

NWX-DISEASE CONTROL & PREVENTI

**Moderator: Dale Babcock
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11:00 am CT**

Coordinator: Welcome and thank you for standing by. At this time your line's been placed on listen only until we open for questions and answers. To ask a question you may press star one on your touchtone phone.

Please be advised that today's conference is being recorded. If you have any objections, you may disconnect at this time. I would now like to turn the conference over to Dr. Raymond Strikas. Please go ahead, sir.

Dr. Raymond Strikas: Welcome to current issues and immunization net conferences presented by the Immunization Services Division, the National Center for Immunization and Respiratory Diseases at the Centers for Disease Control and Prevention in Atlanta, Georgia.

What you need for today's conference is both a separate telephone connection and separate from that an internet connection to view the presentation. Learning objects for today's program are to describe an emerging immunization issue.

Today we'll be discussing influenza disease and vaccines, lists a recent immunization recommendation made by the advisory committee and immunization practices, locate resources relevant to current immunization practice.

And lastly, obtain, access, and apply patient information to determine the need for immunization. Today's program in our epidemiology prevention vaccine for (unintelligible) Webinar series is the Pink book, is influenza presented by Dr. Jessie Wing, a medical officer in our program.

Make a note, please, if you have technical difficulty during today's program, please dial star 0, to reach the operator. To ask a question later on when we announce the question-and-answer session, as operator said, you'll dial star 1.

Continued education or CE credit is available only through the CDC ATSCR training and continuing education training online system at the following Website you see on your screen, <http://www.2a.cdc.gov/tceonline/>. The CE credit for today's program will expire in about a month on October 26, 2015.

When obtaining CE credit you'll be required to provide a verification cord, and watch and listen, I'll give you that code during the course after the presentation. The codes will not be given outside of this presentation.

CDC, our planners, and our presenters wish to disclose that we have no financial interest or other relationships with the manufacturers of commercial products, suppliers of commercial services, or commercial supporters.

Presentations will not include any discussion of the unlabeled use of a product or product under investigation of use with the exception of (Dr. Wayne)'s discussion of the use of influenza vaccine in a manner recommended by the

advisory committee and immunization practices, but not approved by the Food and Drug Administration.

CDC does not accept any commercial support. Let me now turn the presentation over to (Dr. Wing).

(Dr. Jessie Wing): Thank you, Dr. Strikas. Good afternoon. I am presenting today from Atlanta. Today's topic is influenza, which is Chapter 12 of the 13th edition of the Epidemiology and Prevention of Vaccine Preventable Diseases book, or the latest Pink book.

Most of the slides that I will be using will match the graphics you see starting on page 187 of the Pink book. This is a great time to talk about influenza since this is the start of the flu vaccine season.

Let's start with a little history here. Influenza is a highly infectious viral illness. The name, "influenza" originated in the 15th Century Italy from an epidemic attributed to the "influence of the stars". The first pandemic, or worldwide epidemic, that clearly fits the description of influenza occurred in 1580. There have been at least four pandemics of influenza in the 19th Century, and three in this 20th Century. The pandemic of Spanish influenza in 1918 caused an estimated 21 million deaths worldwide. The pandemics in 1957 and 1968 were of lesser severity.

The first pandemic of the 21st Century occurred in 2009 with the H1N1 virus. The first influenza virus was isolated in 1933.

Next slide. The virus: Influenza is a single-stranded, helically-shaped RNA virus of the orthomyxoviridae family.

The nuclear material determines the three basic antigen types A, B and C. Type A influenza has subtypes that are determined by the surface antigens, hemagglutinin, and neuraminidase.

Three types of hemagglutinin in humans (H1, H2, and H3) have a role in virus attachment to cells. Two types of neuraminidase (N1 and N2) have a role in virus penetration into the cells.

The strains: There are some differences in the three types. Type A influenza can cause moderate to severe illness and affects all age groups among humans and other animals. Type B influenza causes milder epidemics, changes less rapidly than type A and affects only humans, and primarily children.

And Type C influenza is rarely reported in humans.

Next slide. Here you can see an illustration of an influenza Type A virus, which is also on the cover of the new Pink book.

As for nomenclature, these viruses are named in order, as you can see on the slide, by the virus type (A or B), their geographic origin, the strain number in the laboratory identifying the virus, the year the virus was isolated, and for type A, the subtype is defined by the hemagglutinin and the neuraminidase.

Antigenic changes: Antigenic drift and shift can affect the influenza viruses that we see. Antigenic drift is responsible for minor changes caused by point mutations in the gene and may result in an epidemic.

However, antigenic shift can cause a major change and a new subtype. This is caused by an exchange of gene segments and may result in a pandemic.

Only six years ago in 2009, the H1N1 pandemic was declared by the World Health Organization.

This is caused by an antigenic shift in the virus antigens.

In April 2009, a novel influenza type A virus (H1N1) appeared and quickly spread across North America. By May 2009 the virus had spread to many areas of the world.

