Influenza Prevention and Control for Children and Youth with Special Health Care Needs

Moderator: Leticia Davila

Presenters: Lawrence Rhein, MD, FAAP and Henry (Hank) Bernstein, DO, FAAP

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Coordinator:
Welcome and thank you for standing by, all participants are on a listen-only mode until the question-and-answer session of today's conference, during that time if you would like to ask a question, you may press * one. Today's call is being recorded, if you have any objections you may disconnect at this time, now I would like to turn the call over to your host for today, Ms. Leticia Davila, ma'am you may begin.

Leticia Davila:
Thank you (Amy), good afternoon I am Leticia Davila and I am representing the Clinician Outreach and Communication Activity, COCA, with the Emergency Communication System at the Centers for Disease Control and Prevention. I am delighted to welcome you to today's COCA call, Influenza Prevention and Control for Children and Youth with Special Healthcare Needs.

We are pleased to have with us today two subject matter experts to discuss sub-specialists and primary care, pediatrician collaboration regarding influenza prevention and control strategies for improving care for high-risk children. During today's call you may participate by audio only, via webinar or you may download the slides if you are unable to access the webinar.

The PowerPoint slide set and the webinar link can be found on our COCA Web site at emergency.cdc.gov/coca, click on conference call. The webinar link and slide set can be found under the call in number and call pass code. At the conclusion of today's session, the participant will be able to, one, identify gaps and opportunities to improve influenza prevention and control for children and youth within special healthcare needs.

Two, describe which children are at highest increased risk for influenza complications, three, discuss the importance of developing partnerships between developing, oh excuse me, developing partnerships

between medical sub-specialists and primary care pediatricians to promote medical homes for children. And four, identify specific strategies to enhance influenza prevention and control for children with neurologic and other chronic medical conditions.

In compliance with continuing education requirements, all presenters must disclose any financial or other associations with the manufacturers of commercial products, suppliers of commercial services or commercial supporters as well as any use of an unlabeled product or products under investigational use. CDC, our planners and the presenters for this presentation, do not have financial or other associations with the manufacturers of commercial products, supplier of commercial services or commercial supporters with the exception of Doctor Henry Bernstein who is a principal investigator on a research grant funded by Merck.

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Our moderator for this webinar is Doctor Georgina Peacock, Doctor Peacock is a developmental behavioral pediatrician and medical officer in the National Center on Birth Defects and Developmental Disabilities at the Centers for Disease Control and Prevention. At this time please welcome today's COCA moderator, Doctor Peacock.

Georgina Peacock:
Thank you and I'm pleased to be with you here today, I - we also have with us Doctor Hank Bernstein with the Amer- who is representing the American Academy of Pediatrics but is also a Professor at Pediatrics in the School of Medicine at Hofstra Northshore Hospital and also Doctor Larry Rhein who is the Assistant Professor of Pediatrics at Boston Children's Hospital at the Harvard Medical School.

I'm going to be speaking to you real briefly about an article that was just released in pediatrics that was a CDC-authored study describing the 2009 H1N1 influenza-related deaths in children during the 2009 influenza A H1N1 pandemic. This study focused on deaths in children with neurologic disorders because

they represented a large percentage of the pediatric deaths. And I'm just going to discuss with you a few of the major findings and this is going to set the stage for the presentations that we receive after this.

So of the 343 pediatric deaths reported to CDC that were associated with the 2009 H1N1 pandemic, 336 had information on the children's underlying medical condition. Of these 68% of pediatric deaths reported to the CDC were in children who had at least one underlying condition that put them at high-risk for influenza related complications and 70% of the children had more than one high-risk condition.

Neurologic disorders were the most frequently reported underlying medical condition in this study and 64% of children had an underlying neurologic disorder. As you can see from this chart that it's from the paper, the most common neurologic conditions were neurodevelopmental disorders such as cerebral palsy, moderate to severe developmental delay and hydro-syphilis that made up 94%, epilepsy at 51% and then neuromuscular disorders such as muscular dystrophy, spinal muscular atrophy and mitochondria disorders at 6%.

Children with neurologic disorders tended to be older and remain hospitalized longer than those children without underlying medical conditions. And these children with neurologic disorders were also more likely to die while hospitalized rather than in an emergency department or at home. When we looked at the children with neurologic disorders who died from 2009 H1N1-associated influenza, about 50% were male and 50% female and the median age was ten years of age, the median time from symptom onset to death was eight days.

Of the children with neurologic conditions only 23% had received the seasonal influenza vaccine and 3% were fully vaccinated for 2009 H1N1. I do have to note that because of the timing of this we didn't - as you know we didn't have vaccine available during the entire time of the H1N1 pandemic, so a number of these children died before there was vaccine available. But ultimately the study of influenza-related deaths in children with neurologic disorders in the 2009 H1N1 pandemic is a reminder too of about the importance of influenza vaccination for prevention and then antiviral treatment early in the course of influenza illness for this vulnerable group of children.

