

So, my name is Will Eiserman and I am the affiliate associate director at the National Center for Hearing Assessment and Management, known as NCHAM now and NCHAM is housed within the Institute for Disability Research, Policy and Practice at Utah State University, which is a federally funded university center for excellence in developmental disabilities, which has a critical nationwide focus starting in 2001. It's a long time ago, I started serving as the director of the Early Childhood Hearing Outreach Initiative, which became known as the Echo Initiative. For about 20 years, the Echo initiative served as, a national resource and technical assistance center on early hearing detection and intervention, with a focus primarily or preliminarily on early Headstart and Headstart programs, and their staff to support them in implementing evidence based hearing, screening and follow up practices. And we're delighted to be able to continue that work to make our resources and learning opportunities like this one available to staff who are currently working within Head Start settings, as well as to anyone in early care and education settings who can put this information and our resources to use, including those of you who might be an early intervention program. Aims health, healthcare, setting schools, private practices, or any a number of another, of other settings. Now I'm joined today by my good friend and colleague, Doctor Terry Foust, who is a pediatric audiologist and speech language pathologist who has served as a consultant and trainer to the Echo initiative since its very beginning.

So, Terry, once again, thanks for joining me in this. Process. Yes. Thank you. Thank you very much, William. As, as William's alluded to, he and I, along with many other echo team staff and local collaborators across the country, have provided training in almost every state with thousands of staff from Early Head Start.

American Indian, Alaskan Alaska Native and Migrant Head Start programs and other early care and education programs over those 20 plus years that, William mentioned, we're, we're always encouraged, just like we are today, by the continued amount of interest that there is in establishing evidence based hearing screening programs so that children with hearing related needs can be identified and served. The you know, I'm going to turn off my, my, camera here because you really don't need to see me. And Terry's going to probably do the same thing. You know, the work of the Echo initiative is based on the recognition that each day, young children who are deaf or hard of hearing are being served in early childhood education and health care settings, often without their hearing related needs being known. You know, hearing loss is often referred to as the invisible condition. So how can we rely identify which children have normal hearing and which may not?

And really, the short answer to that question is just is that early care and education providers can be trained to conduct evidence based hearing screening, just like you see depicted in these photos. Now, the ultimate outcome of a hearing screening program is that we can identify children who are deaf or hard of hearing, who have not been identified previously. So the procedure on the left of your screen, that's called acoustic emissions or hearing screening. And that's the recommended method for children birth to three years of age and increasingly recommended for children 3 to 5 years of age, as well. Now, on the right, you're going to you see the procedure called pure tone audiometry hearing screening. And that's historically been the most commonly used screening method for children three, years of age and older.

And you'll still see in many early care and education, settings and providers using. And we're going to talk about both of these methods today. So let me give you a quick overview of what we want to cover today. Well this presentation is not a training per se. Our goal is to provide an overview of the big picture of what is involved in implementing evidence based hearing screening for children across the age spectrum, birth to five years of age, and even some of the older children as well. We'll start by giving you an overview of the auditory system and or hearing system, which is, which will help lay a foundation for understanding how the hearing screening methods we'll be talking about today actually work.

And then we're going to talk about why we screen for hearing loss, what even makes it possible for us to be seriously engaged in systematic screening for hearing? We'll then talk about the two methods that Teri just referred to and pure tone audiometry. Starting with an overview of the 0 a e screening process, followed by an overview of the pure tone process. Next, we'll address the important question what do we do next when a child doesn't pass a screening? Will summarize the follow up steps that are undertaken when a child doesn't pass a hearing screening on one or both ears. And then what?

We're going to wrap up by showing you how to access a variety of resources to support the process of developing and maintaining your evidence based hearing screening program. And we'll have time for questions. So, that information, that's the flow of where we're headed today. And, just so that you can follow the progression through these topics by referring to the left side of your screen. Note that those are listed there. And since this webinar is recorded, for those of you who are watching it in a recorded fashion, you'll see that if you need to skip forward to any of these topics, or if you're returning and want to go ahead, move ahead.

You can know where you are at any given point by seeing the highlighted areas on the left. So keep an eye out at that as we progress. Now, before we launch into our content today, I want to make sure that you all know where to go after today's webinar to get additional resources. Because really, everything we're sharing today will be found there, both in this current form and a variety of other, resources that we have available there. Well, I mean, if you don't mind, let me just interject for a moment. I just want to say that one of the, to all of you that are participating today, one of the things you're going to hear us say several times is that, we really want to make sure that we all understand that implementing an evidence based hearing screening program or practices, it's much more than just using the designated piece of equipment or a specific method to really implement evidence based practice.

The recommended equipments or methods we'll talk about today need to be used according to a prescribed set of steps under carefully controlled conditions, and each step of which is carefully documented in detail. So this is going to be true whether you're going to be using OAB screening or pure tone audiometry screening. And over the years, the early childhood hearing outreach. This initiative as William is mentioned, known as Echo Initiative. We've developed a wide range of, free resources to help you achieve the goal of implementing evidence based hearing screening. And so that's one of our goals today, is to primarily help you find all of that information and all the resources that you need.

Thanks, Terry. Great clarification. So let's make sure right off the bat that everybody knows where to go after this presentation, why you would go there and what you're going to find. Now let's take a look at kids.hearing.org. This is our website. And we invite you to feel free to use all of the implementation tools that we have there.

And certainly before you sit down to write a letter to parents about your screening efforts or a referral letter or forms for how to document your result, check out what we already have there, because we really have tried, in collaboration with many folks like yourselves, to develop those things for you, at least starting places. Or you might find that they work just as is, and you're welcome to use them. So our goal was really to create all of the things that programs like the ones you're in, would need in order to have an effective program. So take a look@considering.org before you, put a lot of time into creating something to support your efforts. So this is the landing page for kids hearing that or which provides a wide variety of practical resources. And as you look down, you'll see that there is a section called Planning Resources.

That's the first group under which you'll find big picture information. How to find an audiologist. Some resources, their information about selecting and

purchasing and screening equipment. The next category of resources have to do with accessing training, whether for O, a, E or pure tone audiometry. An obvious question that you should have is, okay, I've been to this webinar, but that was explicitly said, you know, this is not a training, it's an introduction. So where do I get that training?

