Building on Your Previous Experience and Training with Evidence-based Hearing Screening Practices for Children Birth - School-age

August 26, 2026

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So welcome, everybody. My name is Will Eiserman, and I'm the Affiliate Associate Director at the National Center for Hearing Assessment and Management, known as. NCHAM. NCHAM is housed within the Institute for Disability Research, Policy and Practice. at Utah State University, which is federally funded. As a university center for excellence in developmental disabilities and disability research. Um, with a critical nationwide focus.

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Since about 2001, I also served as the director of the Early Childhood Hearing Outreach Initiative, which became known as the ECHO Initiative and for. About 20 years, the ECHO initiative served as a. National Resource Center. On early hearing detection and intervention, with a focus of supporting initially. Early Head Start and Head Start program staff in implementing Evidence-based hearing screening and follow-up practices. We're delighted to be able to continue to make use of our resources that we developed during the ECHO initiative, as well as.

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learning opportunities like this one. To staff not only from Head Start programs, but to anybody in early care and education settings who can put these to use. Including those of you who are in early intervention programs, healthcare settings, schools. Private healthcare practice. Um, all of that. So, um, we're really happy to be here today, and I'm joined today. Um, by Dr. Terry Foust, who is a pediatric audiologist and speech-language pathologist.

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who has served as a consultant, trainer, and friend to me and to the ECHO Initiative. Since our very beginning, in the early 2000s. So, thank you, Terry. Oh, thank you, William, and good afternoon, everyone. As William said, you know, he and I, along with other ECHO team staff and many local collaborators, we've provided training in almost every state with thousands of staff from Early Head Start, Head Start American Indian and Alaska Native and migrant Head Start programs, as well as a lot of other early care and education programs in schools over the years that William mentioned.

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So today's webinar is primarily intended for those of you who have already. had some experience implementing evidence-based hearing screening for children, either in the birth to 3 age range, The 3 to 5 age range. Or older, or both. A number of you submitted questions in advance, and Our responses are incorporated into much of what we plan to present to you today. So, but we'll also have ample time, we hope, to take some additional questions of other things.

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come up during our presentation. We did notice that some of the questions we received that we always receive were from folks. For whom evidence-based hearing screening is new. And if that's you, by all means, you are welcome to stay throughout today's webinar. But we also want to alert you that tomorrow on August 27th. We're having an introductory webinar, That will present the topic of evidence-based hearing screening. Throughout the birth to five and older age range, but starting at the very beginning for.

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Newcomers. So if that's more you, feel free to come tomorrow that you see on your screen here. A link to register for that, and it's at the same time as this one is. Just tomorrow. So, if you have introductory questions, that's the webinar where. We're going to really be focused on those things. Today, we're going to organize our time around many of the questions that you submitted, We're going to present some information about each of these topics.

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Um, we're gonna start with a. With a brief overview for our newcomers, Um, on the purpose of hearing screening and what the recommended methods are. We'll then review the screening and follow-up protocol that applies to whether you are using. OAEs, or pure tone audiometry. And no matter what age child you're screening, We're then going to turn our attention Um, to the review of issues pertaining specifically to pure tone. Next, we're going to address otoacoustic emissions, or OAE screening, and some helpful hints for screening With that method. And then we're going to delve into your questions about children who may be challenging to screen and.

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Other issues that you've raised. We're going to wrap up. Um, with, um, a review of. Our resources that we have online and. Address any remaining questions that you might have. So that's the sequence that we're going to follow today. And you can follow along that sequence in the sidebar as we progress. So… Let's just get… dive… dive in and get started. Um, let me do one other thing. I'm gonna turn off my video so that you can focus just on The more pleasant things to see here.

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So, the work of the ECHO initiative is based on the recognition that each day there are children. Who are deaf or hard of hearing, being served in various early childhood school and healthcare settings. Often without their hearing-related needs being known. At all. The hearing screening is often thought of as the invisible disability or an invisible condition. So the question we're left with is, how can we reliably identify which children have normal hearing?

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And which may not. And you know the short answer to that question is that early care and education providers can be trained to conduct evidence-based hearing screening, just like you see depicted in these photos here. Now, the ultimate outcome of a hearing screening program is that we can identify children who are deaf or hard of hearing that haven't been identified previously. Now, you'll recognize the procedure on the left as otoacoustic emissions, or OAE hearing screening, and that's the recommended method for

children birth to 3 years of age, and it's really increasingly recommended for children ages 3 to 5 as well Now, on the right, you're going to see the procedure pure tone audiometry Hearing Screening and that's historically been the most commonly used method for screening children three years of age and older, in which you'll still see probably in many early care and education settings and providers using

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Now, as William mentioned, we're going to talk about both of these methods today, but keep in mind that the hearing screening process does not diagnose a hearing loss, but it will identify those children who need further follow-up evaluation, either by a healthcare provider or an audiologist, with that ultimate aim of diagnosing a hearing loss if in fact it exists And then we're able to connect those children with intervention services that they need. So your screening process is really that really first important step in the whole process.

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Now, I'm going to make just a little aside here, because I didn't mention this to begin with, and it's important. You're gonna have an opportunity to ask us questions once we've wrapped up our comments, but we're not going to try to track questions. While we're also presenting, so… Um, the chat field won't be open until we're completed. This webinar is also being recorded, so don't worry, if something takes your attention away.

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It will be recorded and posted on our website in the next couple of days, so you can go back and review it, or You can also share it with people that weren't able to attend live, so keep that in mind. And then at the end of today's webinar, We're gonna complete with a short little survey of how we did. That will also generate a certificate of attendance for you if you. would like to be able to document your participation in today's webinar. So, I neglected to mention those things before starting.

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So, some of you have asked us about How we can be more effectively encouraging to parents. To follow up when a child hasn't passed a screening. I mean, that's a really typical, common challenge. we all face. Now, one way. is to share information about the incidence of hearing loss. And the fact… that a child's hearing ability can indeed change over time. At any time, often without us even recognizing. You know, about 3 children.

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In a thousand. Are identified with permanent hearing loss. At birth. Deaf or hard of hearing. Now, most newborns in the US are now screened for hearing loss. Using evidence-based screening methods. Most, even before leaving the hospital. But screening at the newborn period isn't enough. Research suggests that the incidence of permanent hearing loss. actually doubles by the time children enter school. to about 6 in 1,000. And that incidence continues to go steadily upward.