And so I want to move on now and turn the podium over to Doctor Tim Uyeki who is one of our subject matter experts here at the Centers for Disease Control and Prevention on Influenza who's going to give us an update. And then we will hear from Doctor Bernstein and Doctor Rhein and at the end Doctor Tim

Uyeki will have some final comments for us before we go into the question-and-answer period. So thank you and I'm turning it over to you Doctor Uyeki.

Tim Uyeki:
Well thanks Doctor Peacock, so influenza activity in the United States at this time is low, basically seasonal influenza viruses have been sporadically detected over the summer and in the early fall. We've had some detection of seasonal influenza A (H3N2) viruses as well as B viruses and a very small number of 2009 H1N1 viruses [which was the pandemic virus].

What this figure shows is actually pneumonia and influenza deaths - this is from death certificate data from 122 jurisdictions in the United States and this is reported on a weekly basis. This is displayed in terms of a projected epidemic threshold using a moving average - five year moving average as well as a seasonal baseline. And so when you see the number of pneumonia and influenza deaths arising above the epidemic threshold that tends to suggest a more severe season.

And so for this season we're way below the epidemic threshold and that is because influenza activity is low in the United States at this time. So this figure shows pediatric influenza-associated deaths in the United States reported to CDC, which has been a nationally reportable condition since the fall of 2004 and of note prior to that, during the 2003-2004 season, there were 153 influenza-associated pediatric deaths reported to CDC.

Since then we have a variable number and you can see from last season 2011-2012, there were 34 pediatric influenza-associated deaths reported to CDC. That was a rather mild year; however 34 deaths is still unacceptable. You can also see back in 2009 and into 2010 - a much higher number of deaths in children were attributed to the pandemic 2009 H1N1 virus. This figure is showing influenza-like illness throughout our outpatient surveillance consisting of different volunteer providers - primary care providers in the United States.

And what we do is look at a baseline – the baseline for this is depicted about 2.5% and we're well below that baseline now. And influenza-like illness activity is not the same as influenza activity, but it's somewhat corresponds to that and you can see that ILI activity in the United States (to the far right) is very low at this time.

We know that globally in the southern hemisphere over our summer months (or their winter months), there has been co-circulation of seasonal influenza, A (H3N2) viruses, the 2009 H1N1 or pandemic virus and influenza B viruses, and so I think we can again expect all three of these viruses to co-circulate.

We cannot predict when the season is going to begin or when it will peak, but typically our influenza surveillance period is from October through May. And since we do believe that these viruses will be co-circulating, I'll just add that they are included in the 2012-2013 influenza vaccines that are available, thanks.

Georgina Peacock:
And now we can turn it over to Doctor Bernstein.

Hank Bernstein:
Thank you Doctor Peacock, welcome everyone. I hope to convey the following key messages during my presentation. As Tim alluded to, influenza vaccine is needed for everyone each year. The composition of this season's influenza vaccine has changed from last season. An updated dosing algorithm for children six months through eight years of age has been created. Most children presumed to have egg allergy can safely receive influenza vaccine in the office without the need for an allergy consultation. And there is no change in the recommendations for the use of TIV or PCV13 for the upcoming influenza season - simultaneous administration should be used when both vaccines are indicated.

Influenza puts a heavy disease burden on the US society in an average year. It is a highly contagious, acute respiratory disease that is responsible for an average of 50 to 60 million infections and illnesses that result in 25 million healthcare visits, hundreds of thousands of hospitalizations and thousands of deaths each year.

As was said earlier, like all seasonal influenza vaccines, the 2012-2013 seasonal influenza vaccine has three strains in it, two A strains and one B. Two of the three strains in this year's trivalent vaccine have changed from last year, the H3N2 strain and the B strain. The other A strain is the H1N1 pandemic strain that was in last year's vaccine.

This slide depicts important populations that need to receive influenza vaccine each year.

We all know that children - all children six months of age and older should receive the trivalent seasonal influenza vaccine each year. This is especially important for those at high risk of influenza complications, like all children less than five years of age and any child of any age with chronic medical conditions such as asthma, diabetes mellitus and, as we heard earlier from Georgina, neurologic disorders.

Annual seasonal influenza vaccine is especially important for household contacts and out-of-home providers of children and adolescents at high-risk for complications of influenza, as I just said earlier, all healthy children under the age of five and any child of any age with a chronic medical condition such as asthma, diabetes or neurologic disorders. All healthcare personnel also need influenza vaccine each year. Healthcare personnel-associated influenza outbreaks lead to more patient morbidity and mortality as well as an increased financial burden on health systems.

Although immunization is the best way to prevent such outbreaks, vaccination rates for healthcare personnel remain well below targets. Mandatory annual influenza immunization has been recommended by the AAP and multiple other national organizations for several years now.

