



**Testimony before the
Committee on Energy and Commerce
Subcommittee on Oversight and
Investigations
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**Influenza: Perspective on Current Season and
Update on Preparedness**

Thomas R. Frieden, M.D. M.P.H.

**Director, Centers for Disease Control and Prevention and
Administrator, Agency for Toxic Substances and Disease
Registry**

U.S. Department of Health and Human Services



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Good morning Mr. Chairman, Members of the Committee. I am Dr. Tom Frieden, Director of the Centers for Disease Control and Prevention (CDC). CDC works 24-7 to save lives and protect people from harm. Tragic and often preventable hospitalizations and deaths each year from seasonal influenza remind us that seasonal influenza epidemics are a significant public health burden. I'm happy to be with you today to discuss this season's epidemic, and to illustrate public health action to identify serious health problems and to coordinate targeted responses that protect our Nation and its citizens from public health threats, saving both lives and money.

In my testimony today, I will provide an overview of current flu activity, how we monitor the flu, and factors associated with flu vaccine supply, effectiveness, and uptake. But first let me provide you with a general overview of seasonal influenza.

- Influenza (the flu) is a contagious respiratory illness caused by influenza viruses. It can cause mild to severe illness, and at times can lead to death. Some people, such as older people, young children, and people with certain health conditions, are at higher risk for serious flu complications.
- In the United States each year, on average, 5 percent to 20 percent of the population get the flu, causing more than 200,000 hospitalizations and more than \$10 billion in direct medical costs for hospitalizations and outpatient visits from seasonal flu-related complications.
- Flu seasons are unpredictable and can be severe. Over a period of 30 years, between 1976 and 2006, estimates of flu-associated deaths in the United States ranged from a low of about 3,000 to a high of about 49,000 people.
- This year's flu season began relatively early compared to recent seasons, with elevated flu activity across most of the United States. For most of the country, the 2012-2013 season has peaked and begun to decline, but there are still many cases and it's likely that flu activity will continue for several more weeks.
- The timing, geographic spread, and severity of flu season are unpredictable. The predominant circulating flu virus this year is H3N2, which tends to cause more severe illness, particularly among the elderly.
- Although it is far from perfect, annual flu vaccination is, by far, the best tool to prevent influenza. There are other important steps that we can all take, including following simple guidelines to reduce transmission including staying home when you are sick and covering coughs and sneezes.
- There was a robust supply of vaccine this year, and we understand that despite spot shortages there is still vaccine available. We continue to recommend that people of all ages be vaccinated.
- Importantly, people who believe they have the flu if they are very young, elderly, or have underlying conditions should see their doctor early as antiviral medications can help shorten the length of illness and avoid more serious outcomes.

Introduction

CDC provides the cutting-edge scientific and programmatic foundation and leadership for the diagnosis, prevention, and control of influenza domestically and internationally. Our annual flu efforts help us be better prepared by strengthening our surveillance and diagnostic capacity; improving public awareness and provider knowledge about influenza and the importance of vaccination, other prevention measures, and early treatment; and enhancing our international, Federal, State, and local partnerships to respond quickly to influenza epidemics. The tracking and control of influenza requires – and is a great example of – excellent international cooperation.

We regularly review and adopt recommendations of the Advisory Committee on Immunization Practices (ACIP) for all vaccines licensed for use in the United States including annual influenza vaccination. Nationally, CDC tracks the distribution and availability of vaccine doses as reported to CDC by influenza vaccine manufacturers, and provides vaccine for publicly-funded vaccine programs. Additionally, CDC's health communications experts ensure that the public has easy access to timely information about the flu, ways to prevent the spread of disease, and information about treating the flu. CDC prepares materials and messages aimed at various audiences (e.g. the general public, healthcare providers, parents, older adults) to share information about protecting the population from influenza. Next, I will provide you with a current update of seasonal influenza activity, and then discuss in more detail how CDC works to protect Americans from influenza each year.