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Throughout the school age period, to about 50 in a thousand, During the school-age years. And so that is an important set of facts. To be able to share with parents and your colleagues. To garner support for your screening efforts. And to reinforce the importance of follow-up. So, hearing loss may be invisible. But these kids need to be identified and need to be seen. So that they can thrive. So what William just said, what that really means is that we can't only screen for hearing loss then at birth, or even just one time after that. We really need to screen throughout childhood because hearing loss can occur at any time. It can occur as the result of illness It can occur as a result of physical trauma or environmental or genetic factors And this is often referred to as late onset hearing loss, simply meaning that it's acquired after the newborn period. And again, similar to the subtle changes that you might see in vision that it can occur for any of us, a child can experience a change in hearing ability that we want to identify so that they have full access to language and all of the information that they're being exposed to as they learn and grow

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Now, all of this information is on our website as well as is a letter for parents that you're welcome to use. But being able to fluently discuss or articulate this with parents and your colleagues, that can strengthen the overall support you receive for your screening And follow-up efforts You know, any conversation we have about screening and follow-up. should always begin with a reminder. that screening methods aren't perfect.

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And that whenever a parent or caregiver expresses a concern about language or hearing, Children should be referred for a more thorough evaluation, and that's true even if the child passes a hearing screening, right, Terry? And, you know, that's true even with the highly reliable hearing screening methods we're talking about today. Yeah, absolutely, William. And to go along with that, we'd like to acknowledge right up front that for any number of reasons, there's going to be an occasional child that you just can't manage to screen. So after you've tried everything in your repertoire, everything you can do, and you have a colleague also try as well if possible Then you're going to be faced with that dilemma of what to do. And so here's our recommendation about that question, which some of you have raised, and that it's this. If you aren't successful screening a child, then we need to refer the child to someone who can. And that's in most cases, going to be a pediatric audiologist

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Now, keep in mind, sometimes the children that you may have difficulty getting screened are going to be the exact very ones that have a hearing loss, so we really can't skip them and just try again next year. So, we just mentioned having a pediatric audiologist in the Now, a pediatric audiologist, if you don't know, is a professional who specializes in the diagnosis and non-medical treatment. Of hearing-related and other disorders associated with the ear.

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And the auditory system. With the pediatric part of their title, meaning that they specialize in children. So, having access to a local pediatric audiologist. can really be helpful. They can not only be helpful for referrals, but they can help you with equipment questions you might have. Consult with you about specific children who aren't passing your screenings. And importantly, maybe one of your resources when you do, in fact, need to refer a child.

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For further evaluation. On our website, which is KidsHearing.org. You'll find a. area that says find an audiologist. And there is a link there that should be helpful to you. In fact, One question that is a perfect question for a pediatric audiologist and. Why some people submitted questions about this. is whether you should screen children. who, let's say, already have PE tubes. So, Terry, let's just answer that question right now.

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We have a pediatric audiologist right here, that's Terry. So, Terry, what do you say? Do you screen children that have PE tubes? So, yes, William, you absolutely can. Not only you can, you should screen children who you know have PE tubes. It's gonna be one way to find out if the tubes are actually doing the job they've been put in to do. So children with PE tubes that are working should pass hearing screenings if the rest of their auditory system is functioning normally.

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So for those of you that are using the OAE method, you're going to want to look at your equipment manual, because with some equipment, you might have to push an extra button to adjust the setting for screening an ear that has PE tubes. So you want to be sure to check that out with your individual piece of equipment. Like I said, some equipment does require a temporary adjustment, while other brands and models do not. Then for those that are doing pure tone, you're actually just going to complete the screening just like you would for any child. So, yes, you can and should screen children with PE tubes.

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And the important point here is that you're screening them. to identify that they might possibly have another ear-related condition. Um, and you're just making sure that the PE tubes are functioning along the way. Yeah, yep, exactly. So, we have two screening methods we want to talk about today. By way of big picture, if you're responsible for children who are under age 3, The recommended method is absolutely OAE screening, which you see on the left here.

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Now, if you're responsible for Screening children 3 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 children. Um, where the child raises a hand and performs some other task. Each time they're presented with a sound, Uh, through their earphone. And you see this method used on the right here. Yeah, and you know several of you have asked about why some programs may be no longer using pure tone audiometry with the 3 to 5 population, or even those older, and are switching to OAEs. And that's because there's growing recognition that although the pure tone method has been the most widely used method historically It may not always be the most feasible method to use with some of these younger children. In fact, the research has shown that 20 to 25% of children in that 3 to 5 age group can't be screened with this methodology, with pure tone methodology, because they just aren't developmentally able to follow the directions reliably

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And that's really been our experience as well. So in those instances, then OAE screening is the preferred method for these children. And as we emphasized a moment ago, our goal is we want to screen every child, even the ones that we find challenging to screen, right? Right. So, at a minimum, if you're establishing evidence-based practices for 3- to 5 year olds or older. And if you're using or considering using pure tone screening.

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You'll also need to be equipped and prepared to do OAEs on that 20 to 25%. who can't be screened with pure tones. Or, alternatively, you'll need to have some means. for systematically referring all of those children to audiologists, who can perform the screening. And frankly, that could be a bit challenging in its own right if we're referring 20% of the children to an audiologist for screening. Yeah, and I guess, you know, really to simplify things, more and more of us as audiologists are recommending the use of OAEs uniformly with all children three years of age and older. And that's because it's quicker than pure tone screening both to learn to do and actually implement. But really, it's far more likely to be a method that's going to work across the board with all those children in that 3 to 5 age group and older that you'll be screening. And it's equally as effective

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So, if you or your program are still undecided about which method to use primarily for those 3 years and older, We encourage you to carefully review a document that we have on our website that compares OAE screening and pure tone screening for this older group. Now, here's one really important note. Some states… It may be yours. Have regulations about what methods. are supposed to be used based on age. requiring pure tone for children three and older, or at least as the primary method, what you should try first.