The last special population is pregnant women because pregnant women with influenza are at increased risk for hospitalization and death. The cornerstone of influenza prevention among pregnant women remains the promotion of the influenza vaccine, which can happen regardless of the trimester of pregnancy.

Maternal vaccination during pregnancy also serves to protect the newborns against influenza throughout the first several months of life when newborns cannot receive the influenza vaccine themselves. The most commonly reported underlying medical conditions for pediatric patients hospitalized with influenza were chronic lung diseases like asthma and neurologic and neuromuscular disorders as shown in this slide.

And although children with chronic medical conditions are at higher risk for complications, much influenza-related morbidity and mortality also occurs among healthy children. And in fact if you look at the last histogram bar on the bottom of this figure, almost half of all hospitalized pediatric patients did not have any known underlying condition.
So what can we do to improve our vaccination rates? We should try to plan to make influenza vaccine as easily accessible for all children, so we should consider creating walk-in influenza clinics. We also should consider extending hours beyond routine times during peak vaccination periods. We should consider

working with other institutions such as schools, childcare centers, religious organizations or even alternative care sites such as emergency departments to expand venues for administering vaccine. Remember there's a universal recommendation for all of us.

It's also important for us to recognize the value in cocooning. Cocooning is a strategy that aims to reduce infection in children by immunizing their parents, family contacts and caregivers. The objective is to decrease infections in these contacts to reduce exposure to the children. The concept of cocooning is particularly important to help protect infants less than six months of age because they are too young to be immunized with influenza vaccine. And of course cocooning also helps protect all children less than five years of age and any child of any age with a chronic medical condition such as asthma, diabetes mellitus or neurologic or neuromuscular disorders.

This slide shows where most people receive influenza vaccine. The most common place for both adults and children was the doctor's office. Medically-related places other than the doctor's office include the clinic or health center, hospital, pharmacies and a few other places. Appropriate documentation of immunization must be provided to the medical homes of children and adults immunized outside of the medical home.

This is the algorithm that depicts the number of seasonal influenza doses for children six months through eight years. As a reminder, infants under six months of age are too young to be immunized with influenza vaccine. Children six months through eight years receiving the vaccine for the first time should receive a second dose this season at least four weeks after the first dose.

The first vaccine dose primes the immune system, but no significant protection against disease is achieved until one to two weeks after the second dose. Children six months through eight years of age who received trivalent seasonal influenza vaccine before the upcoming 2012-2013 season need only one dose of vaccine this season if they previously received a total of two or more doses of seasonal vaccine since July 1, 2010.

This same group would need two doses of vaccine this season if they did not previously receive a total of two or more doses of seasonal vaccine since July 1, 2010. And we all know that children nine years of age and older always need just one dose each year.

Most children with presumed egg allergy can receive influenza vaccine in the office without the need to refer to an allergist. Recent data have shown that TIV administered in a single age-appropriate dose is well tolerated by nearly all recipients who have egg allergy.

More conservative approaches such as skin testing or two-step challenge no longer are recommended. It's important to note that no data exists on the safety of administering LAIV to egg allergic recipients. And as a precaution, pediatricians should determine whether the presumed egg allergy is based on a mild, hives only reaction or a severe reaction, such as anaphylaxis. Pediatricians should consult with an allergist for children who have a history of a severe reaction or anaphylaxis.

Increased reports of febrile seizures in the United States during the 2010-2011 influenza season were noted by VAERS, the Vaccine Adverse Event Reporting System, mainly in children in the 12 to 23 month age group, which happens to be the peak age for febrile seizures. All children fully recovered. The seizures were associated with TIV manufactured by Sanofi Pasteur Fluzone, but remember that's the only influenza vaccine licensed for children under two years of age.

The most common vaccine administered concomitantly with TIV when a febrile seizure was reported was the 13 valent Pneumococcal Conjugate vaccine - PCV13. This disproportionate reporting of febrile seizures persisted through last season, 2011-2012 as well. But that was not unexpected given that the influenza vaccine composition for the 2011-2012 influenza season was unchanged from the previous 2010-2011 influenza season.

Remember that previous febrile seizures or seizure disorders are not a contra-indication to the use of TIV or LAIV in otherwise eligible children. There is no change in the recommendations for the use of TIV or PCV13 for this 2012-2013 influenza season. Both vaccines can be given together when both vaccines are indicated.

To recap, the most important take-home messages are that influenza vaccine is needed for everyone each year and especially this year, even though last year was so mild. The composition of this season's influenza vaccine has changed from last season. There are two new strains compared with last year's vaccine. An updated dosing algorithm for children six months through eight years of age has been created and the key timing is whether or not children within this age group have received two doses of seasonal flu vaccine from July 1, 2010 onward.

