Advancements in Diabetes Seminar
Update on Immunizations for People with Diabetes

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Dr. Ann Bullock:

Everyone, I appreciate your taking time on your busy day to join us for this training. It's a topic that we like to cover periodically because it's one that's so important to people with diabetes and that we think about regularly but maybe don't think of it as being so intrinsic to diabetes -- to good diabetes care. So immunizations, it's been two and a half years since we talked about it. Not too many big changes since then but our expert Amy Groom will tell us all about and remind us what we need to know about these things.

I'm just going to quickly spend just a few minutes talking about some of the data we have on our immunizations and just a reminder that diabetes makes it more likely for patients to develop complications. If they get a vaccine preventable infection, their diabetes makes it more likely that they'll get a worse case or develop complications. So, if a person with diabetes gets the flu, they're a little more likely to get complications that might require hospitalization for example. And infections themselves that might be vaccine preventable are more likely to complicate the diabetes care and control that we want them to have, as well as any other chronic conditions they have. And diabetes itself can even make it more like that people will be exposed to a vaccine preventable infection. A great example there is Hepatitis B, which is exactly why there is that recommendation because even though we try our best to avoid it but using glucose checking devices when patients need dialysis and other kinds of things, it's a little more likely they will develop that kind of an infection. So we want to protect our patients with diabetes for all of those reasons.

So on our audit is -- just a reminder, I mean if you know it well, it assesses the elements of diabetes care for American Indian and Alaska Native people across the country. We do it every year. We did audit 2016 we'll show you some immunization data as a result of that. And the team is getting geared up for audit 2017. For those of you who know about the audit, you know that it includes immunizations that are given to our patients with diabetes. And the four categories of those immunizations that we look at include influenza, pneumococcal, TB and Tdap, and the Hepatitis B series.

So the audit results, of course, the whole purpose of it is to help us all identify areas we can improve in, including our immunizations. So for our 2016, just overall, 332 IHS, Tribal, and urban facilities participated and over 122,000 charts of patients with diabetes were included. So this is a remarkable data set actually. And we're up to about three quarters of those charts being audited electronically. It used to be all paper and pencil and now the vast majority are done electronically.

Here are some outcomes from audit 2016, which means that we're looking at the calendar year audit 2015, but of course as you can see, we're also going all the way back to 1997. The top line -- the blue

line looks at pneumococcal vaccines, both types of pneumococcal vaccines given to adults. We're not looking at childhood immunizations here, just adult immunizations that are indicated for people with diabetes. So you can see overall, we've made some nice slow study increases in pneumococcal vaccination in the last few years, maybe a hint of a downturn in 2016, hard to say on the pneumococcal but overall, how we've improved starting maybe about 2001 or 2002. We've made some slow steady improvements up to about 80% of our patients with diabetes receiving at least one pneumococcal vaccination.

Influenza, that's overall kind of gone up, but you saw we had a pretty good downturn actually this past year. Those of you who are clinicians know that when we have a few years of milder flu seasons, we sometimes see this, but it's still so important for us to keep up. We never know when a bad flu year is going to happen and certainly for individuals, a bad flu is a bad flu year no matter what.

For Td this is either a Td or a tetanus shot, a tetanus diphtheria shot itself or the one time recommendation for the Tetanus diphtheria and acellular pertussis vaccination for the past 10 years. You can see that -- so this is not ever, it's in the past 10 years that the patients have had it. We're up to --again slow steady increases in audit 2016 up to just below 90% of our patients having had that. So that's really wonderful.

Hepatitis B vaccine, you guys remember, maybe, when we started looking at this in the audit, starting with audit 2012, so we now have a few years of data to look at this. And again, slow steady improvements. So we're up to a little better than a quarter of our patients with diabetes having received not just one of the Hepatitis B vaccines. To get counted here, you have to have received the entire series. So has received the Hepatitis B vaccine series. That's pretty good and we're getting better as you can see. Below the red line, some sites were requesting that when they -- some of them are testing for Hepatitis B immunity because patients may have had subclinical infection or previous immunizations. So we started adding that in but you can see that those are pretty small numbers. But overall, we're getting better and better on our patients with diabetes getting the full Hepatitis B vaccine series.

So just really quickly then, of course, immunizations are important for everybody but even more so, for people with diabetes and we may do more good for people by making sure that they get their flu shot than some of the other things we do is part of our diabetes care. Again, avoiding one nasty flu can make a huge difference for patients.

