Evidence-based Hearing Screening and Evaluation Practices for Children Age 0-5: Useful Facts and Practical Tools.

2/9/2023 2 p.m. (EST).

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Captioner standing by.

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Captions test. Evidence-based Hearing Screening and Evaluation Practices for Children Age 0-5: Useful Facts and Practical Tools.

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Captioner standing by
WILL EISERMAN: We have many people registered for today's webinar so we ask you to refrain from using the chat and Q&A fields for now.

We will, however, be opening up the floor to questions after we have completed our remarks for today. You will be able to have an opportunity to ask any questions you might have at that point.

Today's webinar is being brought to you by the National Center for hearing assessment and management at Utah State University which currently serves as the early hearing detection and intervention. The acronym of this is the EHDI NTRC.

I am talking now mostly for the benefit of those who are signing in and needing to adjust their volume. Today's webinar is going to be recorded and then subsequently posted on our website at infant hearing.org as well as kids hearing.org. So if
anything disrupts your full attention today we think of people who might benefit from today's webinar who are not attending live with us today, this webinar will be able to be viewed whenever you would like on our websites. Again, that is infant
hearing.org or the early childhood portion of that website which you can go to directly by typing in

kidshearing.org. We will be starting in just a few minutes. Pardon me repeating myself, but we have people signing on it a very rapid pace right
now so I am going to just continue to talk so that everybody has a chance to get their volume adjusted to their liking. Our part we have not started yet, but we are getting ready to. You are in the right place for today's webinar. Entitled
Evidence-based Hearing Screening and Evaluation Practices for Children Age 0-5: Useful Facts and Practical Tools.

We will be starting in just a few minutes. As I mentioned a moment to go today's webinar is going to be recorded and then subsequently posted on our websites, which are infanthearing.org or if you want to go to directly to the early childhood
portion of that website, you can just type in kidshearing.org, and you will find at the webinar recording there as well. Along with a variety of other resources that we will be talking about today pertaining to early childhood screening and
follow-up practices, lots of practical tools you will be able to find there and download and put to use. We are delighted to see that we had well over 1500 people registered for for today's webinar. That is always so gratifying for us to know that
the work that we do is of significance and relevance to so many people who work with children across the country.

We will give it one more minute and then we will get started. Be aware that at the end of today's webinar, there will be an opportunity to give us a short evaluation and once you do that, it will generate a certificate of attendance for your
participation in today's webinar. If that is of use to you, be sure to not sign off before we have displayed that link so you're able to get your certificate and, of course, give us feedback on today's webinar as well.

We have people signing on pretty rapidly here. I'm going to give it a couple minutes, and then we are going to start.

For those of you who have just signed on, you are in the right place. We are going to start in just a moment. Our webinar title for today is Evidence-based Hearing Screening and Evaluation Practices for Children Age 0-5: Useful Facts and Practical
Tools.

Terry, are you ready to get started with me here any moment moment? Gunner, are you hearing me okay. I did not hear Terry.
>>: I hear you okay,, I did not hear Terry.
DR TERRY FOUST: Yes, can you hear me? Yes, thank you.

WILL EISERMAN: Good.

Okay why don't we get started? Great. Welcome, everybody to our webinar today entitled Evidence-based Hearing Screening and Evaluation Practices for Children Age 0-5: Useful Facts and Practical Tools. My name is Will Eiserman, and I am the
director the associate director for the National Center for Hearing Assessment and Management at Utah State University. I'm joined today by Maternal and Child Health Bureau who is a pediatric cardiologist and consultant and trainer with the ECHO
Initiative since its very beginning. The ECHO Initiative is the early childhood outreach initiative, which has been in place since the early 2000's for Early Head Start and Head Start programs in the development and implementation of evidence-based
hearing screening a follow-up practices before I have Terry introduce himself I want to let you all know that today's webinar is being recorded and will subsequently be posted on our website at infanthearing.org and if you want to go to directly to
the early childhood portion of that website, you can type in kidshearing.org where you will find the recording of today's webinar along with a variety of other useful resources that we will be talking about today. I would to give a shout out to our
captioner today, thank you for your time and talents and helping us make this as accessible as possible today. And I want everybody to know that at the end of today's webinar, we will be doing a short little evaluation and at the end of that, it
will generate a certificate of attendance so that if you need to document your attendance to today's webinar, you will be able to do that at the completion of the webinar today by completing the evaluation. We are going to ask you to hold your
questions until we open up the floor for questions, and then we will gladly engage with you about whatever comes up. Jot down your thoughts that might stimulate a question. Maybe we will anticipate the question and answer it before you even have to
ask at. We will see how that goes. Terry, Dr. Terry Foust is with me today and he is a pediatric audiologist and speech language for the who has worked with us for over 20 years. Terry, welcome.
DR TERRY FOUST: Thank you, William. It has been over 20 years. Has been a while, but it has been great work. William and I along with other Eco team staff as well as many local collaborators have provided training and almost every state, with
thousands of staff staff from Early Head Start, Head Start, American Indian Alaska Native and Migrant Head Start as well as other early care and education programs over these years. We are always encouraged just like we are today by the huge amount
of interest in establishing evidence-based hearing screening programs so that children with hearing related needs can be identified and be served.
WILL EISERMAN: Thank you, Terry. Once again, we're going to ask you all to hold your questions until we wrap up your comments. We cannot simultaneously do that and present all the content that we have prepared for all of you today. If you don't