Current Influenza Activity

The 2012-2013 influenza season began relatively early compared to recent seasons and by February 5th, 2013, flu activity was high across most of the United States. It is not possible to predict when this season will peak or how severe it will be, but based on past experience, it's likely that flu activity will continue for several more weeks to come. According to CDC's latest FluView report, influenza activity remains elevated overall with activity decreasing in some parts of the country, but increasing in others. In particular, flu activity has been declining in the east and increasing in the western part of the country. Key indicators reflecting severity, such as hospitalizations and deaths, remain significantly elevated, with the greatest impact occurring among people 65 and older.

For the week of January 27-February 5, the proportion of people seeing their health care provider for influenza-like illness (ILI) decreased but remains above the national baseline. Since October 1, 2012, 7,224 laboratory-confirmed influenza-associated hospitalizations have been reported. This translates to a rate of 25.9 influenza-associated hospitalizations per 100,000 people in the United States. In general, hospitalization rates seem to be leveling off and the proportion of deaths attributed to pneumonia and influenza (P&I) decreased. However, the number of deaths reported is still well above the epidemic threshold. Levels of hospitalization and death remain high especially among people 65 years and older, who account for more than half of all reported hospitalizations.

Fourteen influenza-related pediatric deaths were reported during the week of January 27-February 5, 2013. This brings the total number of influenza-associated pediatric deaths reported to CDC for the 2012-2013 season to 59. Since the 2004-2005 season, an average of 78 pediatric deaths occur each season, excluding the 2009 pandemic season for which 282 deaths were reported.

Since October 1st, 2012, CDC has tested 1,358 influenza virus samples for resistance to neuraminidase inhibitors this season like the antiviral drugs oseltamivir (brand name Tamiflu) and zanamivir. Virtually all of the tested viruses are susceptible to these antiviral drugs.

Influenza Surveillance

The information I just shared with you about this flu season in the United States comes to us from a broad network of health care providers and researchers across the country. State and local public health departments are vital partners in domestic influenza surveillance and prevention. We also work closely with our colleagues in other components of the Department of Health and Human Services (HHS) and in the U.S. Department of Defense (DoD), the U.S. Department of Agriculture (USDA), the Department of Homeland Security (DHS), the U.S. Department of State (DOS), the World Health Organization (WHO), and Ministries of Health around the world to conduct and support influenza surveillance. These efforts allow us to monitor the impact of influenza and guide decisions about the vaccine viruses that are recommended for inclusion in influenza vaccines. We also continually test the susceptibility of influenza viruses to antiviral medications and provide recommendations to clinicians for use of these medications.

To improve influenza surveillance, we develop influenza diagnostic tests and provide training to improve influenza testing capabilities at home and abroad. CDC distributes influenza diagnostic testing reagents and supplies to public health partners in the United States and globally. Other CDC efforts include enhancing the use of existing surveillance data, identifying alternative data sources to monitor influenza geographic spread and severity, and classifying which high risk groups are most seriously affected by influenza. CDC conducts state-of-the-art applied research to better understand the properties of influenza viruses, which could provide insight into influenza virus evolution, transmissibility, pathogenicity, and susceptibility to antiviral drugs, as well as the immune response to the viruses. This improved understanding of the antigenic and genetic properties of influenza viruses can lead to the development of better tools to prevent and control influenza.

CDC conducts surveillance for human infections with influenza viruses of animal origin (also referred to as “novel influenza A virus infections”). As I previously noted, the dominant strain this year is H3N2, and not a novel influenza A virus. However, we continue our research and preparedness work because we know that influenza viruses have a propensity to change unpredictably over time, and in rare circumstances a new influenza virus that did not previously circulate in humans can jump the host species barrier from an animal reservoir to humans. Both gradual changes in the virus genome and introduction of a new virus not previously circulating in humans can allow influenza to evade our vaccines and antiviral medications. Working with our partners, we are developing methods to improve

rapid identification and reporting of novel influenza A viruses and new human seasonal influenza virus variants. Alongside our colleagues at USDA, we also conduct research at the animal-human interface to assess the risk of human infection with novel influenza A viruses. Using this information, we evaluate ways to prevent transmission of animal viruses to humans.