Audit data shows overall we're continuing to improve our immunizations. Influenza though is one that did go down a fair amount last year actually and we're in flu shot season now. So this is a good one to really be emphasizing. And there are many options for getting flu shots outside of our clinics. Many of you have what we call drive by shootings we like to say out in the community. And, of course, patients can get flu shots lots of places, at many commercial pharmacies and others. So we need to be asking our patients if they did get their flu shots from some other place and make sure that we're entering into our electronic health record system if they did indeed receive a flu shot from some other source. So just a real plug here for working on flu shot rates this year and documentation. It is an important thing for sure. So that's a little bit of introduction I wanted to give you all about data from our system and then turn you over to our IHS immunization expert, Amy Groom.

Amy, we're so appreciative of the great partnership we've always had with you around immunizations, the audits and standards of care. You're just a great partner to us and we so appreciate your being with us today.

Amy Groom:

Thank you so much Ann and thank you, Jan. I really appreciate the invitation. The last time I did this was in 2014. You can always tell if people value the webinars that are put on by the attendance. So

seeing over 80 people participating in this webinar tells me that you really value this as a forum for information, as I'm delighted to be invited to present with you today and thank Ann and Jan for inviting me. So today, as Ann mentioned, I'm going to cover immunization specifically for patients with diabetes but I am going to cover some of the broader recommendations as well.

So just to get started, obviously, there are many routine adult immunization recommendations. This has actually changed pretty dramatically over the last 10 years. We only had pneumococcal and flu vaccine for many, many years, but we've seen the introduction of several vaccines for adults. The human papillomavirus vaccine, it's really recommended for adolescents but if we have adult patients, males and females, who haven't received the HPV is recommended for them. Obviously Td booster every 10 years and then a dose of Tdap are recommended for all adults. Zoster vaccine is recommended for all adults at age 60 and of course, an influenza vaccine is recommended for just about everybody ever single year.

In terms of routine adult immunization recommendations, the pneumococcal polysaccharide 23-valent vaccine and I put all the three different abbreviations to the right because it gets referred to by many different things and it can be very confusing but that PPSV-23, also known as Pneumo-PS in our RPMS system or the trade name, which is Pneumovax. And this vaccine is recommended for all adults at 65 years of age. In the Indian Health Service, we do have some American Indian Alaska Native populations in certain geographic regions mostly in Alaska, and a couple of reservations in the southwest where because of higher rates of invasive pneumococcal disease they opt to do this routine polysaccharide vaccination earlier than 65, so they may do it at 55 or 60 years old depending. So we do have a little bit of variation in that, but for the most part, this vaccine is recommended for all adults starting at 65 years of age.

Then we have a relatively new recommendation. It was actually in 2014, the pneumococcal conjugate vaccine, the 13-valent one, also known as PCV13 or the trade name Prevnar 13. This is then a vaccine that's been around for quite a while for children and in 2014, there were some good data to suggest that if we vaccinated our adults, we could potentially impact community acquired pneumonia and hospitalizations from that. And so the Advisory Committee on Immunization Practices did vote to make a recommendation that all adults 65 years of age should also get a dose of the PCV13 vaccine.

I did include a link to the overall routine adult vaccine schedule. If you want to take a look at it, it's actually a great document to read and it's available on the CDC website.

This one is a little bit busier and it's a slightly different group because this is looking at vaccines that are recommended for adults with certain chronic health conditions. And don't worry, I do not expect that you will be able to actually read this. The reference is there at the bottom. But you can see we have our routine vaccines that are typically based on an age criteria. But in addition, there are certain medical conditions for which patients should receive other vaccines that maybe they wouldn't get routinely but they should get if they have a particular medical factor or risk condition, and diabetes obviously is one of those.

So what I'm really going to cover today is very specifically immunizations for folks with diabetes. As Ann mentioned, it's universally recommended, but it's particularly important for the patient with diabetes is the influenza vaccine. So that's actually a routine vaccination, but I am going to share some data around influenza and why it is so important. There are two vaccines that are actually specifically recommended because a person has diabetes. So pneumococcal polysaccharide vaccine, it's routine at 65 years of age. But for patients with diabetes, this is a vaccine that you would be recommended to get potentially sooner than 65 years of age and then also as Ann mentioned, the Hepatitis B vaccine. So I'm going go in a little bit more detail on those.