This was the cause of the first influenza pandemic since 1968. Pandemic monovalent influenza vaccine was rapidly produced and deployed in a nationwide vaccination campaign that many of you may have participated in.

Pathogenesis: Transmission of the virus is respiratory. Replication occurs in the respiratory epithelium, with subsequent destruction of the cells. Viremia is rarely documented and the virus is shed in secretions for 5 to 10 days.

Clinical features: The incubation period of influenza is usually two days, though it can range from one to four days, 50% of persons develop what are called 'classic symptoms'. 'Classic influenza' disease is characterized by the abrupt onset of fever, myalgia, sore throat, nonproductive cough and headache. The fever is usually 101° to 102° degrees Fahrenheit and is accompanied by prostration where the patient may be bedridden. The onset of fever is often so abrupt that the exact hour can be recalled by the patient. Myalgias mainly affect the back muscles. Cough is believed to be result of tracheal epithelial destruction. Additional symptoms may include a rhinorrhea (or runny nose), headache, substernal chest burning, and ocular symptoms (such as eye pain and sensitivity to light). The severity of illness depends on prior experience with related variants.

Complications: The most frequent complication of influenza is pneumonia, most commonly secondary bacterial pneumonia (for example, from *Streptococcus pneumoniae*, *Haemophilus influenzae*, or *Staphylococcus aureus*). Primary influenza pneumonia is an uncommon complication with a high fatality rate.

Reye's syndrome is a complication that occurs almost exclusively in children taking aspirin, primarily in association with influenza B (or varicella) and presents with severe vomiting and confusion which may progress to coma due to swelling of the brain.

Other complications may include myocarditis (or inflammation of the heart) and worsening of chronic bronchitis and other chronic pulmonary diseases. Death is reported in less than 1 per 1000 cases. The majority of deaths typically occur among persons 65 years of age and older.

Impact: The number of flu-associated deaths varies substantially by year, virus type, subtype, and the age group affected. There are an average of 23,607 deaths due to influenza each year, ranging from 3,349 deaths in 1985 to 48,614 deaths in 2003.

Persons 65 years and older account for 90% of the deaths. 2.7 times more deaths occurred in seasons when type A (H3N2) viruses were prominent.

Impact: The highest rates of complications and hospitalization occur among persons 65 years and older, young children, and among persons with certain underlining medical conditions (for example chronic diseases). On average, more than 200,000 hospitalizations are attributed to influenza each year.

37% of the hospitalizations are among persons younger than 65 years old. A greater number of hospitalizations occur in years where type A (H3N2) virus is predominant.

School-aged children typically have high attack rates during community outbreaks, and they have been a major source of transmission of influenza within communities in the past.

Diagnosis: Influenza virus infection cannot be diagnosed accurately based on signs and symptoms alone. Laboratory testing is necessary to confirm the diagnosis.

Viral isolation is essential for virologic surveillance. Appropriate clinical specimens used for virus isolation include nasal washes, nasopharyngeal aspirates, nasal and throat swabs, tracheal aspirates and broncho-alveolar lavage. One disadvantage is that this process requires several days so it is not very timely for clinical decision-making.

Real-time polymerase chain reaction (or RT-PCR) is the most sensitive method for detection of the influenza virus and is the gold standard for influenza diagnosis. The use of molecular techniques to directly detect virus in respiratory samples can provide rapid identification of viruses.

Commercially available rapid diagnostic kits test for the presence of antigens, although these tests are usually less sensitive than RT-PCR testing. Currently available rapid influenza diagnostic tests fall into two groups: tests that detect both influenza type A and B viruses, but do not differentiate between the virus types and those that detect both influenza type A and B viruses and distinguish between the two. Results of these rapid influenza antigen detection tests can be available in 15 minutes or less.

Paired serum specimens are required for serologic diagnosis influenza virus infection. You will need to know the patient's vaccination history here.

The acute phase specimen should be collected within one week of the onset of illness, and preferably within two to three days. The convalescent sample should be collected approximately two to three weeks later.

Hemagglutinin inhibition tests are most commonly used for serodiagnosis. A positive result is a fourfold or greater rise in titer between the acute- phase and the convalescent- phase samples to one type or subtype of virus. However, this is not particularly useful for clinical diagnosis.

Epidemiology: The reservoir for influenza is human and animals (for type A only). Transmission is respiratory, probably through airborne droplets (usually within six feet). There is a temporal pattern with a peak from December to March in temperate climates. However, this pattern may shift earlier or later. Communicability occurs one day before to five days after the onset of symptoms in adults.

This is a FluView graphic of pneumonia and influenza mortality showing the pattern of peaks and troughs during a typical season as found in the surveillance of 122 U.S. cities.

Now shifting to vaccines: There are two types of vaccines available in the U.S. The inactivated influenza vaccine (IIV) and the live attenuated vaccine (or LAIV). Inactivated influenza vaccine can be administered either intramuscularly or intradermally while the LAIV is only given intranasally.