Most children presumed to have egg allergy can safely receive influenza vaccine in the office without need for allergy consultation and there is not change in the recommendations for the use of TIV or PCV13 for the upcoming influenza season. Simultaneous administration is perfectly appropriate when the both vaccines are indicated.

Thank you.

Georgina Peacock:
Thank you Doctor Bernstein and now we will turn it over to Doctor Rhein.

Larry Rhein:
Thanks so much I really appreciate it, thanks to the AAP and to the CDC for highlighting some attention on this important problem. I'm a neonatologist and a pediatric pulmonologist and so in this presentation I'm going to try to provide some perspective about the problem of trying to protect patients from preventable and non-preventable illness and I'm going to try to emphasize some of the points that have been made already about the seriousness of influenza infection.

I'm going to try to describe some of the barriers to effective vaccinations and I'm going to try to describe some of the strategies that we're using to try to address those barriers. So some of the key messages that I want to project today are some that you've heard already, I want to emphasize that influenza may have serious consequences not only for children with chronic health conditions, but also children - healthy children. We have a safe and effective vaccine that is the best option for trying to prevent influenza infection.

Vaccination rates of susceptible, eligible children are woefully inadequate and so all of us - the sub-specialists, primary care providers and parents and families share that responsibility to try to improve vaccination rates to try to protect children. We've already seen some of the epidemiologic data that shows that influenza has tremendous effect across the United States and when we think about the consequences.

Doctor Bernstein showed how it affects so many families in missed work and school days and a sub-set of families who have to go to the emergency rooms for influenza-related illness and a sub-set of families

who get hospitalized with influenza associated complications and that even in 2012 we have many influenza-related deaths and so I agree with Tim's comments earlier, it's unacceptable.

This is a - this figure is a figure from a paper in 2007 and it reinforces some of the topics that have been shown even more recently which is that influenza has serious consequences for children with high-risk medical conditions, but also for healthy children.

And so the concept of cocooning that Hank discussed, the role of immunizing healthy children is not only to protect that significant number of healthy children who have serious adverse consequences, but also to protect the children with high-risk medical conditions who otherwise might be exposed to these healthy children who then get influenza - and this figure is from a paper that looked at 700 or so hospitalized infants to show that the frequency of illness was in both low-risk infants in the black bars and in high-risk infants with the shaded bars and that it crossed across several different age ranges.

This is a slide that Doctor Bernstein showed, what are some of the issues that these children have? What are some of the underlying conditions? Doctor Peacock's article highlighted children not just with pulmonary problems but interestingly with neurologic disorders. But you can see that there's a variety of chronic healthcare conditions that are adversely affected by influenza that you wouldn't necessarily expect, so it's not just children who have primary pulmonary problems who are at highest risks of hospitalization and death, but children with other significant underlying medical conditions.

And the exact reason for that isn't clear, it may be that there's underappreciated pulmonary disease in patients with these chronic conditions. It may be that their immune function is less effective, it may be that influenza infection lowers the threshold for the other complications that they may have. But it's clear that a large number of chronic, underlying conditions are predominantly affected by influenza infection.

Knowing that influenza is a serious illness and knowing that we have a safe and effective vaccine, it's surprising to learn that even in children who are at highest risk, the vaccination rates are unacceptably low. And if you survey the literature across many of these different conditions, you'll see that all of them share similarly low rates of vaccination. And so if you look at the populations of infants that are followed - infants and children that are followed in pulmonary programs with asthma, you can see that here the rates of vaccinated children are in blue and the rates of unvaccinated children are in red.

And so you can see that a very small minority of infants with asthma are - were vaccinated in the paper that was described by (Chung et al). If you look at infants with chronic renal disease, their vaccination rates were slightly higher and still well under 50% and then if you look at the population of patients that I tend to see often which are the graduates of our NICU's, you can see that again, those families need to be vaccinated to protect the children. And because the infants are too young to receive their own vaccine - and their rates of vaccination are also woefully inadequate.

So what are some of the barriers to vaccination in these children? What are some of the reasons why these vaccination rates are not even close to 50% and in many cases much lower? There are several possible reasons: Number 1, children with chronic medical conditions may be frequently hospitalized, so they may miss a lot of their primary care appointments. Number 2 is that for a lot of these children, their routine primary care visits may not coincide with flu season and so may result in the need for an extra visit just for vaccination that families may not be willing to pursue or may not remember to do.

I'm going to point out that also for several of our children, a lot of their "primary care" they're followed frequently in sub-specialty clinics for a lot of their care. They have frequent visits for dialysis, they have frequent visits because of their cystic fibrosis care. They have - a lot of the former preemies that I see, I end up seeing them more often after six months than often their primary care provider and so they may not see their primary care provider during the season when they - they're due to get vaccinated.

