Seasonal Influenza Update

Carolyn Bridges, MD

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Coordinator: Welcome and thank you for standing by. At this time all participants are in a listen only mode. During the Question and Answer Session please press star 1 on your phone. Today's conference is being recorded. If you have any objections you may disconnect at this time.

I will now turn the meeting over to Ms. Alycia Downs. Thank you. You may begin.

Alycia Downs: Good afternoon and welcome to today's COCA Conference Call entitled Seasonal Influenza Update. We are very excited to have Dr. Carolyn Bridges present on this call.

Dr. Bridges started at CDC in 1996 as an Epidemic Intelligence Service Officer working the influenza branch. She has continued to work with influenza throughout her career and now serves as the Associate Director for Science in the Influenza Division at the National Center for Immunizations and Respiratory Diseases here at the Centers for Disease Control and Prevention in Atlanta, Georgia.

We're using a PowerPoint presentation for this call that you should be able to access from our Web site. If you have not already downloaded the presentation, please go to www.emergency.cdc.gov/coca. Click on Conference Call Information Summaries and Slide Sets. You can find the PowerPoint there.

After the activities the participants will be able to: describe current U.S. vaccine recommendations in terms of target groups; describe available antiviral medications and recommendations for use; and they should be able to identify influenza-related illnesses and deaths that should be reported to health departments and CDC.

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I will now turn the call over to Dr. Bridges.

Carolyn Bridges: Good morning. Thank you very much for joining us today on this call. I'd first like to start by thanking my coworkers and colleagues for sharing their slides and data with me for this presentation. I'll start with the first slide that says Human Influenza at the top of the slide for those of you who have the PowerPoint presentation with you.

As you all well know, I'm sure, influenza is a contagious respiratory illness caused by influenza virus. And the illness is characterized by fever, which is often high, cough, body aches, headaches, malaise and rhinitis. Gastrointestinal symptoms can also occur, usually in children, but the predominant symptoms, of course, are respiratory.

Influenza causes yearly winter epidemics with peak activity generally occurring in January or February; although activity can occur as early as late October in some years and last as late as April or even into May.

In contrast with seasonal influenza, pandemic influenza occurs very sporadically and in unpredictable intervals with the last pandemic having occurred in 1968.

Next slide. The burden of influenza is substantial whether you're talking about seasonal influenza or pandemic influenza. For seasonal influenza, on average around 6 to 7% of adults are infected in a given year and up to 30% of children.

On average during the 1990s there were approximately 36,000 influenza-related deaths, most of which occurred in older adults, and approximately 200,000 hospitalizations, about half of which occurred in older adults. In addition, of these 200,000 hospitalizations, about 10% of those occurred in children less than 5 years of age.

Again in contrast with seasonal influenza, pandemics are much more of an equal opportunity pathogen in that infection rates are high really across the board and across all age groups. And although the burden of disease is very substantial with seasonal influenza, in a very severe pandemic the disease burden could be several-fold higher. And some estimates predict up to 1.9 million deaths in a 1918-like, very severe pandemic.

Next slide. Although influenza infection rates can vary substantially among different years, certainly they can also vary by age group with generally the

highest influenza illness rate seen in school-age children followed by preschool age children and then lower rates for adults.

Next slide. In contrast, as I mentioned, for hospitalizations, the highest rates of hospitalizations occur among people 65 and older followed by children less than 5 and then age 50 to 64, and then lastly persons 5 to 49 years of age.

Next slide. For deaths from influenza the highest rates of deaths occur in people 65 and older and then followed by 50 to 64 year olds. Tragically there are influenza-related deaths, however, that occur in all age groups including some deaths reported every year even in young, otherwise healthy children.

Next slide. One of the main focuses of the influenza program at the CDC is to conduct influenza surveillance. And I'm just going to review some of the influenza surveillance activities that are in place for the 2008-09 influenza season. And a couple of cases where we certainly encourage the reporting of special cases through state and local health departments.

The goals of influenza surveillance are to describe the onset and duration of the influenza season and to identify and characterize viruses that are circulating. And that information is used for biannual vaccine strain selection. It occurs in February for the northern hemisphere and in September for the southern hemisphere; and to monitor antiviral resistance among circulating influenza viruses.