Transmission of the LAIV virus: LAIV replicates in the nasopharyngeal mucosa of the vaccine recipient. Vaccinated children can shed vaccine

viruses in nasopharyngeal secretions for up to three weeks. There has been one documented report of the transmission of vaccine virus to a contact.

Vaccine efficacy: IIV is considered about 60% effective among healthy persons younger than 65 years of age. The vaccine has been 50 to 60% effective in preventing hospitalization among elderly persons, and 80% effective in preventing death among elderly persons.

In a study from a nursing home in Michigan in 1982-1983, vaccinated residents (represented here by the black bars), had fewer illnesses--specifically hospitalizations, pneumonia cases and deaths, when compared to unvaccinated residents (shown here by the gray bars).

LAIV efficacy in healthy children: It has been reported that LAIV is 87% effective against culture-confirmed influenza in healthy children 60 to 84 months old. There was a 27% reduction in febrile otitis media (OM), a 28% reduction in OM with accompanying antibiotic use, and decreased fever and otitis media in vaccine recipients who developed influenza.

Recommendations for IIV. The Advisory Committee on Immunization Practices (ACIP), recommends annual influenza vaccinations for all persons six-months of age and older.

And that protections of persons at higher risk for influenza-related complications should continue to be a focus of vaccination efforts as providers and programs transition to routine vaccination of all persons age six months of age and older.

Further, when vaccine supplies are limited, vaccination efforts should focus on delivering vaccinations to the following groups of persons.

Children six months through four years of age (or 59 months), persons 50 years and older, persons with chronic pulmonary (including asthma), cardiovascular (except hypertension), renal, hepatic, neurologic, hematologic, or metabolic disorders (including diabetes mellitus).

Persons who are immunosuppressed (including immunosuppression caused by medications or by HIV, the human immunodeficiency virus), and for women who are or will be pregnant during the influenza season.

Additional groups who should receive IIV or the inactivated influenza vaccine are: children six months through 18 years of age and receiving long-term aspirin therapy and who therefore might be at risk for experiencing Reye's Syndrome after influenza virus infection.

Residents of nursing homes and other chronic care facilities, American Indians and Alaskan natives, persons who are morbidly obese (with the body mass index of 40 or greater), healthcare personnel, household contacts and caregivers of children younger than five years of age, and adults 50 years of age or older, with particular emphasis on vaccinating contacts of children aged younger than six months, household contacts and caregivers of persons with medical conditions that put them at higher risk for severe complications from influenza.

Pregnancy and IIV: Among pregnant women, the risk of hospitalization due to flu is four times higher than among non-pregnant women. The risk complications are comparable to non-pregnant women with high-risk medical conditions. Therefore, vaccination with IIV is recommended if a woman is pregnant during the influenza season. Flu vaccinations can occur during any trimester with the IIV.

HIV infection and IIV: Persons with HIV are at increased risk for complications from influenza. IIV induces protective anti-body titers in many HIV infected persons. IIV should be given and will benefit many HIV-infected persons.

Moving on to LAIV.

Remember that LAIV is a live vaccine. Any inactivated vaccine can be administered either simultaneously or at any time before or after LAIV. Other live vaccines can be administered on the same day as LAIV. Live vaccines not administered on the same day should be administered at least four weeks apart.

There are three contraindications and precautions regarding IIV. Severe allergic reaction (for example, anaphylaxis) to a vaccine component or following a prior dose of inactivated influenza vaccine. Moderate or severe acute illness. History of Guillain-Barre syndrome within six weeks following a previous dose of influenza vaccine.

Contraindications to administration of LAIV: The groups shown here with an asterisk should receive IIV or the inactivated influenza virus vaccine instead.

These groups include: children younger than two years of age, persons 50 years of age or older, children and adolescents receiving long-term aspirin or aspirin containing therapy, immunosuppression from any cause, pregnant women, children younger than five years with recurrent wheezing or recent wheezing (within the last 12 months). These groups should receive IIV. A severe allergy to egg or any other vaccine component is also a contraindication to LAIV.

Precautions for the administration of LAIV: Persons with chronic medical conditions, children five years or older with asthma, those with moderate or severe acute illness, a history of Guillain-Barre syndrome within six weeks following a previous dose of influenza vaccine.

Adverse events: For IIV, local reactions are common. Guillain-Barre syndrome is expected to be greater among persons with a history of GBS than among persons with no history of GBS. And for LAIV, nonspecific symptoms are common.

IIV Adverse Reactions: Local reactions (such as soreness and redness), occur in about 15% to 20% of vaccine recipients; fever, malaise, myalgia in less than 1% of vaccine recipients; and allergic reactions (such as hives, angioedema or anaphylaxis) are quite rare.

Adverse reactions after LAIV: For children there have been no significant increases in URI symptoms, fever or other systemic symptoms. An increased risk of wheezing has been seen in children 6 to 23 months of age.

