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NATIONAL CENTER FOR HEARING ASSESSMENT AND MANAGEMENT
INTRODUCTION TO EVIDENCE-BASED HEARING SCREENING PRACTICES FOR
CHILDREN 0-5 YEARS OF AGE
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>> We would like to welcome everybody to today's webinar which is entitled planning evidence based hearing screening practices for children birth-5 years of age brought to you by the early childhood reading initiative also known as the ECHO initiative. It's housed in the hearing assessment and management known as NCHAM funded in jointly by the Maternal and Child Health Bureau and the office of head start to serve as a national resource center on early hearing detection and intervention and the ECHO has a special focus on early head start and head start programs helping to support the development and sustainability of evidence based hearing screening practices. My name is William Eiserman and I'm the director of the ECHO initiative and I'm joined today by Dr. Terry Foust who is a pediatric audiologist and a speech language pathologist who has served as a almost daily consultant to the ECHO initiative since its very beginnings in the early 2000s. We have been doing this work for quite a number of years now. Terry, thank you for being with us today.

>> Thank you, William. It's a pleasure to be with everyone this afternoon.

>> We have a lot we want to cover today so let me just give you a quick orientation. We will present for awhile and then we will reveal a question field through which you will be able to post some questions that you might have or comments. And I want you

to know that we are available all the time through e-mail or by phone if you have any questions you would like to discuss that we don't adequately handle today, know that this is not your only opportunity to engage with us. We are here to support you in all phases of your hearing screening related activities. So let's dive in and talk about this today. We are talking about birth-5-year-olds. And each day young children who are deaf or hard-of-hearing are being served in early childhood education and health care settings. The question is how do we know who they are? Hearing loss is often thought about as an invisible condition. So that raises the question of how can we reliably identify which children have normal hearing and which may not.

Now the short answer to that question is that you can be trained to conduct evidence based hearing screening. The screening is the first step in the process of identifying a disability such as hearing loss and screening processes whether they are for hearing or other areas of development look at general indicators, commonly associated with the condition of concern. In this case related to hearing. Since no screening method is 100% effective in identifying possible areas of concern, parent or care giver concern always overrides a passing screening result. No matter what the screening method is that is being used. So any conversation about screening should always begin with a recognition that screening methods aren't perfect. And whenever a parent or a care giver expresses a concern, in our case related to language development or hearing or even sometimes behavior, children should be referred for a more authority to evaluation. And that's even true with the highly reliable hearing screening methods that we will be talking about today. The purpose of today's webinar is to highlight the importance of quality hearing screening practices for all children and to provide you with some concrete recommendations for ensuring you have quality hearing screening and follow-up practices in place in your programs.

Now whether you are new to providing hearing screening or conducted screenings today, our goal is to help you be aware of the specific elements that you will need to be formally trained upon in order to ensure quality. And when we say "you," we are talking about you or anybody in your program. It's been our experience that there are quite a few individuals that are attempting to screen children who have not yet received formal training, therefore, maybe unaware of some of the critical mistakes that can be made or that they are already making which

could potentially invalidate the results of all of their screening efforts. So that would mean that there could be children with permanent hearing loss that remain unidentified even though people are thinking they are engaged in doing hearing screenings.

So during today we will talk about the importance of hearing screening for children, birth-5 years of age. Talk about the evidence based practices that are recommended for the age groups. We will talk about a follow-up protocol so that you have a general idea of what you do when a child doesn't pass. We will talk about some equipment issues and the importance of engaging with an audiologist if at all possible. And making sure that you are aware of all of the resources that we have available to you and anybody who is interested in hearing screening on our website which is kidshearing.org.