So go and check. I'll check out what we have available there as a potential resource. Then we've got a wide variety of resources to help you develop your, your program. Tools for preparing for a screening day. The follow up protocol guides forms for documenting your results. The letters that I just referred to for parents, health care providers, audiologists, even scripts for what to say to parents at different points in the screening or follow up process.

And then we have a set of follow up resources, including a tracking tool that you can use to track a group of children from beginning to end of the screening and follow up process. So kids hearing dawg, if you don't remember anything else today, remember kids hearing.org where you can go and find all of this and many other types of resources to support your efforts. So let's put all of those resources into context. We're going to start by giving you a quick overview of the auditory system. So there are three main parts to the auditory system. We have the outer ear the middle ear and the inner ear or cochlea.

So when sound enters the outer ear it causes the eardrum to vibrate, which then moves three small bones in the middle ear. And this movement then stimulates thousands of tiny, sensitive hair cells in that snail shaped portion of the inner ear that you see called the cochlea. And from the inner ear, then the sound signal is carried along special nerves to the hearing centers of the brain, and the individual experiences the sensation that we call sound. So while this is how the auditory system typically functions, there can be some exceptions. There can be temporary issues like a wax blockage, or there can be fluid in the middle ear caused by ear infections that we may discover and get addressed during the hearing screening process. But the primary target condition of hearings of hearing screening is the functioning of that inner ear or cochlea, that snail shaped portion of the ear.

Now, in some instances, that sound will travel through the outer and middle ear, but when it reaches that the cochlear inner ear, this signal is not transmitted up to the brain, resulting in what we call a sensory neural hearing loss. And this condition is usually permanent. This is the primary condition for which we were screening in our mass screening efforts. Now, this may come as a surprise to you, but it's an important fact for you to know that sensory neural hearing loss is the most common birth defect in the United States. In fact, about three children in every thousand are born with a hearing loss, deaf or hard of hearing. Now, most newborns in the United States are now screened for hearing loss using evidence based methods, most even before leaving the hospital right after they're born.

But screening at the newborn period isn't enough. Research suggests that the incidence of permanent hearing loss doubles between birth and school age from that three. In a thousand at birth to about 6 in 1000 by the time children enter school. And that prevalence just continues to go up throughout the school age years, going up, up, up. So that is the reason why it is so important that children who are lucky enough to be in education or health care settings where they are hearing, can be screened periodically. Are there so fortunate to be able to have the opportunity to be identified?

Yeah. So now you can see we can't only screen for hearing loss at birth. We need to screen throughout early childhood because hearing loss can occur at any time. It can occur as a result of, illness, physical trauma or environmental or genetic factors. And this is often referred to as late onset hearing loss. And that just simply means that it's acquired after the newborn period.

It's commonly understood that language development is at the heart of cognitive and social emotional development and school readiness. This drives many of the

practices we see in early childhood settings. Think about how much emphasis is always placed on early language development. Counting the words children can produce, rewarding their expression, their expression using language. All of the emphasis that is placed on that. It's also important to note that hearing health is at the heart of typical language development, and that if we're going to be conscientious about promoting language development as a part of our commitment to school readiness, we should be equally conscientious about monitoring, monitoring the status of hearing throughout this early childhood and throughout that whole entire childhood period.

If hearing is compromised, then typical language development will ultimately be compromised as well. And we certainly don't want to wait for a language delay to manifest to then discover that the child has some degree of hearing loss. Yeah, exactly. And this is this is why we see so much emphasis is being placed on monitoring the status of hearing in young children. So programs like headstart, which for years served as models of comprehensive health and education educational programs for young children and their families, they've required hearing screenings for all of their children. Even before we have the excellent methods that we have now to do this.

You know, sometimes we use the term teary screening and we just skip right over it. We neglect to make sure that everyone really understands what it really means. As an audiologist, Terry, how do you describe what screening is or in this case, hearing screening? Yeah, that's a really good point, William. So screening can be thought of as kind of a sorting process. It's going to help us sort or separate out the children who are at risk of having a condition from those who are far less likely to have the condition.

So those in that first higher risk group will then be followed with additional steps, in this case implemented by pediatric audiologists and health care providers to, continue to refine that sorting process until we definitively can identify that small group of children that actually have a hearing loss. And I guess, just to be, blunt or upfront that we screen because we simply can't provide a full, comprehensive, ideological evaluation on each and every child. So screening followed by appropriate ideological assessment and intervention for the ones that didn't pass can ultimately dramatically improve the options and outcomes for children who are deaf or hard of hearing. When hearing loss is identified early, we can make sure a child has access to language. Yeah. And and children, you know, as a result, children who are deaf or hard of hearing, they're really thriving in these wonderful ways that used to be rare.

And so by providing hearing screening, you become part of creating these amazing and life changing outcomes. So let's take a, a chance, an opportunity here to look at several examples of children that have severe to profound hearing loss, who have had the benefits of early identification and quality intervention. You're going to see these children are learning thriving and they're communicating okay. So these two little girls are both considered deaf. They have hearing aids, and were identified early. Now listen to their communication with one.

We're having a party over here. We're going to make it okay. Are you guys talking? Oh, my. Okay. Be me now be let me is.

And what if she's not gonna let me. Come here and talk to me. Can you talk to me? No, I'll talk to you. Okay. And I look at you, and I look at you, and I'm here.

And how can you and I retract? Well, they certainly are communicating, which is the whole idea. Let's take a look at another, set of children. These children's parents selected sign language as their primary mode of communication. And let's watch them and how they communicate as a result of having access to language as early as possible. As a result of hearing screaming.

Now I'm going to show you one more example. And these two boys are deaf and have

what are called cochlear implants, which allow them to, experience hearing, and, listen to their communication abilities. Hey. I'm AJ. Yeah. Hi.

My name is Gibson. People are special in different ways. One of the things that makes me feel special is, Yeah, I'm deaf too. And that means that your ears can't hear easy. And I have special things there. So you are called cochlear implants.