Surveillance is also used to track the geographic spread of influenza; to monitor the severity, and then to provide information for partners including clinicians and public health officials and others who are working in prevention and treatment roles for influenza.

Next slide. There are several different types of influenza surveillance that are conducted through CDC with our partners. Those include virologic surveillance, morbidity surveillance, mortality evaluation and we track influenza activity as well as conduct surveillance for novel influenza A virus infections. And I'll describe all of these in a little more detail.

Next slide. All of the information from influenza surveillance is updated weekly on the CDC Web site. And you can find that by going to www.cdc.gov\flu and click on the button that says flu surveillance or influenza surveillance.

The report that is currently available is the Week 42 Report. Data used for this report is through October 18. The data is updated weekly; usually published on Fridays by close of business on Friday. And there's generally about a week or so lag in the report (i.e. data collected through October 18th would be published on about October 24th, for example.).

Next slide. The virologic surveillance remains a very critical component of the surveillance system. There are currently 140 laboratories from two networks that report within the U.S. This includes 80 WHO (World Health Organization) collaborating laboratories in the U.S. and 65 NREVSS laboratories also in the U.S.

And they report the number of specimens that they have tested for influenza and then the number of those which were positive for influenza. And they report by type (ie whether it's type A or B) and the age group of the persons who were tested. Again this data is included in the weekly report.

Next slide. This bar graph entitled WHO NREVSS Collaborating Laboratories shows the distribution and timing of influenza reports from this

virologic system for the 2007 -08 year. And as you can see both influenza A H1, influenza H3 and type B influenza viruses have all circulated last year. And that's fairly typical that we will see some mixture of both of those subtypes of influenza A as well as type B influenza in a single season.

Next slide. And this map of the U.S. shows the distribution of these different types and subtypes of influenza viruses across the U.S. for the '07 - '08 season. And there can be some, you know, pretty substantial variation by region in terms what the predominant type or subtype is. And again this data also by region is published on a weekly basis.

Next I'll be talking about the morbidity surveillance. One of the main surveillance systems we use for morbidity surveillance is the Sentinel Providers Network to evaluate influenza-like illness in United States. This network currently consists of approximately 2400 clinicians and physicians that were enrolled in 2007-08. And we expect similar numbers for '08-'09.

These clinicians report the total number of patient visits and then the number of those visits which were for an influenza-like illness, where influenza-like illness for this surveillance system is defined as fever plus cough or sore throat and the absence of another known cause, other than influenza. And this data is weighted by state population for analysis.

Next slide. A graph shows the peak and timing of the peak of influenza-like illness reporting by this Sentinel Physician Network and where green shows the 2007-08 season which had a higher peak than the previous three but was somewhat similar in magnitude to the 2004 - '05 season. And this surveillance will continue again in '08-'09.

Next slide. Hospital surveillance is another component of the surveillance systems conducted by CDC. The next slide shows a U.S. map, which shows a distribution of sites who participated in the Emerging Infections Program Hospital Surveillance System.

We have a second system which is the New Vaccine Surveillance Network, or NVSN, which is a three site system. The NVSN focuses just on children less than five years of age with laboratory confirmed influenza. And the EIP program focuses on both adults and children for this coming year.

The NVSN slide, which is the next slide, shows the timing of those influenza hospitalizations of the last four years and rates of disease. And the next slide shows the graph that's available for the Emerging Infections Program by year for laboratory-confirmed influenza hospitalizations.

And again these are updated actually twice monthly and put on the CDC Web site. These systems have not yet begun for the 2008 - '09 season but should begin in the next few weeks.

I'll next talk about the mortality reporting system in the U.S. The system that is used to look at mortality for persons of all ages is the 122 Cities Mortality Reporting System. The purpose is to monitor that proportion of death that are due to pneumonia or influenza on a weekly basis throughout the influenza season.

We receive reports here at CDC from the Vital Statistics Offices in 122 U.S. cities which represents approximately 1/4 of all U.S. deaths. And these Vital Statistics Offices report that the total number of deaths filed and the number of those where influenza or pneumonia is listed anywhere on the death certificate.

The next graphic shows what is updated on our surveillance update on the CDC Web site to show the pneumonia and influenza mortality for a given year. And this again is updated each week.