Let's dive in. We will start off by talking about why periodic screening is so important during childhood, particularly starting at birth. You will recognize this photograph here. You may be been on one side of the glass, maybe both sides. As closely as we look, we can't see hearing loss. And yet permanent hearing loss is the most common birth defect in the United States. A lot of people aren't aware of the prevalence. It's the reason why most newborns are now screened for hearing loss in hospitals. And yet not every single baby does in fact get this screening. Babies not passing the screening require some follow-up and yet some of them are lost to follow-up and don't receive it. So those are two of the reasons why periodic screening throughout early childhood is needed. Not every single baby is screened at birth and some babies are lost to follow-up after not passing their screening. There is actually more of a reason why we want to continue to screen throughout early childhood. Because even when babies pass their newborn screening, we want to continue to screen because hearing loss can occur at any time in a child's life. Not just at birth. It can re-- occur at any time in a child's life as a result of illness, of physical trauma, or environmental or genetic factors. In fact, the research suggests and this is an interesting statistic for you to be aware of if anybody is questioning why it's so important. The research suggests that incidence of permanent hearing loss actually doubles between birth and the time children enter school, from about three children in 1,000 at birth to about 6 in a thousand -- woops. To about 6 in 1,000 by the time enter school. And that's right during the time that you have the

children in your programs and in your care. And that's why screening during this vulnerable period is so important.

We talk about language development in early childhood settings. It's commonly understood that language development is at the heart of cognitive and social emotional development. And school readiness I'm sure you all talk about that often. It frames a lot of the practices that go on to early childhood settings that you operate in. What isn't discussed as often is that hearing health is at the heart of typical language development. And that if we are going to be conscientious about promoting language development as part of our commitment to school readiness, we need to be conscientious about monitoring the status of hearing throughout this critical early period of development.

Screening followed by appropriate audiological assessment and early intervention can dramatically improve the options and outcomes for children who are ultimately identified as being hard-of-hearing or deaf. When hearing loss is identified early, we can make sure that a child has access to language. And so I want to show you a couple of quick examples of some children who had the benefit of an early identification and the access to language that afforded them. We will start off by watching a couple of children who have been taught to use American Sign Language and look at how vibrantly they communicate with one another because their parents and their care givers knew that they needed support around language. Let's watch.

[Video]

>> They are actively engaged in communicating about what they are seeing out the window. If they hadn't been given a means for communication, you can imagine they might be just looking out the window and that would be all.

Let me get to another screen here. These next children also have a bilateral significant hearing loss. They are deaf and they both have hearing aids which you can hardly see in these videos here. But let's watch these girls and listen to their communicate.

>> We are having a party over here. We are going to miss it.

>> Okay. Hi, you guys -- are you guys talking?

>> I'm skating, wee!

>> Look. This is the water. She is skating on the water.

>> Wee! Come on, let's talk to each other. You talk to me.

>> No, I will talk to you.

>> Okay.

>> And I will talk to you. And I will talk to you --

>> I'm going to stop the video there. And I'm going to show you one more of these boys who have cochlear implants and they are also deaf. And they are communicating very vividly with one another. And the camera people.

>> Hey! I'm A.J.

>> Hi, my name is Gibson. People are special in different ways.

>> One of the things that makes me feel special is I'm deaf.

>> I'm deaf, too. And deaf means that your ears can't hear.

>> A.J. and I have special things to show you. They are called cochlear implants. They help us hear.

>> Cochlear implant is a big word so I call them CIs.

>> We always like to start off by showing you what the potential outcomes can be because that's what it's all about, right? To make sure that when children need support, they have access to the support that they need. And they get access to language so that they can fully participate with their families, their peers and educational settings regardless of what method is used. So that's our inspiration. What I like to do now is hand it over to Terry and for those of you who signed on a little bit after we got started. Dr. Terry Foust will be speaking now. He is a pediatric audiologist and a speech language pathologist who has served as primary consultant to the ECHO initiative since its very beginning.

>> Thank you, William. We just want to talk about equipment and

let you know that the availability of peer tone and OAE screening means it's no longer appropriate for us to rely on subjective methods. And these are methods such as ringing a bell behind a child's head or solely depending on care giver's perceptions or observations of a child's hearing.

Now let's go back to William mentioned newborn hearing screening results. These results are valid at the time of the screening. The time the screening is done so you definitely always want to be sure to get those results and if the child didn't pass, then we want to support the family in getting the follow-up screenings or the diagnostic evaluations that may be needed. So even when children have passed the newborn screening, this screening again is only valid at the time of screening and doesn't necessarily reflect a child's hearing status in the years that follow that screening.

