According to this week's FluView, influenza activity is still elevated but continues to decrease in the United States. The number of states with widespread or high flu activity is decreasing, however, another six flu deaths in children were reported this week, bringing the total number of flu-associated pediatric deaths reported so far this season to 92.
- While H3N2 viruses remain most common, an increase in influenza B viruses has been detected in parts of the country.

- Flu activity has been elevated for 14 consecutive weeks nationally. The average length of a flu season for the past 13 seasons has been 13 weeks.
- Below is a summary of the key flu indicators for the week ending February 21, 2015:
    - For the week ending February 21, the proportion of people seeing their health care provider for influenza-like illness (ILI) decreased from 3.2% to 3.0% but remains above the national baseline (2.0%) for the fourteenth consecutive week. All 10 U.S. regions reported ILI activity at or above region-specific baseline levels. For the past 13 seasons ILI has remained at or above the national baseline for between one and 19 weeks each season.
    - Puerto Rico and 11 states experienced high ILI activity; a decrease from 12 states during the previous week. States reporting high ILI activity for the week ending February 21, 2015 include Arkansas, Connecticut, Kansas, Louisiana, Mississippi, New Jersey, New York, North Carolina, Oklahoma, Texas, and West Virginia. Three states (Colorado, Idaho, and Nevada) experienced moderate ILI activity; a decrease from five states during the previous week. Sixteen states (Alabama, California, Georgia, Hawaii, Massachusetts, Minnesota, Missouri, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Utah, Vermont, Virginia, and Wyoming) experienced low ILI activity. New York City and 20 states (Alaska, Arizona, Delaware, Florida, Illinois, Indiana, Iowa, Kentucky, Maine, Maryland, Michigan, Montana, Nebraska, New Hampshire, New Mexico, North Dakota, Ohio, Oregon, Washington, and Wisconsin) experienced minimal ILI activity and 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 influenza activity was reported by Guam and 20 states; a decrease from 30 states during the previous week. Puerto Rico, the U.S. Virgin Islands and 25 states (Arizona, Arkansas, Florida, Georgia, Hawaii, Kansas, Kentucky, Louisiana, Michigan, Missouri, Nebraska, Nevada, New Mexico, North Dakota, Ohio, Oregon, Pennsylvania, South Carolina, Tennessee, Texas, Utah, Washington, West Virginia, Wisconsin, and Wyoming) reported regional geographic influenza activity. Local flu activity was reported by the District of Columbia and five states (Alaska, Colorado, Illinois, Minnesota, and South Dakota). Geographic spread data show how many areas within a state or territory are seeing flu activity.
    - A total of 14,162 laboratory-confirmed influenza-associated hospitalizations have been reported through the Influenza Hospitalization Surveillance Network (FluSurv-NET) since October 1, 2014. This translates to a cumulative overall rate of 51.7 hospitalizations per 100,000 population. This is higher than seen for the same week during the 2012-2013 season when the overall hospitalization

rate was 36.7 per 100,000 people. Last week, the overall cumulative rate was 48.6 hospitalizations per 100,000 population.

- The hospitalization rate in people 65 years and older is 258.0 per 100,000, which is the highest hospitalization rate recorded since data collection on laboratory-confirmed influenza-associated hospitalization in adults began during the 2005-2006 season. This is the highest rate of any age group. Last week, the hospitalization rate in people 65 years and older was 242.2 per 100,000. Previously, the highest recorded hospitalization rate was 183.2 per 100,000, which was the cumulative hospitalization rate for people 65 years and older for the 2012-13 season. (The 2012-2013 season was the last H3N2-predominant season.)
- The hospitalization rate for children 0-4 years is 45.7 per 100,000 population. During 2012-2013, the hospitalization rate for that age group during the same week was 51.9 hospitalizations per 100,000 population.
- Hospitalization data are collected from 13 states and represent approximately 9% 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 attributed to pneumonia and influenza (P&I) based on the 122 Cities Mortality Reporting System decreased to 7.4% this week but remains high and above the epidemic threshold of 7.2%. Last week, P&I-associated deaths was 8.4%. (The highest P&I this season was 9.3% and occurred during week 2. During 2012-2013, P&I peaked at 9.9%. This is comparable to recorded percentages for past severe seasons, including the 2003-2004 season when P&I reached 10.4%.)
- Six influenza-associated pediatric deaths were reported to CDC during the week ending February 21.
  - Three deaths were associated with an influenza A (H3) virus and occurred during weeks 51, 4, and 5 (the weeks ending December 20, 2014, January 31, and February 7, 2015, respectively). Two deaths were associated with an influenza A virus for which no subtyping was performed and occurred during weeks 5 and 6 (the weeks ending February 7 and February 14, 2015, respectively). One death was associated with an influenza B virus and occurred during week 53 (the week ending January 3, 2015).
  - A total of 92 influenza-associated pediatric deaths have been reported for the 2014-2015 season at this time.
- Nationally, the percentage of respiratory specimens testing positive for influenza viruses in the United States during the week ending February 21 decreased from