In terms of pneumonia and influenza, we know from data that are out there that American Indian and Alaska Native people are almost two times more likely to die from pneumonia and influenza compared

to non-Hispanic whites. There is a lot of variation by region and by age group, but particularly in the very young and in the very old, we do see higher rates of disease particularly in certain geographic regions like Alaska and in the Northern Plains. And this really came home in 2009 when we had the H1N1 influenza pandemic. There was a study that was done in 12 states that have a high proportion of American Indian and Alaska Native people. And what they found, that American Indian, Alaska Native people were four times more likely to die from influenza-related complications than other race groups. You know the reason for this disparity has continued to be explored, there have been some really good data that was led by the Arctic Investigations Program in Alaska that actually looked at the lower 48 as well. And while there certainly are active issues, household crowding issues that can contribute to this higher burden of disease, certainly, the high burden of chronic disease in the American Indian, Alaska Native population is one of the reasons why we continued to see this elevated rate of death and hospitalizations related to pneumonia and influenza. And one of those chronic medical conditions of course is diabetes. So influenza vaccine is particularly important.

As Ann noted in the data that she shared from the audit, we saw that decrease in 2015. And I think we had a pretty mild flu year. And in addition, in the previous, flu season, we didn't have a great match between the vaccine and the circulating strains. So I think there were a lot of perceptions by people out there that you know, we had a vaccine that didn't really seem to match very well and then we have this very mild flu season and I think there wasn't very much incentive for people to get their flu vaccine. And that probably also contributed to the declines she noted because we certainly saw that across the patient population, not just among those with diabetes.

So influenza vaccine recommendations, pretty straightforward, basically everybody who is six months and older should get an influenza vaccine. We have a particular challenge I think with our healthy young adults who don't seem to think of they're at risk. And I think really emphasizing that the flu vaccine protects not just the individual person, but also those around them can be a really important message. And we actually worked with the Great Plains Tribal Epidemiology Center to develop some flu posters specific to our Native communities. And I just wanted to include those there and the link is below.

Excuse me. So now I'm going to switch and talk a little bit about pneumococcal vaccines just because they've gotten increasingly complex. We have what I mentioned the pneumococcal polysaccharide 23-valent vaccine. This is the one that's been around for a really long time. We've actually been vaccinating and monitoring coverage with this since the late '90s and that's again is PPSV-23, Pneumo-PS or Pneumovax. And now we have the second pneumococcal conjugate vaccine or PCV. I just want to make sure that people are really clear on the differences between those two vaccines and I'm actually going to get into a little bit of detail on the recommendation for these vaccines.

So PCV13 for adults is a routine recommendation for all adults 65 years and older. And this again was the new pneumococcal recommendation in 2014. The interval between the pneumococcal conjugate, the PCV and the PPSV-23 is one year. So both of those vaccines are recommended to be given at 65 years of age, but they cannot be given at the same time. And they actually do need to be separated by a year. And because this is very complicated, CDC did really nice job of this diagram that they included in the actual recommendations. And if you're having confusion about understanding who should get what vaccine, I encourage you definitely to check out this diagram.

And I do want to spend a moment just to walk you through it. So the first box at the top. I'm going to use my pointer that Jan told me about, right here. This is for folks who have never received a pneumococcal vaccine at 65 years and older. So they've never received their 65-year old dose. They should get their PCV, the conjugate vaccine first and then one year later, they should get the new pneumococcal polysaccharide.

For folks who have previously received a pneumococcal polysaccharide at the age of 65 years or later, they should just get a dose of PCV13 and again you need to wait that one year interval. So if they just

got their pneumococcal polysaccharide six months ago, you need to wait until a year has elapsed and then give the pneumococcal conjugate vaccine.

The slightly trickier group and the one that we might hear a little bit more about particularly when we're talking about patients with diabetes, is people who've previously received a dose of the pneumococcal polysaccharide before age 65. So all of our patients with diabetes who may have received this vaccine already and they've now turned 65 years of age. And the big question is, "Well what do we do with those folks?"

If they've already received a dose of pneumococcal polysaccharide, you need to make sure that there is a one year interval and then they would first receive the pneumococcal conjugate vaccine. And then one year later, and five years after their last polysaccharide vaccine, they would receive a second dose of pneumococcal polysaccharide. So if you get a dose before 65, you still need a dose of the polysaccharide vaccine at 65. I do have some quick questions that I'm going to go over in just a little bit. But I don't want you to despair that this is complicated and how on earth are you supposed to remember it.

This is where our electronic health record and the reminders that we have programmed in really can be beneficial. Our logic in RMPS takes into account all of this information and will forecast the pneumococcal polysaccharide and the PCV at the appropriate intervals based on this diagram. So I want you to understand it and be aware of it, but know that we really have tried to include this clinical decision support into the EHR so that busy clinicians don't have to spend their time scratching their head and trying to figure out which vaccine the patient is due for.

In terms of PCV13 -- for adults, PCV13 is recommended for adults who are less than 65 years of age, only if they have an immune compromising condition. So this is who the vaccine was recommended before we had the routine recommendation at 65. For folks less than 65, you would only be indicated to receive the PCV if you had an immune compromising condition. And I've listed out all of those immune compromising conditions here.