Finally, we are exploring the extent to which “next-generation” genetic sequencing technologies can allow us to improve our surveillance of influenza. Advanced molecular techniques will enhance our ability to diagnose infectious diseases, investigate and control outbreaks, understand transmission patterns, determine antimicrobial resistance, and develop and target vaccines (which I will describe below). The work we are pursuing today can allow us to achieve these ends with increased timeliness and accuracy and decreased costs, and will help us detect and manage flu outbreaks in the future.

Vaccine Virus Strain Selection

The best tool we have for the prevention and control of influenza is influenza vaccine. We recommend yearly influenza vaccination. There are several reasons for this. Influenza viruses change over time and we often need to update the vaccine for a new season. Additionally, an individual’s immune response to vaccination can decline over time, necessitating annual vaccination. The influenza viruses selected for inclusion in the seasonal flu vaccines for the northern hemisphere are updated each year based on information about the circulating influenza viruses, influenza activity throughout the world, and how well the previous season’s vaccine viruses might protect against changes in the circulating viruses that are newly identified. There are currently 140 national influenza centers in 110 countries conducting surveillance for influenza viruses and disease activity and CDC is part of this global network. CDC assigns staff in strategic locations to help countries such as Vietnam, Laos, Cambodia, China, India and South Africa to develop their own capacity to monitor influenza – this protects both the people of these countries and people in the US.

The annual WHO vaccine virus decision meetings include representatives from the WHO Collaborating Centers, including the U.S. Collaborating Center for Influenza at CDC, Essential Regulatory Laboratories, including the FDA, and others from WHO’s Global Influenza Surveillance and Response System (GISRS). After WHO makes its recommendations, our colleagues at the U.S. Food and Drug Administration (FDA) Vaccines and Related Biological Products Advisory Committee (VRBPAC) meet to concur with or modify WHO’s recommendation for the United States.

The 2012-2013 seasonal flu vaccine is a trivalent vaccine (a three-component vaccine) with each component selected to protect against a main group of influenza viruses circulating in humans. This year’s vaccine includes two influenza A viruses and one influenza B virus. Two of the three components in the trivalent vaccine for 2012-2013 were changed from the strains included in the 2011-2012 vaccine based on changes in the genomes of influenza viruses, their antigenic profiles and global influenza epidemiology. These changes in the composition of influenza vaccines were based, in part, on CDC’s successful efforts to identify new influenza variants, to rapidly sequence the viral genomes and to provide candidate vaccine viruses to partners in industry.

Vaccine Effectiveness

Choosing the right vaccine strains is key because the closer the corresponding viruses in the vaccine are to the constantly evolving influenza viruses that are currently circulating, the more protective influenza vaccination is. Vaccine effectiveness – or VE – is measured through observational studies (rather than through randomized control trials). In observational studies the study participants make their own decisions about whether or not to be vaccinated. VE is measured by comparing the frequency of influenza illness in the vaccinated and unvaccinated groups, and is usually adjusted for factors (such as presence of chronic medical conditions) that may vary between the groups. Effectiveness represents the percentage reduction in the frequency of influenza illness among people vaccinated compared with the frequency among those who were not vaccinated, assuming that the vaccine is the cause of this reduction.

Estimates of influenza vaccine effectiveness are affected by several factors, including study biases (e.g., confounding bias, selection bias and information bias), the match between the vaccine influenza strains and the circulating strains, host factors and the sample size of a specific study. Specificity of the outcome measured in a study has an important influence on the observed effectiveness. As more data are collected globally from annual studies that estimate effectiveness for RT-Polymerase Chain Reaction confirmed influenza, it is expected that our estimates will become more refined. However, vaccine effectiveness will always vary from season to season, based upon the degree of similarity between the viruses in the vaccine and those in circulation, as well as other factors. In years when the vaccine strains are not well-matched to circulating strains, vaccine effectiveness is generally lower. This year the vaccine has proven to be well-matched to the circulating strains.