They help us here. Cochlear implant is a big word. So I come to I. Those children remind us of our goal. We want to make sure that all children have access to language one way or another, regardless of whether they have a hearing loss. And the way to achieve that is by being fully committed to quality, periodic hearing screening.

Now, I want to make an additional point here, Terry, and jump in if you feel inspired. Not all children are going to be profoundly deaf. Hearing loss can range a full spectrum. Just like vision. Can vary in in all of us. So there can be minimal hearing loss, moderate, profound, all the way up to what is considered deafness.

And any degree of hearing loss can pose a disruption in a child's ability to hear, the sounds, to access language and to participate fully. So we're looking for that full spectrum. Not just those that are the more significant hearing loss. Yeah, as well said. And I guess just to follow up with that, then moving to screening, as we mentioned a moment ago or earlier in the webinar, oh, the acoustic emissions and pure tone audiometry are the recommended methods that we're going to be talking about today. Just want to make the point that the availability of these two methods is okay.

And pure tone screening really means that it's no longer appropriate for us to rely solely on subjective methods that have been used in the past. These, and these methods include things like ringing a bell behind a child's head or, depending solely on caregivers perceptions of a child's hearing. And don't don't get me wrong, and observations of a child's response to sound, especially the lack of response can be helpful, and we should pay attention to how children do or do not respond to their environment. But these sorts of observations don't constitute a hearing screening because they're far too crude and unreliable. And frankly, we can do so much more than that because of the current available technology. It's also important to note that although some health care providers have incorporated evidence based hearing screening into, well, child visits, this really is not yet standard practice, especially for children less than four years of age.

Yeah, exactly. I think, you know, we've all had parents that would that may report with a lot of certainty that their health care provider did perform hearing screening, but I think it's really important to understand and we really can't emphasize that enough. Especially as an audiologist, that routine examinations of ears by health care providers should not be mistaken as hearing screenings. It's precisely because the screening isn't yet happening consistently in that context that programs like yours are so important in, adopting hearing screening practices, because obviously, we have this increased recognition of the importance of monitoring hearing. And it's now feasible to do this in programs like yours and by people like you. So the take home message here is this unless a child's health or medical records include documentation of ear specific hearing screening results and the screening method that was used, we should never assume a hearing screening was completed.

Yes. And you know, another important point to remember is while, oh, and pure tone screening are highly reliable screening methods, they are not perfect. We don't they're there's no such thing as a perfect screening tool. And that means that there may be some rare conditions that are not identified through these screenings. So whenever a parent expresses concern about a child's hearing or their language development, even if the child's received and passed a hearing screening using one of these methods, that child should still be referred for an

evaluation from an audiologist. Now, before we go on, let me say one more thing about newborn hearing screening results, which we said, you know, the majority of children born in this country will have gotten when children enter your program or system or practice, especially during that first year of life, always be sure to ask for and collect the newborn hearing screening results.

If the results are anything other than a pass on both ears, you want to make sure that the follow up evaluation have already occurred. If you don't see evidence of that, you want to help the family circle back to their health care provider. To accomplish that. And if you're in a program that requires annual hearing screenings like Head Start does, you could go ahead and use the newborn hearing screening result for that first year of the child's life. But you wouldn't want to, but you'd want to screen after that. You wouldn't want to rely on that newborn screening result after that first year.

And that's because, as we said a moment ago, hearing status can and often does change over time. Okay. So now let's talk about the two hearing screening methods that are being used during early child, childhood. If you're responsible for children who are under three years of age, the recommended method is auto acoustic emissions, or OAE screening, which you see on the left here. And if you're responsible for screening children three years of age or older. Historically, pure tone audiometry has been considered the recommended method for this age group.

This is the headset screening where the child raises a hand or performs another task each time they hear a sound that's presented into the earphone. You see this method here on the right. Now there's growing recognition that, for a variety of reasons, as common as the pure tone method is been, it may not always be the most feasible method to use with some of these younger children. The research is showing that the 20 to 25% of children in that 3 to 5 age group can't be successfully screened with this methodology, because they just aren't developmentally able to follow the directions reliably. And that's really been our experience as well. So in those instances, OE screening will be the preferred method for these children.

So at a minimum, if you're establishing evidence based practices for 3 to 5 year olds, let's say, and if you're considering using pure tone screening, you'll also need to be equipped and prepared to do a EAS on that 20 to 25% who can't be screened with pure tones or alternative Lea. You'll need to have a means for systematically referring all of those children who can't be screened with pure tones. To audiologists who can perform the screening, which is often quite challenging to accomplish because there just aren't a lot of audiologists who have opened things in their schedules to do a lot of screenings. Yes. And so that's why we're seeing to simplify things, more and more, audiologists are recommending the use of EAS uniformly with all children three ages, three years of age and older. And they're doing that because it's quicker than pure tone screening, both to learn and to do and to actually implement.

And it's, but it's really it's far more likely to be a method that's going to work across the board with all children in that 3 to 5 age group that you'll be screening, and it's equally as effective. If you or your program are still undecided, or if you're reevaluating the method that you want to use primarily for children in this three and older age group, we encourage you to carefully, review a document that we've got on our website, Kids hearing.org that compares only screening and pure tone screening for this population. And it gives you some of the considerations that you'll want to make. In making that decision, one of which is checking in with your state to make sure that there aren't actual regulations that will, have to be followed regarding what, method is being used. Yeah. Good point William.

Now let's go ahead and let's start with odor acoustic emissions or OE screening, which again, as we said is the recommended hearing screening method for birth to three year old children. Now you see this tape, being depicted or happening in these photos on your screen. So if you're serving children birth to three, a

lady is the one and only evidence based method recommended by the American Academy of Audiology and the American Speech Language Hearing Association, which is also known as Asha. I want to just come back to this picture for a second look at the this the this set of pictures. What do you notice about where the screening is happening? They're being held by a caregiver.

Maybe that's a parent. They're sitting at a lunch table in their actual where they were already participate painting. They may be in an outdoor play area where the screener is met them as they drive by. They may be sitting at a table with, a toy. That's one of the beauties of OE is screening. We can go to where they already are happily participating.