Although some health care providers have incorporated hearing screening into the well child visits they provide, it's really not. It's not yet standard practice, especially for children that are less than four years of age. So routine examinations of ears that are provided through health care or health care providers should not be mistaken as hearing screenings. And I know that this can be somewhat of a disappointment to you as it does to other professionals and parents who are hoping that this was being taken care of during the visits. But it's precisely because this isn't yet happening in that context that programs like yours are taking this on. Because obviously there is an increased recognition of the importance of monitoring hearing and that it's now feasible to do an objective screening.

Now unless you have kept careful records and unless your records include documentation of ear specifics -- so results for each ear and the method that is used, we don't want to assume that a hearing screening has been completed. I'm sorry here. Let me -- here we go. I need to orient back to correct slide. OAE screening like we said is the recommended hearing screening method by lay screeners for children birth to 3. Now historically peer tone screening is the -- pure tone screening is the recommended method for three to five year olds. We want to recognize there is growing recognition for a variety of reasons that it may not always be the most feasible method to use. In fact, research has shown that 20 to 25% of the children who are in that three to five-year-old age group can't really be screened

with this methodology because they aren't developed mentally able to follow the directions reliably. So in those instances, then OAE screening is the preferred method for these children. At a minimum, if you are focused on establishing an evidence based practices for three to five-year-olds, and if you are considering using pure tone screening, you will also need to be prepared to do OAEs on the 20 to 25% that can't be screened with pure tone or you will need to have a means for systematically referring to all of those children to audiologists who can perform the screening, which can often be quite challenging to accomplish.

I'm going to turn the time back to William for a moment.

>> Thank you. For those of you who are focused on the three to five-year-olds, we encourage you to carefully review a document that we have on our website that compares OAE screening and pure tone screening and walks you through some of the considerations that you and your health services advisory committee and hopefully if you can have a partner audiologist also help you examine these issues as you make a decision. This is a document you will want to look at and we also have it in the lower left hand corner of your screen which you can download at some point or at the end of today's webinar. If you do it right now it might take you away from this browser window. So I caution you not to do it at this moment. On our website right here where you see that pink box, this is where you will find that document as a PDF. It's at kids.hearing.org right on the landing page. We encourage you to have a look at that.

We will zoom in now on each of the screening methods, OAE and pure tone and tell you about each one and we will start with OAEs and talking about why it is the recommended method for birth-3-year-olds and why it's increasingly being selected for three to five-year-olds as well.

OAE is an appropriate method to identify young children at risk for permanent hearing loss because it's accurate and it's really feasible. It doesn't require a behavior response like raising a hand and doing a task like pure tone screening head phone screening does. And what that means is that it allows us to screen children who are very young as well as older children who can't respond appropriately when doing pure tone screening. It's quick and it's easy. Most children can be screened in just a minute or two. Sometimes in as little as 30 seconds an ear. And it's a flexible tool that can be used in a variety of

different environments. You see that in the photograph here. This little guy is being screened at the snack table in his early care environment. We can go in the classrooms and we can go into homes and health care settings. We can go where children are as long as it's not terribly loud. It doesn't have to be silent either.

It's also effective. And that's perhaps one of the most important criteria. In identifying children who might have a mild hearing loss or a loss in just one ear as well as those who have severe bilateral hearing loss. In addition, OAE screening can help us identify or draw attention to a broader range of hearing health conditions that may need further medical attention like a wax blockage or an ear infection that nobody knows about. So in addition to screening for permanent hearing loss, OAE screening helps us to identify some of the things that might contribute to temporary hearing loss like a middle ear infection does. So even though we aren't really screening for those temporary conditions like ear infections and wax blockages, they are great side benefits when doing OAE screening.

So these photos here, these children are being screened using the OAE method and one of the things we hope you notice off the bat is we were screening them in all of these really great different environments. We go to where the children are. Playing with the toy, being held by somebody that they are comfortable with and even in an outdoor play environment in that lower right hand corner. We go to them and the people that are doing the screening can be people they know. We can train teachers, home visitors, health specialists. In fact, those are some of the best people to do the screening because they already have the most important skill and that is the skill of establishing a rapport with a child and keeping them busy and entertained and engaging in a screening activity.

In fact that screening works the best when children are familiar with and comfortable with the adult who is doing the screening. And where they can continue to be engaged in whatever they were doing prior to the beginning of that and you know that even includes sleep. We can screen children while they are asleep. Many people who are doing OAE screening use at least the sleep option as a backup if they can't get the child to cooperate quite as much as needed. So there are many different ways question accomplish this.