13.0% to 12.1%. For the most recent three weeks, the regional percentage of respiratory specimens testing positive for influenza viruses ranged from 8.0% to 23.8%.

- Influenza A (H3N2) viruses have been the dominant circulating viruses in the United States this season accounting for more than 99% of all subtyped influenza A viruses. This week, however, the proportion of influenza B viruses increased to 30.9%. Influenza A (H1N1) pdm09 viruses have been detected rarely.
- CDC has antigenically or genetically characterized 933 influenza viruses, including 27 influenza A (H1N1)pdm09, 752 influenza A (H3N2) viruses and 154 influenza B viruses, collected in the United States since October 1, 2014.
    - All 27 influenza A (H1N1)pdm09 viruses tested were characterized as A/California/7/2009-like. This is the influenza A (H1N1) component of the 2014-2015 Northern Hemisphere quadrivalent and trivalent influenza vaccines.
    - 228 (30.3%) of the 752 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 524 (69.7%) influenza A (H3N2) viruses tested were different from A/Texas/50/2012. The majority of these 524 influenza A (H3N2) viruses were antigenically similar to A/Switzerland/9715293/2013, the influenza A (H3N2) component of the 2015 Southern Hemisphere influenza vaccine.
    - 100 (93.5%) of the 107 B/Yamagata-lineage viruses were characterized as B/Massachusetts/2/2012-like, which is included as an influenza B component of the 2014-2015 Northern Hemisphere trivalent and quadrivalent influenza vaccines. Seven (6.5%) of the B/Yamagata-lineage viruses tested showed reduced titers to B/Massachusetts/2/2012.
    - Forty-three (91.5%) of the 47 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. Four (8.5%) of the B/Victoria-lineage viruses tested showed reduced titers to B/Brisbane/60/2008.
- Since October 1, 2014, CDC has tested 32 influenza A (H1N1)pdm09, 1,762 influenza A (H3N2), and 217 influenza B viruses for resistance to neuraminidase inhibitors (oseltamivir, zanamivir, and peramivir). While the vast majority of the viruses that have been tested are sensitive to oseltamivir, zanamivir, and

peramivir, so far this season, one influenza A (H1N1)pdm09 virus showed resistance to oseltamivir and peramivir. (Because H1N1 viruses have been so rare this season, one virus accounts for 3.1% of the H1N1 viruses analyzed for antiviral resistance this season.)

- Previously, the neuraminidase inhibitors oseltamivir and zanamivir were the only recommended influenza antiviral drugs. On December 19, 2014, the U.S. Food and Drug Administration approved Rapivab (peramivir) to treat influenza infection in adults.
- As in recent past seasons, high levels of resistance to the adamantanes (amantadine and rimantadine) continue to persist among influenza A (H1N1)pdm09 and influenza 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.

ACIP Influenza Meeting Summary

- On February 26, 2015, the Advisory Committee on Immunization Practices (ACIP) voted on its annual influenza vaccine recommendations for 2015-2016.
- ACIP voted to continue to recommend that all persons 6 months and older be vaccinated annually against influenza.
- ACIP did not renew the 2014-2015 preference for using the nasal spray flu vaccine (i.e., LAIV) instead of the flu shot (i.e., IIV) in healthy children 2 through 8 years of age when immediately available.
- The preferential recommendation was originally approved on June 25, 2014, after a review of data from several influenza seasons suggested that the nasal spray vaccine could offer better protection than the flu shot for children in this age group.
- The decision not to renew the preferential recommendation was made based on new data from more recent seasons which have not confirmed superior effectiveness of LAIV observed in earlier studies.
- ACIP recommends that children 6 months and older get an annual influenza vaccine with no preference stated for either the nasal spray vaccine or the flu shot.
- ACIP is a panel of immunization experts that advises the Centers for Disease Control and Prevention (CDC).
- Part of the ACIP charter is to continually evaluate new data and update or change recommendations as warranted. The new data considered by ACIP included vaccine effectiveness (VE) estimates for 2013-2014 and for the current 2014-2015 season.