The smooth curved lines show the epidemic threshold and the seasonal baseline for the proportion of all deaths that are coded as pneumonia or influenza. And the red, more jagged line shows the actual proportion of deaths that are reported for the given year. This system is currently up and running for this year.

Next slide please. In addition, CDC also reports influenza associated pediatric deaths. This system was initiated after the 2003-'04 influenza season, which was a very early and somewhat severe season in which there were 153 laboratory confirmed influenza deaths reported in children that were reported by 40 states.

In June of 2004 the Council of State and Territorial Epidemiologists recommended that influenza associated pediatric deaths become nationally notifiable. That reporting began in October of 2004. And again this data is updated weekly in the Surveillance Report online. All influenza pediatric deaths are asked to be reported to state and local health departments who then gather the information and then submit those reports to the CDC.

Next slide. The case definition for these pediatric influenza associated deaths are deaths that are resulting from a clinically compatible illness that was confirmed to be influenza by an appropriate laboratory or rapid diagnostic test specific for influenza.

All reports are from children less than 18 years of age. And the Case Report Form requests that whoever is reporting also report information on bacterial coinfection.

Next slide This next slide shows a bar graph of the number of pediatric influenza associated deaths that were reported over the last three previous influenza seasons. And the timing of those deaths corresponds very directly with the virologic surveillance data.

Next slide. As of August 2008, CDC received 85 reports of influenza associated pediatric deaths for the 2007-08 season. Among these children the median age was 5 years. And of the 67 who were tested for bacterial and coinfection, 43 were positive for bacterial coinfection. And 28 had *Staph. aureus* coinfection, 15 of which were MRSA.

What we have seen over the last years is a very concerning increase in the proportion of pediatric deaths that have *Staph. aureus* and influenza coinfection. Only 2% of the pediatric influenza deaths in 2004-'05 had reports of *Staph. aureus* coinfections compared to 6% in '05-'06; and then 30% in 2006-'07 and then again a further increase to 42% in 2007-'08.

So this is something that is of concern. And we will continue to be monitoring this and reporting both in the weekly Surveillance Report as well as in MMWR.

CDC also collects information of influenza activity. This is a state epidemiologists' report. In this report overall influenza activity is assessed at the state level. And in this system states can report different levels of either no influenza activity, sporadic, local, regional or widespread activity. And they

provide the overall impression of virus circulation and illness. This is the only system that provides state level data.

The next slide shows the U.S. map. And this is the most recent map from this activity report for the U.S. from the week ending October 18. And there is currently, as is typical for this time of year, very little influenza activity.

The last part of influenza surveillance which I wanted to share with you is novel influenza A virus infection reporting. Novel influenza A virus infections are human infections with influenza A viruses that are different from the currently circulating human subtypes of A, H1 and H3.

Human infections of novel influenza A viruses that might be transmissible from person to person may signal the beginning of an influenza pandemic. And thus any identification of novel influenza A infection in humans requires rapid evaluation and assessment to determine what the possibility is of sustained human-to-human transmission.

Next slide. Beginning in June of 2007 the Council of State and Territorial Epidemiologists added novel influenza A virus infections to the National Notifiable Diseases Surveillance System. Reporting of new subtypes of influenza infection in people is also required under the International Health Regulations from 2005. And so those reports go to World Health Organization.

Next slide. You all have heard of the avian flu H5N1. This is the virus that is currently spreading through Asia, Africa, Europe and the Middle East. And this virus is highly pathogenic to domestic poultry like chickens and turkeys and has also caused disease in other animals.

In addition to its widespread impact in the poultry population, there have also been 387 human cases including 245 deaths in people since 2003. And although H5N1 is not getting nearly as much attention as it was a couple of years ago, these illnesses in people continue to occur sporadically.

Luckily there has been no efficient human-to-human transmission of this virus reported. But it remains the subtype of influenza A of greatest concern for pandemic potential, although it is certainly not the only virus of concern out there. H7 viruses would be another subtype of concern that has caused illnesses in people as well.

Next slide. In response to H5N1 and to improve pandemic planning, substantial resources have been devoted to improving PCR testing capacity for novel influenza A viruses at public health laboratories. The APHL has provided public health laboratories with RTPCR procedures and training so that they can differentiate human influenza A H1, human influenza A H3 and Asian avian H5N1 viruses.