In some cases their susceptibility to acute illness may result in a missed opportunity for immunization and finally when there are multiple providers, it makes it difficult to determine who is responsible for keeping immunizations up-to-date. And so the sub-specialists may think that the primary care provider is going to provide vaccination and in return the primary care provider may think that a child who's seeing their sub-specialist so frequently is obviously going to get their vaccine through the sub-specialist and there can be potential miscommunication or mis-assignment of who's responsible.

So what are some of the ways that we can try to address this inadequate vaccination rate? Number one we need to identify eligible patients and Doctor Bernstein highlighted all of the different eligible populations, certainly all children less than five years of age - children of any age with chronic healthcare conditions, healthcare workers and pregnant women. And in our sub-specialty clinics one of the strategies that we have attempted to perform is to identify all of our eligible patients at every visit.

And so in our templated notes there is a box at the bottom of the note that states if we think a child is going to be eligible during the flu season, even if it's in June, even if it's in July, at the bottom of their encounter visit in case we're not going to see them during that time period and to highlight to the primary care provider that this patient should receive flu vaccination this winter.

Or if you're seeing young infants - a large population in our clinic where we see a lot of former preemies, we document that since the patient is too young to receive his own vaccination, the parent should receive the flu vaccine and when he does reach the eligible age, he should also be vaccinated. So we try to document very specifically the recommendation even when flu season isn't at the height of everyone's priority list.

Secondly we want to provide education about vaccination to dispel the possible concerns based on misinformation. There are many families who choose not to do vaccinations based on the conception that the vaccination may in and of itself cause harm, that the flu is not as damaging to healthy children or to their child specifically. And it's up to us as sub-specialist and primary care providers to provide the right education to explain the true risks of this illness and the many benefits of vaccination.

We need to provide opportunities for vaccination and so if we're going to request or require that families provide the appropriate protections, we need to make it easy and convenient. I mentioned that one of the reasons why families don't always come in for vaccination is that they're not coming for a regular routine visit, they're not coming for a routine check. They would have to come in specifically for an extra visit and I think the concept of doing evening clinics, of doing separate vaccination clinics at the height of the season is very important to try to make it as convenient as possible.

To try to take that excuse out of the hands of families and to try to make it more convenient to so that families can get vaccinated if we think it's very important. And finally it's really important to communicate with other providers to ensure that patients don't fall through the cracks. So whether it's through a documentation system, through the electronic medical record, whether it's through documenting lists of patients that are eligible and whether they're receiving the vaccine in your clinic, but if they're not you can write in your note that they did not receive it here so they need to receive it in the primary care office.

Making sure that there's clear communication about who is going to deliver that vaccine becomes incredibly important. So again just to highlight the key messages, influenza may have serious consequences for healthy children and children with chronic health conditions. The vaccine is safe and effective, but we know that despite having a safe and effective potential prevention strategy, rates of vaccination for susceptible, high-risk children are woefully inadequate and it's our collective responsibility to come up with new strategies to try to improve vaccination rates.

I want to thank you again for allowing me to participate in this webinar.

Leticia Davila:
Thank you Doctor Bernstein and Doctor Rhein for providing our COCA audience with such a wealth of information. We will now open up the lines for the question-and-answer session and also remember you can submit questions through the webinar system.

Tim Uyeki:
This is Doctor Uyeki and I'm going to make a few comments right before the question-and-answer session. So just to add onto what Doctor Bernstein and Doctor Rhein had presented, some additional information that people on the call may be interested in. In today's MMWR issue, there are findings from two Internet panel surveys that were published about influenza vaccine coverage for last season - the 2011-2012 influenza season.

So in a survey, of 1660 pregnant women, 47% of these pregnant women respondents reported receiving influenza vaccine last season and of these 36.5% reported receiving influenza vaccine during pregnancy. And as Doctor Rhein mentioned, children less than the age of six months are particularly at high risk for influenza complications, hospitalizations and deaths. And these are children that are contra-indicated for influenza vaccination - influenza vaccine is approved for children six months and older in the United States.

So the only way to protect them as Doctor Bernstein nicely pointed out is a “cocooning” strategy and so one of those elements is to have maternal influenza vaccination during pregnancy. And we know that can result in actually a reduction of lower birth weight-birth deliveries and protection of the infant through trans-placentally antibody to the infant, protection of and prevention of influenza in that infant up to six months of age.

So vaccination of pregnant women during their pregnancy with influenza vaccine needs to be improved. In another Internet panel survey of healthcare personnel during 2011-2012, of 2,348 participants, approximately 67% of these healthcare personnel reported receiving influenza vaccination during 2011-2012. And of those, 85.6% coverage was reported among physicians which was the highest. Influenza vaccine coverage was 78% reported by nurses and influenza vaccine coverage was 63% among all other healthcare personnel.

And note that the influenza vaccine coverage for healthcare personnel for the healthy people 2020 goal is 90%, so this is just another comment to reinforce not only influenza vaccination of pregnant women, of children six months and older, but also of healthcare personnel providing care to patients.