But the point that I really want to make is that diabetes is not on that list and I wanted to put this out here because I do field this question from time to time because people with diabetes are supposed to get a pneumococcal polysaccharide vaccine. People can get confused and think that this should mean that they should also be getting a PCV13 vaccine before the age of 65 years, and that actually is not the case. Diabetes is not considered an immune compromising condition for this vaccine. So people who are less than 65 with diabetes do not need to receive a dose of a pneumococcal conjugate vaccine. They would wait and get their routine dose at 65 years of age.

In terms of the pneumococcal polysaccharide or the PPSV-23 for adults, again this vaccine is routinely recommended for everybody at 65 years of age. But if you haven't received a pneumococcal vaccine, you should first get the PCV, followed by the pneumococcal polysaccharide. In terms of high risk, those who are less than 65 years of age with a high risk condition should also get a dose of the pneumococcal polysaccharide at the time of diagnosis. And one of those high risk conditions for the polysaccharide vaccine is diabetes.

And if you received a dose of the polysaccharide vaccine before the age of 65, because you have a high risk condition like diabetes, you will still need that routine dose at 65 years of age. And you need to make sure that there is a five-year interval between those two pneumococcal polysaccharide doses. So even though you received your pneumococcal polysaccharide at the age of 50 for example, you do still need an additional dose of vaccine when you turn 65.

I've listed here on this tiny, tiny font. Hopefully your eyes are better than mine, but you can see here, these are the risk factors for the pneumococcal polysaccharide vaccine. So in our clinical decision support in the RPMS system, we do the routine forecasting for the polysaccharide vaccine at 65 years

of age and then we also give sites the option to have a reminder pop up if somebody has any of these risk factors and these are taken from the ACIP recommendation of what a risk factor is. And they include HIV infection, congestive heart failure, asthma, and of course diabetes. I just wanted to show the slide for you here just so you can see the ICD-9 and 10 codes that we use in our logic in RPMS to identify those folks. And if you have a patient that has one of those diagnoses, they will show up as due for pneumococcal polysaccharide if you've turned that reminder on in your system.

I'm going to switch gears a little bit here and talk about children just because Ann asked me specifically to cover some of the pneumococcal recommendations for children. They can get a little bit confusing. So again PVC13, it's a routine recommendation for all children, regardless of their health conditions, at less than five years of age. And typically what's recommended is a four-dose series with doses given at two, four, six and then a booster dose at 12 to 15 months.

If a child gets off schedule, maybe they don't get their first dose until seven months or maybe they don't get a first dose until 12 months where they get a little bit off of that recommended schedule -- the total number of doses to complete the series can vary. So kids who start late or get delayed may end up only meeting three or two doses or even one dose depending on when they get it to complete that routine pneumococcal conjugate series. Children who are two to five years for example who have never received the dose of the conjugate vaccine would just need one dose to be considered complete.

There are some special considerations for high-risk children between the ages of two to five. If they don't get that four-dose series and one of those high-risk conditions is in fact diabetes. So if you have a two-year old child or a three-year old child who got less than four doses of the PCV series, they may need some additional doses of the conjugate vaccine. And again, it will depend on when they got them or how many doses they got. They may need an additional one or two doses of the conjugate vaccine.

Then there are some recommendations for the conjugate vaccine in children who are older than five, between the ages of six and 18. But this is for a very select group called -- considered the highest risk and those include those conditions there, so asplenia, immunocompromising conditions, cochlear implants or CFFV. And I really just again want to highlight that diabetes is not indicated there. So if you have a child who is six years of age, who received their full pneumococcal vaccine series, they do not need additional doses of PCV13. They are fine.

Moving on, I do -- I'm sorry, Jan can we go back to my slide? I don't know if I maybe did that by accident, sorry. Great, sorry, so I just wanted to cover this. I might have messed up my slide numbers. In terms of the polysaccharide vaccine, we don't have a routine recommendation for use of this vaccine in children. So basically children get the conjugate vaccine series and if they're healthy there would be no indication for them to receive the polysaccharide. However high-risk children who are two years and older should receive a dose of the pneumococcal polysaccharide vaccine. And again, I just wanted to highlight for you that diabetes if considered one of those high risk conditions.

So a child who is two years old, who has diabetes -- if they completed their PVC series, should get a dose of the pneumococcal polysaccharide. The polysaccharide vaccine should be given after they have completed their PCV series. So if they did need some additional doses because they didn't get the four doses, you would want to do those before you gave the pneumococcal polysaccharide. And the dose of the polysaccharide should be given at least eight weeks after the last dose of the conjugate vaccine.