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So, you need to check with your state if you're considering OAEs. For that 3 to 5 age group and older. Um, frankly, those rules are on the books, largely because. They were written before OAEs were really much of a question. So, um, but you can check your state regulations by… Contacting your state's newborn hearing screening program. And you'll find a link to your state office on our website as well. Now, on another note, We had a question about whether there are any other recommended evidence-based methods that could be considered. Terry, anything other than OAEs or.

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Pure tone audiometry that. People could consider as an evidence-based hearing screening method. You know, William, there's not really the answer to that is no. There are no other recommended evidence-based methods for the populations in these age groups that we're screening. You can augment these methods with parent questions and your observations of a child, and that's absolutely important to note But those type of things do not and cannot stand alone as hearing screenings So a parent questionnaire about their perceptions of a child's hearing does not constitute.

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an evidence-based hearing screening method. That's really important to note if anybody's being encouraged to do that. Yeah, absolutely. Okay, so we use Our evidence-based methods, which are key to fulfilling the

purpose of hearings of the hearing screening effort. But, you know, our very best screening efforts are only worthwhile. If we follow up effectively. So, let's take a good walk through. of the protocol for following up.

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And see if you have any questions about that. You know, and William, if you don't mind, I'd just like to, before we do, just say one of the really great things to remember is that the steps of this follow-up protocol, they're going to be the same, regardless of the screening method that you're using And regardless of the child's age Yep, and that protocol that you see on your screen right there. That's the whole thing. And you'll find images of this on our website if you need it, or you can take a screenshot. We're going to show it again here in a moment.

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But, you know, there's one main rule to remember. The screening and follow-up process is complete when either the child passes the screening on both ears. Or, the child receives an evaluation from an audiologist, And you've obtained the results. Those are the only conditions under which you should consider. A screening process complete for a child. So, let's walk through the steps. to get there. So here's how the screening and follow-up process unfolds.

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Keep in mind, we're always talking about screening both ears, and that they each need to pass. this criteria in order for the child to pass overall. So, if an ear passes the screening, Right off the bat… The process complete for that ear. Pretty straightforward. If the ear doesn't pass, We're… we can't be absolutely sure why that is. Yeah, William, you know, sometimes an ear may not pass due to screener error like it might be my error as the screener or a temporary condition like a head cold. So it wouldn't usually be practical for every child who doesn't pass this first screening to be referred to a healthcare provider or an audiologist In that birth to three age group, we can see that up to 20 to 25% of the children that we screen with OAEs not pass on at least one ear that first time that we screen them. Now, several of you have asked about how a head cold or congestion can affect screening outcomes, and this is where we might see that. And

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When we see that, you'll see in this protocol here that we're going to re-screen them and you'll be able to see that most of them will pass at that time. So, and Terry, if you happen to know, like, let's say you're planning to do a bunch of screening of children. But you also notice that there's a big, heavy-duty cold going around. Maybe you just don't even start the screening that week, right? Oh, yeah, no, absolutely. If we've got a virus or colds that are kind of going through the program, if possible, it might be great to adjust your screening back a couple weeks so that we can just avoid the impact of that temporary condition Yeah. All right, so moving on, if an ear doesn't pass the screening.

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Instead of making an immediate referral to a healthcare provider or audiologist. We wait about two weeks, and we screen that ear again, just the ear that didn't pass. And I emphasize that because the one ear that passed the first screening. We don't need to screen that ear again. We know it passed. That ear is done. Just the one that didn't already pass is what we need to re-screen. Now, if the ear passes the second screening.

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Then the screening is considered complete for that ear. If, however, the ear still doesn't pass the screening. This is the point at which further evaluation is needed. We expect about 8%, maybe a little bit fewer as children get older. won't pass this second screening. And we'll need to have their ears checked by a healthcare provider. Using what we call tympanometry or pneumatic otoscopy. Yeah, you know, sometimes an ear may not May not may not pass there. And sorry, William, I just my slides skipped They may not pass because there could be something like a wax blockage.

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There we go. Or it could be, like, fluid, right, Terry, in the middle ear? Yeah, fluid or inflammation in the middle ear, and that's, you know, that's preventing the screening of the inner ear from being completed, and that could have cost a non-passing result. But, you know, it's at this point that we're going to want to intensify our monitoring of the child's follow-up So we'll want to consult closely with the healthcare provider to find out the results of the middle ear evaluation and any treatment that's being provided.

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You're also going to want to document the results of that middle ear evaluation, so keep in mind that since the ear hasn't yet passed the screening, we still don't know if the inner ear or the cochlea is functioning properly. Most healthcare providers, they actually don't have hearing screening equipment in their offices, and so they can't really complete the screening process. So that's why you'll need to confer with a healthcare provider about when the ear should be re-screened So, what Terry just said there is, like, something to really, like, get, like, really get what he just said.

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Most healthcare providers don't have hearing screening equipment. So, that addresses all sorts of assumptions we make about You know, who is picking up hearing loss? And our healthcare provider is doing this as a part of well child visits. And when we make a referral, Based on a hearing screening, Are we done? And they're going to continue to run all the bases. And the answer is no. We're still very much in the game of completing this process.

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Because they haven't met the criteria of a complete screening process yet. They haven't passed. Nor have they been to an audiologist. So after the middle ear evaluation. We then want to conduct a re-screen. But keep in mind, This is a very small fraction of the total number of children you're screening. Usually it's less than like 8 out of 10 out of 100 children. that will need these follow-up steps. But it is essential. that they get these steps completed.

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So, you re-screened them, after they've been to see the healthcare provider. And in most cases, They're going to pass at this point. It will have… they will… that will tell us. They have… Whatever caused them to not pass was something, probably in the middle ear, that wax, a fluid, a cold. something, or screener error. If the ear passes this re-screen. Then, the screening is complete, right? Yep. But if the ear still does not pass, that's when the child should be referred to a pediatric audiologist for evaluation. That's because now our level of

concern is heightened because the child is repeatedly not passed And we really don't think there's a middle ear condition now to explain why the child is still not passing, because that's what's typically getting addressed or ruled out by that middle ear consultation.

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So do you see how that graphic… actually shows the entire screening follow-up process. With that one overarching rule at the bottom telling you when you're done. as the one directing, overseeing, and taking. responsibility for the screening process. It's complete when either both ears pass, Or, you've been to an audiologist. And you get the results. Less than 1% of children will typically need that final step of being referred to an audiologist?