Adults, there may be a significantly increased rate of cough, runny nose, nasal congestion, sore throat, and chills reported among vaccine recipients. However, there has not been an increase in the occurrence of fever.

There have been no serious adverse reactions identified for children or adults after the administration of LAIV.

Antiviral agents: Some providers may consider prescribing antiviral agents, especially within 48 hours of symptom onset.

However, amantadine and rimantadine are not recommended because of documented resistance in U.S. influenza isolates. Zanamivir and oseltamivir are neuraminidase inhibitors; they are considered effective against influenza A and B, and both are approved for prophylaxis.

Please see the ACIP statement or the CDC influenza website for further details on using the antiviral agents.

Surveillance: CDC and its state and international partners conduct surveillance to monitor the prevalence of circulating strains and to detect new strains. This helps in strain selection for new flu vaccines. This also helps to estimate influenza-related morbidity, mortality, and subsequent economic loss, to rapidly detect outbreaks and to assist in disease control through rapid preventive action.

Vaccines for the 2015-2016 season: This slide lists the antigens contained in the trivalent and the quadrivalent vaccines for this season. H3N2-like antigen has been included in the vaccine which should be helpful.

The trivalent vaccine has two A antigens and one B antigen, while the quadrivalent vaccine has an additional B antigen.

To reiterate the ACIP recommendation: Annual influenza vaccination is now recommended for every person in the United States six months of age and older.

And more specifically, providers should make a special effort to vaccinate persons at increased risk for complications of influenza. These include children six months through four years, person 50 years and older, persons with underlying medical conditions, pregnant women, close contact of high

risk persons, and healthcare personnel. This recommendation can be found in a MMWR from 2010.

Okay, we have a polling question here. An eight year old child is being vaccinated for the first time. When the child returns for the second dose he or she is now 9 years old. Should the second dose of influenza vaccine be given? Please indicate your answer, yes or no. Okay, is that enough time? All right, so we have 277 who voted “yes” (or 75% of the votes) and 92 who voted “no” (or 24% of the vote). And we can discuss this a little later.

We're going to finish up the slides here. Moving on. Here's a screenshot of the CDC website on influenza and the URL address. As you can see there are several topics that you can click on to find much more detail.

The flu vaccine finder may be helpful for some of your patients so they can locate vaccine by zip code area. That's in the upper right in this slide, and there's also a table that lists all the flu vaccines available for the current season that may be helpful for you.

Here are some resources that may be useful for you. These include websites for the ACIP, the CDC, the Immunization Action Coalition, and the Children's Hospital of Philadelphia. There's also a list of selective references at the end of the influenza chapter in the Pink book.

In closing, one more recommendation on how to avoid influenza is to gargle every day and the best recommendation is to get a flu vaccination.

Here are some myths about the flu vaccine. Every time I get the vaccine I get sick. Flu vaccine can give you the flu. If I get the vaccine in October, it will

not work in February. It's not safe, it doesn't even work. Why get the vaccine every year, last year's vaccine is good enough. Okay. Thank you very much.

Dr. Raymond Strikas: Thank you very much Dr. Wing. We're going to move to the question and answer session momentarily. To line up for the questions and answers, please star 1 on your telephone.

And while we're waiting for the questions to line up, let me go over the CE information, the recast, and the slide set from today's program will be available at [www. CDC.GOV/vaccines/ED/CIINC](http://www.CDC.GOV/vaccines/ED/CIINC), and these will be available the week of September 28, 2015.

For a continued education credit, as I said before, I'll repeat the Website, it's [http://www. 2A.CDC.gov/tceonline/](http://www.2A.CDC.gov/tceonline/), you need to search first for the course number and today's course number, the first part is the same for all the courses in this series, EC2064, a dash or a hyphen, 092315, which is today's date.

Please note the date's specific extension, which is specific to today's course to complete CE requirements. I'll repeat that course number, E-C, E as in Edward, C as in Cat, 2064 dash 092315.

The verification code which you need to complete registration for CE is the word Flu, F-L-U, 23. And again, CE credit expires October 26 of 2015. That verification code, again, I'll say it one more time, at least before the broadcast is over, is flu, F-L-U, 23.

Okay. Let us go to the questions, but first I'd like to, there's one part we omitted that I think is important for (Dr. Wing) to cover. It's from this year's influenza vaccine recommendations about which children should receive one dose and two doses.

So we snuck up on you and asked you a question about one and two doses, but let's go over, we don't have a slide on this, I'll ask Dr. Wing to go over that information for you before we get to the questions.

(Dr. Jessie Wing: Okay. There we go. Thank you, it's up on the computer here. The influenza vaccine schedule for children. The answer to that polling question is actually no.

That child, who is now nine years old, would receive one dose of flu vaccine just because he or she has aged out of it. From six months through eight years of age, it would be two doses for the initial series. When that child comes back, he is now nine years old and would actually only receive one dose. That is contained in the latest ACIP recommendation and it's up on the slide here. And we will make sure that this slide is included in the final slides that are posted. I'm sorry we didn't include that in the original slide set here.