And in the U.S. there are approximately 140 laboratories that have RTPCR testing capabilities for influenza. So more labs can do more subtyping than ever before. And CDC requests that labs quickly inform CDC if there are any influenza A viruses that they are unable to subtype; that those get forwarded to CDC for confirmatory testing.

Next slide. With this increased testing capacity and diagnostic capability, we have seen an increase in the number of unsubtypeable viruses of novel influenza viruses identified in the U.S. None, of course, have been H5N1. But what we have seen is an increase particularly in the number of swine influenza infections in people.

Next slide. Swine influenza viruses are influenza A viruses that occur in swine. And they were first identified in 1930. And that's three years before influenza was identified as a human pathogen.

Swine influenza viruses are endemic in pig herds throughout the world. And they cause respiratory symptoms in pigs including cough and runny nose, lethargy and decreased feeding.

Secondary bacterial infections are common. And herds are often vaccinated in the U.S., though there certainly are breakthroughs of illness that frequently occur in pigs.

Next slide. The interspecies transmission of swine influenza viruses to people and vice versa is well documented. And recently in 2007 there was a nice summary put together by Myers and colleagues that was published in Clinical Infectious Diseases which reviewed 37 human cases from 1976 through 2006. And they found a human case fatality ratio in that population of approximately 17%.

In addition most of those cases were due to the classic swine H1N1 virus which is antigenically quite distinct from the human H1. But we know that other viruses can also cause disease in pigs and in humans. And, for example, in China H9N2 influenza A viruses that originated from birds have been found to cause disease both in pigs as well as in people.

Next slide. In North America swine influenza viruses, which were the classic swine H1N1, have been known to be circulating among pigs probably since 1918 and remains relatively unchanged but very slow antigenic drift up until really 1997-'98, when a human H3N2 virus was introduced into the swine

population, probably more than once, and now circulates widely among pigs as a reassortant virus.

So the initial virus was a human H3N2 virus which we has reassorted with the classic swine H1N1 virus. And then an additional reassortment occurred with an avian influenza virus. So now what we see is a triple reassortant virus in pigs that has both human, avian and swine influenza virus components in it.

And now at least probably five to six distinctly different antigenic groups of influenza viruses in pigs that include viruses with classic H1 from swine as well as human H1 and human H3 hemagglutinin circulate among US pigs. So things are very dynamic in terms of influenza viruses right now in the swine populations in the U.S.

Next slide. And as I mentioned based probably largely on increased capacity for PCR testing, CDC has received increased numbers of reports of laboratory confirmed human infection with swine influenza viruses.

And since December of 2005 CDC has received reports of nine cases of laboratory confirmed swine influenza A virus in people. This is in contrast to approximately one case in every one to two years received previously. And all of these nine are human cases where the virus has been these triple reassortant viruses. People who have been reported infected with swine influenza viruses in these systems have had varying level of exposure to pigs and varying levels of investigation regarding sources of infection.

Next slide. These represent a potential concern because many of the human cases of swine influenza that have been reported have not had any occupational exposure to pigs;. We know that people who are occupationally

exposed to pigs tend to have higher levels of existing antibody to the classic swine H1N1 virus.

But those who are not occupationally exposed may not have this antibody. And exposure outside of a work setting, such as at a fair or petting zoo may allow for exposure of young children or immune compromised people to swine influenza viruses. And those groups may be at increased risk of becoming ill with swine influenza.

So persons with exposure to swine influenza who have influenza like illness, ideally those people would receive influenza virus testing with coordination with a local or state health department to make sure that those people weren't infected, in fact, with a novel influenza A virus such as a swine virus.

Next slide. In response to this increase in the dynamic nature of swine influenza viruses and increased number of human infections with swine influenza virus detected, the U.S. Department of Agriculture and CDC have embarked on a pilot swine influenza project. This is an interagency agreement between CDC and USDA. And this was just signed in September of 2008.

So it's going to be getting underway hopefully soon. And the objectives of this pilot project are to identify what the antigenic variation is among circulating swine influenza viruses and to increase the testing and reporting of outbreaks in swine where they are associated with novel subtypes of influenza A in pigs; unusual disease in pigs to look for changes also in the internal genes. And then where there are cases where there are potential human illness associated with exposure to pigs infected with influenza.