- Since 2010, CDC and ACIP have recommended that everyone 6 months and older get a flu vaccine annually with rare exception.
- Although flu vaccine is the best way to prevent influenza infection, how well it works can vary.
- Since CDC began measuring vaccine effectiveness in 2004-2005, estimates have ranged from 10% to 60%.
- One factor that can influence how well the vaccine works is the similarity between the vaccine viruses and circulating influenza viruses.
- More than two-thirds of the H3N2 viruses circulating nationally in the U.S. this season are different from the H3N2 vaccine virus; the proportion of drifted viruses is higher (>80%) at the U.S. VE Network study sites.
- Host factors of the person being vaccinated like age, health and immune status also can impact how well the vaccine works.
- The ACIP recommendation must be adopted by the CDC Director. The recommendation would then be incorporated into the 2015-2016 influenza prevention and control recommendations and published in a Morbidity and Mortality Weekly Report (MMWR), at which point it would become official CDC policy.
- Meeting minutes and slides will be posted on the ACIP website at http://www.cdc.gov/vaccines/acip/meetings/meetings-info.html.

WHO Consultation Meeting Recommendations

- Influenza viruses are always changing and so the composition of the seasonal influenza vaccine is reviewed each year. The review takes place to help ensure that circulating viruses and vaccine viruses are closely matched.
- In February each year, international experts gather at the World Health Organization (WHO) to review global flu laboratory and surveillance data and available vaccine candidate viruses, and then make selections for vaccine strains for the upcoming Northern Hemisphere flu vaccines.
- WHO makes vaccine strain recommendations twice a year; once for each hemisphere (Northern and Southern).
- In the United States, the Food and Drug Administration's Vaccines and Related Biological Products Advisory Committee (VRBPAC) reviews WHO's recommendation and makes the official recommendation for flu vaccines to be used in the United States during the upcoming influenza season.

- WHO met February 23-25, 2015, to consider the vaccine strain selection for the next Northern Hemisphere flu season, and announced their recommended flu vaccine composition on February 26.
- WHO recommends that influenza vaccines for use in the 2015-2016 northern hemisphere influenza season contain the following:
    - an A/California/7/2009 (H1N1)pdm09-like virus, which is the same as 2014-2015
    - an A/Switzerland/9715293/2013 (H3N2)-like virus, which is different from 2014-2015
    - a B/Phuket/3073/2013-like virus, which is different from 2014-2015
- WHO also recommends that quadrivalent vaccines containing two influenza B viruses contain the above three viruses and a B/Brisbane/60/2008-like virus.
- The WHO-recommended vaccine viruses for the 2015-2016 northern hemisphere influenza season are the same as those for the 2015 Southern Hemisphere influenza season. That recommendation was made in September 2014.
- More information about the WHO recommendation is available at http://www.who.int/influenza/vaccines/virus/recommendations/2015_16_north/en/.
- On March 4, 2015, VRBPAC will meet to make the recommendations for the influenza vaccine viruses to be included in the 2015-2016 influenza vaccines licensed for use in the United States.
- More information about selecting vaccine viruses for the seasonal flu vaccine is available on the CDC website at http://www.cdc.gov/flu/about/season/vaccine-selection.htm.

Influenza Vaccine Effectiveness: Updated Estimates

- Since 2004-2005, CDC has been conducting vaccine effectiveness (VE) studies each season to measure how well the vaccine is protecting vaccinated people from having to go to the doctor because of flu.
- Study results from the U.S. Influenza Vaccine Effectiveness (Flu VE) Network have varied from 10% to 60% between 2004-2005 and 2013-2014. (See http://www.cdc.gov/flu/professionals/vaccination/effectiveness-studies.htm for adjusted vaccine effectiveness estimates for influenza seasons from 2005-2014.)
- Early estimates for the current season were published in the January 16, 2015 edition of the Morbidity and Mortality Weekly Report. The MMWR report is available on the

CDC web site at http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6401a4.htm?s_cid=mm6401a4_w.