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When you make the initial referral to the healthcare provider, For that middle ear consultation. It could be a really good idea to inform them. That you're going to be screening the child again. And that you will likely need their assistance. In making a referral to an audiologist, should the ear not pass the rescreen? Be sure, then, to make sure that you support the parent in getting the audiological evaluation completed. that you provide the audiologist with all of the screening and follow-up hearing health outcomes that you've.

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collected from the healthcare provider. And that you obtain a complete report of the audiologist's evaluation. So, we want to encourage you to check out our. Referral forms and our letters that we've. Posted on kidshearing.org. These are for a healthcare providers or for parents. Helping you share what you are seeking from them. In the middle ear and other referral processes. So, that gives you an overview. Of the complete screening and follow-up protocol from start, to the completion, keeping in mind that overriding rule, That the… and say this to yourself, that the screening and follow-up process.

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is complete when either the child passes the screening on both ears. or the child receives an evaluation. From an audiologist, and you've obtained the results. And remember, also, that although screening. Can lead to the identification of the most common types of permanent hearing loss. It is only a screening. So, anytime. A parent, a caregiver, a teacher, or even you, have concerns about a child's hearing or language development.

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Referral for a complete audiological evaluation. is warranted. Now, we know a number of you have had some questions about How to move this process along. Once referrals are made. You've asked both about how to support parents in the follow-up. As well as what to do. When health care providers don't exactly support the ongoing. follow-up steps. Yeah, that can be that can be a real hurdle and a challenge at times, and so, you know, we have a lot of educational materials on the website that are free for you to use, and these materials can be shared with healthcare providers to educate them, not only about the methods used, but about childhood hearing loss And then second, most states will have a chapter, a local statewide chapter of the American Academy of Pediatrics, and there's usually a chapter champion and sometimes by contacting that chapter champion and seeing if they can make contact with the health care provider

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They can really be helpful in education and helping that process move along. And then state EHDI programs are also a great resource as well. And by EHDI, Terry means the early hearing detection and Intervention Program. You'll find a link on our website, which we're looking at right here. This is our landing page. And if you scroll down, you'll see this first category by that. pink arrow planning resources. This is where you'll find some big picture resources.

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information about how to find a local audiologist. If you're looking for purchasing new equipment or making a decision about which. Method to use, you'll find that under Screening Equipment. In the next category. you'll be able to find information about how to access training. We have an online training system, which is an on-demand training system. For both OAE and pure tone audiometry. So if you or any of your colleagues need either.

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initial training, or you need refresher training. Look at what's available there. Um, it's a great way to standardize your training process so that everybody's on the same page. In the next group of resources, you'll find really practical tools about getting ready to screen, You'll see in the second bullet there a dropdown that includes that protocol we just went over. As well as screening and documentation forms that correspond with that protocol.

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And then in the next group, letters and scripts. letters you can download and send to parents, you can revise them. But before you start creating something from scratch, Look and see what we already have here. We've collaborated with people all over the country and. have included lots of samples here for you to draw from. And then in that last group, we have follow-up resources. You know, so how are you exactly going to track all the children through this process?

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We have a tracking tool there that you're free to download. It's really a smart Excel sheet that follows the protocol. that many programs and schools use to keep track of the children, particularly those after they they don't pass a screening. So have a look at those and other resources we've got on our website. And see how you can put those to use. So, as we mentioned at the beginning, we've got various questions. Um, that we've tried to incorporate into our presentation.

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So we want to walk through our methods with you. And see, by starting with pure tone audiometry, if we can answer some of these questions. Keeping in mind that. While these two methods, both pure tone and OAE, are different, They follow many of the same steps, only in ways unique to each method. So. As I just showed you, there are several tools on our website that are. can be supportive of your screening effort. Each method for each of our methods, we have.

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A screening skills checklist, like you see here, and this is the one for pure tone screening. And this checklist is really a helpful step-by-step guide for conducting. Any given screening with a child. Not only can it take and be used as a review as you prepare and complete a screening. It could also be used to monitor the quality of your screening if you have to. Evaluate you or another team member on. Whether you're actually abiding by these evidence-based steps. So check that tool out.

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Now. For each method, we also have documentation forms. that directly correspond with the recommended screening and follow-up protocol. These are the forms for the pure tone method in which After recording the identification method for the screening. This portion of the form is all you'll need to use. But in cases where the. If a child passes on both ears. then you just fill out this top this top piece. But in cases where the child doesn't pass on one or both ears.

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The form includes fields to record subsequent steps. And we have a second form. Where the child is referred for a middle ear consultation. And the subsequent steps in the protocol. So together, these two forms Include space to indicate the results for completing. The entire protocol for a given child. You know, having good documentation like this. is useful in knowing where a child is in the process of completion. As well as just making sure that your overall screening program has fidelity, so.

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Let me walk you through this. And how you'll put these to use. So, this is the screening skills checklist that you can just take a quick look at. These are all of the steps of the screening. Process. And then we get to the screening itself. Now, the first step is to record The child's basic information. Which is followed by doing a visual inspection. Of the outer ear. Now, Terry, what are we looking for in a visual inspection of the ear?

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That might tell us whether to continue or not. Yeah, what we're what we're doing is we're taking a look at that ear because we want to make sure that there's no visible sign of infection or blockage. So, anything that looks malformed in the shape of that outer ear, or if you can even see Just any reason into why that ear may be not normally function or may have blockage. So we're just really just taking a quick look at that ear and making sure that we can screen it. And at the same time We're also looking if we're using OAEs, for example, we're also looking to size the probe there, but we're really just looking for no visible sign of infection or blockage.