And we hope to improve the understanding of the risk of interspecies transmission of swine influenza viruses to humans as well as human influenza viruses to swine populations.

Next slide. Now I'd like to move to talk about the main prevention tools for influenza which, of course, are influenza vaccine and antiviral drugs. Influenza vaccines, of course, are the mainstay for prevention of influenza. They are our primary tool to prevent the infection and complications of influenza.

There are two type of influenza vaccine available in the U.S. The live intranasal spray vaccine is FDA approved for healthy nonpregnant persons who are 2 through 49 years of age. So these people would not have any of the chronic conditions that would increase someone's risk of complications of influenza.

And in particular there is a contraindication for giving the live vaccine for children less than 5 years of age who have a history of asthma or recurrent wheezing or anyone 5 or older who has wheezing or asthma.

The inactivated, injectable influenza vaccine is approved for persons 6 months of age and older and is approved for anyone regardless of the presence of chronic disease and is also recommended for pregnant women.

More than 140 million doses of influenza vaccine are anticipated for the U.S. market this year. So that is plenty of vaccine for anyone who wants to reduce their chance of getting influenza.

Next slide. The current influenza vaccine recommendations have really evolved quite a bit over the last several years. Traditionally the vaccine was

recommended for people 65 and older and then people 6 months to 64 years with high risk conditions.

In addition we've recommended influenza vaccine for households' contacts of high risk as well as all healthcare workers. Beginning in 2000, people 50 to 64 years of age were added to the recommended group for influenza vaccine. Many of these people either lived with someone at high risk or have a high risk condition themselves such as asthma or diabetes or heart disease.

In addition the influenza vaccine has been recommended for anyone who wishes to reduce their risk of influenza. And that, of course, is a longstanding recommendation as well over the past several years.

In 2008 the recommendation was further expanded to include all children 6 months up to their 18th birthday for influenza vaccination to implement in this season, if possible, but by 2009 at the latest. This added the 5 to 18 year age group to the groups recommended for vaccination in addition to the 6 month up through the 5th birthday group that was previously recommended. So now all children are recommended for influenza vaccination up through their 18th birthday.

Next slide. The medical conditions which appear to increase the risk of influenza really have not been changed over the last several years except to add in the last three years people that have conditions that interfere with lung function or controlling respiratory secretion such as those with neurologic and neuromuscular disorders.
And then the recommendation for pregnant women was changed a few years ago so that it reads now that vaccine is recommended for any woman who would be pregnant during influenza season. So any pregnancy during influenza season is a recommendation for influenza vaccination.

Next slide. So many of these, in fact, most of the vaccine recommendations have been in place for many, many years with the first influenza vaccine recommendations in the U.S. made in the 1960s.

Still our vaccination rates certainly are not optimal. For people 65 years of age and older, the group for whom the vaccine has been recommended the longest, vaccination rates for 2007 were approximately 66%. For people 50 to 64 years old with high risk conditions, they are 46% and 32% for otherwise healthy 50 to 64 year olds.

Among pregnant women the 2007 estimate is that only about 15% of pregnant women were vaccinated. And only approximately 45% of healthcare workers received the recommended influenza vaccine. So we can certainly do better with these adult populations.

Next slide. As I mentioned the children have been recommended for influenza vaccine regardless of chronic medical conditions for the last few years. The first group to be recommended were the 6 to 23 month olds.

And a Sentinel Surveillance System in three sites -- Oregon, Michigan and Arizona -- suggests really very minimal changes in vaccine coverage over the four years of this recommendation beginning in 2004-'05 with vaccine rates of 6 to 23 month olds hovering around the 20% range. And this is children who are fully vaccinated; those children who have gotten their recommended two doses who needed it.

Next slide. The 2 through 4 year olds have not fared much better. And data from these same three sites for two seasons indicate vaccination rates - full vaccination for children 2 to 4 years of less than 20%. So there is substantial

room for improvement in vaccinating these high risk children less than 5 years of age. And we'll have continued challenges as we try and implement the vaccine recommendations for the 5 to 18 year old age group.

Next slide. Lastly I'd like to just touch on some information on antiviral medications. There are two classes of antiviral medications that are licensed for use in the United States. They are the adamantanes and neuraminidase inhibitors.