- At that time, influenza vaccination was estimated to have reduced a vaccinated person's risk of having to go to the doctor for flu illness by about 23% across all ages.
- On February 26, 2015, updated interim estimates from the U.S. Flu VE Network were presented to ACIP.
- These updated estimates include an additional four weeks of data from this season.
- The updated mid-point vaccine effectiveness against H3N2 was 18% (95% CI: 6% to 29%).
- The mid-point vaccine effectiveness estimate against influenza B viruses was 45% (95% CI: 14% to 65%).
- These estimates are lower than some other seasons, likely reflecting the fact that about two-thirds of circulating H3N2 viruses this season have been antigenically or genetically different from the H3N2 vaccine virus.
- The reduced protection offered by flu vaccine this season underscores the need for additional prevention and treatment efforts, including the appropriate use of influenza antiviral medications for treatment.
- These updated estimates will be made available on the CDC website.

Background on Vaccine Effectiveness

- CDC conducts studies to measure the benefits of seasonal flu vaccination each flu season to help determine how well flu vaccines are working. These studies are called "vaccine effectiveness" studies or "VE" studies, for short.
- How well the flu vaccine works can vary by season, virus type/subtype, the vaccine, and age and other host factors of the people being vaccinated.
- Although antigenic match influences vaccine effectiveness, randomized studies of influenza vaccines have reported variable vaccine efficacy during seasons when antigenically drifted viruses predominated.
- VE is difficult to measure and study results can vary widely based on the study design, the outcome being measured and the population being studied.
- CDC has worked with researchers at universities and health systems since 2003-2004 to estimate VE in non-randomized, observational studies.
- The U.S. Flu VE Network consists of five study sites across the United States that measure the flu vaccine's effectiveness at preventing outpatient medical visits due to laboratory-confirmed influenza.

- CDC's observational studies at U.S. Flu VE Network sites measure outpatient visits for laboratory-confirmed influenza infection using a highly accurate lab test called rRT-PCR to verify the outcome.
- This is an observational study that compares the odds of vaccination among outpatients with acute respiratory illness and laboratory-confirmed influenza infection to the odds of vaccination among outpatients with ARI who test negative for influenza infection.
- The study uses a test-negative control design, which minimizes potential bias introduced by access to medical care and health care-seeking behavior.

2014-2015 Vaccine Match

- 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."
- In order for any vaccine to be delivered in the fall, the viruses in the vaccine must be chosen in February.
- When the vaccine viruses for the Northern Hemisphere 2014-2015 influenza season were selected, A/Texas/50/2012 was the most common circulating influenza H3N2 virus.
- Drifted H3N2 viruses were first detected during routine surveillance testing during late March 2014, after WHO recommendations for the vaccine composition for the Northern Hemisphere for the 2014-2015 season had been made in mid-February.
- At that time, just a very small number of these viruses had been found among the thousands of specimens that had been collected and tested.
- Influenza viruses are constantly changing and it is common to detect small numbers of antigenic variants that never circulate widely.
- Many antigenic variants emerge and spread in a limited way and then die out.
- Early on, there is no way to predict if a given antigenic variant will circulate widely.
- Over the summer, these viruses were detected in greater proportions and by the fall had become common among H3N2 viruses in the United States and abroad.
- By September 20, 2014, about half of H3N2 viruses isolated worldwide since May were drifted from the H3N2 vaccine virus component of the 2014-2015 Northern Hemisphere influenza vaccine.
- Since October 1, 2014, about two-thirds of H3N2 viruses collected in the United States that were characterized at CDC were drifted from the H3N2 vaccine virus component.

- When vaccine viruses and circulating viruses are not well-matched, how well the vaccine protects against circulating viruses can be reduced.

Influenza and Parotitis This Season

- Since December 2014, multiple states have notified CDC of laboratory-confirmed influenza infections in persons who have swelling of their salivary glands (a condition called 'parotitis').
- Parotitis is not a common symptom of influenza infection, although cases of parotitis with influenza infection have been reported in the past.
- Parotitis is much more commonly seen following infection with other pathogens such as the mumps virus.
- Of the cases of influenza infection with parotitis that have been reported to CDC, the majority have occurred in young adults with influenza A (H3) infection, and have resulted in mild illness. No deaths have been reported.
- CDC is currently investigating the situation in order to understand the characteristics of patients and the occurrence of parotitis during the 2014-2015 influenza season.
- On January 10, 2015, CDC issued a request to state health departments to report laboratory-confirmed cases of influenza with parotitis.
- CDC will provide updates at www.cdc.gov/flu as more information becomes available.