mind, that would be useful.

The work of the ECHO Initiative is based on the recognition that each day there are young children who are deaf or hard-of-hearing being served in early childhood education or childhood settings often without their hearing related needs being known. Hearing loss is often called the invisible disability. It is an invisible condition. So how can we reliably identify which children have normal hearing, and which may not.

DR TERRY FOUST: At 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 pictures here in these photos. 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 previously identified brick. The procedure you see on the left of your screen is otoacoustic emissions or shortened to OAE. That is the
recommended method for children birth to three years of age. It is also increasingly wrecking recommended and used for children's ages three to five as well. On the right you can see the procedure pure tone audiometry hearing screening. That has
historically been the most commonly used screening tool for children ages three and older. You will see it still see that in many education settings and providers using a. Will be talking about both of these methods today.
WILL EISERMAN: Let me give you a quick overview of what we want to cover today while this presentation is not a training, our goal is to provide an overview of the big picture and then permitting a supplement based hearing screening for children
across the age spectrum birth to five years of age. We will start by giving you an overview of the auditory system or the hearing system, which will help lay a foundation for understanding how the hearing screening methods we will be talking about
today actually work than we will talk about why we screen for hearing loss, what even makes it possible for us to seriously engage in systematic screening for hearing? We will then talk about the two methods that Terry just mentioned OAE and pure
tone audiometry starting with an overview of the OAE process followed by an overview of the pure tone audiometry process. Next, we will address the important question of what do we do next when a child does not pass a screening? We will summarize
the follow-up steps that are taken when the child is not pass a hearing screening on one or both ears so you have an idea of what that process looks like. Because actually that is probably the most important part of the process. We're going to wrap
up by showing you how to access some resources to support the process of developing and maintaining your evidence based hearing screening program and then address whatever questions you might have so have your questions ready for when we get to that
part. That is where we are headed. He will follow our progression through these topics by referring to

the left side of your screen that you see over there and since this is a recorded webinar, this left side menu will be useful if your return to
this recording and want to navigate to a specific portion of it to review again or to share with others. Keep that in mind. Once again, the recording of this webinar will be found on infanthearing.org or kidshearing.org, which is a subsection of
infanthearing.org that focuses on early childhood. There you see it right there. Before we launch into our content. I want to make sure that you all know where to go after today's webinar to get additional resources, information, and access to
training.

You will here us say this several times today. Implementing evidence-based hearing screening practices is more than just using a designated piece of equipment or specific method. To implement evidence-based practices, which we presume most of you
or all of you have is your goal, that equipment or method must be used according to a prescribed set of steps, under carefully controlled conditions, each step of which is carefully documented in detail. This is true whether you are using OAE
screening or pure tone audiometry screening. Over the years the Early Childhood Hearing Outreach Initiative known as the ECHO Initiative developed a wide range of resources to achieve the goal of implementing evidence-based hearing screening. Our
goal today is primarily to help you find all of the information and resources you need. So let's make sure it right off the bad that you know where to go, why you will go there, and what you are going to find.

Let's take a look at our website, kidshearing.org. We invite you to feel free to use all of these implementation tools and certainly before you sit down to write a letter to parents about your screening efforts, or a referral letter, or for
developing a form for documenting your results, check out what we have kidshearing.org because you will likely already find it right there already developed. Our goal over the past 20 years was to create all of those things so that you would not
have to make them your selves. Many of the resources you will find here are the result of various examples early childhood programs at shared with us, so you can be assured that others have used the language and format of many of these resources to
achieve the same goals you have. We also want you to know that many of you want to know how to access training, so be assured we can direct you to a specific location where you can get the training you need. A location on our website, let me give
you quick look at our resources, but again, take time after the webinar to get acquainted with these resources.