OJT screening is the most appropriate method for identifying young children at risk for permanent hearing loss because first and foremost, it's accurate and it's feasible because it doesn't require a behavioral response from the child, thus allowing us to screen children under three years of age. That's quick and easy. Most children can be screened in just a minute or two, sometimes in as little as 30s per ear. It's a flexible tool, which is what I was just trying to point out, and that it can be used in a wide variety of environments, including classrooms, the home health care settings, and. Most importantly, very well even. Yeah.

No no no. I know this is where you like to jump in. Yeah. Just most important of all, it's, it's effective in identifying children who may have a mild hearing loss or loss in just one ear as well as those that have a severe bilateral or a loss in both ears. Now, in addition to, what we just talked about, it can also be helpful in drawing attention to a broader range of hearing health conditions that may need further medical attention. So a screening can also help us to identify children who have a temporary hearing loss as a result of middle ear infections or fluid.

But this isn't the primary goal, but it's definitely an added benefit of screening with this method. And as I said, take a look at these photos and think about what this represents as an opportunity for you to be able to screen children in a variety of settings, engaging various adults to help you with that process. The point here is that they aren't being pulled out into a separately prepared environment that is foreign or strange to the child. It does not have to be silent. It can't be loud, but it doesn't have to be a silent environment. And they're being screened in these everyday settings by those people, often that they already know, like their teachers or home visitors or health specialists.

So there are many elements to a screening that really help it to be, why it's become so, widespread in, across the country and outside of our nation as a way of identifying hearing loss early in, in life. Yeah, exactly. William. In fact, the the hearing screening works. It just works best when children are familiar and comfortable with the person that's doing the screening and where they can play with the toy, they can be held or even sleep while the screening is being conducted. And you heard that correctly.

We can screen them while they're asleep. So a lot of different ways to get screening done. So how about we quickly walk through Terry how screening works so people can understand why all the things we just said about it are even possible? Sure. Yeah. So, to start, we're going to conduct the we're first going to take a thorough look at the outer part of the ear.

We want to make sure that there's no visible sign of infection or blockage. And then after that we're going to put a small probe on which we've put a disposable cover. We're going to put that and insert that into the ear canal. And that probe is going to deliver a low volume or quiet sound stimulus into the ear. Now, a cochlea or that inner, snail shaped portion of the ear, if that's functioning normally, it's going to respond to this sound by sending the signal to the brain while also producing an acoustic emission. And this emission is analyzed by the screening unit.

And in approximately 30s or so, the result will appear is either a pass or a refer. And every normal, healthy inner ear produces an emission that can be recorded in this way. So let's watch an actual real time. Oh A is screening meaning this is unedited. This little guy is seated in the lap of one of his teachers, and the woman on the right is going to be, running the screening process. You'll see the unit in her hand here in a moment.

And then the length and the length of time it takes from the moment that probe goes in his ear to the time they have a result. Are you ready? So the screening is progressing now. Yeah. And that means they got a result. Either a pass or a refers.

They're going to always celebrate. They got a result that one. Day. Many, many. And there you see the device in her hand. She's already doing it now.

So like a lot of skillful tasks, competent screeners can make it look so easy. And it often is easy once you've been trained and have had a little time to practice to assist screeners and keeping all of the different steps of the screening process in mind. One of the many resources we've developed for screening is A08 Screening Skills Checklist, which you'll find on considering.org. That checklist guides the screener through the screening process like Terry just went over and it's helpful to have this checklist whether you're, a new screener or an experienced one needing a refresher, or if you're a manager and you're needing to do some kind of competency based observation for those that you're supervising as your screener. So we have tried to think through a lot of the resources that you might need for implementing, evidence based practice, as we've emphasized, evidence based practice is more than just a designated piece of equipment that you're using. We all have to be trained to use that equipment and to have a screening and follow up process built around that equipment, but you do need appropriate equipment.

So let's take a moment and look at this. We you should be aware that, oh wait, equipment is available from, a variety of different companies and in models that are designed specifically for lay individuals like yourselves, as opposed to the equipment for audiologists. They're they're these are the simpler and less expensive models. But, basic equipment currently costs. Terry, where are we now? I mean, like, everything is going up around \$4,000.

Yeah. Yeah. And you know, this this is probably a good point, a good time to make this point. When you purchase equipment there's going to be models or modules for these various equipment that's intended, as William said, for use by audiologist like myself that are designed for further diagnostic purposes. And these can be more complicated and they just add more expense. And you don't need or want these more expensive or complicated models.

So as non audiologist we want you to be very careful to not purchase more than you need. You want to be get the basic screener models only. Yeah. And that is such an important point. We have seen that mistakes happen. And some of the programs with whom we've worked, after they purchased the equipment and they discovered that they had bought something far too sophisticated that they didn't need.

Now, in addition to the cost of the equipment, each time screen somebody, there are those disposable covers that go over the probe that then gets inserted in the child's ear. And they come in a variety of sizes to ensure that when they're put in the ear, they're really snug. And you'll need to have a good selection of those different sizes. And again, there's a cost associated to that, about \$1 to dollars 50 for each one. And since you may not always select the right one on the first try, you could, especially at first, end up using several different covers for a given child. So we recommend that you do you purchase what?

Maybe about twice as many probe covers as you have total number of children to be screened. You'll figure this out as you go. Oh yeah. But you'll also, just

another quick point. You'll also need some adult size probe covers as well, because during your learning process, as well as on a regular basis, you're going to be testing the equipment on your own ears or on another adult. Just to make sure it's functioning properly before you screen children.

So you're going to want to need some adult size probe covers as well. When you meet with an equipment distributor or salesperson, they might mention that they can offer you training, and it's important that you understand that this training that they can offer you is rarely sufficient to meet the actual training needs. You may hear you're going to need. Yeah. In fact, you know, the training offered by the salesperson is good for acquainting you with the various functions of the equipment, but they're not going to train you on how to screen young children under a variety of conditions and, how to manage behavior or how to document your results, or how to communicate with parents, or what the follow up protocol, should be when a child doesn't pass. And I think this has been a point of confusion for some people.