The two adamantane drugs are rimatadine and amantadine. But these medications currently are not recommended for use in the U.S. due to high levels of resistance among circulating influenza A viruses and particularly among the H3N2 viruses.

The neuraminidase inhibitor drugs are oseltamivir and zanamivir. Both of these classes of antiviral drugs can be used for both prevention and for treatment.

Next slide. Oseltamivir, the trade name is Tamiflu, and zanamivir, the trade name is Relenza. These both can be used for treatment and for prevention. And they're effective against both influenza A and B viruses.

For both of these medications their benefit appears to be better the sooner they're started after illness onset. And ideally they should be started within the first two days of illness onset for treatment purposes.

Next slide. The neuraminidase inhibitors have been shown in randomized trials to reduce the duration of the influenza symptoms and severity by 1 to 1-1/2 days, when they're started within the first two days of illness onset.

In addition a recent observational study by Dr. Allison McGeer and colleagues in Canada has shown benefit of the oseltamivir when started even 48 hours among hospitalized adults with influenza. These medications appear to reduce lower respiratory tract complications and hospitalizations in some studies and may also reduce influenza mortality.

In terms of prevention studies that have been done on prophylaxis have shown these drugs to be 70 to 90% effective in preventing influenza when they're started within 48 hours of exposure to influenza.

Next slide. Oseltamivir is the drug most commonly used at this point in the U.S. It's available as a capsule or a suspension. And it's administered orally. It's approved in the U.S. for treatment or prevention for persons aged 1 year and older. Treatment is generally for five days and prevention regimen is usually for ten days after exposure.

Pediatric dosage varies by age and weight. And information on that dosage is available, of course, in the package insert but also in the ACIP recommendations.

For treatment the drug is administered twice a day for five days. The primary side effects of oseltamivir are nausea and vomiting. But even in randomized trials they have very few patient dropouts because of these side effects. So in general it's quite well tolerated.

However there have been some reports of delirium in some pediatric patients, predominantly reports from Japan. And a warning was added to the oseltamivir label about neuropsychiatric potential side effects in 2007.

Next slide. Antiviral resistance has emerged as a problem for oseltamivir beginning in the 2007-'08 season for influenza A H1N viruses. Previously there was very little resistance. But by the end of the 2007-'08 season approximately 12% of U.S. H1N1 isolates were resistant to oseltamivir, which compares to about 16% of H1N1 viruses globally.

However there was substantial range in proportion of H1s that were resistant to oseltamivir by country with some countries reporting no oseltamivir resistant H1s and some countries reporting up to 100% of their H1 viruses being resistant.

In contrast, resistance to zanamivir is rare both in the U.S. and globally. And for adamantane, as I mentioned, there's very high level of resistance among influenza H3N2 viruses both globally and in the U.S. And about 10% of U.S. H1N1 viruses have been resistant to the adamantanes in the 2007-08 season.

For the 2008 season we have not yet detected any influenza H1 viruses that were resistant both to oseltamivir and adamantanes. And So for influenza B viruses there was is resistance to oseltamivir or zanamivir. However, adamantanes were not effective against influenza B.

Next slide shows the global map of the world and the proportion of H1N1 viruses that have been determined to be resistant to oseltamivir. There are not data, certainly, from all countries. But among those that do have virologic surveillance that they've repored, there was a substantial range from less than 1% resistant among H1N1 viruses all the way, as I said, up to 100% resistance.

Next slide is on zanamivir. Zanamivir is an orally inhaled powder which is administered via a special device called a Diskhaler. A picture is shown on the slide.

This drug is approved in the U.S. for treatment of influenza among persons 7 years and older and prevention of influenza for prophylaxis among people 5 years of age and older.

For treatment the drug is given as two puffs in the morning and two at night for five days. And for prevention it's administered as two puffs once a day typically for ten days after exposure.

The main side effects of zanamivir are wheezing and breathing problems. And there is concern about using this drug among people who have chronic respiratory disease. Like oseltamivir, zanamivir is also a category C drug for pregnant women. But resistance to zanamivir is very rare and so it remains certainly an option for some patients without existing lung disease.