Terry, let's talk now about how OAE screening is just so people have a general understanding of how this works and what it is that you can screen a child and not require them to do anything like raise their hand. How is that possible? Terry, let's have you walk us through it.

>> Thank you, William. So to conduct an OAE screening, we want to take a thorough look at the outer part of the ear and we want to make sure that when we do that there is no visible sign of infection or blockage. So to do that, after we do that, then a small probe that you can see here in this picture is then placed in the ear canal. And that appropriate delivers a low volume or quiet sound stimulus into the ear. A cochlea or the inner ear which is that inner snail shape portion of the ear, a cochlea functioning normally will respond to this sound by sending the signal to the brain while at the same time producing an acoustic emission. And this emission is analyzed by the screening unit and so then in approximately 30 seconds -- I'm just having a difficulty advancing so if you could do that for me, that would be great.

>> It's doing it.

>> In approximately 30 seconds then the result appears is either a pass or as a refer. So every normal healthy inner ear will be producing an emission that can be recorded just in this way.

>> So let me show you a quick example of an actual realtime OAE screening. Now this little guy, granted is very cooperative. There are two adults working together which is really nice to have two involved. So we realize this is ideal. And let's watch this screening. This is actual realtime meaning from beginning to end. This woman on the right is going to put a little ear bud in this child's ear. Kind of like what you would use with a SmartPhone and a listening device. And then she will push a button on a hand held device which you will see later in the video to start it and in a minute it will end with the results.

[Video]

Pass! Yeah! Say thank you. Want to put in this other ear? What about the other ear?

>> Let's try that ear. Move over to the other ear. And you will see the device here in a second. There it is.

>> You already did it. Yeah!

>> And they got another result.

>> That's a realtime screening.

>> Screeners and keeping all of the different elements in mind, we have one of the resources we have on our website is the screening skills check list for OAE screening. And this check list has all of the important details that serve as a guide to screeners through the OAE process. This is especially helpful for new screeners as you refresh or experience screeners who you want to just manage to make sure that they are doing all of the necessary elements of evidence based OAE screening. You want to look for that on our website and it serves as one of the elements for quality screening. It's essential that anyone wishing to conduct OAE screening receive thorough training. The OAE process is simpler than pure tone screening which we will talk about in a moment. OAE screening is automated and that means we don't need a behavioral response from a child like raising a hand. And as Terry explained, the ear is actually doing all of the responding and the device is doing all of the recording. Once you learn how to get an appropriate probe fit and how to manage a child throughout the screening procedure, the actual screening of the ear itself at different frequencies is done automatically by the machine. Nevertheless, there is still skills you need to develop to perform the OAE screening and again we encourage you to seek the assistance from an audiologist partner who can help with training and that training includes understanding how the OAE screening works and how the equipment can be used. We always encourage you to learn to screen. First by practicing on yourself and then other adults before you even start to try to screen children. And then to move on towards screening with children.

Now there are several ways you can receive training for OAE screening. We offer regular web based classes which you can register for on-line by going to the learning opportunities window which you see right here this is our landing page and if you look right down here where it says interactive learning opportunities, you will learn about other webinars that we are offering as well as our four part web class which we offer four or five times a year. If you are looking for training one way to do it is with us. You can also do it by having your audiologist

partner work with you and they can go on to our website where we have all of our training modules, video modules posted here. There are 11 in all and they walk through the complete process of preparing for learning about your equipment, learning to screen other adults, yourself and then children, how to document outcomes and how to track children through follow-up. The full complement. You will notice, too, on our website that you can do our practice exercises right there either independently or with the guide of an audiologist assistant. And if you submit your little reports pertaining to those practice exercises, you will get a certificate of completion for each of the four steps of our training process that you will find on-line. Go have a look at that. If training is a need that you are facing related to OAE screening.

That's OAE screening and the resources that we want you to become aware of. Keep in mind today is not a training. We are orienting you to what is involved with training and where to go get further assistance. Now we will shift gears and talk about the pure tone screening method. Terry will walk us through this. Terry?

>> Great, thanks.