So we just want to make this really clear. Yeah. You know, I really like to make this analogy. A car salesman at the dealership may in fact train you on the various functions of the car, which can really be helpful. But that person is not going to teach you how to drive or how to parallel park. And it's the same when purchasing hearing screening equipment.

By all means have them show you everything they can about the equipment, but you'll need another way to learn how to screen and. And as we all point out, one way is to access the online courses that we have on our website. But you might have an audiologist in your program, maybe they would work with the online course that we offer and do some hands on with you. That would be wonderful. Or maybe there's another service, but one way or the other, you want to make sure that you have comprehensive training and that everybody who is operating in the same program are receiving the same training. And so that's why a standardized training system that, like we have is, so valuable because that can be accessed at any time.

And this is going to be true whether you're, whether you're using o.R screening or the other method that we're going to talk about now, which is pure tone audiometry. So, just one of the resources that we've got on our website is equipment. And I'll show you again where the equipment information is. You'll see a variety of different kinds of equipment there. Two points. When you're looking at equipment, there are some disposable foam covered tips that are really like an almost one size fits all that some of these equipment types offer.

You want to look for that. And there are some equipment. There's some equipment available now. In fact, they're the ones you see in the middle of the screen right there. The Centenario and the OD X that offer both pure tone screening and o a is in one device. And that can be really, really nice for programs that are going to stick with the pure tone.

For those older kids, but need to have an on the fly ready to use alternative for that 20 to 25% that they want to do. O a ease with. And I believe at least with the Centenario, the price is no greater to have both pure tone and o a is. Isn't that what we heard, Terry? So that's my understanding, is that there's not an extra extra cost for the modules. Yeah.

So something to check out there. Okay. Pure tone screening. Let's talk about that. Terry, for those of you who may be considering pure tone screening or already using it, note that this is never recommended. Never for children under three.

As we mentioned, pure tone screening has traditionally been the most common method for, recommended for children 3 to 5 years of age. You'll probably recognize the method either because you already use it, or because you've had your own hearing screened this way in this procedure, musical note like tones

are presented to children through headphones, and children provide a behavioral response, like raising a hand when, to indicate that they've heard the tones. So pure tone screening gives us a good idea of the functioning of the entire auditory system all the way to the brain, with the child showing us a physical or behavioral indication that they perceive the sound. It's a relatively affordable method for, with the screening equipment costing more around \$1,000. The equipment is durable and portable, enabling us to easily transport and use it in a variety of locations. And like you, screening, a wide range of individuals can be trained to perform the pure tone screening procedure.

So let's let's go ahead and get, started and go through it really quickly. So just like to conduct pure tone screening again. We're going to take a look at the ear to make sure that there's no visible sign of, of infection or blockage. And if that ear appears normal then you as the screener or the or or myself as the screener, we're going to then instruct or condition the child how to listen for a tone and respond by raising a hand or placing a toy in a bucket, for example. Now this step can take some time. So we because we have to make sure that the child is able to reliably complete the screening task.

Once the screeners, that screener is observed that the child reliably responds to the sounds that are presented just like the screener instructed, that's when the actual screening is started. So, Terry, that part of the process can take up to what, about 3 or 5 minutes, right? You can. Yeah. Sometimes depending on situation in the child's level even more. But yeah, you're going to spend 3 to 5 minutes in that conditioning step okay.

All right. And then once we get started screening during the screening process that listen and respond game, we want to repeat at least twice at three different pitches on each ear. And we're going to know the child's response or their lack of response after each tone is presented. If the child responds appropriately and consistently to that range of tones presented each ear, then the child passes the screening. So there are two notable ways that pure tone screening differs from only screening, and that is that the process requires children not only to be cooperative, but to be full participants in the process, following directions and responding reliably as they were instructed. As we mentioned, that means completing an initial process that we referred to as conditioning, or teaching the children and then carefully determining whether you're actually getting reliable responses from them before even attempting to do the screening.

Yes. And then the other difference between pure tone and noise screening is that the screening itself is not automated, like only screening is. So instead, in pure tone screening, you as the screener will have to manually step through the presentation of each tone multiple times for each ear, and then record each response. Then, following a very specific protocol, you, as the screener, will determine whether the air passed or not. With and you can you can see with pure tone screening, there's considerably more potential for screener error to produce inaccurate results. And so that's why there's a need for a thorough training and oversight, because we want to make sure all screeners are adhering to the prescribed screening protocol.

Now here on your screen, you'll see an example of the actual screening steps that need to be documented for each ear as you screen. So through the training process, you'll learn all of the steps of the conditioning and screening process and all of the environmental conditions that need to be monitored and met as you complete a child screening. Then, based on these results, the screener will determine if each year passes or not. Again, the device itself does not, produce that result, as is the case with the screening. So you see, all of the each of those checkmark represents a specific action taken by the screener. Throughout the screening process.

So as we mentioned for the OAC method hearing, the kids hearing talk provides a set of implementation resources for curtailed screening as well. And similarly, there is a screening skills checklist for pure tone screening. And it walks the

person through the entire process and is paired with what the training process needs to include. As well as if you're monitoring the quality, pure tone screening. So that's just an example. We like to highlight one of our resources that, can really ensure that evidence based practice is being, used in a given program.

Again, underscoring that while appropriate equipment is a part of evidence based practice, evidence based practice means that that equipment needs to be used according to prescribed standards. And that's the thing that we want to make sure everybody understands and why training is so important. So we've given you an overview of the two methods. Regardless of which method you use, you will eventually have a child who doesn't pass the screening on one or both ears. So what that in order to be evidence based, your screening process has to include a follow up protocol for when children don't pass. We don't want to just screen children and not follow up.

What would the point of that be? We have to emphasize that our screening efforts are only as good as our ability is to systematically follow up on children who don't pass the screening on one or both ears. So let me give you a quick walk through of the protocol, and then you can, go have a look at it more closely on our website after the webinar. The percentages that we'll give you here come from our data on over 10,000 children, birth to three years of age, on whom each screening was used. So the the stats we're about to give are related to that scenario. We expect children in the 4 to 5 age range to have slightly better pass rates because they tend to have less ear infections, which can sometimes cause a child not to pass initially.