As another update I will say that approximately 86 million doses of influenza vaccine have been distributed in the United States to-date this season. It is projected that approximately 135 million doses of influenza vaccine will be available in the United States this season, which includes a projected 62 million doses of thimerosal-free or thimerosal-reduced influenza vaccine. Finally I'd like to just emphasize something about early antiviral treatment, so the recommended antiviral drugs for treatment of influenza in children are the Neuraminidase Inhibitors, oral oseltamivir and inhaled zanamivir.

Oral oseltamivir is recommended by the Advisory Committee on Immunization Practices and CDC for children of all ages. Inhaled zanamivir is recommended by ACIP and CDC for treatment of influenza in children aged seven years and older. Antiviral treatment with oral oseltamivir or inhaled zanamivir is recommended as soon as possible for any hospitalized child with suspected influenza without waiting for the results of laboratory testing.

In addition, early administration of oral oseltamivir or inhaled zanamivir is recommended for any high-risk outpatient with suspected influenza - again as soon as possible without waiting for influenza testing results. And finally children who are not at high risk for complications of influenza, otherwise healthy children without any chronic medical conditions, early antiviral treatment can be administered for patients with suspected influenza if non-high risk children present early - and this is based upon clinical judgment.

And just as a reminder again to reinforce what Doctor Bernstein and Doctor Rhein had said, children less than five years of age are considered at high-risk for influenza complications, but it is especially those

aged less than two years old who are at the highest risk of complications that would result in hospitalization or death and children of any age who have certain chronic medical conditions.

And so I just want to comment that while influenza vaccination annually is recommended for - and is our best weapon to prevent influenza in children, it is important that because influenza vaccine effectiveness is not 100%, that children - especially those with neurologic or neuromuscular underlying conditions who have suspected influenza should be evaluated as soon as possible.

And if influenza is suspected, antiviral treatment should be administered as soon as possible because these children are at very high-risk of severe complications, thank you.

Georgina Peacock:
Thank you Tim and I think now we are ready for questions, are there any questions with the operator?

Coordinator:
Thank you, we will now begin the question-and-answer session, if you would like to ask a question from the phone please press * one. Please un-mute your phone and record your first and last name clearly when prompted. To withdraw the request you may press * two. Again if you would like to ask a question, please press * one, one moment please.

Leticia Davila:
We actually have a question from the webinar system - the first one is, what is the recommendation for children receiving their first flu vaccination, one or two doses?

Hank Bernstein:
This is Hank Bernstein. All children should receive vaccines. Children under six months of age are not eligible for vaccine, children nine and older should receive only one dose and children six months through eight years of age, if this is their very first time will need two doses, a minimum of four weeks apart.

Coordinator:
We do have a question from the phone, Doctor (Norman Castell) you may ask your question.

(Norman Castell):
I have a few questions, looking back in the findings from the - on the desk from H1N1, it said 23% had received the vaccine but only 3% were fully vaccinated - one question is why did those 3% get sick? And the other question is the other 20% I assume they weren't fully vaccinated because they had not received the second dose, but did they get six during those four weeks waiting for the second dose or did they - were they never going to get it anyhow?

Georgina Peacock:
Thank you for your question, this is Georgina Peacock and I will start to answer and then I'd ask my colleagues to also follow. Actually the numbers were the 23% had received the seasonal influenza vaccine and these were - so the children we described all had H1N1 so were not covered with that. The 3% that were fully vaccinated for H1 - of the 2000, sorry, the 3% were fully vaccinated for the 2009 H1N1.

And I think that that speaks to what Doctor Uyeki was saying about vaccination certainly is our first line of prevention but it's not 100% effective. I don't know if Doctor Uyeki or Doctor Bernstein would like to comment as well.

Tim Uyeki:
So this is Tim Uyeki and my comment is that if you recall that at the time when the monovalent 2009 H1N1 or pandemic vaccine because available in the United States, it was already after the second pandemic wave had peaked. And so that many of the hospitalizations and deaths had actually occurred up to then in children who were not vaccinated and Doctor Peacock is quite correct, seasonal influenza vaccine had been available in September and October of 2009 but the H1N1 component of that vaccine offered no protection against the 2009 H1N1 virus.

And so having - 23% having received seasonal influenza vaccination would not be expected to provide any benefit in terms of prevention of 2009 H1N1 virus infection. So the 3% that were fully vaccinated - these are likely children who were able to get pandemic vaccine after late October of 2009 but then died later that season, I would agree that this does highlight the point that no influenza vaccines unfortunately are 100% effective. And even in children that are fully vaccinated, it is possible to develop influenza virus infection and illness.

And so while it is the best way to prevent influenza, we do have to have parents call in and consult pediatricians for evaluation of the child, especially those with underlying chronic medical conditions and especially those with chronic neurologic or neuromuscular conditions and they can be administered early antiviral treatment as soon as possible.