This is the landing page when you that you fall on when you go to kidshearing.org, which provides a

wider raid array of practical resources and tools to help you implement evidence-based hearing screening. The first part of the page places early
childhood screening and the larger context of identifying children who are deaf or hard-of-hearing, expanding the traditional focus of newborn screening to include a focus on identifying hearing loss throughout early childhood. If we scroll down,
this is where you will find all of the practical resources of most relevant to early childhood screening, starting with planning resources.

You will see the planning resources here and then the next part of it you will see where to access training. As we said, for nearly 20 years, the ECHO Initiative was funded to provide in person and virtual comprehensive training. That complete
process, training process, is now available any time you and your staff need it. We know that many of you are needing to know how to get training for a hearing screening. When you click on either OAE or pure tone audiometry, you will be taken to a
separate NCHAM nonfederally funded website learntoscreen.org, and the screen as we can access the training that you are needing to prepare early care and education providers and evidence-based hearing screening practices for young children. At some
of you may have a group of staff who are needing training at the same time time, while some of you may find a single staff member entering your programs at different times and needing training at different points throughout the year. The online
training available here can be done at any time and at any pace so it should meet the needs of just about anyone who is needing quality comprehensive training on either OAE or pure tone audiometry hearing screening practices. We encourage you to
check that out after we complete our webinar today. Or part of the next set of the resources here are screening resources and we will be talking about those. These are practical tools for getting ready to scream, the protocol guide and
documentation forms, referral letters, all sorts of daily practice things that you need to run a screening program and then there is follow-up resources, a tracking tool, which is really helpful in tracking a group of children through the screening
and follow-up process as well as some monitoring the quality of your program tools to make sure you are staying within what is evidence-based practice. Kidshearing.org is where you want to go after today's webinar. If you don't remember anything
else we say today, remember this because everything we are covering you will find it again there.

So let's put all of these resources into context. We will start by giving you a quick overview of the auditory system are really in layman's terms they hearing system. There are three main parts to the auditory system. The outer ear, the middle
ear, and the inner air or cochlea. When sound enters the outer ear, it causes the eardrum to vibrate which then moves three small bones in the middle ear. This movement stimulates thousands of tiny,

sensitive hair cells in the snail shaped portion
of the inner ear called the cochlea. From the inner air, the sound signal is carried along special nerves to the hearing centers of the brain and the individual experiences the sensation we call "sound."."

DR TERRY FOUST: And William while this is typically 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 air caused by ear infections that we
may discover and get addressed during a hearing screening process, but the primary target condition of our hearing screening is the functioning of that in her ear or cochlea the snail shaped portion of the ear that you see here on your screen. In
some instances the sound travels through the outer end middle ear but when it reaches the cochlea the signal is not transmitted to the brain, resulting in what we call a sensorineural loss. This condition is usually permanent. This is the primary
condition for which we are screening in our mass screening efforts. This may come as a surprise to you, but it is an important factor for all of us to know and understand and that is that sensorineural hearing loss is the most common birth defect in
the United States.

In fact, about three children and every 1000 are born with a hearing loss, deaf or hard-of-hearing. Most most newborns in the U.S. are now screened for hearing loss using evidence-based methods, most before even leaving the hospital. But screening
at the newborn period is not enough. Research suggests that the incidence of permanent hearing loss of doubles between birth and school age, so from that three in 1000 at birth to about six and 1000 by the time children enter school.

So we can only screen for hearing loss at birth. We need to screen throughout early childhood because hearing loss can occur at any time as a result of illness, physical trauma, or environmental or genetic factors. This kind of hearing loss is
often referred to as late onset hearing loss meaning it is acquired after the newborn period.
WILL EISERMAN: , you know,, it is 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 many early childhood settings. Think
about how much emphasis is always placed on early language development, counting the words children can produce, et cetera cetera. It is also important to note that hearing health is at the heart of typical language development and that if we are
going to be conscientious about promoting language development as part of our commitment to school readiness, we should be equally conscientious about monitoring the status of hearing throughout this period. If hearing is compromised, then typical
language development will ultimately be compromised as well well. We do not want to wait for a

language delay to discover that the child has a hearing loss.
DR TERRY FOUST: Exactly. This is why we see so much emphasis is being placed on monitoring the status of hearing a young children. Programs like Head Start, which for years has served as models of comprehensive health and educational programs for
young children and their families, have required hearing screenings for all of their children even before we had the excellent methods that we do now to do this.

What actually is screening. It could be thought of his kind of a sorting process and and helps us separate the children who are at risk of having a condition in case hearing loss from those who are far less likely to have the condition. Those in
that first at risk group are then followed with additional steps implemented by pediatric audiologists and healthcare providers to continue to refine that sorting process until we can definitively identify that small group of children who actually
have a hearing loss. To be blunt, we screen because we simply cannot provide a comprehensive audiological evaluate evaluation on each and every child.