And they are. That older group is also easier to screen because they're more cooperative. So let's take a look at the protocol. 100% of your children will receive an initial OAC screening on both ears. Now we expect about 75% will pass on both ears right off the bat, and will not need any further follow up. However, about 25% will not pass on one or both ears the first time they're screened, and they will need a second screening within about two weeks.

So if you're screening 100 children, they'll be about 25 that you'll have to go back and screen again. I think the interesting thing at this point, is, you know, a good number, a good many of the children who didn't pass at that 25% that didn't pass that first screening will pass. The second screening. So that's going to be about 8% of the total number of children. Screen will not pass the second screening and these children will be need to be referred to a health care provider for a middle ear evaluation. Once any middle ear problems have been resolved and medical clearance is given, you'll then screen that small number that 8% eight out of 101 more time.

And now we'll expect less than 1% of the total number of children being screened will not pass the third screening. And these are the children that will be referred to a pediatric audiologist for a complete, diagnostic audio logical evaluation. Having talked about this in hundreds and hundreds of Head Start programs across the country and other programs, this is the point at which some people's eyes start to roll because they're like, we have to do multiple screenings. You we gotta emphasize that it's on a very small subset, that need the secondary and, and third screening and that this protocol has been used widely by many different kinds of early care and education providers and found to be feasible. And importantly, that has led to the identification of children with permanent hearing loss. And that's our goal.

It helps children get the medical and ideological attention they need. And by going through this protocol in this stepwise fashion, it minimizes some of the unnecessary referrals to health care providers, like, for example, if that first 25%, rather than re screening them a second time, we're all referred, right off the bat to a health care provider. You'd have a lot of health care providers unhappy with those referrals, because if you went to weeks, you'd find that only 8% of them really had an enduring problem that needed to look at. So this is something that is explained in much greater detail in our trainings. But

we want wanted to give you an overview of what follow up needs to be, regardless of whether you're doing OAC or pure tone screening. And this is just another illustration of the screening, and follow up protocol, with the overall process being complete when one of two conditions has been met, and that is when the child passes on both ears at some point in the process, or they've been referred to an audiologist and you've gotten the audiologist results.

Terri, there's an exception to the protocol, isn't there? There is. And it's one that we reference a little earlier in our conversation today. And that's whenever a parent or a caregiver expresses concern about a child's hearing or language development, that child should be referred for an evaluation from a pediatric audiologist. And here's the key thing. Even if the child passed a hearing screening, but those concerns persist.

They need to be referred. And this is true because if you recall from what we said earlier, hearing screening methods are not 100% accurate or perfect. So to be on the safe side, whenever there's an explicit concern about hearing or language, go ahead and make a direct referral. And of course, you can and probably ought to still screen the child and send that result along. But make the referral regardless. When a concern about hearing or language development has been raised.

So let's return to our website. Remember I said this is the the most important thing for you to remember today is kids hearing your ID, because all of the information we just covered can be found there. Again, this is where you'll find the recording of this webinar and a lot of other resources there. So let's do a quick review again of what you'll find here. You'll find our planning resources. Do you see there in that planning resources.

Where to find an audiologist, some helpful, links to audiologist resources and the screening equipment information is under that first heading of planning. Then in the next group you'll see, information on how to access the comprehensive, online training that's available there for both methods. In the next group, you'll find lots of resources pertaining to building and managing your screening program with practical tools like letters to parents. Documentation forms. The protocol that we just went over really quickly is reviewed again there. As well as letters to parents and even the scripts of what to say along the way, and then follow up resources are there.

So take a good look at that and get acquainted, remembering that we really we have worked with. I can't tell you how many people across the country over the last 25 years. And when somebody came up with a good letter or a good form or a tool, with their permission, we adapted it and have been able to share that with you on our website so that you don't have to recreate the wheel all of these things have been, co-developed by people very much like yourselves in programs very much like your programs. So you may not have ever really thought of it quite like this, but monitoring the status of children's hearing is central to quality early childhood programs that are committed to language development and school readiness. When children with hearing loss are identified and then connected with the intervention or resources that they need, they can thrive. And you can have the satisfaction of knowing that you are a part of that outcome.

I know there are many, many different things that you do to support children and their families, some of which are more tangible than others, some of which you never quite know what your effect was. But with regard to some of these health screenings and particular hearing screening or vision screening, you can see an actual tangible outcome on those cases where a condition was found and be assured those conditions can be life changing, like forever. Just like you see with these children here. So we want to open up our questions, box here so that if you have some questions on things that we didn't, address or that you'd like us to talk about again, we'll do that. I'm looking for the. Do you want it in the chat box or.

Oh, okay. The Q&A field. Let's see. Could or why am I not seeing the Q&A field? You know, I'm not sure I see it on my screen. I just enabled it, and it's to the right of the share button.

Yep. Down on the bottom. Yep. I've got. It up. While you're doing that, one question that we get frequently, William, is, can we screen with children with tubes?

And, you absolutely can and should screen with pea tubes if they're, doing the job they were placed to do open and functioning, then you should be able to screen. And so, go ahead and do that. One note though, is there some, couple of pieces of equipment that need an adjustment when you initially turn them on so that they'll calibrate to screen with pea tubes that go ahead and do that. So I, I've, I've got it now, Terry. Okay. Just one of the questions that is more of a logistical question for everybody here at this webinar, as is being recorded as we speak, and it will be on our website in the next couple of days.

Kids hearing.org where you can review it again, you can fast forward, you can go back to any areas you need to think about and review again, or share with people that didn't, attend live with us today. So by all means, remember that as you, go forward from today. Here's a question, Terry, that reads, I've had a few times where the ears are dirty. How would you get how would you gently direct a parent to clear the Air Force for testing? That's a really great, great question. And we're, we are often concerned about, you know, putting things in the ears that actually push the, the earwax further in the canal or could damage something.

So we, we really, at most asked them to use kind of a, warm, damp, washcloth and clean the outside of the canal, but not to stick anything in, and then one of the things we've learned is it may take an extra probe cover tube, but often when we insert the probe, there's wax, they pull it out, it pulls the wax out. We change that probe cover, put that in, and we're able to get the. So if you pull wax out with, with the probe, change that probe cover. Try it again. Often it'll be just enough. Wax will come out with that probe that you'll be able to get the screening done.