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And so, if the ear appears normal, which will be most of the time, you'll just proceed with the next step, right? Yep. Okay, so we proceed with the next step, and the next step. is to… prepare the child for the screening by what we call conditioning the child. And this means teaching the child the process. Whereby the child provides a behavioral response. Each time they hear a sound. Yeah, this is where you as the screener instruct or condition the child in how to listen for a tone and then respond by raising a hand or placing a toy in a bucket, for example. And you do this by presenting the tones at the 60 and then 40 dB levels And while you're conditioning the child, you're usually facing them, making sure that you're carefully

assessing whether they're understanding the instructions. When you think they understand, then we want to turn them around so they can no longer see you to see if they continue to respond as instructed

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Once you've observed that the child, you know, they respond reliably to the sounds that are presented, just like instructed, that's when the actual screening can get started. Let me interject, Terry. We've received some questions about just how long. The conditioning process should take. Yeah, let me answer that. Really, the conditioning should not take much more than 5 minutes, even hopefully less. Children who are going to be successfully screened using the pure tone method, they ought to be able to be screened in 10 to 15 minutes max, including that conditioning step So if you can't condition a child in five minutes or less, then you want to probably consider using your backup plan, which is either to do an otoacoustic emission or OAE screening, or hopefully right then while you have the child there

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You can also try on another day if you have the flexibility to do that, to try to rescreen on another day. But just remember, if you can't screen the child with pure tone, then you're either going to need to do an OAE or refer the child to someone who'll be able to successfully screen them, most likely a pediatric audiologist And then remember, you know, like we said earlier, that some children who have hearing loss could actually be the ones that are most difficult to condition to do the screening. So, one way or another, we want to get every child screened. I know we alluded to this earlier, but it's not acceptable to conclude that if a child can't be screened, we just wait till next year These might be the very children who have hearing loss Yeah, it's always sobering, isn't it, Terry, when we hear

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How often that happens. And that is just not what we want to do because like Terry said. That may include children who have hearing loss. Yep, for sure. Now, you know, as we go through the screening process, you know, back to the process here, this listen and respond game, we're going to want to repeat it at least twice at the three different pitches on each ear And then we're going to note the child's response or their lack of response after each tone is presented. So if the child responds appropriately and consistently to the range of tones presented to each ear, that's when the child passes the screening Now, assuming that we've successfully conditioned the child, you know, that screening process begins. Now, note that the form that you're seeing here on the screen, that form provides space for you to record the results for each ear

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So begin with the right ear by repeating the conditioning tone one more time and noting that the child responded as desired. Then the actual screening starts then, okay? So then up to four presentations of the tone can be made for each frequency level We're going to start at 2000 and then 4,000, and then we'll go to 1,000. Two responses are needed for the ear to pass for a given tone. Once you've completed the presentation across all three frequency levels, then this form is going to remind you how to determine if the child passes for that ear.

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The child needs to have at least two successful responses out of no more than four attempts at each frequency level in order to have an overall ear pass. Once that's recorded, then The left ear is screened in the same way. Again, we're going to record each presentation level as you go. If the child responds at least two times at each frequency level on both ears, then they pass the screening Now, sometimes you might have an ear, even both ears, that don't meet the criteria for passing. Like we see in the example here on the right ear. See how the child responded successfully 1 out of 4 attempts at the 2,000 Hz So you can see that right there on your screen. Now, if one or more ears do not meet the PASS criteria like you see here, that's when a second screening

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of the previously non-passing ears is conducted in approximately two weeks, as the form indicates. You'll do a second screening two weeks later, On the ear or ears that didn't pass the first screening. In this case, we only need to re-screen the right ear. If the child passes at this point. The screening is complete. Because you've received passing results now. On both ears, across your two screening sessions. But what if that previously non-passing ear still doesn't pass?

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This is when we record the results. And we… Um, go to… The next step of a middle ear consultation. Yeah, and you know for any child who's referred for a middle ear consultation from a healthcare provider You'll want to use the diagnostic follow-up form, which you see here. This form is where you'll document the remaining steps in this child's screening and diagnostic process, starting with the results of the middle ear consultation Now, since the child was referred to the healthcare provider to see if there's any middle ear related health problem that may have prevented the child from passing the screening on either ear during your first two screening sessions You'll want to find out the results of this consultation, and then you're going to want to record them here

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Then, once the healthcare provider indicates that the ears are healthy and clear, that's when you'll want to re-screen the child's ear or the ears that have not yet passed. So all children referred for a middle ear evaluation need to receive the re-screen on any ear that did not previously pass. You'll document the re-screening results on the screening form that you started with, and then if the ears pass, the screening's completed.

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If at this point there's still an ear that has not yet passed Then the child is referred for a complete audiological evaluation. And so you can see these forms follow exactly the screening protocol and just help walk you through it. Now, you're going to want to support the family in completing this important step, and be sure to get the results and document them on this form. You're going to also want to collect additional supporting docu… excuse me, documentation of that audiological evaluation results, especially if the permanent hearing loss has been identified.

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In most cases, this is going to include additional referrals for intervention services that you're going to want to be aware of, and so you can help, you know, support the family in obtaining those And then when you get all of the results back, then you'll consider the child screening and follow-up process complete Okay, take a deep breath. That's a lot, I know. And that's why this isn't a training, this is a review. And so, if all of this feels.

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A bit much, and maybe not exactly what you're doing. Consider doing the online training. To get all of this nailed down, because once you do get this nailed down. It will make the process Consistent and straightforward. So that you are, in fact, following this overarching. rule of evidence-based practice around pure tones. And that the screening process is complete. When you can document passing results on both ears. Or you have audiological evaluation results.

[00:51:00]

William, let me just interject with another question someone has raised in a previous email to us. And that question is, what if a child does fine in responding at first, but then becomes distracted, or you observe they're no longer engaged in the screening, say after the first couple of pitches or tones, what do you do? And this absolutely can happen. So if it does, just be sure to document as far as you got in the screening, and then you can do one of several things. You can use your backup method, which would be the OAE instead, or you can come back to this child on another day, and then you can continue where you left off Making sure, however, that you always start by repeating that conditioning process before you continue again with the actual screening steps where you left off.

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So, Terry, you have to do the same thing, right? If there was a sudden increase in environmental noise, for example, that's outside of your control. If you can't continue the screening at that time, you'd have to come back at another time, picking up where you left off. Yeah, exactly, exactly right. If the child's not able to be conditioned again or remain attentive, then you should probably use the OAE method or refer the child to an audiologist. But there's an important point here that I want to emphasize And we've said it a couple times already, but sometimes children with hearing loss, again, are the very ones who are the most difficult to screen. So the last thing we want to do is to abandon the screening process on those children and just simply conclude that they can't be screened without doing something else

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And that's something else is, you know, being screened with OAE or making a referral to an audiologist. We've seen sometimes that in people's screening programs. They'll have three categories of results that they can report. A pass, a refer, or a cannot test. really want cannot test to be a viable… option. We want to make sure that those children. at least get to an audiologist. Yep, exactly. Thank you. So, remember, you're going to find these resources for pure tone screening activities on our website, At kidshearing.org.