Larry Rhein:
I think that's an excellent question. I think that, you know, what Tim said is 100% accurate, I think it's very important to make clear to families that this vaccine is not a guarantee for protection, it's just the best available. Because we certainly don't want families to once they have in fact been in the sub-set that gets vaccinated to think that when their child develops some symptoms that it can't possibly be flu.

And so they certainly still need in these high-risk patients to seek prompt attention when children develop symptoms, with or without that claim. But certainly, you know, even though it's not perfect, it's the best available.

Hank Bernstein:
And this is Hank, I would also add that this just highlights that if the vaccine is not 100% effective, which there aren't many things in life that really are 100%, that it's still important for not only the patient perhaps with a neurologic disorder to be immunized, but also all of their family members, all of their care providers, everyone that comes in contact with any child of any age with a neurologic disorder or other chronic medical condition or healthy children.

Everyone should be getting the influenza vaccine and everyone should continue to use good hand-washing and all the other methods to avoid transmission.

(Norman Castell):
Okay and my other question is about vaccinating sick children, we have a tendency not to vaccinate children when they're sick but those who are frequently ill get passed over completely.

Hank Bernstein:
This is Hank. You're right. I think there are many times that children don't receive vaccine because there's concern that the illness at that moment in the office and therefore the child should just return to the office

for a vaccine when they're feeling better. I think it depends upon the degree of illness. We all know that there's varying degrees of illness when children that we see are presenting in the office.

And I think children that have common respiratory or GI symptoms but maybe even low-grade fever all are still eligible for the vaccine since they're in the office. I think a moderate to severe fever or illness with signs of symptoms of concern to their parents I would defer the vaccine. Short of that I think that we can be much more liberal and less conservative and administer flu vaccine to these children.

(Norman Castell):
Okay thank you.

Coordinator:
Our next question is from (Bridgette Mueller), your line is open.

(Bridgette Mueller):
Thank you, as both Hank and Larry know I'm a pediatric hematologist oncologist, so for us to question is always if a child is getting a steroid course as part of the chemotherapy and we gave the flu vaccine at that time, do we need to repeat it later? Do we need to give a booster?

Larry Rhein:
(Bridgette) nice to hear from you, I think it's an excellent question that comes up a lot and what we know theoretically is that the steroids are potentially going to mitigate the response and the whole point of a vaccine is to induce antibody production and theoretically that - in the course of giving vaccine during a treatment that's going to affect the immune system's response to develop antibodies, there's the potential that it's going to be decreased.

So depending - when I am treating children who are on short courses of steroids, I have to admit that what I do is not based on evidence but I do defer vaccination until that course is over. Now if you're doing prolonged courses of steroids, I would think that the theoretical benefit of giving at least - even if a diminished response, it's safer to give vaccine during that course. And the question whether you need to give additional one is an interesting one that we haven't I think as far as I know there aren't official recommendations to obtain antibody levels or to give an empiric booster and so I don't know the specific answer to that question.

Those would be the theoretical data-driven ways to determine if an individual child does in fact - did in fact mount an effective response as to check antibody levels, but I have to admit I have not been in that situation routinely.

Tim Uyeki:
So this is Tim Uyeki from CDC, we don't - ACIP to my knowledge does not have a recommendation for booster vaccination of such children. I think the recommendation would still be to vaccinate them, but obviously they need to be followed. ACIP has not put out a recommendation as Doctor Rhein has suggested in terms of checking antibody levels, it's an interesting thought. But I think it's unclear. I think that there's not real good data to really inform us in terms of a recommendation about whether the child would be considered protected and therefore immunized or still susceptible.

And I think such children still need to be watched very closely because of their primary disease and early antiviral treatment needs to be started empirically for influenza if influenza is suspected with appropriate testing as soon as possible. So it's a really good question and I don't think we have any official recommendations on that - certainly none that I know of for a booster dose.

Hank Bernstein:
And this is Hank and hi Bridgette, we don't have - certainly the AAP does not have a recommendation as far as that is concerned. I do think that what you consider is the degree of immuno-competence for that individual that might influence the administration of the vaccine. And I also would highlight that these are the perfect children that cocooning is most effective and then obviously early administration of antiviral at the first sign of an influenza-like illness.

(Bridgette Mueller):
So it sounds like we're doing the right thing.

Tim Uyeki:
Yes and...

(Bridgette Mueller):
Thank you.

Tim Uyeki:

...you know, and basically even if you were to give a booster dose in such children, it's not clear that there would actually be an immune response to boost the titer. And so I think there is not official recommendation on that and I think I would just proceed as kind of we've discussed.

(Bridgette Mueller):

Thank you.

Coordinator:

Our next question is from (Ricardo Sorenson), you may ask your question.