In addition, host factors also affect vaccine effectiveness. In general, influenza vaccines are less effective among people with chronic medical conditions and among people age 65 and older, as compared to healthy young adults and adolescents. Because of lower VE that is observed in older adults and people with chronic health conditions, our communications team works to specifically emphasize the importance of early treatment with antiviral medications and vaccination of those people close to these individuals in messages to the public and health care providers.

Each season since 2004-2005, CDC has estimated the effectiveness of seasonal influenza vaccines to prevent influenza-associated, medically attended acute respiratory infection (ARI). The early onset of the 2012-2013 influenza season offered an opportunity to provide early VE estimates this season. These estimates were published in the Morbidity and Mortality Weekly Report (MMWR) on January 11, 2013 and are available on our website (<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm62e0111a1.htm>). Initial estimates may be higher than final estimates, however, final VE information will not be known until the end of the season.

The overall vaccine effectiveness estimate of seasonal influenza vaccine for preventing laboratory-confirmed influenza virus infection was 62 percent, roughly the same level of effectiveness as we

experienced in other seasons. (95 percent confidence interval [CI] = 51-71 percent). **Getting a vaccination this year reduced a person's risk of influenza-associated medical visits by approximately 60 percent.** Influenza vaccination with this level of moderate effectiveness offers substantial benefits to the population. Benefits include reducing illness, antibiotic use, doctor visits, time lost from work, hospitalizations, and deaths. We recommend that all Americans over the age of 6 months get vaccinated. Generally the vaccine is much more effective in older children and young adults and less effective in people over the age of 65. CDC will continue to monitor VE throughout the season and provide updates as soon as data become available.

Though these early estimates reinforce the importance of influenza vaccination, they also indicate that some vaccinated persons will become infected with influenza despite having been vaccinated. This does not mean that everyone with influenza-like-symptoms of cough and fever has influenza. There are many other respiratory viruses circulating right now besides influenza. However, we know that some people who get vaccinated will still get infected by influenza. There are a few reasons this may occur. One is that they may be exposed to an influenza virus shortly before getting vaccinated or during the two-week period that it takes the body to gain protection post-vaccination. Another possibility is that a person may be exposed to an influenza virus that is not included in the seasonal flu vaccine; and perhaps some people get it on time with the right strain but don't have sufficient immunity anyway. And, even if well matched, the influenza vaccine is far from perfect, so people can still get infected by and sick from a strain of influenza that is included in the vaccine. While influenza vaccination is not a perfect tool, it is still the best thing we have at our disposal to prevent influenza and we strongly recommend annual vaccination.

Our VE estimates emphasize how critical it is that our continued investment in making better influenza vaccines continues. CDC works to support critical efforts both by HHS's Office of the Assistant Secretary for Preparedness and Response's (ASPR) Biomedical Advanced Research and Development Authority (BARDA), the National Institutes of Health (NIH), the FDA, vaccine manufacturers and others to make faster growing, more effective vaccines. These partners are pursuing multiple strategies to increase the efficacy of the current seasonal flu vaccine and to develop a universal flu vaccine that would provide broader, longer protection against multiple strains or subtypes of influenza.

As an example of one step to improve the range of viruses covered by the influenza vaccine, in 2012, our colleagues at the FDA approved a quadrivalent vaccine with four components rather than three. Though that vaccine was not available this season, we expect it to be available next season.

Vaccine Safety

CDC, in partnership with FDA, leads the Nation's public health effort to provide a safe, effective vaccine supply for all licensed vaccines approved for use in the US. CDC uses multiple systems to monitor vaccine safety including the Vaccine Adverse Event Reporting System (VAERS), the Vaccine Safety Datalink (VSD), and the Clinical Immunization Safety Assessment (CISA).