A point that I really want to stress is that a child with diabetes who receives the pneumococcal polysaccharide vaccine will not be revaccinated. So there are some conditions, such as immunocompromising, where there may be some revaccinations. But for a child who just has diabetes, there's no revaccination and they would not receive an additional dose of pneumococcal polysaccharide until they turn 65 year of age. That is the current recommendation. If you have diabetes, you get one dose upon diagnosis and then at 65 years of age, you would get your second

dose -- your booster dose at 65 years of age. But there's no revaccination in between. So yeah, I think here now, Jan if you could pull up my questions.

I realize that I covered a lot of information. Again much of this is included in our clinical decision support. Though some of those PCVs for children who had diabetes, we don't have that logic programmed in. So you do need to be aware of that, but I'd love it if people could go ahead and take a quick look at these questions that we have up there.

The first question, if you have a 60-year old patient with diabetes and they've had no prior pneumococcal vaccine, what vaccine should they receive today? The pneumococcal polysaccharide, the pneumococcal conjugate? Both the polysaccharide and the conjugate or neither? I'll give everybody a few minutes to process that. And I know from the attendance list, I recognized the names, we definitely have some immunization experts in the crowd.

Okay, we'll wait just a few more minutes because I know that there's over 90 people on this call. So I'll wait until our numbers get a little bit higher. We're still on Question 1. Okay, so I think we'll go ahead. The correct answer is that a 60-year-old patient who has diabetes and has not received a pneumococcal vaccine should get "A" a pneumococcal polysaccharide vaccine today.

So remember, if you just have diabetes and you're less than 65, you are not indicated to receive the conjugate vaccine. You are indicated to receive a dose of the pneumococcal polysaccharide vaccine upon diagnosis. So this patient is less than 65, they have no pneumococcal vaccines, but they have diabetes, they should get a dose of pneumococcal polysaccharide and it looks like the majority of you got that correct.

Question number 2; You have a 65-year old patient with diabetes who received the pneumococcal polysaccharide vaccine 60 years ago. So they're 65, they have a history of pneumococcal polysaccharide vaccine. What vaccine do they need today? A, a pneumococcal polysaccharide? B, a pneumococcal conjugate? C, both the polysaccharide and the conjugate or neither? So I think we'll go ahead and you can see here, the correct answer is B, the conjugate vaccine. So remember, at 65, you should get a dose of pneumococcal conjugate vaccine first and then your dose of polysaccharide. So this patient would need to get their conjugate vaccine today.

Okay, so Question number 3; 66-year old patient who has diabetes, they received their pneumococcal polysaccharide at 50. They received their pneumococcal conjugate at 65, what vaccine do they need today when they're 66? Great, a 100% of you got it correct. The correct answer there is the pneumococcal polysaccharide vaccine, right? So this is where they get that routine dose at 65 years of age. The important thing is that the interval with the last polysaccharide has been met. So that was given at 50 years and they're now 66. So that's fine and the pneumococcal conjugate was given 65 and so a year has passed and so now they can receive that dose of pneumococcal polysaccharide.

All right, and the last one, you have a 26-year old patient who has diabetes. They received the pneumococcal polysaccharide at 17 years of age. What vaccines do they need today? Do they need another dose of the pneumococcal polysaccharide? Should they get a dose of the pneumococcal conjugate? Should they get both the polysaccharide and the conjugate or should they get neither? And the correct answer is neither. If you received your dose of pneumococcal polysaccharide, you do not need another dose until you turn 65 years of age. So this patient will not need another dose of polysaccharide until they turn 65. And you don't get conjugate vaccine if you only have diabetes as a risk factor. That's only -- would be given to people who had an immunocompromising condition if they're less than 65. So that's great, people did a fantastic job on those.

So if we could go back to my presentation Jan. Thank you for your audience participation. All right. So I covered the pneumococcal, that's probably the most complicated thing and again, we have tried to put in the logic in our software to really assist clinicians with that. It's pretty good. It's very good for adults,

for the high risk children and the pneumococcal conjugate vaccine. It's not as thorough as we could potentially make it but it should give you the basics.

The other vaccine that we want to talk about is Hepatitis B in patients with diabetes. As Ann alluded to, this is an important issue for people with diabetes. Hepatitis B virus can cause acute and ultimately chronic infection of the liver which is why it's a concern. And in the data that the advisory committee on immunization practices and CDC reviewed, they found that they had -- there were a number of outbreaks that had been identified of Hepatitis B in long-term care facilities. And when they looked at the risk factors for it, they found that adults who were -- had diabetes, who were receiving assistance with their glucose monitoring, that was one of the risk factors for acquiring Hepatitis B. So there was definitely something with the glucose monitoring and the needles and the blood contamination that was making them more likely to get Hepatitis B than people who did not have diabetes.