Next slide. Information on the antiviral drugs is also available in the ACIP recommendations with information on dosing if you have additional questions.

So in conclusion my last slide. Influenza causes substantial morbidity and mortality yearly in the U.S. from seasonal influenza. Influenza activity currently is low as we would expect for this time of year but is expected to increase.

Surveillance information is updated on a weekly basis and is available for the public as well as, of course, healthcare providers and others. The components that are of particular concern are the bacterial coinfections we're seeing with

pediatric influenza deaths. And we certainly appreciate the help of clinicians and the health departments in monitoring those deaths and reporting.

And we will be updating the antiviral resistance information as that becomes available on a weekly basis throughout the seasons. In addition we also certainly appreciate everyone's help in monitoring for any reports of novel influenza A infections that may be suspected in humans.

Vaccine remains the primary prevention tool for influenza. And luckily we have plenty of vaccine available this year. And certainly encourage those recommended groups and anyone else who wants to decrease their risk of influenza to get vaccinated.

For antivirals oseltamivir and zanamivir are the currently recommended antiviral drugs. Recommendations on the use of these medications will be updated as needed based on surveillance data and will depend on the proportion of all influenza viruses, if they are H1N1s, and then the proportion of H1N1 viruses that are resistant.

And I thank you for your time. And we'll stop there and answer questions in any time that's remaining. Thank you.

Coordinator: Thank you. We will now begin the Question and Answer Session. If you would like to ask a question, please press star 1. Please also record your name so that I may introduce your question. Again that is star 1 to ask a question. One moment for the first question.

Our first question. Your line is open.

Question: Hi you had mentioned that 30% of pediatric cases were associated with *Staph. aureus*. I was wondering what percentage of those were MRSA.

Carolyn Bridges: I don't have the last year's in front of me. But I can tell you that for the 2007-'08 season the proportion that were MRSA was about half. So 28 total that had *Staph. aureus*. And of those 28, 15 were MRSA.

Question cont'd: Thank you.

Coordinator: Doctor, your line is open.

Question: Thank you - very nice presentation. A question about the duration of post-exposure prophylaxis ten days as opposed to treatment five days, is that because the goal is to cover at least two incubation periods for the household and healthcare worker exposed contacts or are there other rationales? Because for pandemic flu the duration of PEP is five to seven days.

Carolyn Bridges: Thanks for that question. The data, of course, for H5 and pandemic influenza is not as clear because we just haven't had the experience with antiviral drugs. For the timing for prophylaxis and treatment for seasonal influenza that's based on the clinical trials data.

But certainly for post-exposure prophylaxis that could vary for seasonal influenza. And one scenario, of course, would be for someone maybe who was not able to get vaccinated against influenza because of allergies or other reasons. And in that case if it was high risk person one could, you know, possibly conceive of phophylaxing someone for the length of time the influenza was circulating widely in a community so that could be up to several weeks.

In nursing home outbreaks, for example, what we recommend is prophylaxis for a minimum of two weeks, or two weeks after the last influenza case is detected. So it is a bit dependent on the situation.

For most people in a household situation where you have someone who is infected, most of the time virus shedding is done by around day five or so. Influenza shedding in children can go up there around ten days. So the exposure period is probably much longer in children than it is in adults.

So there certainly can be some tailoring of the length of time for prophylaxis just depending on the specific situation that you're involved in.

Coordinator: Your line is open.

Question: Hi we have a rapid test that differentiates influenza A from influenza B, but it doesn't do the subtyping. And did I understand your presentation correctly that if you have positive influenza A's you want them sent to the CDC for subtyping?

Carolyn Bridges: That's a great question. So for cases in which you expect a novel influenza A infection, which is in a person infected with an animal influenza virus, then those viruses we would want to be sent on for additional testing.

Question cont'd: Okay so not all influenza A's.

Carolyn Bridges: No, for influenza A tests most of the rapid tests that are available, as you mentioned, don't differentiate between different subtypes of influenza A. And in most cases that's adequate.

One of the drawbacks, of course, is of some of these commercial available rapid tests is the relatively low sensitivity. They tend to be quite specific. But a negative test sometimes isn't as helpful as you would like it to be. The sensitivity is, you know, somewhere around 50 - 60 - 70%. So that's a bigger issue, I think, with the rapid tests.