Dr. Raymond Strikas: Okay. Thank you, Dr. Wing. Operator, can we go to the questions, please.

Coordinator: Thank you we. We have a question from (Ms. Taylor). Your line is open.

(Ms. Taylor): Thank you. My question is that there are two kinds of flu vaccines, the quadrivalent and trivalent, why have two? Why not have just the one quadrivalent because it covers more strains?

(Dr. Jessie Wing): That's a good question. And actually I don't believe there is enough quadrivalent vaccine that's currently produced. There're many more companies that produce trivalent vaccine right now.

So it may be a matter of the number of available doses. The CDC does not state any preference for any of these, of the influenza vaccines that are available: trivalent, quadravalent, high dose, or standard dose.

And because there's really not been a lot of head-to-head testing done. So the vaccines are available and this is really a discussion between the provider and the patient as to what might be best for that patient. We don't have data that shows the trivalent is any less effective than quadrivalent in a head-to-head study.

Dr. Raymond Strikas: Yes, this is Dr. Strikas, I would agree with what Dr. Wing said.

Occasionally the B strain collection is not correct and it would stand to reason that as you suggest in your questions, quadrivalent is a better choice because it covers both B strains.

But to date, there have been no head-to-head effectiveness trials comparing quadrivalent to trivalent to demonstrate there's additional benefit.

Theoretically, that's why it was produced and it's my impression that the companies are moving more and more to try to produce quadrivalent vaccine as much as possible.

But there is a supply constraint in terms of number of eggs available to produce in which vaccines viruses are grown, and the amount of antigen necessary because you've got to produce an extra dose of antigen for each dose of quadrivalent vaccine.

So I think it's an important issue both more data needs to be collected to demonstrate the effectiveness not just immunogenicity that you get a good immune response and also as we believe there is a supply constraint to some

extent but the companies are trying to overcome that. Thank you. Can we go to the next question?

Coordinator: Thank you. The next question is from Sharon Lewis. Your line is open.

(Sharon Lewis): Yes. In the context of, I had heard in the context of the IIV it was very important to give to people on aspirin long-term-care, and then it was mentioned American Indian, Alaskan natives.

And for several other categories. I had not heard that American Indians, Alaskan natives should just get IIV. I assume that was just part of the group that specifically should be targeted for influenza vaccine, whether LAIV or IIV, is that correct?

Dr. Raymond Strikas: There's no contraindication.

(Dr. Jessie Wing): There's no contraindication for them to receive LAIV other than normal contraindications and precautions.

(Sharon Lewis): Wonderful. Thank you.

Woman: That's correct.

Dr. Raymond Strikas: Thank you for the question. Operator, do we have another question?

Coordinator: Yes. The next is from (Vicki Hardsste). Your line is open.

(Vicki Hardsste): My question concerns giving the regular inactivated flu vaccine to pregnant women. In years past, working in public health, we were always advised to give the preservative free to our pregnant women regardless of the gestational

age. And now I'm working in another facility, a hospital facility, and their recommendation is to give the regular inactivated flu vaccine to the pregnant women. It's not necessary to give the preservative free, what's your feeling on that?

(Dr. Jessie Wing): It's really a choice of the facility as to what the obstetrician may choose, and it may be a choice of the mother. It may depend on the vial, and if it's a multi-dose vial, which may have a preservative in it. We make no distinction here at CDC, and consider it a choice between physician and patient.

Dr. Raymond Strikas: Yes, this is Dr. Strikas. I agree with Dr. Wing, and I would just add that there are no data that the amount of thimerosal which is the preservative is always brought into question here in these discussion have any adverse effects on the vaccinated person or in the case the pregnant women or her fetus.

So both options exist, but the more important issue is for people to be vaccinated because pregnant women vaccinated during pregnancy protect both themselves against the increased risk of influenza they have during pregnancy.

And they also develop antibodies that are passed on to the newborn and protect that child for several months as long as six months in some cases when a child can't be vaccinated after delivery. And again we have no evidence that the preservative thimerosal causes any difficulty in any population including pregnant women.

(Vicki Hardsste): Okay. Thank you.

Dr. Raymond Strikas: The next question, please.

Coordinator: The next question comes from Janet. Your line is open.

(Janet): Thank you. If someone developed hives four days later after a flu vaccination, is that a contraindication for receiving a flu vaccine next year?

(Dr. Jessie Wing): No, not at all. That's not a contraindication for receiving flu vaccine the following year.

(Janet): Thank you.

Dr. Raymond Strikas: Yes, as Dr. Wing said, I'm just reiterating her statement earlier. The only contraindication for influenza vaccine, only single contraindication that is permanent is prior anaphylaxis to the vaccine or a component of it.