Over the years, hundreds of millions of Americans have safely received seasonal influenza vaccines. Each year, CDC conducts studies to assess the safety of the annual influenza vaccine. These data are presented in public meetings of Federal advisory committees and published in the peer review literature, providing transparency of the monitoring, research and safety findings. Monitoring to date indicates that this season's influenza vaccine is as safe as past seasonal flu vaccines, and CDC will continue to collaborate with FDA and other HHS agencies and advisory committees to monitor the safety of seasonal influenza vaccine.

Implementing the Annual Influenza Vaccine Program

As of February 1, 2013, 134.6 million doses of flu vaccine had been distributed in the United States of the approximately 145 million doses produced for the 2012-2013 season. The remaining doses will continue to be distributed based on demand.

Our work at CDC extends beyond laboratory and vaccine development work to implementation of seasonal influenza vaccine programs and other clinical interventions. Influenza vaccine is primarily purchased and distributed through the private sector; public sector purchase and distribution account for a small part of the U.S. vaccine supply. A total of approximately 17.9 million doses of 2012-13 influenza vaccine for children and 910,000 doses for adults were purchased using Federal and State funds; this represents about 13 percent of the total U.S. influenza vaccine supply.

At this point in the 2012-2013 influenza season, some vaccine providers have exhausted their vaccine supplies while others have remaining supplies of vaccine. The increased demand for vaccine in some communities has made it more challenging for some people seeking vaccination to locate vaccine. In light of these challenges, CDC is working with state immunization programs to implement strategies that make the best possible use of available influenza vaccines. These include guidance for finding available flu vaccine for purchase and local options for vaccine redistribution.

Vaccination Coverage

During the 2011-12 season, 52 percent of Americans age 6 months and over were vaccinated. Early season 2012-13 coverage was 36.5 percent, which is similar to early season influenza coverage estimates during the 2011-12 season. As of mid-November, more than 60 percent of Americans had not taken advantage of flu vaccination and the protection it offers from influenza and its complications. CDC is working with provider organizations to encourage all providers to recommend a flu vaccination to all their patients and make plans to vaccinate their patients and staff, as well as get vaccinated themselves. Influenza vaccination among health care personnel (HCP) has increased slowly over the past decade, and reached 63.5 percent in the 2010-2011 influenza season; however, coverage is still well below the Healthy People 2020 target of 90 percent. Early-season 2012-13 flu vaccination coverage among HCP was similar to coverage from the same time the previous season. By occupation, flu vaccination was highest among pharmacists (88.7 percent), physicians (83.8 percent), nurses (81.5 percent), and nurse practitioners/physician assistants (73.3 percent). Flu vaccination was lowest among assistants or aides

(43.4 percent) and administrative/non-clinical support staff (54.5 percent). Flu vaccination coverage was highest among HCP working in hospitals (83.4 percent) and lowest among HCP working in long-term care facilities (48.7 percent). CDC is working with partners to educate HCP, especially assistants or aides and non-clinical staff, and HCP working in long-term care facilities about the importance, effectiveness, and safety of annual flu vaccination may increase overall vaccination coverage. Influenza vaccination coverage among HCP is important for patient safety, and CDC recommends that health care facilities should make vaccine readily accessible to all HCP as part of a comprehensive infection control program.

During the 2010-11 flu season, vaccination coverage among pregnant women was 47 percent, which is below the Healthy People 2020 target of 80 percent for pregnant women. By early season 2012-13, flu vaccination coverage among pregnant women was 47.3 percent; this was similar to vaccination coverage from the same time the previous season. Women receiving a health care professional's recommendation and offer were more likely to be vaccinated than those not receiving a recommendation or offer. CDC is working with health care providers for pregnant women, especially obstetricians and midwives, to recommend and offer flu shots to pregnant women throughout the influenza season.