I want to also mention one thing. I've noticed that some of your questions are indicating that some of you are already doing hearing screenings with one or both of these methods, and and that's wonderful. The other day last week, we did a webinar that was intended for those who are already underway, screening, in which we address some more advanced questions. So and that was recorded also and is available on our website. So if you didn't attend that you may want to go and review that webinar to see if there are other, more advanced tips that we have offered in that webinar. Some of them are kind of suggested in, in some questions we're seeing here.

One of the, attendees today has commented that she has successfully completed a screening during nap time, when working with a child who was resistant to having something put in their ear. So that's, validation, that. Yes, in fact, that does work. And it's a nice feature of being able to do a screening. That I might just jump in, William, and say that not only have I done that, but sometimes, the parent has been bringing the child and they, they arrive, the child's asleep in their car seat. I've jumped into their car while they and screened the child, while they've driven around the block so that we didn't even wake them up.

We just tried to do it right there while they were sleeping. So that that often can work well. So here's a question is a family's primary health care provider. And okay, first step, if a child does not pass two consecutive screenings or should we refer directly to an audiologist? Now this is a question that is addressed in the full training. But I'll let you answer it here.

With any qualifiers that you might want to add. Yeah. So, if you recall, during the webinar we talked about our protocol, we would, we would conduct our first screening and we'd have that 25%, and then we do a second, and now we're down to

that 8%. And that's when we would refer for that middle ear evaluation. So with this question, if they didn't pass two consecutive screenings, we'd be to where we would want to refer them to their health care provider to do a middle ear evaluation. And then if that comes back clear, we risk screening them again and they still don't pass.

That's when we refer directly to the audiologist. And you see that illustrated on your screen right there. And I'll just say a little bit more about why the protocol is this way. This is explain more in the, in our training. But, you know, the majority of children that don't pass two consecutive screenings don't pass because they have a middle ear problem that is not a permanent problem and that a health care provider can help address. So, and that an audiologist is not empowered to treat.

So if there's an ear infection, they have to go to the health care provider to get that addressed. But having it addressed only eliminates the thing that was preventing the child's hearing at from the inner ear to be screened. So we take care of the middle ear problem, and then we always re screened once we know the ear is healthy and ready to be screened. And if they still don't pass, that's when it makes sense for the audiologist to come in to play. So that's why the protocol is designed with that particular flow. The next question is, I work with the birth to three population.

Sometimes we have a great deal of difficulty with some kids and they 0808 EAS do you have a recommendation for a unit that has graphics that are more engaging for children? Okay, yeah. So maybe we're more of them. Do in. Yeah. Let me go grab we're.

Going to pull up that the slide I think it's number 62 that has. So right there we're just going to look at that first one, that blue one on your screen, the Madsen Alpha. It has some, graphics such as a race car, things like that. The two above it will have, some progress bars and balloons and things that go, the first row does not. There's there's not a lot of interesting graphics at all there. The green row, like I said, will have a little bit and then that, that blue unit right there in blue probably has the most graphics as far as interest for a child.

Yeah. All right. I see the next question says to confirm the OE device does not need to be calibrated or linked to an audiology assist. So I'm going to take those as kind of two separate questions. They do they do need to be calibrated. We recommend an annual calibration, which is consistent with the manufacturer.

And that's simply just to ensure that the sound signal and the recording of the emission is calibrated and it is measuring accurately. You actually recommend to, calibrate your audiometry for pure tone testing or screening? Annually as well. And then the link to an audiologist, the equipment itself. If you have a consulting audiologist, I think it's always great to have a piece of equipment that that audiologist is familiar with and can help you troubleshoot and train you on. But there, there, there doesn't need to be, an approval link or anything like that as far as your ability to use that as a lay screener.

Terry. Why we're we're on the topic of equipment. There's a question here that there are several, in fact, about are there some OAC, devices that are quicker than others or that work better in noisier environments? Are they all the same? Yeah, that's a really a great question. So while the the technology to stimulate, and record the emission, they're all using, the same technology, the way it goes about it can be different.

And what I mean by that is it's usually the design of the probe and how well it fits in the ear. That's going to make the difference. So there are some that have, a probe design and things that, we have found in our experience, are faster, quicker or tend to be more stable. And, again, when we look at this role here, this second row in green, these two devices here tend to have a very stable probe. And they have a great foam tip that fits well and stays stable in

the air. Now, some tips are available for a lot of the other equipment as well.

But not all of the probes and probe tips are created equal. So so there I would, trial some of these and, and see what you think the plastic probes, this, this great, this. Sorry, this yellow row here primarily, comes equipped with, little, plastic probe covers and those cases. You've got to make a choice. Pick the right one. We want to go as large as possible.

That would fit in the air. And, and insert that probe. It may not be as stable or in our experience, we found the foam tips to be much more stable. So one recommendation is to, try to use the foam tip if it's available. And then second, you can look at some of these pieces of device to where the probe tends to stay more stable in the ear with child movement. So, I want to point out that, the question of how what features matter the most to you are a question for you.

Who are doing the screening, not for the person who's buying the equipment. And so you don't want to just go only with, well, what's the cheapest device that we can seem to get our hands on as though they're all the same. So we really recommend that those of you who can influence, that choice process to get involved, talk to the equipment salespeople yourselves. Get your hands on a device, try it out. If you're having frustrations with it, find out if there is a solution to that frustration, or if you want to try a different device before you go and purchase, something that's expensive. So, and talk to others who are in the field.

If you're in Head Start, my peers is a great on online, way to reach out to others who have experience with a screening. And can give you recommendations. But I mean, and we don't, you know, stand behind any particular device. But we have highlighted today some of the features that, we think are really, helpful. So, take a look at those that, that we've been talking about today. Let's see if we can tick through some of these questions.