Now while this person had a hypersensitivity reaction perhaps to the vaccine, although four days later is a little longer than one would expect, the absent symptoms of anaphylaxis, that's not a contraindication. Operator, we have more questions.

Coordinator: Yes we do. The next question is from (Beth Bellin). Your line is open.

(Beth Bellin): Hi, we had an eight-month-old baby last year, they got one dose of flu. Now she's back this year. Does she get one dose or two doses?

Dr. Raymond Strikas: Let's see I'm looking at the table, where's the table? You've got it.

(Dr. Jessie Wing): (Dale), can we go back to the table? There we go. So, yes. That eighth-month-old child will be getting two doses of the 2015-2016 influenza vaccine

(Beth Bellin): Okay great. Thank you

Dr. Raymond Strikas: Yes. I'm sorry we were fumbling, but it's an important question. And the guidelines for two doses have evolved, and if you look at Figure 1, from the influenza vaccine recommendations of the MMWR of August 7, 2015, and there's a simple figure that goes through the algorithm.

And, you know, as I said, it's evolved over time, and it's simpler than it used to be, but we wanted to check and make sure we got that right. And as (Dr. Wing) said, that child in that scenario would be two doses because the child had not received two doses the prior year and needs two doses.

And after this year when the child gets the two doses separated by at least four weeks, and subsequent years, one would only need to give the child one dose each season. Thank you. Operator more questions.

Coordinator: Yes. The next question is from (Amanda). Your line is open.

(Amanda): Hi, my question is regarding the dosing for children under the age of nine. If we have a child that comes into the clinic who's 35 months or younger and comes in for their first dose.

And then comes back for the second dose and has aged and is now older than 36 months, and comes back in the same flu season, would it be correct to give them the next week the age-appropriate dose of 0.5 ml?

(Dr. Jessie Wing): Yes. I believe so up until six months through the age of eight, would be two doses.

Dr. Raymond Strikas: I think she's talking about the dosage, the amount...

((Crosstalk))

(Dr. Jessie Wing): The higher amount, yes. I think it was up on that chart. (Dale) could you keep that chart up? I'm sorry there seems to be a lot of questions about the age...there we go, yes.

((Crosstalk))

Dr. Raymond Strikas: You're talking about a kids who is now 36 months or older for the second dose, is that correct?

(Amanda): Yes. Correct.

Dr. Raymond Strikas: Yes. So that child would then need, following the graphic, would need the higher dose of 0.5ml for the second dose.

(Amanda): Okay. Great, thank you.

Dr. Raymond Strikas: Thank you. Operator, more questions?

Coordinator: Yes. The next question's from (Florence Elstein). Your line is open.

(Florence Elstein): Your recommendations on which to provide for an older person, a quadrivalent or the higher dose vaccine?

(Dr. Jessie Wing): Thank you for your question. Actually CDC makes no specific recommendations for any specific vaccine for older age groups. Any of the commercially available vaccine products are fine to use, trivalent, quadrivalent, standard dose or high-dose. And we would just recommend that, that person should get a vaccine.

Dr. Raymond Strikas: Yes. I concur with (Dr. Wing). I understand the concern or the questions, and the high-dose vaccine has been demonstrated in a small number of studies.

Albeit, they were in large populations of older persons to be more effective against clinical influenza by the order of 23 or 24% better reduction or less frequency of disease by that percentage influenza related illness in older persons with the high-dose vaccine.

But that the small number studies and ACIP and CDC wanted more data to be able to think more seriously about issuing a preference. So at this point as Dr. Wing said, we do not have a preference. Obviously you all can choose which vaccines you recommend to your practitioners

Though you didn't exactly ask it, why doesn't the company that produces the high-dose vaccine make it in quadrivalent form and my understanding is that they're looking into seeing if they can do that, but it's a large amount of antigen they have to get into that vaccine and see if that will actually work and be affective so that work in ongoing is my understanding. Next question, please.

Coordinator: Thank you. The next question comes from (Rosa). Your line is open.

(Rosa): Good afternoon or morning still, right?

(Dr. Jessie Wing): It's afternoon here.

(Rosa): It's still morning here. My question is, I'm relatively new to public health as far as working in a large hospital. And last year we started to give our flu vaccine during the latter part of October.

This year we started sooner, but we received our actual, I guess, doses earlier. How soon do you recommend we start immunizing our healthcare workers, and does it wane if we start too early?

(Dr. Jessie Wing): Thank you for your question. Actually, we recommend to practitioners that as soon as the vaccine is available in the fall you can go ahead and start vaccinating.

(Rosa): Okay.

(Dr. Jessie Wing): And it will carry them through the season. So when you have the flu vaccine, please, do offer it as soon as you receive the vaccine.

(Rosa): Very good. Okay. Thank you so very much.

Dr. Raymond Strikas: Thank you. Operator, do we have another question?

Coordinator: Yes. The next question is from a (Wang Lesage). Your line is open.

(Wang Lesage): Hi, thank you for taking my call. I had a patient who had Guillain-Barre, but not really to any vaccination. So can he ever have vaccines again?