Screening, followed by appropriate ideological assessment and early intervention, can dramatically improve options and outcomes for children who are deaf or hard-of-hearing. When hearing loss is identified early, we can then make sure a child has
access to language. As a result children who are deaf or hard-of-hearing are thriving in ways that used to be rare. By providing that hearing screening, you become part of the process of creating these amazing, life-changing outcomes. We want to
take a moment to look at several examples of children that have severe to profound hearing loss who have had the benefits of it being identified early and quality intervention. These children are learning, thriving, and communicating.
WILL EISERMAN: Let's take a look at this, these two girls. They both have a severe hearing loss and are considered deaf.
(Video playing)
They have hearing aids. Is pretty cool how fluid they are in communicating with each other. In these next examples, these children are also deaf and their parents have elected to use sign language as they're primary mode of communication. Watch
how well they are communicating with each other.
(Video playing)
Let me show you one more example. These boys are also deaf and they are using cochlear implants to assist their communication.
(Video playing)
WILL EISERMAN: (Laughter)
We like to show those children as a part of this conversation to remind us of our goal. We went to make sure that all children have access to language one way or another, regardless of whether they

have a hearing loss. Half of the children that get
identified through early childhood hearing screening have a mild or moderate hearing loss or a loss in just one ear pick the other half has more significant hearing needs. Regardless of how significant they are hearing loss is, we need to make sure
that they have full access to language and that is our goal. The way to achieve that is to be fully committed to quality periodic hearing screening.
DR TERRY FOUST: As we mentioned a moment ago, OAE and five are the recommended methods that we will be talking about today. The availability of OAE and pure tone audiometry it really means that it is no longer appropriate for us to rely solely on
subjective methods that have been used in the past. Thing such as ring a bell behind a child's head or depending solely on caregivers perceptions of a child's hearing. Don't get me wrong. Observations of a child's response to sound, especially a
lack of response, can be helpful, and we should pay attention to help children children do or do not respond to their environment. With the sorts of observations do not constitute a hearing screening because they are far too crude and unreliable and
frankly we can do so much more than that because of our current available technology.
WILL EISERMAN: It is important to note that although some healthcare providers have incorporated evidence-based hearing screening into well-child visits, this is not yet standard practice, especially for children less than four years of age.
DR TERRY FOUST: Yes, of some parents may report with a lot of certainty that their healthcare provider did perform a hearing screening. But please understand this, and I really can't emphasize this enough as an audiologist. Routine examinations of
ears by healthcare providers, when they look in there with that year light, that should not be mistaken as a hearing screening. It is precisely because screening is isn't yet happening consistently in that context that programs like yours are
adopting hearing screening practices because obviously, there is an increased recognition of the importance of monitoring hearing, and is just now really feasible to do this in programs like yours and by people like you.
WILL EISERMAN: The take-home message here is this this: Unless a child's health or medical records include clear documentation of an ear specific hearing screening result, and the screening method that was used, we should never assume a hearing
screening has already been completed.
DR TERRY FOUST: William, another important point to remember is this: While OAE and pure tone audiometry screening are highly reliable screening methods, they are not perfect. That means there could be some rare conditions that are not identified
through these screenings. So there is no perfect method. Whenever a parent expresses concern about a child's hearing or language development, even if they received and passed a hearing screening method using one of these methods, we still want to
go ahead and refer that child for any value evaluation from an audiologist.

WILL EISERMAN: That's right. Before we go on, let me say one more thing about newborn hearing screening results. When children enter your program or system, especially during the first year of life, always be sure to collect their 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 evaluations have already occurred. And if you do not see evidence of that, you want to help the family circle back to their
healthcare provider to accomplish that follow-up hearing evaluation. If you are in a program that requires an annual hearing screening, like many Early Head Start programs, you can use the newborn hearing screening result for the first year of the
child's life, but you want to rescreen after that because the hearing status of the child could have changed. There is never a problem with screening them again within that first year. Keep that in mind. You can use the newborn hearing screening
for up to the first year but then you always want to rescreen annually after that.