>> Do you need me to advance the slides?

>> Yes, thank you.

>> Okay, I will.

>> Now let's go ahead and talk about pure tone screening then. Especially for those of you who may be considering this or who are already using this for screening three to five-year-olds. I want to note this is not recommended for children under three. While the head start performance standards currently do not specify methods, as I mentioned earlier pure tone screening is traditionally been the most common method used with children three to five years of age. Now you probably recognize the pure tone method either again because you already use it or because you had your own hearing screened or tested that way. So in this procedure, let's just review. In this procedure music like tones are presented to children through head phones and then the children provide a behavioral response like raising a hand or example to indicate that they heard the tones. So pure tone screening does a couple of things It gives us a good idea of the

functioning of the entire auditory system. All the way to the brain with the child then showing a physical or a behavioral indication that they perceived the sound. Second is it's a relatively affordable method with the screening equipment costs between about 800 and \$1,000 for each piece of equipment. The equipment is really durable and portable and it lets us transport it easily and use it in a variety of locations. And then again a wide range of individuals can be trained to perform the pure tone screening procedure.

Now to conduct the pure tone screening, we will do the same thing we did with OAE screening. We will first take a look at the ear to make sure that there is no visible signs of infection or blockage. Then if that ear appears normal, and we will go ahead and the screeners will instruct or what we call condition the child how to listen for a tone and then respond by raising a hand or placing a toy in a bucket. And once the screener has observed that the child is reliably responding to the sounds that are presented, just as the screener instructed, then we start the actual screening. Now during the screening process the listen and respond game that we taught them is repeated, at least twice at three different pitches on each ear. And we note that the child's response or their lack of response after each tone is presented. Now if the child responds appropriately and they are consistent as they respond to the range of tones presented to each ear, then the child passes the screening.

>> So let me show you a quick video here of a pure tone screening that begins with that first the conditioning process and then the actual screening process. Now this is not in realtime. This is condensed. This takes considerably more time to get accomplished. So let's take a look at how some of these elements look. And we are starting --

>> We first take a look at the ear -- to make sure there is no visible sign of infection or blockage. If the ear appears normal, the screener -- then instructs or conditions the child how to -- listen for a tone and then to respond by raising a hand or placing a toy in the bucket. Once the screener has observed that child reliably responds.

>> I think that video was staggering a little bit. Sorry about that. You get the idea of what that is involved. It's quite a bit more involved than the other -- the OAE method. There are two especially notable ways that pure tone screening differs from

OAE screening. That's the process does not require children not only to be cooperative, but it also requires children to be full participants in the process following directions and responding reliably. As we mentioned, that means completing an initial process of teaching children and carefully determining whether you're getting a reliable response from them before attempting the actual screening. The other difference between pure tone screening and OAE screening is that the screening itself is not automated as OAE is. Instead, pure tone screening you as the screener have to manually step through the presentation of each tone multiple times for each ear recording each response. In OAE screening all of that is done automatically. Then in pure tone screening, following a very specific protocol, you as the screener determine whether the ear passed or not. You don't get an automated response that says pass or refer. With pure tone screening there is considerable more potential for screener error to produce in across results and hence there is a need for thorough training and oversight to make sure all screeners are adhering to the prescribed screening protocol. We can't emphasize enough the importance of screening and periodic oversight as even some experienced screeners make errors that inadvertently invalidate screenings in ways that they are unaware. One of those errors may be that they are giving a visual cue when they are presenting the sound and then the child is responding to that visual cue rather than the actual hearing of that sound. So we don't want to discourage pure tone screening exactly, but we do want to caution you about the importance of training and then make sure you understand that this is complicated and can potentially be fraught with ways errors could be made.

Kidshearing.org provides resources for pure tone screening as well and they are similar to what we offer for OAE screening. These include the teach me check list for pure tone screening that was designed as a tool that you could give to a local pediatric audiologist willing to help you with providing some formal training. They would walk through this check list as well as go through a series of video modules that we have on our website that are just like what we showed you for the OAEs. Let me show you where you will find them if you go here on our website, you will see here in the hearing screening program development box get started in implement under screening methods you get to pick either OAE or pure tone. Obviously if you pick OAE you will find your video modules there for training if you click pure tone it will take you to this page where you will see

a set of 11 video modules and a series of implementation tools. We have these implementation tools available for both methods and they are the full complement of all of the forms you need for documenting outcomes, referral letters, what to say to parents as children progress through the screening and follow-up process. We have a tracking system available. All of this is free to you. So we -- and anybody who wants to use it. So take a look at these and if you are looking and considering OAE versus pure tone for three to five years, remember to go back and look at this document found right here for information about deciding between the two methods. Which is also downloadable on our screen right now if you want to grab that.