And also, in looking at acute Hepatitis B infection among adults with diabetes versus those without, they did find that the rate of infection was 2.1 times higher among adults who had diabetes. So there definitely seemed to be an increased risk for Hepatitis B infection in people with diabetes.

And then finally when they looked at the serum prevalence of antibody to Hepatitis B core antigen which is indicative of having had an infection with Hepatitis B, they found that adults with diabetes had a higher serum prevalence compared to those without diabetes. So definitely some good evidence to suggest, that there is increased Hepatitis B infection among adults with diabetes and evidence from outbreaks really pointing directly to glucose monitoring as a potential risk factor.

So based on these data, the recommendation was made in 2011 that Hepatitis B vaccine should be administered to all unvaccinated adults who have diabetes ages 19 through 59 years of age. So because we've had routine Hepatitis B vaccination for children around for quite a long time, most children will be fully vaccinated and we're moving into where we may have some of our younger adults in their 20s who have also already been vaccinated with Hepatitis B because of routine childhood vaccination. However we definitely have a proportion of adults who did not have that around when they were children. And if they are unvaccinated, those between the ages of 19 to 59 years of age with diabetes should receive the full three-dose series.

There was also recommendation and they looked at lot of the data among adults who were 60 years and older. And frankly, just because the immune response to the vaccine isn't great the older you get, that was sort of the cut-off that they made. So it's routinely recommended for everybody less than 60 who hasn't been vaccinated, and then it can be administered to adults with diabetes who haven't been vaccinated if they're 60 years and older at the discretion of the clinician. So again, the routine 19 to 59, all people with diabetes should make sure they have a complete Hep B vaccination series. And then clinicians can choose to vaccinate those adults who are 60 years and older.

And I want to just cover some of the vaccine coverage data that we have. Ann was able to give us really great data at the beginning from the diabetic audit. And I want to just really stress that that's a different data source than the data that I'm showing here, and even some of the data that I have here which is from our IHS reports and our U.S. general population data that CDC collects. They're not a 100% comparable because we have slight differences in how the data are collected and also just in our denominator. So do take it with a grain of salt, but I think there are some interesting trends that we can definitely point to.

So we look at influenza and this is influenza for all adults 18 years and older, you can see for the Indians Health Service last year, we had coverage at about 34%. And coverage in the general U.S. population was actually a little bit higher to over 40%. So there is something with flu that we really need to work on, not just for our patients with diabetes, but for our entire patient population. We really struggle with that.

Bu when you look at some of the other vaccines, we definitely have a good track record. So this next one is looking at Shingles or the Zoster vaccine again, this is not a vaccine specifically recommended for patients with diabetes. But if you have a patient who is 60 years and older, they should get this vaccine. In the Indian Health Service, we have coverage of about 45% compared to coverage in the general U.S. population that's just below 30%. So you can see, we definitely have some increased coverage and I'll talk a little bit more about why that might be in a little bit.

This next one here, this is actually a little bit of a misnomer. It's not looking at Td and or Tdap, this one is actually just looking at Tdap vaccines. So this is what proportion of adults have received a dose of Tdap. In the Indian Health Service, we have almost 80%. So this is not Td or Tdap. This is saying, "Have they ever received the dose of Tdap?" And about 80% of our patient population has received a dose of Tdap vaccine compared to less than 20% in the general U.S. population. If you added in Td, both of these numbers would look even higher, but I think the big rate limiting step here is that Tdap vaccine.

And then finally, if we look at the routine pneumococcal polysaccharide among our adults 65 years and older -- so again this is all adults, not just those with diabetes or risk conditions. In the Indian Health Service, we have coverage of about 85% and for pneumococcal vaccine and in the general U.S. population, they're only looking at coverage just over 60%. So again, we have markedly higher coverage compared to the general U.S. population. In the pneumococcal polysaccharide for patients who are high-risk. So this is U.S. data, it would include diabetes, but also would include some of those other risk factors. You can see they have coverage of about 20%. And if you remember back to the data that Ann shared, that Jan is going to pull up for us again just so you can take a quick look at that -- in the diabetes audit, we actually had 80% coverage of pneumococcal polysaccharide among patients with diabetes. So again we are actually doing very, very well with that particular vaccine.

And then, Hepatitis B, among those with diabetes, again for the general U.S. population, coverage of about of 24% to 25% and Ann shared data from the most recent diabetes audit that had coverage of 28%. So we're pretty comparable with Hep B.