Antiviral Drugs

Antiviral drugs can be used to treat flu illness and prevent serious flu complications.

- There are prescription drugs, called "influenza antiviral drugs" that can be used to treat the flu or to prevent infection with flu viruses.
- Treatment with antivirals works best when begun within 48 hours of getting sick, but can still be beneficial when given later in the course of illness.
- Treatment with flu antiviral drugs can make flu illness milder and shorter. Treatment with antivirals also can lessen serious flu complications that can result in hospitalization or death.
- Antiviral drugs become even more important when circulating flu viruses are different from the vaccine viruses, which can mean that the vaccine doesn't work as well in protecting against infection with those viruses.
- Antiviral drugs are effective across all age and risk groups.
- Studies show that antiviral drugs are under-prescribed for high risk people who get flu.

  - A new study by CDC authors suggests that only 15% of patients at high risk for flu complications with an acute respiratory illness who sought medical care within two days of symptom onset (i.e., the period of time when antiviral treatment is most beneficial) received a prescription for influenza antiviral medications. The study also showed that 70% of high-risk patients presented for care more than two days after onset of symptoms (Havers, 2015).
  - This research suggests two main barriers to patients treated with an antiviral as recommended: (1) high-risk patients often wait until after two days of symptom onset to seek care, and (2) even when high-risk patients present early, clinicians fail to prescribe antivirals.
  - Another study showed that less than one-fifth (19%) of patients who were at high risk for flu complications and presented for care within two days of symptom onset received a prescription for antivirals, regardless of laboratory testing for influenza infection (Havers, 2014).
  - The study demonstrates that clinicians are still more likely to prescribe antibiotics rather than antiviral medications to outpatients with flu, including to high-risk patients who would benefit from early empiric antiviral treatment.

- CDC has done some limited qualitative research into clinician knowledge, attitudes and practices (KAPs) related to antiviral drugs.
- The findings suggest that there are probably a number of factors involved that may act as barriers to prescribing, including low clinician awareness of CDC's antiviral guidance, a perception that these drugs may not work, that some physicians may require a positive flu test before they prescribe and that some physicians may not prescribe antivirals after the 2-day window during which benefit is optimal.
- These are all areas where CDC is working to improve clinician awareness.
- Treating high risk people or people who are very sick with flu with antiviral drugs is very important. It can mean the difference between having a milder illness instead of very serious illness that could result in a hospital stay.
- Health professionals should empirically give prompt treatment with antiviral medications to persons with suspected or confirmed flu who are hospitalized; have severe or progressive illness; or are at increased risk for influenza complications
- Three FDA-approved influenza antiviral agents are recommended for use in the United States during the 2014-2015 influenza season: oseltamivir, zanamivir and peramivir.
  - On December 19, 2014, the FDA approved peramivir (trade name Rapivab®), an intravenous antiviral drug, to treat uncomplicated influenza infection in adults age 18 and older. Read more at http://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm427755.htm.

- A summary of antiviral recommendations for clinicians is available on the CDC website at http://www.cdc.gov/flu/professionals/antivirals/summary-clinicians.htm.
- A CDC Health Update reminding clinicians about the importance of flu antiviral medications was distributed via the CDC Health Alert Network on January 9, 2015, and is available at http://emergency.cdc.gov/HAN/han00375.asp.
- Visit http://www.cdc.gov/flu/professionals/antivirals/index.htm for information about how antiviral medications can be used to prevent or treat influenza when influenza activity is present in your community.
- CDC has provided an algorithm for medical offices to use to evaluate patients for possible influenza over the telephone: http://www.cdc.gov/flu/professionals/antivirals/office-evaluation.htm.
- A CDC Expert commentary on antiviral recommendations for the 2014-2015 flu season is available through Medscape at http://www.medscape.com/viewarticle/837284.
- 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.
    - 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.
- More information about everyday preventive actions that help fight flu is available at http://www.cdc.gov/flu/protect/habits.htm.