Vaccine Supply Information from National Influenza Vaccine Summit Survey

A brief survey was done by the National Influenza Vaccine Summit, a 300-member partnership, on January 10-18, 2013. The NIVS includes manufacturers, distributors, health departments, provider groups, including pharmacists and medical groups among other influenza immunization stakeholders. Results from 493 survey responses received indicated that there were many doses of vaccine still available, although some immunizers and distributors have exhausted their supplies. More specifically, 10,343,412 doses were reported as in-stock/available for purchase, secondary distribution, or administration.

Most immunizers who responded to the survey (61 percent) had not depleted their inventory of influenza vaccine. Among those who had depleted their inventory and attempted to order additional doses, most were successful in obtaining additional doses. This information provided a helpful snapshot about vaccine available from different segments of the immunization community for the survey time frame.

Outreach and Communication

Over time, we have seen incremental improvements in overall flu vaccination coverage in the US, flu immunization coverage disparities among children have been eliminated, and substantial improvement has been made in vaccination coverage among pregnant women. Many factors contribute to public interest in flu vaccination, including some that we can not control, such as when disease activity begins, the severity of illness, and who is most impacted. However, outreach, communication and education efforts are essential tools for increasing vaccination coverage rates by increasing awareness about influenza, the populations recommended for vaccination, and other prevention and treatment options.

CDC's influenza communication and education efforts occur on an ongoing basis throughout the year and span all influenza topic areas, including disease activity; vaccine recommendations, safety and effectiveness; antiviral use; and vaccination coverage, among others. Activities begin in the spring with formative communication research and then continue in the summer with communication planning. Many of our National, State and local partners look to CDC's influenza communication plan and research findings to frame their own communication activities. These partners are critical to CDC's communication outreach efforts so continuous, year-round communication with them is essential. CDC relies on established partners (health provider organizations, medical institutions, and State, regional and local health departments) who all make an enormous effort to support CDC's annual campaign to promote flu vaccination, with special emphasis on those at greatest risk for complications from the flu and to reduce disparities. CDC also collaborates with a strong, active base of diverse multi-sector partners at national and local levels, including collaborating with community leaders to promote flu vaccination in underserved communities.

- Each year, CDC participates in a seasonal flu vaccination press event with the National Foundation for Infectious Diseases. This event typically involves sharing the final vaccine coverage data from the previous season, and promoting flu vaccination for the current season. This year's press event generated more than 1,030 print, online, and broadcast placements resulting in over 694 million impressions with media coverage by the [Associated Press](#), [Reuters](#), [New York Times](#), [USA Today](#), [HealthDay](#), [MedPage Today](#), [CBSNews.com](#), NBC Nightly News and ABC World News.
- Our strategic partnership with Medscape and WebMD allows us to share important and timely influenza-related information through video commentaries on Medscape to raise the knowledge and awareness of clinicians of varied specialties about the importance of vaccinating their patients.
- CDC recognizes National Influenza Vaccination Week (NIVW) each year to highlight the importance of continuing influenza vaccination throughout the flu season, specifically before and after the holiday season, and into January and beyond. This year we announced an early start to flu activity. This event along with two National Radio Media Tours garnered approximately 88 million estimated impressions. In addition to these news media activities, a digital media outreach campaign garnered an estimated 157 million impressions through websites, blogs, tweets, live twitter chats, and mobile messages.
- This year, CDC also worked to educate the public about the significant burden flu illness has placed on the elderly this season. A spotlight article was posted on the CDC website that explained the significant increase in hospitalizations among people 65 years of age and older reported this season compared with last season, and emphasized that people 65 years of age and older are at high risk for serious complications from the flu and should seek early treatment from a doctor. CDC also created an article for seniors 65 years of age and older designed for placement in magazines or other publications, which was made freely available for download from the CDC website's "free flu resources webpage."
- In addition to traditional communication channels, CDC employs new technologies to reach a variety of new audiences, including social media and other new media. CDC recently launched our new Influenza iPad Application (App). Since the launch, there have been 99,100 page views of content by users of the new App and 8,010 downloads. CDC projects there will be approximately 130,000+ total page view of content by users during January 2013.
- CDC's seasonal flu website continues to be a valuable resource for sharing information with the public, health care professionals and other partners as evidenced by the Web metrics. This

season, the number of hits to the seasonal flu website began increasing significantly in December 2012 with 3.7 million views that month (average 141,000/day). This is three times the number of page views when compared to December 2011, and the highest number of views in 3 years. Web activity for January 2013 was nearly triple the December count, with 10.3 million page views (332,000/day). Among all content areas across CDC's website, influenza pages accounted for 7 of the top 10 page views. For the month of January, 15 percent of all web traffic for CDC.gov involved seasonal flu content.