Now let's talk about these two hearing screening methods that are used during early childhood. If you are responsible for children who are under three years three years of age, the recommended method is OAE or otoacoustic emissions screening, what
you see on the left. If you are for children screening children three years of age or older, historically pure tone audiometry historically has been recommended for this age group. This is the headset screening were the child raises a hand or
performs a specific task each time they hear a sound that is presented into one of the earphones. You see this method being used here on the right. You have probably experienced this yourself at some point in your life.
DR TERRY FOUST: I would like to note here that there is growing recognition that for a variety of reasons as common as the pure tone method has been it may not always be the most feasible method to use with some of these younger children. Research
shows that about 20 to 25 percent of children in the three to five age group cannot be screened reliably with this methodology and that is because these children are not developmentally able to follow the directions reliably. That has been our
experiences as well. And those instances, OAE screening is the preferred method for these children.
WILL EISERMAN: What that means is at a minimum, if you are establishing evidence-based screening practices for three to five -year-olds, and if you are considering or already using pure tone screening, you also need to be equipped and prepared to do
OAE's on that 20 or 25 percent who cannot be screened with pure tones. Alternatively you will need to have a means for systematically referring all of those children to audiologists who can perform the screening and to be frank, I don't think you
will find it many audiologists who are going to be available and willing to do that many screenings of 20 to 25 percent of your children. You have to think about if you are doing pure tone screening, what are you going to do about that 20 to

25 percent that you cannot screen. You can't just not screen them.
DR TERRY FOUST: I think to simplify things, more and more audiologists are recommending the use of OAEs uniformly with all children 38 years of age and older. Is quicker than pure tone and both to learn to do and actually implement. It is far more
likely to be a method that will work across the board with all children in the three to five age group you would be screening.
WILL EISERMAN: If you or your program are still undecided about which methods are used primarily for children three years of age and older, we encourage you to carefully look at a document that we have on our website at kidshearing.org that compares
OAE screening appear to screening for this population. And that will help you figure out what to do about that. Be sure one thing. Or be encouraged about one thing and that is you do not want to just not screen 20 percent of your children. Because sometimes the children that are the most difficult to screen are the very ones that have a hearing loss. Be careful to have a backup plan for children you cannot successfully screen.

All right Terry, let's talk about OAE screening.
DR TERRY FOUST: Okay let's start with otoacoustic emissions or OAE screening, which is we've just said is the recommended's hearing screening method for birth to 3-year-old children. See this depicted in the photos here on your screen. If you're
serving birth to age three, OAE is the one and only evidence-based method recommended by the American Academy of auto audiology and the American Speech Language Hearing Association also known as ASHA.
WILL EISERMAN: OAE screening is the most reliable method to identify young children at risk for permanent hearing loss because it is accurate and feasible it does not require a behavioral response from a child like raising a hand or dropping
something in a bucket and at allows us to screen children under under three years of age. It is quick and easy. Most children once they are trained to do this well, can be screened and just a minute or two. Sometimes, as quick as 30 seconds per
air. It is a flexible tool. With that means is we can do it in a variety of environments, just like you see in this photo here. This little guy is being screened at the snack table. It child can be screened and a variety of settings. Classroom,
home, a healthcare settings, even while they are asleep.
DR TERRY FOUST: Most importantly, of all, it is effective. Is effective in identifying children who may have a mild hearing loss or a loss in just one air as well as those who have a severe, bilateral hearing loss or hearing loss in both years.

In addition, it can be helpful in drawing attention to a broader range of hearing health conditions as well, conditions that may need further medical attention. OAE screening can also help us identify children who have a temporary hearing loss as a

result of middle ear infections. Although this is not the primary goal of OAE hearing screening, it is definitely an additional benefit of screening with this method.
WILL EISERMAN: Take a good look at these photos. What do you notice? These children are all being screened using the OAE method. They are not being pulled out into a foreign environment that they have never been being before that that is strange
to them if they are being screened and every day educational home and environments, even in an outdoor play environment. Those who are doing the screening are people they already know. Their teachers, home visitors, health specialists they are
acquainted with already. That is part of the beauty of doing OAE screening with these young children.
DR TERRY FOUST: In fact, the screening works best when children are familiar and comfortable with the adult doing the actual screening and where they can play with a toy, be held, or even sleep while the screening is being conducted. Or part let's
talk about conducting the screening. To conduct an OAE screening, we first take a thorough look at the outer part of the ear. We want to look in there and make sure there is no visible sign of infection or blockage. Then a small plover small probe
on which a disposable cover has been placed, is then inserted into the child's ear canal, and that probe delivers a a low-volume or quiet sound stimulus into the ear. A cochlea, or the inner, stale shaped portion of the ear, if that is functioning
normally, it will respond to the sound by sending the signal to the brain wall so producing any acoustic emission. This emission is analyzed by the screening unit and an approximately 30 seconds or so, a result will appear as either a pass or a
referral.