That's where it's highlighted. Right there.

So here are some the considerations that you will want to keep in mind as you discuss whether you are interested in OAEs or pure tone. We will go through these very quickly we talked about automation being one of them. With pure tone being a manual process where you step through it all and OAEs being automated. Automatic. There is a cost difference. So pure tones range from -- we have here 900 to 1500 for the equipment where OAEs are more expensive in the 3600 range plus you have to pay for disposable probe covers. There is a cost difference that needs to be considered. Pure tone screening needs a very controlled environment. Near silence. Where OAEs can be done in more of a natural setting. And that can happen quite a practical bearing on how programs proceed because some programs don't really have environments available that are reliably that quiet to do pure tone screening in. There is always a question about what happens with children that can't be tested and how many of them are there? In pure tones as Terry mentioned, we expect about 20-25% of the children in the three to five age range that actually can't be screened with this method because they can't follow those directions. With OAEs it's very few that can't be screened and you need to get some outside assistance with. As far as developmental levels, whether we are talking about children with disabilities or just the normal developmental progress, pure tones do require a developmental level to be able to follow those directions where OAEs can be done on any child who speaks any language incidentally. So as long as you can illicit their cooperation to just be relatively still -- elicit their cooperation to be relatively still or quiet. You screen them and you don't have to speak their Lang -- language. The question is that what if you can't pass in both cases, an audiologist

referral is an option. With pure tones you can revert to doing OAEs as a second level of screening if you aren't successful in doing continuing the child for pure tone screening.

So we will move one step farther and talk about one other thing and that is that when regardless of whether you are using pure tone screening or OAE screening, you need to think about having a good way to document your results and have a clear protocol to follow that -- and a systematic way to track children who don't pass and need further follow up. I will give you a quick overview of the recommended protocol and this is something that you want to give some thought to as you develop your screening program as it may have an influence on who you decide to train to do the screening as well as help you determine how you will incorporate screening into other activities and then into your overall schedule. So when a child doesn't pass the initial screening on both ears, this protocol we will go over here is basically identical whether it's OAEs or pure tones. The data we will talk about in terms of percentages are related to OAE screenings of birth to three-year-olds. Let's have a look. We do the screening on all of the children and we expect with OAE screening about 25% don't pass on one or both ears. And regardless when pure tone or OAEs we would screen those children using the original screening method a second time about two weeks later. And the reason we do that is because maybe they just have the end of an ear infection or a back blockage that's going away and we don't want to over refer all of those children -- those children to a health care provider we screen them in about two weeks and look what happens a lot more pass in our birth to three population it goes down to 8% that still don't pass. That 8% are referred to a health care provider for middle ear evaluation. Often we find that they in fact have one. Once we get medical clearance from the health care provider, we screen that 8% again because they still haven't passed the screening and many of them will pass at this point but some don't and if they still don't pass, we refer those children to a pediatric audiologist for a complete audiological evaluation. We will encourage you as you develop your screening program to look at our protocol information on our website. All of our forms and our tracking systems mirrored this recommended protocol. So you don't even have to commit it to memory if you use the forms. It guides you step by step through the process. The screening is complete when either the child has passed on both ears or the child has gone on the way to an audiologist. Any other process along the way is considered not done. And our resources on our website clarify

that even further.

We encourage you to reach out to a local pediatric audiologist. You will find links on our website where you can look for pediatric audiologists. We encourage you to refer to your health services advisory committee to see if they know of a local person that might be willing to help you. Often the child find office with early intervention services knows of local people that might help you. You could also contact your state's early hearing detection and intervention program. Sometimes that acronym is referred to as the EHDI program. Or the newborn hearing screening program in the state. They usually know where to find audiologists across the state who might be able to either contract with you or volunteer their support to you. They can help you at all levels of your program development from the initial phases of planning if you are doing that to the training to follow-up to referring them children that don't pass. So having that relationship is really valuable.