The bottom line is that nearly 4 in 10 Americans get vaccinated each year. This is lower than we would wish though it is higher than any other country.

Antiviral Medications to Treat Influenza

Another important tool we have to prevent influenza related deaths and complications are antiviral medications – specifically the neuraminidase inhibitors. The benefits of antiviral drugs for treatment of influenza have been documented for some time. During and since the 2009 H1N1 pandemic, several observational studies demonstrated a reduction in serious influenza-related complications, such as pneumonia, respiratory failure necessitating ICU admission, and death, and a reduction in the length of hospitalization and duration of virus detection, with early antiviral treatment of hospitalized patients compared to no treatment or delayed treatment. Many of these studies included hospitalized patients, patients with underlying medical conditions and pregnant women. In randomized clinical trial studies of previously healthy patients with uncomplicated influenza, early treatment (within 48 hours of illness onset) with neuraminidase inhibitor antiviral drugs (oseltamivir and zanamivir) reduced illness by 1-2 days and lessened illness severity.

CDC is aware that questions have been raised about the clinical benefits of oseltamivir in reducing influenza-related complications. Specifically, a Cochrane Collaboration review of randomized control trials (RCTs) published last year generated some concern about the drugs. However, we believe a review of *all* available evidence demonstrates that early treatment with oseltamivir reduces influenza related severe outcomes, and CDC's guidance on the use of antiviral medications remains unchanged.

The ACIP and CDC consider all of the published evidence available from both RCT's and observational studies, including safety data, when issuing recommendations on antiviral treatment of influenza. ACIP and CDC guidance emphasize early antiviral treatment as soon as possible for patients who are hospitalized, severely ill and for those who are at greatest risk for complications from influenza. In our education and outreach efforts to clinicians, we emphasize both vaccination and antiviral treatment.

Preparing for the Next Influenza Pandemic

As I noted earlier, influenza viruses are constantly evolving and changing. Seasonal influenza viruses, the viruses that cause influenza in people every year, change from year to year and there is always some pre-existing background protection in the population. When a new influenza virus emerges, one that people have not previously been exposed to, and the virus has the ability to be transmitted from person to person, then we have the possibility of an influenza pandemic—widespread transmission of a new influenza virus against the background of very little if any pre-existing protection. The systems and the work that I have described today for seasonal influenza are exactly the systems and work we need to respond to an influenza pandemic. We need to detect the new virus, assess its ability to be transmitted

from person to person, develop and administer a vaccine, promote treatment with antiviral drugs, and communicate with the public and with the medical community. The more we can improve our seasonal influenza response, the more effective our response will be to a pandemic.

Conclusion

As we have been reminded this year, influenza is a serious disease and can result in hospitalization and death. The influenza virus is constantly evolving. At CDC we remain committed to keeping pace with influenza, improving our understanding of the disease and tools to prevent and treat it.

We continue to improve our surveillance of influenza, and have worked alongside our partners across the United States and the world to monitor those influenza strains currently circulating and detect those that emerge faster than ever. In close collaboration with our partners at FDA, NIH and other HHS components, we contribute to the evidence base to support the development and production of better influenza vaccines that can be produced more quickly.

As we have worked to improve surveillance and vaccines, we remain committed to sharing information with the general public and health care providers to prevent illness and death due to influenza through increasing vaccination coverage for all Americans and encouraging prompt treatment for those at high risk who do become sick with influenza. Thank you for your time today. I look forward to answering your questions.