Every normal, healthy inner air produces any mission that can be recorded in this way.
WILL EISERMAN: Here you see a child being screened. Let me play this for a minute. This is a realtime screening. She's going to put the probe in the ear now.
(Video playing)
On the device you will see in a moment, a handheld device, she pushed a button to start it. That indicated they got their pass or refer. Now they are going to do the other ear. It is really nice to have a helper like she has here. There you see
the handheld device. And they got another result. The applause does not necessarily mean he passed. It just means that they have a result he cooperated like they hope to. Like many skillful tasks competent screeners can make it look so easy easy.
Often it is easy once you have been trained and have had some practice. To assist screeners in keeping all of the different steps of the screening process in mind, one of the resources you will find on kidshearing.org as the skills checklist for OAE
screening. This checklist guides a screen or through the OAE process. This checklist is helpful whether you are a new screener or an experience screen or need a refresher or if you are a manager and want to make sure that everybody is doing this by

the book. In doing a a competency-based observation. You want to check out the screening skills checklist. Make sure that none of those steps are being skipped.

As we have emphasized, evidence-based screening is more than just using a designated piece of equipment. You have to be trained to use that equipment and have a screening and follow-up process built around that equipment. You need to use
appropriate equipment, so let's talk about that for a moment. You should be aware that OAE equipment is available from several different companies and in models designed specifically for screening that is being done by lay individuals like
yourselves. But there also are toke these are the simpler and less expensive models. Basic OAE equipment currently cost around $3800. There are also other equipment models on set use by audiologists and these are more complicated and more
expensive. You do not need these more expensive ones. As nonaudiologist you want to be careful not to purchase more than you need by just getting the simpler models. In addition to the costs of the equipment, each time you screen someone, there is
a disposable probe cover up the goes over the probe that needs to be answered snugly into the ear canal. Those come in a variety of sizes to ensure a really snug fit. You need a good selection of those, and this is the hard part two here. They
cost about $1.00 to $1.50 each. They can't be used on other children. You also need to purchase some adult size probe covers and if you're thinking why it's because you will use the adult size ones when you're learning, you screen yourself and
other adults to get comfortable with the process and you will also be using the equipment on your yourself before you screen children each day you are going to screen just to make sure the device is still working properly. You want to test it on
yourself before you go screen children. Our part we recommend you purchase twice as many probe covers as you have total number of children to be screened just so you always have enough on hand. When you meet with an equipment distributor or
salesperson, they are most likely going to offer to train you. That is great. They're going to train you about the equipment. It is important to understand that the training that they are prepared to offer you is rarely if ever the training you
really need. It is kind of like going to a car salesman and expecting them to teach you to drive. They are not going to do that. They will show you the functions of the car and the salesman here will show you the functions of the equipment,
probably more functions than you need to know, but they are not going to give you training on how to screen children, how to document your results, how to communicate with parents what you are finding, what the follow-up steps should be. This has
been a point of confusion for people and we want to make it clear. Be sure that you get training whether it is from the training available through our website or from a local pediatric audiologist or experienced screener. You need someone who's

going to be able to teach you to drive, to screen children, under a variety of conditions. So that was an overview of the OAE screening method. So let's talk about the pure tone screening for those of you considering this. No that this is never
recommended for children under three. As we mentioned pure tone screening has traditionally been the most common method for children three to five years of age and older. You probably recognize this method because you either already use it or have
had your own hearing screened this way. And this screening procedure, musical note like tones are presented should stroke to children through headphones and children provide a behavioral response like raising a hand or dropping a toy in the bucket
to indicate they heard the tone. Pure tone screening gives us a good idea of the functioning of the entire auditory system in fact all the way to the brain, with the child showing us with a physical or behavioral indication that they perceived the
sound.

It is a relatively affordable method. The screening equipment costs between $800 to $1000. It is less expensive than the OAE for the upfront costs.

That equipment is durable and portable enabling us to easily transport and use it in a variety of locations.

And a wide variety of individuals can be trained to perform the pure tone screening procedure.

DR TERRY FOUST: To conduct a pure tone screening just like we did with OAE we first take a look at the air and make sure that there is no sign of infection or blockage and if the ear appears to be normal than the screener is going to instruct teach
or condition the child to listen for a tone and then respond by raising their hand or placing a toy in the bucket the step can take some time because we want to be sure that the child was able to reliably complete the screening task. Once the
screener has observed that the child is reliably responding to sounds that are presented just like they were instructed, that is when we will start the actual screening.