(Dr. Jessie Wing): Yes. Actually, the patient should be in close consultation with their physician, but if the GBS was not related to vaccines, then certainly they can continue with the recommended vaccine schedule.

(Wang Lesage): Okay. Thank you.

Dr. Raymond Strikas: Thank you. Operator, the next question.

Coordinator: Thank you. The next question comes from (Hazel). Your line is open.

(Hazel): Just to clarify, for the initial doses for it to be valid, it has to be from the same season?

Dr. Raymond Strikas: I'm not sure I follow your question. You're talking about children who need two doses?

(Hazel): Right, right, right, so for the initial doses for the kids, so it has to be from the same season, like from the question earlier it says like if they had it from the last season and then they get it for this year then they're going to have two. So does it mean that the initial doses, both doses have to be for the same season for it to be valid?

Dr. Raymond Strikas: Well the recommendation and I'll read it again for you is that children six months through 8 years who have previously received two or more doses of either trivalent or quadrivalent vaccine appropriate to their age before July 1, of 2015 they only need one dose this fall, those two previous doses need not to be given in the same year they could've been given in 2013 and 2014.

And now it's 2015 and in this case you would give the child just one dose. So the point is two doses at any time before the new vaccine became available in July of 2015 is appropriate.

And then you can give them one dose if you have no record or you are certain they've only received one dose of influenza vaccine been this year they should get to doses separated by at least four weeks.

(Hazel): Okay. Thank you.

Dr. Raymond Strikas: Thank you. Next question, please.

Coordinator: Thank you. Just one moment, we have one question just coming in. And that question comes from (Julie). Your line is open.

(Julie): I have a question do you guys have any recommendations for the flu block?

(Dr. Jessie Wing): What kinds of recommendations? We make no specific preference for any of the vaccine products that are available. If there's a preference that the patient or provider may have...

Dr. Raymond Strikas: It's the egg free one.

(Dr. Jessie Wing): It's the egg free vaccine that is available and if somebody has a documented problem with egg allergies this certainly is a good option for them.

Dr. Raymond Strikas: Yes. Particularly if someone's got an anaphylactic allergy to eggs that's been documented, this would be a vaccine that is entirely egg free, and it has that advantage.

Although it's licensed only for persons 18 years and older. Is not available, licensed for children where many of the egg allergies and that's unfortunate. But it is available for those individuals and there's algorithm that Figure 2 in the ACIP recommendations talking about how to deal with egg allergies we didn't discuss it.

But again in the August 7 MMWR there's a detailed algorithm and egg allergies and how to manage folks with those depending on the type of allergy and their reaction to vaccine in the past or reaction to eggs. Did we address your question?

(Julie): Yes. Thank you

Dr. Raymond Strikas: Thank you. Next question, please.

Coordinator: The next question is from (Shirley). Your line is open.

(Shirley): Sorry to have to bring this question back up again, but I had a difficult time hearing that answer. So if a patient does receive their very first flu ever a week before their ninth birthday, in four weeks as they mentioned they would now be nine years old. Do they receive that second dose sense they received their first set season when they were actually age eight?

Dr. Raymond Strikas: But they, our position is that they had a dose. And while there's no harm in giving the second dose there now nine years of age and had one dose of for the season then there's no need to give a second dose. It's an arbitrary thing about going to 8 to 9 years.

And yes, it's only been four weeks between the one dose and when they become nine years of age but they've had the dose in their ninth year and there's no need to give one. I mean if there's some uncertainty about it you can give a second dose. Our position is that it's not necessary

(Shirley): Okay. Thank you.

Dr. Raymond Strikas: Thank you. Operator, more questions.

Coordinator: Yes. The next question is from a (Victoria Cunningham). Your line is open.

(Victoria Cunningham): Yes. Can you hear me?

Dr. Raymond Strikas: Yes.

(Victoria Cunningham): Hi, yes. I have a question regarding a pregnant mom whose three-year-old child wants to receive the naso. And is there any shedding of the live virus that would be a concern to the mom who also wants to receive the vaccine to protect herself and her coming newborn baby. When should she receive her vaccine? She's in the third trimester now.

Dr. Raymond Strikas: So we have two questions. You're asking about is it okay for the young child in the family to receive live attenuated vaccine? And then you also asked the timing of vaccination of the mother, the pregnant woman, for her vaccination. Is that correct?

(Victoria Cunningham): Yes, sir.

Dr. Raymond Strikas: Okay. (Dr. Wing)?

(Dr. Jessi Wayne): Yes. On one of the slides-- Slide 26 that I have here, the vaccination of the pregnant women can occur during any trimester. And it should be with IIV, inactivated influenza vaccine, of course. And then for the child, the child can receive LAIV and that should be fine.

(Victoria Cunningham): And so there's no concern with shedding of the live virus with regard to the mom and the newborn baby or any timing with that?