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Um, so after seeing how. All of these. The steps of the pure tone process, you can see. why some people are trying to find ways to do OAEs on everybody. Because it is so much easier. But there we go, that's where

you'll find training information, so if. Training is now starting to sound like a good idea. This is where you can go to access that. As well as our other resources. So, let's shift gears and talk about OAE screening now, as we've already said, this is the recommended evidence-based practice for children.

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Birth to 3 years of age, and increasingly for older children as well. Terry, walk us through the OAE screening process. Yeah, so again, just like pure tone screening, to conduct an OAE screening, we're going to first take a thorough look at that outer part of the ear, again, just to make sure there's no visible sign of infection or blockage And then if the ear appears to be normal and healthy, that's when we're going to take a small probe on which is disposable cover has been placed, placed on over that probe that is then inserted into the ear And then a button is pushed on your equipment. A button is pushed to start an automated screening process.

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The probe sits independently in the ear, and it delivers a low volume sound stimulus into the ear. Now, the cochlea or that inner snail-shaped portion that you see on your screen on that ear, an inner ear that is functioning normally is going to respond to this sound by sending the signal on through to the brain while also producing an acoustic emission And this emission is analyzed by the screening unit, and in approximately, you know, 30 seconds or so, then a result is going to appear, and it's going to be either a pass Or a refer And so every normal, healthy inner ear produces an emission that can be recorded this way.

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So just like we showed with the pure tone screening, we have A screening skills checklist for OAE screening. That will help you make sure you're going through all of the right steps and. that can be used for evaluation or quality monitoring purpose. And we also have screening and follow-up forms. that correspond directly with the protocol that are specific. to the OAE method. Now, a couple of things to highlight. In addition to a list of steps, you'll also see a list of supplies, so.

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You, um, so be sure to go over those to make sure you're set. and ready to go, um, to do your screening. If you haven't had the equipment calibrated. Um, in the last year or so, you want to make sure you do that. Um, and regardless of what screening method you use, You always want to make sure you communicate with parents and other program staff. whose cooperation you're seeking. Yeah, yeah, William, and some of you have asked about how to prepare children for hearing screening. And I just want to say our main recommendation is to keep it fun, regardless of which method you're using. So rather than referring to the activity as screening or a hearing test Call it a listening game. And then you can engage teachers or parents in some activities that include noticing, like, the child's facial parts, including their ears, or you can expand on the idea of what animals have ears, too.

[00:57:36]

Yeah, in fact, if you have a way of sharing a video with children you're screening, you may want to look at a short two-minute video that we have on our website called Listen Up. Just as a way to set the stage as a fun activity, especially for the. The younger ones. Just like we showed you with the pure tone screening, um…

We've got a, um… A screening form here, let's see… Um… And this is the, the form that we're going to be, uh, showing you here.

[00:58:12]

And the diagnostic form, so that we have both of those forms again. Now, Sorry, I'm getting stalled out a little bit here. Here's the screening form. Let's look at these forms really quickly here. They're a lot simpler than the pure tone forms because The OAE process is automated, allowing you to just record the ear-specific outcomes. For each screening. So, these forms… Directly correspond with the protocol. Uh, helping you know what the next step is in the process until the child's screening.

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Um, and follow-up evaluations are completed. And you can record these results. First… The first OAE result. Then the second, and if needed… The results of the middle ear evaluation. You see that here. The need for a second for a follow-up re-screen after the middle ear. Just like we were reviewing with the pure tone. And then, if the child still doesn't pass, than an area in which you can record the results from the audiological evaluation.

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At which point, then, you would know that your screening process. is complete. Because OAE screening is automated, and it doesn't require a lot of manual steps, like pure tone screening does. That doesn't mean that there aren't challenges with OAE screening. I mean, there absolutely are some things that. take some skill. So, a number of you have asked some questions about children you struggle with screening for various reasons, so.

[01:00:12]

Let's look at some of these strategies here. Let's start by taking a look at these pictures. What do you notice in these photos of these kids? The children you see here are all being screened with the OAE method. They aren't being pulled out into a foreign environment. Um, that they don't know about. They're being screened in their everyday educational home and. Healthcare environments. Where often they're already… Happily spending their time.

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Those doing the screening are often people they already know. Their teachers, home visitors, and. Health specialist, so keep in mind that you can go to where the children are. They don't need to come to you. Yeah, you know, and in talking about the people that they're familiar with and their teachers and health specialists, you know. That's when the screening works best. It works best when children are familiar and they're comfortable with the adult that's doing the screening, and where they can play with a toy, they could be held, or even sleep while that screening is being conducted. So we really have quite a few options. Now, some equipment is more effective than others when trying to or attempting to screen in natural environments, but most of them will work just fine under these conditions. But there are several key

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Keys to successful screening to keep in mind So, the four keys to successful screening that we just want to talk about are, first, a good probe fit. Second, we're going to want to minimize movement Third, we want to minimize internal noise, noise that is generated from the child, like sucking or chewing or crying, and then fourth, we want to minimize external noise in the nearby environment. So that's noise that's not coming from the child, but in our environment around us Now, of course, as you screen, there's going to be times when you get an error message or refer. Now, don't worry too much about what the error message actually says on your machine, because regardless of the error message and what it, What it says, you're gonna really do the same things, and then try again. So, you're going to

[01:02:46]

You're going to reposition the probe Try to get a better fit. We're going to work on quieting the child, reducing, you know, excuse me, we're going to work on reducing external noise in our environment. Then we're going to check the probe, we're going to take it out, we're going to look, see if there's wax, if it needs cleaned, we're going to replace it maybe perhaps And then we're gonna, as I started to say earlier, we're gonna try to quiet and reduce the movement of the child. We want to use unique and fun but quiet toys to distract them And we'll want to elicit the help of another adult or screener. That can often be very helpful.