The point that I want to make is that for -- well keeping flu aside because there seemed to be some unique issues with flu. But when we look at our Shingles and our Tdap and our pneumococcal polysaccharide, one of the things that really sets the Indian Health Service apart, is that we have an electronic health record and we have reminders that pop up for our providers to tell them to give these vaccines. And that's actually pretty unique and a lot of electronic health record systems may not have that logic in place. And I really think in addition to the great public health focus that we have and the great efforts of our clinicians on the front line. The fact that we have reminders in place in our electronic health record is one of the reasons why we have such high coverage with some of these routinely recommended adult vaccines.

When we look at Hepatitis B and the coverage from the diabetes audit that Ann shared, one of the reasons that we may have less robust coverage -- it's pretty similar to what we see in the general U.S. population, is that until very recently, we didn't have a reminder for Hepatitis B vaccine for the first dose for patients with diabetes. That's a relatively new introduction, I'm going to talk a little bit about that. But I really think that lack of a reminder is really one of the reasons why we haven't achieved higher coverage. And now that we actually have a reminder, it's an optional reminder so it does need to be turned on. But I think now that we have it -- if we can get more sites to consider implementing that, I think we'll continue to see that increase in the Hepatitis B vaccine series completion among our patients with diabetes.

Jan, could you pull up Ann's slides so people can see the diabetic audit data as well?

Jan:

Sure. They're just the next slides that are in place in your presentation. So if you just advance your slides they are there.

Amy Groom:

Okay, you embedded them. Okay great. Thank you. So there you can see the pneumococcal and influenza again. We have 80% in the Indian Health Service coverage among people with diabetes, very similar. This downward tick in influenza but I will say that considering that we were only at about 34 percentage points for the general U.S. population, the fact that we are slightly higher than -- for people with diabetes is a great find.

And here again is Td or Tdap, so this would include both the dose of Td vaccine, which does inflate the number just a little bit. So it's a little bit different from the data I presented but coverage of 90% among our patients with diabetes which is fantastic. And then finally Hepatitis B vaccine, as you can see, this really nice increasing coverage. Just under 30% - very similar to what we see in the general U.S. population, but again I think if we can get more sites to look at that Hepatitis B vaccine reminder and start reminding providers about that first dose in our patients with diabetes -- we could continue to see that number increase.

So I want to talk a little bit about, "Well what can we do?" We definitely have some great success stories, but with things like Hepatitis B and maybe even for flu, there's definitely some room for improvement. So I just want to share with you briefly some of the best practices and strategies and tools that we have available to us in the Indian Health Service.

So first of all is our electronic health record which as you know just sits on top of our RPMS and in the RPMS immunization package, we have clinical decision support for immunizations and this really is the reason why we have such high coverage with many of the adult vaccines. These reminders will show which vaccine a patient is due for and it will take into account minimum intervals and ages. So again, that very confusing diagram of polysaccharide and conjugate vaccine in 65 years and the year interval, our logic actually takes care of that and we'll show you when the patient can get the polysaccharide, when they can get the conjugate vaccine. So it's a very important tool.

But I really want to highlight these optional reminders that we have. You have to actually make a choice to turn them on. So we have a reminder for pneumococcal polysaccharide that it will forecast the dose of that vaccine for anybody who meets one of those high risk conditions that I showed you which does include diabetes. And this is actually been around for quite a while and I really think that the majority of our sites have this reminder turned on and are currently forecasting pneumococcal for their patients less than 65 years of age who have a risk factor.

But the one that folks may be less aware of as it's a relatively new development is the Hepatitis B for adults. And when I presented in 2014, we did not have this reminder and we have since developed that reminder. And if you turn this on, then all your patients who are 19 to 59 years of age who have diabetes, they will start to have an immunization prompt or a reminder show up to give that patient that first dose of Hepatitis B and then will forecast the second and third doses in accordance with the schedule. So if you're interested, this is a really great tool for those of you who are interested in increasing your Hepatitis B vaccine coverage.

So Jan, could you pull up my other questions please? Okay so I have in two questions. I'm really curious to know how many of you knew that we have an immunization reminder in our RPMS and in our electronic health record that you could forecast pneumococcal polysaccharide for adults less than 65 who have a high risk condition. So did you know that we have a reminder in our EHR for the pneumococcal polysaccharide vaccine for adults less 65? I'm sad to see that not all of you knew that, but I'm also really glad that you attended this presentation and now you do know that. So at least you're aware that you have the capability of forecasting the pneumococcal polysaccharide.