(Dr. Jessie Wing): We believe that it would be all right for the child to receive LAIV.

Dr. Raymond Strikas: Yes. The only group for whom we recommend they not receive the live attenuated vaccine because of their potential contact with a high-risk person is

persons coming into regular contact with immunocompromised persons who require special protective measures to avoid infection.

And this is what we would call reverse isolation or it use to be called that in a hospital for people who've had stem cell transplant of something of that sort. Healthcare personnel, in those settings are recommended if they receive live vaccine to avoid those patients for seven days.

While they may be shedding virus because of the theoretical concern of infecting those patients and, or they can receive an activated vaccine. That's the only population of context of high risk persons who should avoid LAIV.

So in this case, the young child could receive LAIV because the risk of transmission is deemed so low for an otherwise healthy, person in this case the pregnant mom, that it is not a barrier for the child to receive the live vaccine.

(Victoria Cunningham): Marvelous. I'll be able to reassure her. Thank you very much.

Dr. Raymond Strikas: Thank you. Operator, we'll do two more questions.

Coordinator: Thank you. The next question is from (Cynthia). Your line is open.

Dr. Raymond Strikas: Thank you. Please go ahead.

(Cynthia): Hello. My question has been answered. Thank you.

Dr. Raymond Strikas: Okay. And the last question please.

Coordinator: No, sir, we have no further questions.

Dr. Raymond Strikas: Okay. Well let me ask Dr. Wing, one that we've gotten in the past, that I'm surprised hasn't come up and that's many of you are aware if you've been in this business for a while the influenza vaccine effect was lower than usual last year. And can you explain to us why that was, Dr. Wing?

(Dr. Jessie Wing: The H3N2 virus that spread last season was very different from the H3N2 virus that was contained in that vaccine and the drifted H3N2 virus was the most common or predominant that was circulating.

So this change in the virus resulted in a lower than normal or lower than usual vaccine effectiveness of an estimated 23% overall (13% against H3N2 virus, and 55% against less common influenza B viruses). The B type effectiveness is more similar to the usual effectiveness against lab confirmed influenza that we see. So basically, last season it had changed and what was in the vaccine did not match what was circulating. So hopefully for this year we have done a better job of matching, and there is H3N2 antigen, which we think is going to be a good effective vaccine for all groups.

Dr. Raymond Strikas: Yes. And to follow up on that Dr. Wing people have asked us what does CDC predict for the match this year. And why should we be more confident it's going to be better?

Dr. Jessie Wing: CDC is optimistic that this season vaccine will offer good protection against flu for the upcoming season. The vaccine composition for the northern hemisphere vaccine is reviewed annually in February. The vaccine can be updated to include the vaccine viruses that protect against currently circulating viruses. Two of the vaccine virus components from last season were updated for this season's vaccine. (The influenza A (H3N2) virus and the influenza B virus components have been updated.)

And the laboratory data so far suggests that most circulating viruses are like the vaccine virus that's included for the vaccine for the upcoming season. So we think and hope it should be a good match.

Dr. Raymond Strikas: Great. Thank you very much, Dr. Wing. So that's the time we have allotted for today's program and presentations. Let me go through some final housekeeping things are about CE and the program.

As I said several times that it's very important that those if you want CE credit please go to the Website <http://www.2a.cdc.gov/TCEonline/>. The course number again is E-C, E, Edward, C, Cat, 2064-092315.

Note that date specific extension to the course number which is the same for all the programs with the date specific extension, EC2064-092315, the verification code, last time you're going to see it, flu, F-L-U, 23 and the CE credit expires October 26 of 2015.

For help with the online system which is usually very easy to use, we have phone help between 8am and 4pm eastern time you can dial 1-800-41TREIN, trein, or email at CE2CE@CDC.GOV.

If you have questions you didn't get a chance to answer or you think of them after the program, please feel free to email us at NIPINFO@CDC.GOV, that's NIPINFO@CDC.GOV for influenza or any other immunization related question.

You can call us with an immunization question at 1-800-CDCINFO between 8am to 8pm Eastern Time and our specialist there will answer your questions if they can or they'll refer it on to our offices if they cannot.

And their available Monday through Friday 8am to 8pm eastern time.
Additional resources are the PINK book which many of you are aware of, the
13th edition was published this year 2015 at the Website on your page.

Our CDC vaccine immunization home page is at CDC.GOV/VACCINE and
other CDC immunization resources for you and your patients and you can
send us tweet if you have a question or issue at [CDCIZLEARN, L-E-A-R-N](https://twitter.com/CDCIZLEARN).

And lastly, we thank you for joining us for this program in the series from the
Pink book, Epidemiology and Prevention of Vaccine Preventable Diseases.
Thank you from Atlanta and join us next week at Wednesday 12 eastern time
and we'll talk about HPV disease and vaccines. Thank you and good bye.

Coordinator: Thank you. This does conclude today's conference. We do thank you for your
participation and you may disconnect your lines at this time.

END