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Now, the goal with proper probe placement here is we want to get a really snug fit. A snug fit's going to seal out all of the noise from the environment. So that means we want to select as large a possible probe cover that will fit in that ear canal, so that when we insert the probe in the child's ear, we can totally let go of it, and it'll be self-seating. It's going to stay in place. In fact, you need to let go, because if you hold on to it, your touch can loosen it, allowing more noise to get in and disrupt, you know, disrupt the screening process So, remember, as you select probe covers, always aim for the biggest one that's going to fit in that child's ear canal. There's really no great secret aside from experience and being able to make good probe cover selections, so just know, the more you screen, the better you're going to get at it.

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Now, some brands of OAE equipment have a compressible foam probe cover. Which tend to be the easiest kinds of probe covers. to have success with, so. If foam covers are an option for your brand of equipment, You want to give those a try, especially if you're having trouble getting a good snug fit. Yeah, and William, can I interject here? Just a little aside about probe covers You can only use the probe covers that have been designed and intended for your device, even though you'll see others on the market, you have to use those that have been made for your brand of equipment because they're custom made for that piece of equipment and calibrated as such. So if you don't use probes for your specific brand of equipment, you can get inaccurate results.

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Some of you have expressed a concern. about… and this is such a common thing, especially when children, or when people are learning to screen at first. That you're worried you could hurt a child. by inserting the probe. Yeah, we understand that concern, you know, and having something in your ear canal can be uncomfortable, but rest assured that the probe lengths they've been carefully designed so that you're not going to hurt or damage anything for the child, so that that's not possible Now, a child with an active ear

infection or they may experience pain with probe insertion, and that's really one of the reasons we want to carefully inspect the ear prior to doing a screening. But otherwise, probes will not go in deeply enough to harm the child's ear.

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The videos that we have in online training on kidshearing.org. Demonstrate probe insertion showing, as you see in this photo, How we can pull back the outer part of the ear. Insert the probe in the direction of the child's nose. And then back, with a slight twist. to get it snug. And then… We always let go. Yeah, that's right. You always let go and it should stay put. I often refer to as self-seating, but it needs to stay put in the ear by itself. You also want to make sure that the cord's been clipped up to the child's clothing. So the weight of the cord And as they move, it doesn't pull the probe out of the ear. Those are really two important things for getting and keeping a good probe fit. Now let's take a look Yes. Yeah. Take a look at that video and hear.

[01:07:10]

Let's see here… Yeah, so that, that's a little excerpt from one of our trainings. See, she's not holding that in the ear, is she? It's so tempting to do that, but it isn't helpful. If you get the probe in properly. Yeah. So, what are some other strategies, Terry? Yeah, there are several strategies that can help make it a positive experience for the children and for you. So one of those is to create a fun feeling around the screening activity. We want to make that fun. We want to talk positively You want to position the child and yourself and other helpers in a way that's comfortable. And then it's not only comfortable, but allows the child's behavior to be naturally directed. And then you want to use toys, distractors, and rewards effectively And then you want to document the screening results accurately. So let's look at each of these for a minute here.

[01:08:42]

So by creating a fun feeling, we're just talking about the way we even talk about it. This is a listening game. We don't have to use the word screening. Can you hear the birdie? Can you hear the truck? And so we create some intrigue around that. Hey, William, we can see your PowerPoint window over the presentation. Oh. What happened? Let's see. You mean this? Yes. Huh. There you go I don't know what happened. Okay. So, creating a fun feeling.

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Um, sometimes having children wait their turn. You know, rather than trying to get them to come, we can say, no, you have to wait your turn. It creates an anticipatory vibe around the screening. We also don't want to. necessarily use words like test your ears or even bring up the possibility of it hurting. There's no point in saying it won't hurt. Just avoid that altogether. Yeah, and then, you know, I alluded to positioning a little bit earlier or just a minute ago, but what I'm talking about there is that you want to position yourself to the side of or slightly behind the child because that gives you good access to the ears to facilitate probe insertion And if possible, if you have another adult, have them hold the child snugly, or they can keep the child distracted, keep their hands occupied with another activity. And it's also okay to sit on the floor at their level. I often do that.

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Yeah, like you see in the upper right there, yeah. Having some really good toys to use as distractors is always helpful. Especially if they're toys that children have never seen before, or only see during hearing screening activities. If a child loses interest in one, have another one ready to go. And remember, not every toy is going to be equally impressive to every child. Someone Yeah, we have a little inventory toys and we'll just switch them out. As William says, when they lose interest, just switch it out and get another one.

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Sometimes something just as simple as distracting their attention from the ear by Drawing a little circle on their forehead with your finger can just kind of distract one sensation. from the other, and reduce their anxiety about it. Having a reward involved in the whole process, and having children anticipating that can be useful. Some people have. stickers they they give out as children get completed, and we always want to make sure that.

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Every child gets a sticker regardless of whatever the outcome is, of course. It's also helpful to screen in teams. If you've got another adult. present that can help entertain the child while you're doing the. business of the screening, that can be. really helpful. Yeah, and now let's take a minute and we'd like to show you a variety of strategies for engaging children in playful ways that'll help you be successful, as well as add perhaps a few cautions about some common errors to avoid. So a really great and important strategy is to keep those hands away from the probe by redirecting the child to manipulate an object or simply grasp an adult's finger or hand Yeah, here's a little video of that happening.

[01:12:43]

Yep, so she's going to place this probe Right here And watch the child's hands can immediately go up And There we go She's so skillful. So she got that hand and immediately put a puzzle piece in there and distracted her. Offering children choices about like where do you want to sit or what toy do you want to play with? It's great, but you don't want to, like, explicitly offer the choice of whether they're screened or not. You can familiarize the child with the probe, you know, touching it to their hand.

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To their face so they can see that it's soft. of what it looks like, or they can even pretend screening one of their dolls, or a stuffed animal. And remember that you can always screen children. While they're sleeping. And if a child starts to cry, While you're… a probe is in the ear, Don't automatically assume you need to remove the probe. The, the screening process may continue in between the child's cries. Or, if you just leave it there.