But if you do have unusual influenza infections or severe influenza infections, we certainly would encourage people to talk with their health departments about getting additional samples sent for either virus culture or RTPCR typing.

Question cont'd: Okay thank you very much.

Carolyn Bridges: Thank you.

Coordinator: Your line is open.

Question: Hi you mentioned briefly RTPCR capabilities. And I was just wondering if you had any additional information on the new real-time RTPCR. One of our hospital labs here is going to be validating its use this flu season. And I was just trying to learn more about it. And I've only been so far able to find the standard press release regarding it.

Carolyn Bridges: Thanks for that question. As people may have heard, CDC recently worked with another company to develop a FDA approved real-time RTPCR test. And the person here at CDC who is getting that test out to public health laboratories and so forth is a gentleman named Steve Lindstrom. And if you want to give your name and information to the call moderator or email in I'd be happy to hook you up with the people that you need to talk to about that.

Question cont'd: Thank you.

Carolyn Bridges: Thank you.

Coordinator: Your line is open.

Question: Hi yes - I was wondering if you had information on how the flu season was in the southern hemisphere. And then also with the changes with the flu vaccine, how does that seem to be matching with what's currently circulating?

Carolyn Bridges: Thanks for that question. Of course, influenza season is going on right now in the southern hemisphere. There is information up about the southern hemisphere influenza season that's on the WHO Flu Net site. So that's a good place to go to get more specifics.

I have not heard of any terribly severe influenza seasons so far. But sometimes those reports, you know, can be delayed. And in fact what happens in the southern hemisphere is not always a good indicator of what we are going to see in the U.S. in the following season.

This year I'm very pleased to say that the viruses that our laboratory has looked at that are in circulation in the southern hemisphere and other places appear to be well matched to the vaccine strains. So this is an actually quite marked contrast to last year where even by this time of year we were seeing a substantial number of viruses that were antigenically drifted from the vaccine strain.

So things look very good this year. And, of course, influenza is a moving target. And so surveillance has to occur worldwide year round. And we'll

continue to monitor things. But so far things look very good. So we're really encouraged by that. Thanks.

Coordinator: Your line is open.

Question: Hi - actually I'm in a physician's office. And he actually came to me a minute ago and said he had a patient that had said he saw on one of the local news channels that there was some recommendation that persons aged 55 and older should get an additional flu vaccine such as in a booster. Is that true?

Carolyn Bridges: No - for anyone 9 years of age and older, they only need one influenza vaccine. But they do need it every year. So previous influenza vaccines don't provide protection against the current year.

Immunity starts to wane after you get an influenza vaccine. And also the viruses that are in the vaccine are updated on an annual basis. So I'm not sure if that's what they were referring to or not.

Importantly - you brought up an important point that there are some people who do need a priming and a booster dose. And those are children who are less than 9 years of age who have never been previously vaccinated against influenza.

So children who are less than 9 years and who've never gotten a flu vaccine before, those children need two influenza vaccine doses one month or more apart the first year they get vaccinated for them to have a good immune response. And there are many influenza vaccine studies now that have been done to show that, you know, those immunized children who have gotten only one dose, but who needed two doses have substantially lower to no protection

from the vaccine. So it's very important to get those two doses in those kids who need two doses. But that's not the case for adults.

Question cont'd: Very good - thank you.

Carolyn Bridges: Thank you.

Coordinator: And I show no further questions.

Alycia Downs: Dr. Bridges thank you so much for providing our listeners with this information today. And I also want to thank our participants for joining us.

In case you think of another question later on, you can send an email to COCA@cdc.gov. That's C-O-C-A@cdc.gov and we'll try to get that question answered for you.

The recording of this call and the transcript will be posted to the COCA Web site - www.emergency.cdc.gov/COCA - within the next week or so. You have a year to obtain education credits for this call. All continuing education credits for COCA conference calls are issued online through the CDC Training and Continuing Education online system: www.2a.cdc.gov/tceonline.

Thank you again for participating today. And thanks again to Dr. Bridges for a wonderful presentation. We hope that everyone will join us next month for our call on November 18. That will be on mental health in disaster settings.

So thanks again and have a wonderful afternoon.

Coordinator: Thank you. This concludes today's conference. You may disconnect at this time.

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