Study: High Dose Influenza Vaccine in People 65 years and Older

New study of high-dose flu vaccine in people 65 years of age and older shows greater protection compared to standard-dose flu vaccine.

- On February 8, 2015, *The Lancet* published a CDC co-authored observational study that compared the protection provided by the high-dose flu vaccine to the standard-dose flu vaccine.
- The study analyzed data from more than 2 million Medicare beneficiaries 65 years and older who received the high-dose or standard-dose inactivated flu vaccine from community pharmacies during the 2012-13 flu season.
- Results showed that there were 22% fewer (95% confidence interval [CI]: 15% to 29%) probable flu cases in the high-dose group than in the standard-dose group.

- Likewise, the high-dose vaccine was 22% more effective (95% CI: 16% to 27%) for preventing flu-related hospital admissions.
- This marked the first time a significant reduction in flu-related hospitalizations was shown in people who had received the high dose vaccine versus the standard-dose flu vaccine.
- This study is available on The Lancet's website.

Background

- The "high-dose" flu vaccine is a vaccine option designed specifically for people 65 years and older. This "high dose" flu vaccine (Fluzone® High-Dose) contains more antigen (the part of the vaccine that helps your body build up protection against flu viruses) than standard flu shots, and is intended to promote a better immune response in this age group.
- CDC and the Advisory Committee on Immunization Practices (ACIP) **have not expressed a preference** for the high dose vaccine over the standard-dose flu shot for people 65 years of age and older at this time.
- The higher dose flu vaccine may result in more of the mild side effects that can occur with standard-dose seasonal shots. Mild side effects can include pain, redness or swelling at the injection site, headache, muscle ache and fever.

Influenza-Associated Pediatric Deaths

- Six influenza-associated pediatric deaths were reported to CDC this week.
- A total of 92 influenza-associated deaths have been reported during the 2014-2015 season.
- Because of confidentiality issues, CDC does not discuss or give details on individual pediatric death cases.
- Additional information regarding pediatric deaths is available through FluView Interactive.
- A pediatric death is a death in a person who is a U.S. resident and younger than 18 years old resulting from a clinically compatible illness with influenza that is confirmed by an appropriate laboratory test.
- During the 2013-2014 influenza season, a total of 109 influenza-associated pediatric deaths were reported to CDC.
- A review of the available pediatric death reports from the 2013-2014 season indicates that:

  - Of the 106 deaths in which the child's medical history was known, 54% occurred in children who had underlying medical conditions that placed them at high risk of developing serious flu-associated complications. However, 46% had no recognized underlying health problems.
  - About 80% of pediatric deaths occurred in unvaccinated children.
  - These proportions are largely consistent with what has been seen in the past.

- Since 2004, when flu-associated pediatric deaths became a nationally notifiable condition, the number of deaths reported to CDC each season has ranged from 37 (2011-2012 season) to 171 (2012-2013 season).
- During the 2009 H1N1 pandemic — April 15, 2009 to October 2, 2010 — 358 pediatric deaths were reported to CDC.
- These deaths are a somber reminder of the danger flu poses to children.
- Typically, most flu-related pediatric deaths occur in children who have not been vaccinated against flu.
- Among children 6 months and older, 80% to 85% of flu-related pediatric deaths occur in children who have not been vaccinated.
- The single best way to protect children against seasonal flu and its potential severe consequences is to have them receive a seasonal flu vaccine each year.
- Among children, vaccination is especially important for those younger than 5 years of age and those of any age with an underlying medical condition like asthma; a neurologic, neuromuscular or neurodevelopmental disorder; or immune suppression. These children are at higher risk of serious complications if they get the flu.
- Yearly vaccination also is especially important for people who come in contact with high risk children in order to protect the child (or children) from the flu.
- Even previously healthy children can become seriously ill if they get the flu. Data on laboratory-confirmed influenza hospitalizations collected through FluSurv-Net during the 2013-2014 flu season indicated that 50.3% of children hospitalized with the flu had no identified underlying medical conditions.
- 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 2014-2015 flu season is updated each week and can be found at http://www.cdc.gov/flu/weekly/.
- Additional information about the pediatric deaths, including basic demographics, underlying conditions and week and place of death, for the 2014-2015 season as well as past influenza seasons, is available through the Influenza Associated Pediatric Mortality application of FluView Interactive at http://gis.cdc.gov/GRASP/Fluview/PedFluDeath.html.