Then during the screening process, this listen and respond to a repeated. It is repeated at least twice at three different pitches on each ear, and we note the child's response or lack of response after each tone is presented. If the child responds
appropriately and consistently to that range of tones presented to each year, then the child passes the screening.
WILL EISERMAN: Two especially notable ways that pure tone screening differs from OAE screening 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 we mentioned that means completing an initial process were for we refer to as conditioning or teaching children and carefully determining whether you are getting reliable responses from them before even even attempting to screen.
DR TERRY FOUST: There is one other notable difference between pure tone and OAE screening and that is that the screening itself is not automated like OAE screening is. Instead, and pure tone screening, U.S. the screener manually step through the
presentation of each tone multiple times for each ear and then record each response and then following a very specific protocol, U.S. the screener determine whether the ear passed or not. With pure tone screening, there is considerably more
potential for screener error to produce inaccurate results. And hence, there is a need for thorough training and oversight to make sure all the screeners are adhering to the prescribed screening protocol.

This is an example here on your screen of the actual screening steps that need to be documented for each year as you screen. Through the training process, you will learn all the steps of the conditioning and screening process and all of the
environmental conditions that we want to monitor and watch and make sure that those are met as you complete a child's screening. Based on these results, the screener determines, like I mentioned before, if any air passes or not. The device itself
does not produce that result as is the case with OAE screening. A.
WILL EISERMAN: That complicated process is one of the reasons why a lot of people are deciding to go with OAE instead. But for those of you using this process, we also have a skills checklist to work through to make sure that each and every step of
the screening process is being followed. You will want to look at this. As we said early on, one of the last things we want to talk about briefly today is what happens when children do not pass screening? What then? In order to be evidence-based
or screening process has to include a follow-up protocol for when children do not pass on one or both both ears. We have to emphasize that our screening efforts are only as good as our ability to systematically follow up on children who do not pass
on one or both years. So here is a quick snapshot of our screening process. We are going to screen 100 percent of the children. We expect about 75 percent will pass on both ears right off the bat. That leaves about 25 percent who do not pass that
initial screening. We do with that 25 percent as we screen them again in two weeks just to see if they will pass in the second time. Maybe they had fluid in their ear or wax blockage, may there was screener error. So we screen them again before we
refer them to anybody. At that point we still fight about 8 percent of those kids do not pass. Those kids are referred to a healthcare provider. Maybe they have an ear infection that needs to be treated after they have been treated and then
cleared by the healthcare provider, we screen that 8 percent one more time. Most pass at this point,

but if they do not, about 1 percent are referred to in audiologist for a complete audiological evaluation. This is overall what I just went through
and you will see this in detail on our website and in our training process that is the follow-up protocol that you need to use regardless of which method you are using, OAE or pure tone audiometry.

All right I said at the beginning today that the most important thing is that you know where to go when we are done with today's webinar and that is kidshearing.org. Let me reviewed again we will find when you go there. Now if you have some
questions, you can start posting them in the Q&A box and we will respond to them. Note that in a moment we will also put up an evaluation in the chat box so that you can complete the evaluation before heading off today and get your certificate of
attendance for today's webinar. Again, our website is right here. The first group of resources are all about planning for evidence-based screening, getting the big picture resources about that, we're to find a local audiologist to help you with
your screening and training process. Who are you going to refer children to? How can you get some help? Maybe after you do the training, one of the really good things to do is have in audiologist, and spend in our with you and watch you screen and
give you some pointers of what they are observing. There are equipment resources about how to select equipment. You will find it four OAE and pure tone screening equipment. The next group of resources is how to find that online training we have
been referring to whether for OAE or pure tone audiometry.

The next group of resources are all the daily use of resources, getting ready to screen, what do I need to have each day I'm going to screen, there is a checklist for getting ready to screen, there are letters to parents introducing your screening
program, letters you can send to healthcare providers or a local audiologist about what you are doing at your program, and the fact that you may be referring children to them. If you want a good review of the protocol I just went over really
quickly, you will find that here under protocol guides. Then forms for documenting your results. The forms we have developed follow the protocol exactly so you don't really need to remember the protocol if you use the forms, it will guide you to
the next step through completion of the screening process. Then letters for referring parents to healthcare providers over audiologist are available there in both English and Spanish.

At last, you will find a tracking tool for tracking children through the screening process as well. And then other resources in our our Icar archives are available. For those of you a Head Start, remember the Head Start center technical assistance
Center is available also. Remember they have some resources related to hearing screening. They are another link back to us as well.

So you may not have ever thought of it quite like this, but monitoring the status of a child'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 connected with the intervention resources that they need, they can thrive. And you can have the satisfaction of knowing that you were really a part of that outcome. That outcome literally lasts a lifetime. This is not a vague
contribution that you are making to their lives. This is a very tangible lifelong outcome that you're helping them to achieve.