And then my next question is, did you know -- do you know if that reminder is actually turned on at your site? And it looks like some of you know that for a fact that it's turned on. Some of you aren't -- know that it's not turned on and the bigger group here is folks don't know. And I really recommend that you go and you find out because this could be a relatively simple tool that you could turn on to make sure that folks get the pneumococcal vaccine and that the providers get reminded to give it to your patients who have diabetes. So really that group of you that said that you're not sure, but you will find out. I really do hope that you will find out.

My next set of questions have to do with the Hep B reminder. How many of you knew that there was an immunization reminder for Hepatitis B vaccine for adults 19 to 59? Again about half of you seemed to know that, but half of you didn't know that. So hopefully, now you know that from this presentation. And in terms of how many of you actually have it turned on? It looks like there's a group of you that know for a fact that it's been turned on. A group of you who know that it hasn't been turned on and if anybody has feedback as to why you haven't turned it on, maybe you find the logic to not be accurate. We love to hear that kind of feedback and my email address is at the end and I would really love it if you could give me feedback on why you haven't turned on the Hep B reminder. And then a good proportion of you again not sure, but find out. And I really encourage you to do that. Your best bet is to go to either your site manager or your CAC if you have one. Or there's usually an immunization champion at every site and they can take a look and see if this reminder has been turned on in the system or not. So I hope you'll take those efforts because if you choose to turn it on, it can really make a big difference in your ability to make sure patients get the vaccines that they need.

So if you could go back to my presentation Jan and thank you everybody for participating in the polls. So the other tools in addition to the reminders that we have that I just want to make sure people are aware of is that in the immunization package. So again it's not available in the electronic health record. You have to go into the old fashioned -- what we call "roll and scroll." We do have the ability to run lists and letters and you can use this to get a list of patients who are due for a vaccine and haven't received it yet, or if they need a second dose of a vaccine. So you can generate lists of patients and actually send a reminder letter. So once you print out a reminder letter saying, "Hey you're due for your next dose of Hep B vaccine" or, "Hey did you know that you're supposed to get your flu vaccine?" And you can use that to do reminder recall letters which is a strategy that has been shown to increase immunization uptake.

I think something that a lot of folks aren't aware of is inlets and letters in the immunization package. There's a lot of ways you can define the data, but you can also import a template for QMAN and I know a lot of people have used QMAN for years to help them identify their patients with diabetes for a whole host of follow-up activities. You can actually import that into the immunization package with the letters and say, "Among my patients with diabetes, give me a list of everybody who's due for a flu vaccine or due for a Hepatitis B vaccine." And it will actually show you that and then you could focus your efforts to making sure those patients get vaccinated. So there are some ways to leverage what we have in the immunization package using probably tools you're already using, to really focus on your patients with diabetes and to make sure they receive the vaccines that they should.

So to summary again, we have clinical decision, support and reminders in the EHR. If you don't have or you aren't sure if you have the optional reminders for the pneumococcal polysaccharide vaccines for those less than 65, and the Hepatitis B reminder for patients with diabetes turned on, this is something to find out about so that you can talk with people and you may choose to turn them on and then your providers will start to get reminders to give these vaccines.

Again, we have list and letters, a way to identify patients who are due for vaccine and a way to actually send the letters. And then of course there's QMAN that allows you to identify patients with diabetes and then you can use tools in the immunization package to flag who might need a vaccine for a reminder letter.

And then I think I have one more question Jan. I'm just kind of curious how many of you might be potentially interested in looking at improving your vaccine coverage rates for your patients with diabetes as a quality improvement project? I know it's part of the grants you receive, you need to identify projects or maybe this is just an issue that's near and dear to your heart.

If any of you are interested in looking at increasing immunization vaccine coverage and I think Hepatitis B seems a place where we might have the biggest bang for our buck and would be interested in doing that. And I see at least 24 of you are and there are some of you that might consider it, please get in touch with me. I would love to work with your site, go through what tools you have. We can do a webinar training to make sure everybody knows how to turn the reminder on. We really would be delighted to work and partner with you to help you on that. So if that's something that's of interest to you and you just need a little bit of assistance, please don't hesitate to get in touch with me.

So now if you could just go back to my last slide, I just want to make sure that I put the link to the resources. So again there are some links to the CDC schedules that I shared. Those are really nice to look at and give you a good overview and great for patients if they have questions. We do have our immunization package user manual and also have some trainings that we do and recordings of those trainings available to you. So if you want to know how to turn on the reminders, we can walk you through that. Or finally if you have any questions about how to turn on that reminder or you're interested in QI projects, you want to look at this issue further, please do not hesitate to reach out to me and I've included my email address there. If you look me up in the global, you will see both my CDC and my IHS email. You can use either one. The CDC email gets forwarded to my IHS one. So please do feel free to reach out to me.