Terry, that are most related to, what you, what people need to do before they're doing, engaging in screening. Some people are asking if there's an alternative to a screening, if children are not able to complete a screening or, you know, if there's a risk factor questionnaire, if a child, if you just can't screen a child, Terry, but you've tried with, okay is what do you do. Yeah. We go ahead and refer them for a diagnostic evaluation. At that point, the very fact that we've not been able to, successfully screen them actually sorts them into that risk bucket. And then, you know, specifically with, risk factors or questionnaires, that, we have done away with that, at all levels of, looking at intervention for hearing loss from the Joint Commission on Infant Hearing just across the board, because we want to have an objective measure of hearing.

If somebody is asking here if there's a difference between the results you get why a child is sleeping or when they are awake. Nope. Nope. With our screening, we will measure that emission. And it should be the same as if they're awake or asleep. So, no, no difference in in those results.

Yeah. Great. I may have missed this. This person says who typically screens at early head start. Our head starts. Our experience is that it could be a wide variety of people, often the health or disability specialist.

Nurses, teachers. It could be a wide variety of people in those settings that are doing the screenings. The website that you're looking for is and maybe, gunner, you could put this in our, our, our chat is kids hearing.org. It will redirect to early childhood um.org but it kids hearing.org is where you want to go. Here's one Terry. My program, which is birth to three, has screening equipment that screens, the timp and E.

I find the timp frustrating because it often comes up as a refer even when the OAC passes. I would like to drop the timp screening as a part of our process. Is there any insight you can provide on the screening of Tim's? Oh, yes, and we've

learned this through that. 10,000, kids, in our study that William referenced earlier. So, just to clarify, timp means, Tim pedometer or it's a, it looks at middle ear function.

Now, remember earlier in the presentation we talked about other, ear health related conditions that we may identify using? Okay. So while it's not the primary thing we're screening for, we often identify that. And then the protocol that we walked you through addresses that as well. So we don't we do not use tympanum through screening as part of our protocol. Because when you looked at our 100 kids and then we had 25% that, that, referred and then we're screening, we had eight.

We sent them on for middle ear evaluation. The reason those numbers change is in that 25%, if there was middle ear fluid, etc., that's resolved. They've now passed. We have the 8%. We send them on for medical clearance. That middle layer gets addressed.

And now we have that 1%. So our the use of our E's and our protocol we feel is actually addressing those, things that the, the temp would be catching as well. But we don't have to use time and expense to do it. This is a question that is further down the pike for those who are already involved, but it reads that we have parents who, when told that their child have not passed, get mad or defensive, refusing to follow up on it. Do you have any suggestions about that? I, I acknowledge how hard and challenging that can be.

And sometimes, you know, I've had to take a step back and a big breath and then, move to educating. Parents especially found it helpful if I compare hearing division, because they can say, well, I dropped, something on the floor and they started I know they can hear, I don't need to follow up. And, and it's it's helpful to let them know that that, hearing impairment or hearing loss, excuse me, can, be in varying degrees and, varying pitches or sounds. And so, making that comparison is helpful. And if I can hand walk them right through that referral process, like sometimes, I can offer to make the appointment, make the call, help them with it. But I acknowledge the challenge that can be in a found that sometimes I have to take the time to step back and educate before I, push that follow up again.

Oh, go ahead. Terry. Oh, I was just going to ask if you had anything to add with him. No, no. That's great. Do we know of any available funds or grants that can be obtained to help purchase OAC equipment?

Well, let me tell you what we do have, we have experience with people getting grants and funds from local charitable organizations like the Lions Club, CERT, Toma, other local fraternities that, take an interest in young children. But Lions Club and they're certain the club are the two that come to my mind. We also on our website have a grant template that you're welcome to download and use, in which we've written the request for you to submit to a local charitable organization or a small grants opportunity. So take a look at that information under equipment and big picture resources. And know that if you're at the head start, it is OAC equipment and supplies or pure tone equipment and supplies are all considered allowable expenses to be written into your grant funding. So I hope that's somewhat helpful.

But we don't particularly have grants. We need, we need our own grants to do this work and are also experiencing some of those challenges. So, I hope that's helpful. Let me look through here. We're getting close to the bottom of the our, Gunnar, our great tech support is putting a link in the, chat field, for you to complete a quick evaluation for us that will also generate a certificate of completion. And, attendance.

I mean, certificate of attendance for today. So if you'd like to document your participation in this, please, do so. And, and then I think the last question is, and we didn't get to everybody. Feel free to email us through our website. At kids hearing.org, the contact us button there. If you have questions you

really love to have us answer.

One of them is how do we get our system to move to this, to evidence based practice, away from checklists and ringing bells? Yeah, that's a great question to answer to. And, Terry. Yeah, I. I'm, I'm just smiling because it's hard to think that in today's day and age that we're still addressing this, but obviously, we are and William and I have seen it in use over the years that we've been doing this. But, you know, the the short answer to that is that it's an that's an antiquated old approach.

We have these objective evidence based methods and it's standard and, and, it's it's the standard, you know, care that we should be providing and we need to bring our, the care we're providing up to the standard of practice. On our website. We have some short videos and we also have some handouts that are intended for this very purpose, to educate decision makers around what current practices are. And that underscores not only why these methods are important, but why it's important in the first place to to do everything we can to identify children who have compromises to their hearing ability and, you know, to give anybody a parent, a teacher, anybody, the impression that hearing has been screened when we have not used a an evidence based method, is to really do a disservice to that child because then they run the risk of being misdiagnosed. No. Well, we've ruled out hearing.

So why isn't this child learning or responding the way we would expect? And that is how we've seen children get misdiagnosed with a range of other conditions when hearing hasn't been appropriately ruled out or ruled in. So those are some of the arguments. And and again, we have resources on our website, that are simple informational resources that need to go, to the, the decision makers or give them the link to this web recorded webinar and ask them to review it and then have a conversation with them. Thank you, everybody, for your attention to this topic today, for hanging in there with us and for all that you do to support children in your program to succeed. Thank you, Gunnar, for your help, as always, as our tech backup support.

Terry, as always, thank you. And remember, everybody, the this webinar has been recorded and will, be able to be reviewed, shared, again on kids hearing.org in the next couple of days. Thank you. Thank you all. Oh, and check the chat for your link to the questionnaire that will generate your certificate of completion or attendance today.