So we will open up to some questions now and keep in mind that we have many learning opportunities that are available and you can find those as I mentioned before by going down here to our interactive learning opportunities window. This is where what it looks like. We zoom in and then I want to draw attention to a couple of upcoming learning activities right here. In June we are going to be talking about -- that's today. Sorry. Our next learning opportunity is a guided learning curriculum webinar where we are going to be launching a summer self-guided web class for those of you who are interested in learning OAE screening. We are going to then in August do an OAE refresher mini webinar. And if those of you, if there are any of you who are interested in training people, we have an upcoming training webinar. So we have a variety of different things that we encourage you to go and have a look at so that you know that there are other ways to continue to learn and then improve your skills.

So I revealed the questions field here. If you like to ask a question, feel free to do that. Keep in mind that today's webinar has been recorded. So if you need to review any of this again or if you have some colleagues that aren't able to attend today that would benefit, just go to Kidshearing.org and you will find our recorded webinar and again you will find that if you go back to the learning opportunities window and if you click right here where it says interactive learning opportunities, you will find all of the recorded webinars that we have done -- archived

there.

So several of you are asking for this PowerPoint presentation. What we would prefer that you do instead is that you go and look at our website because all of the information that we have compressed into today's webinar is provided through our website. If you go and click on OAE, you will find a series of very short videos. They are each three minutes in length that walk you through all of the information that you are looking for. And you can progress at your own rate. You can also go and view the webinar again. So that's probably the best way to look for the resources that you are asking about.

The next question, Terry I will ask you to answer this, the question is, I'm confused about which one is required to use from birth to three and from three to five-year-olds. Can you talk about those two methods and the age groups?

>> Yes, thank you. This is a great question and I appreciate the request for clarity. So as we talked about the two methods, the first method was otoacoustic emissions or OAE and this is the method that is used for children from birth to two years of age. So there is a follow-up question that says, can OAE be used for children below 12 months of age? And the answer to that is absolutely. Is it the correct method and the best method to use from children from birth up to two years of age. Now we talked about pure tone testing or the traditional testing where we put ear phones over the ears and present tones and look for response such as a raised hand. That pure tone testing is typically used for children ages three to five years of age. And I will just remind everyone that there is a large group in the 20 to 25% which won't be able to participate and complete a pure tone test and that's where we mentioned that you will want to have a backup method such as otoacoustic emissions or refer to their audiologist. Just before I leave this question, I think maybe we confused you when we have broken it in the two age groups and yet tell you to use OAE as a backup for the three to five. The reason for that is that while it's the recommended method for children zero to two, it actually applies throughout the age range. It's a good objective test throughout the age range, clear up to adults for those that we may not be able to get pure tone testing completed on.

>> So coming back to the requests for copies of our power point, here is another thing I want to show you. -- oh, darn, this isn't

the right screen but I will show you where you can find all of this in print format. We know that some of you learn better when you look at -- oh, darn. The visual information rather than the auditory display. So when you click on either OAEs or pure tones and you go to the list of the videos, over here to the right planning and learning tools, one of the things you will find right here on this clickable is a printed out verbatim document of all of the information that is covered in each of these modules. So that you can read them and flip through them at your own pace. So look here under planning and learning tools for print versions of what we covered today.

The next question is, will I receive certification to give hearing screenings? How long is the training and is there a fee? Excellent question. So we -- for pure tone -- or for OAE screening, we offer a web based class which provides you with those certificates for the -- for each of the four parts of the class. And there is no fee for any of our resources or trainings. And as far as how long it takes, the four part web class that we offer typically is a four one hour web based sessions that we have been doing across a two week period. So we will meet on a Monday and a Thursday and then a Monday and a Thursday for one hour and there is a little homework assignment after each one usually to go and do a little screening practice on somebody or on a child. And then you submit your report. So in about five hours of total time, you would end up with your certificate of completion. Now the real key is practicing. And so the more you practice, the better you will get. That screening -- that training process can be done with us on-line through our web class as I mentioned. You can do it by going through the 11 modules with the assistance of an audiologist or an experienced OAE screener. Or you could attempt to do it on your own. Now obviously doing it on your own is probably the least desirable of all of those. But we realize that sometimes you are on your own. So those are some of the strategies. Keep in mind we are always here in the wings. If you are working independently or with the help of somebody but not enough help, know that you can reach out to us with a question or with some needs for guidance. You can do that through our website or by calling us. Feel free to do that.