(Ricardo Sorenson):

Yes hi this is (Ricardo Sorenson), I'm an immunologist and frequently asked question in our circle is patients that are receiving (hemoglobin) for different forms of antibody deficiency syndromes should be immunized with the influenza vaccine, one, because (hemoglobin) may not have the right antibodies and two, because there may be cellular immunity induced in that they would also offer some protection, that's my question.

Georgina Peacock:

Doctor Bernstein or Uyeki?

Hank Bernstein:

Are you asking whether or not they should or you're saying they should not? I'm sorry I...

(Ricardo Sorenson):

Whether or not...

Hank Bernstein:

...I'm trying to follow and I lost the thread.

(Ricardo Sorenson):

...whether or not they should - I mean normally other immunizations are not recommended during (hemoglobin) replacement but the question is should influenza be given?

Hank Bernstein:
Yes, the current recommendation in general would be that even with children who have immuno-suppressive disorders or immuno-suppressive therapy, I still would suggest that they receive TIV not the live attenuated vaccine.

Whether or not they're going to have - how robust a response they're going to have, you're correct it may or may not be as robust as we'd like, but certainly I would recommend administering it to those patients. And of course just as we said earlier with the heme/onc patients, cocooning strategy and early antiviral therapy with influenza-like illness presentation would be appropriate.

Tim Uyeki:
So this is Tim Uyeki I would actually agree with everything Doctor Bernstein just said and especially to highlight not administering live attenuated influenza virus vaccine LAIV to any child with underlying conditions, including a child receiving immunoglobulin therapy. But I would definitely recommend inactivated influenza virus vaccination - influenza vaccination of those kinds of patients.

Leticia Davila:
Thank you, we also have another question on the webinar side, is there a length of time that the patient should wait after receiving the vaccine to have elective surgery?

Larry Rhein:
Not that I'm aware of, it does take up to two weeks for a vaccine dose, even up to a month for it to be effective, but I guess it would also depend upon whether there was going to be transfusions or not, but I don't think there's a problem in administering the vaccine before elective surgery.

Leticia Davila:
Thank you, operator we have time for one more question, is there another one on the phone?

Coordinator:
Yes our next question is from (Richa Sharon Pogney), your line is open.

(Richa Sharon Pogney):
Hi, this question is about RAST testing, so in a patient who hasn't had eggs yet but was RAST-positive for egg allergy, could they receive the vaccine?

Hank Bernstein:
So I'm not aware - yes this is Hank, I'm not aware of specific data relating to RAST testing. Certainly RAST testing is not as specific and sensitive as we would like, especially in younger children - you might run that by your local allergist. We're not recommending any kind of testing as mentioned earlier, skin testing, RAST testing or (two graded challenge), I really think it's based solely on what reaction they've had.

And if the child that you're alluding to has only had hives and a mild reaction I don't think there would be a problem in administering the vaccine in the office with the appropriate caveat of observing them for 30 minutes in the office should there be some reaction. Certainly if they had anaphylaxis or a more severe reaction, GI, respiratory or otherwise, then I would refer them to an allergist.

(Richa Sharon Pogney):
Yes I know I understand - in this case and this was a case I had actually not seen in an office. I work for the health department and got this question from a physician and I believe this child had never eaten eggs and so all they had was the RAST testing, probably - it was a panel of testing that they had done that came out...

Hank Bernstein:
How old was the child?

(Richa Sharon Pogney):
Seven months.

Hank Bernstein:
You know, there are obviously certain foods in mom's diet and if she was breastfeeding certainly there could be exposure to proteins there with some IGE-mediated response. If the baby's had no systemic

manifestations, I would not think that would be a problem in administering influenza vaccine, but I'd probably run it past my local allergist to see what he or she thought.

(Richa Sharon Pogney):
Which was my recommendation to that position as well.

Hank Bernstein:
Hey we agree.

Georgina Peacock:
Well thank you to everyone for joining the call, I'm going to turn it back over to our COCA colleagues to give us the end of this presentation.

Leticia Davila:
Thank you, on behalf of COCA I would like to thank everyone for joining us today, with a special thank you to our presenters, Doctor Bernstein and Doctor Rhein and today's COCA call moderators, Doctor Peacock and Doctor Uyeki. We invite you to communicate to our presenters after the webinar, if you have additional questions for today's presenters, please email us at coca@cdc.gov. Put September 27th COCA call in the subject line of your email and we will ensure that your email is sorted to them for a response - again that email address is coca@cdc.gov.

The recording of this call and the transcript will be posted to the COCA Web site at emergency.cdc.gov/coca within the next few days. Free continuing education is available for this call. Those who participated in today's COCA conference call and would like to receive continuing education should complete the online evaluation by October 26, 2012 using the Course Code E-C-1-6-4-8. That is E as in Echo, C as in Charlie and the numbers 1-6-4-8.

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Coordinator:

Thank you for participating in today's conference, you may disconnect at this time.

END