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Once the child settles down, you'll be ready to start. BAM. Immediately, rather than going through the insertion process all over again. That's been a really helpful one for some folks. You know, and if a child is uneasy about being screened, but they can be soothed by having a pacifier to suck on or a snack, you can attempt to screen while the child is sucking or chewing. You know, it does introduce some noise from that sucking or chewing However, but you can try and screen, you know, when they're relaxing and you can often be successful in getting that screening. But if the results are referred, then we'll just repeat the

screening when the child is not sucking or chewing But if the result is a pass, Yeah, absolutely.

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You're good, right, Terry? Yes, you don't have to worry about it. You don't have to second guess a passing result. You just have to wonder why you got a non-passing result. Now, another strategy is to consider screening in groups. This can be really helpful for some children. They may be fearful, or who are fearful. It helps them to become more comfortable with the process, as long as they're seeing others having a positive experience.

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So we always consult with the teacher and the people there that know the children, because we want to Where we know we'll be most successful to set the tone for a positive screening experience. So we asked the teachers for someone that they're fairly confident that will be cooperative and set the example that we're hoping for. So, I want to make sure we have a little bit of time for some questions. I'm going to skip forward here, Terry, and just remind everybody that Everything we've talked about today is available on our website.

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And so go and take a look there. And all of the different resources that we have. And. You know, see what else is available there. Including the training resources that are there. Um, so let's open up the. Chat field, and see if you have any questions. In a moment here, We're gonna. Complete with a short evaluation, and which will also give you the opportunity to. get a certificate of attendance for today's webinar, so. Hang on for that here in a moment, if that matters to you.

[01:16:56]

So questions. What kinds of questions are coming up for you that we haven't quite addressed yet? I see one that says, are there any training? Is there any training on how to use the OAE device? And so, yes, yes, very much so. The vendor that you buy your equipment will be able to give you some technical support on which buttons to push and how to use it that way as well. But there… all of the equipment has really common elements of how to use it. And so there's information on our website that we have some information that's equipment specific and others that may be helpful as well.

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But look at the access training. component on kidshearing.org. You see it highlighted right there on the screen. That's where you want to go to get training on using OAEs. I see another question. It says, we have been having a hard time screening children with hearing tubes. Any suggestions on how to approach this situation? So I can appreciate that question. We talked about, yes, we can and should screen children with PE tubes But often, the reason that it may be difficult to screen them is because they've had so much experience with ear infections, having their ears checked, they get, you know, they go in deep to look at that ear, and it may have been somewhat painful, so They may come with some negative experience with that, and in many of those cases, we will condition over several weeks where we might play with the probe, and we might screen their animal, but we don't put it in there, we don't even try, and then we come back and we put it in our own ear now and then eventually we work up to where they play with the probe and we may be able to get that probe in their ear. I realize that takes some additional time, but

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But those that have had somewhat of a negative experience with having their ears checked may take a little bit of time to get comfortable. Thank you for the nudge that we should be on the screen to help those that need visual cues when we speak. I've turned my camera on. Thank you for… That nudge, I really appreciate it. We let's see, um… Are there any grants to purchase OAE or replacement probes? Well, not directly, but I can tell you if you are in, for example, a Head Start program, Hearing screening equipment and supplies is considered an allowable expense.

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Um, I can tell you that service clubs like Sertoma. The Lions Club. Um, other local fraternity and sorority clubs in communities. love to purchase. Equipment on behalf of programs related to hearing and vision screening. She might want to check out those organizations. Um, we do have… On our re… on our website. A mini-grant template that just explains. OAE screening. that you could tailor and submit to any organization of your choice.

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We know just the process of writing a grant could be burdensome, so we've written one for you to just personalize and submit, so… Um, but as far as knowing where to submit it, I'm not… I don't have anything off the top of my head. Um… Let's see Do you have any advice on how to screen children with sensory issues? You know, those are very similar to the ones that we talked about with PE tubes that have had a somewhat negative experience having their ears checked. Those are… these are kids that take maybe some additional time where there's, no intent at first to insert anything in the ear, and we let them play with the probe And watch other children, and we work more slowly up to it. But, you know, some of them may be… you may be unable to screen, and in many cases, kids with severe sensory issues are appropriate to refer directly to a pediatric audiologist.

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And related to that, Terry, uh, the question. How do you feel about functional hearing assessments on students who are difficult to screen? Yeah, that's really not acceptable anymore, and so we either need to screen using pure tone or OAE, or make a direct referral, and then the pediatric audiologist can determine the appropriate course of evaluation, which in very difficult situations could be You know, auditory brainstem response test under appropriate conditions.

[01:22:12]

Someone said here that many of the Head Start programs who have contacted. Our state EHDI programs indicate that they really can't afford both OAE and pure tone equipment. and are opting exclusively to use OAE technology for all the children in their programs. Have you had this comment as well, and is this acceptable practice? Terry, Yeah, I sorry I was just my my I was just going to say yes and yes. We've had the comment before. And yes, it is an acceptable practice. In fact, it's becoming more and more common But with the caveat that you need to look at state regulations.

[01:22:58]

to make sure that you are consistent with what is permissible in your state. Yeah, and I'm going to underscore what you said earlier in the webinar, William, that it's mostly due to outdated regulations than it is screening methodology. Yeah, yep. So we've reached the bottom of the hour and you see a… A certificate of attendance link on your screen. It'll also appear in the chat here. Um. Yep, it's there Yep. Gunnar, is… can you put that up? I think that's click. Yeah, so you can click it on in the chat. That's probably the easiest way to do it.

[01:23:45]

Know that tomorrow we're doing an introductory webinar. For those of you who either yourself or colleagues that would benefit from going over. Information in a more fundamental level. about evidence-based practice. Join us for that. And, um, take a look at our website, take a look at the trainings that are offered there. Many programs are using our trainings on an annual basis, Across all of their staff to make sure everybody's.

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Up to speed and doing the same things, and that there isn't. drift over time. We all drift in our practices, and we need to get back to the center of the wheel, if you will. to use pottery lingo. Um, every once in a while to make sure that we haven't modified our practices. So, thank you, everybody, for all your great questions and attention today. And, um, if you… if we didn't get to a key question. Feel free to email us, and we'll do our very best to respond.

[01:24:55]

Thank you. Yeah, I'm so sorry we didn't get to all of those questions. I'm scanning through and they're great. So thank you and reach out.