The next question, Terry, is how accurate are OAEs for adults? And I don't know if you addressed that before when you were talking about age groups or not.

>> Sure. The short answer to that is that there are very accurate. Again, it applies through for all ages. Zero to adulthood. The one factor is that it's just as we age and have experience with noise exposure and other things, our hearing may not be as sensitive and we actually may start to demonstrate hearing sensitivity that isn't as good as it was when we were younger and the OAE because it is accurate will reflect that.

>> Now the next question is an excellent question and it has to do with some of the assumptions that can be made. Here is a question about is the -- if the doctor screens for hearing or vision between ages 0 to 3, does that count as our screening? What we can tell you is we discussed briefly that most health care providers are not doing hearing screenings. So the first thing you want to make sure is that what it -- whatever it is that you are seeing as a hearing screening, actually is one. And the way to do that is to find out what the method is and to have ear specific results. Now if you have that documented in the child's health record, then, yes, that can count as the hearing screening. But you want to make sure that it is current and that you have the specific method used. For birth to three-year-olds it should be OAEs. For three to five-year-olds it could be the pure tone or the OAEs. And you wouldn't want to have a hearing screening that was more than a year old. Because as we know hearing status can change at any time.

The next question is how or where would we be able to have our OAE machine calibrated?

>> That's a great question. We recommend that your OAE machine be calibrated annually to ensure that everything is functioning correctly. That -- and that you -- your best contact for calibration is the distributor that you bought the equipment from. They should be able to provide that and put you on an annual calibration schedule and if you do not have a local distributor for some reason, you contact the manufacture directly and they will help align you with someone that can do that calibration.

>> And so a calibration is kind of like taking your car in to have a once over. It might include an oil change, an update of software program, not a literal oil change. It's kind of like that you want to make sure that everything is working as you want it to so that you can be confident that you are getting accurate results.

We are getting close to the top of the hour so if we don't cover everybody's questions, again, notice that we are available to follow up with you offline. So do get back in touch.

The next question is, if we cannot buy a pure tone tester because we already -- if we cannot -- hmm.

>> I think what it means is we already have three OAE machines and we may not justify to buy an additional pure tone.

>> Oh, okay. Okay. I see. The question is, if we can't do pure tones, is it okay if we do OAEs with three to five-year-olds. And the answer is yes, increasingly we are seeing people using OAEs. Again, I encourage you to look at that document, comparing the two approaches, consult with your health services advisory committee and hopefully with an audiologist in making that decision. Now here is a little caveat. Many audiologists believe that pure tone screening is the only method for three to five-year-olds. And for years it was. And so there is an active debate, if you will, within the audiological community about whether OAEs should be recommended for three to five-year-olds. That's just kind of where we are right now. It's a discussion going on. Some audiologists are perfectly comfortable with that. Some are not. And some are in the middle. So that's why you want to make sure that you don't make the decision all by yourself. And you get others involved in making that decision and using that comparison sheet which is found -- remember, right here can help you and your team in that decision process.

Well, I think we were at the top of the hour. So we thank you all for your great questions today and for your sustained attention. Know that Kidshearing.org has a wide variety of resources with both of these methods. Go and spend time and find out what's there, and see what might make your life easier. We have attempted to create the full complement of resources so that you don't have to recreate the wheel over and over again there are forms and letters and all sort of things that are necessary for operating a quality evidence based hearing screening practice. Whether that's with OAEs or with pure tone screening. To Lenore, our captioner, thank you for your services today. To our back up technical team, Lenore, Terry and Daniel, thank you and Terry, thank you. Remember, everybody, this was recorded and can be found right here on our website under interactive learning opportunities in just a couple of days once we get it posted if

you want to review it again or share it with others. Thank you,
everyone.

I will send you over to a quick evaluation. So take a look
at this and give us some feedback.