So in our final minutes here, what questions do you have? Remember again, this webinar has been recorded and that means that we are going to post it on kidshearing.org and infanthearing.org so you can review it again or share it with those who have
not attended live with us today. So a question: For those of us who have been trained as OAE can we train others to do the we have to be certified. That is up to you. We know that telephone game where I can say one thing and pass it to the next
person and then pass it to the next person and by the time you get around the table the message has changed. I would encourage everybody to hear the original message. But the really great thing about those of you have already been trained there and
available as you can go do the practice exercises with them. Go screen with them and give them helpful hints along the way. But there are no standardized requirements about who is certified and who is not unless your state has specific
requirements, which is always good to check. But I would employ those of you with more experience as models for those, but not necessarily trainers.

The next question is what you do with children who do not cooperate? What is the example of a backup plan?.

So I can say quickly that for pure tone screening the backup is to do OAE yourself or refer the child to an audiologist. You can always have somebody else if you have multiple staff who could do the screening, it may be somebody else will just have
a better rapport for the child and be effective. Do not hesitate to swap in and out and tapping each other out if one of you is not registering with a given child. That happens to all of us. That is true with OAE or pure tone screening as well. During the training, you will see lots of strategies particularly around OAE screening for being able to try it under different conditions using different toys to distract children. Those are what we would call backup plans. With OAE screening, and
never forget that screening while a child is asleep is always an option.

Next question: When using OAE screening, doesn't have to be completely quiet? Terry, do you want to

respond to that?
DR TERRY FOUST: Terry? Thank you that is a great question. If you recall earlier in the presentation we should some photos of children being screened in natural averments like the snack table. That is one of the beauties of OAE hearing screening
is it is a method that can be done with some background noise present. I would take advantage of that and try to screen kids. The environment does not have to be absolutely quiet.
WILL EISERMAN: Since we are at the top of the hour can you gunner, can you post a link for the evaluation for folks who need to go on. We will continue to answer some of the questions you have here. And Paula if you need to run as our captioner,
we totally understand. We'll continue to wrap up in the next few minutes.

Many times, I'm going to try to ask the questions that are not about specifically screening children because this is really an introductory, in the introduction not a training let's see. Does a physical examination of the ear by the PCP count as
evidence-based hearing screening. The answer is no, it is not. Not unless that PCP is actually implementing an evidence-based hearing screening. If they are birth to three, and you do not see in OAE screening and ear specific results, you would
never want to assume that there ears have been screened. We always say do not assume unless you see method specific, your specific results.

The next question would we ever need to use a temp manometer during our screening process Terry do you want to talk about how that comes into play during the middle air evaluation.
DR TERRY FOUST: Yeah, a tympanometry is a test that is used to assess solely middle ear function. However, in some programs have elected to include that. As we talked about earlier in the presentation, one of the side benefits really of OAE
screening is that typically if a child has a fluid-filled middle ear, they will probably refer if you follow through our referral protocol and we make that referral for medical evaluation, and in most cases that is when that middle air disorder is
addressed. It is not necessary to add that step in, but it is a useful tool in the diagnostic process.
WILL EISERMAN: The next question if I'm understanding correctly is it acceptable to use OAEs on all children birth to age five. At you do need to consult with your health services advisory committee if you are a Head Start program. There are
different points of view about this question within the audiological community itself. Many people are going with a, yes, to that question. You do also want to check any guidelines at your state level. From us us at the ECHO Initiative, we
encourage people to consider that option and again look at the document on kidshearing.org that explains the two, and compares them in consideration between those two methods. But that is really a choice that people are making at the programmatic
level.

The next question: How do we get newborn hearing screening results? That should be the part of the child's health record. You can ask for that as part of the child's health record. Terry, anything to add about that?
DR TERRY FOUST: You can also contact the state newborn hearing screening program and they should be able to help facilitate getting those records if you do not know which facility that screening occurred.
WILL EISERMAN: The way you can find that is on a website if you go into that first group of resources where it says "find an audiologist, you can find your states hearing screening program. Somebody says I have a parent who is concerned about
whether the OAE would affect the feeding tube placement Terry?
DR TERRY FOUST: That is a great question and that is appropriate to screen with OAE. That PE tube is placed at the level of the eardrum and the probe is made to not go in that far. And open functioning PE tube we should expect a normal passing
result if that child has normal hearing.
WILL EISERMAN: So we have a question here that for virtual early intervention, the state is using the here checklist. When they worry get a referral for an early evaluation? We would say that that is not a hearing screening. That the only
recommended screening of children is a physiological physiologic screening. We would recommend that any child who is being considered for early intervention services especially if it is related to speech or language have a complete audiological
evaluation or at least a physiologic hearing screening, which is in OAE screening in the case of early intervention. Terry, anything to add about that?
DR TERRY FOUST: That is exactly right. The actual hearing system has never been screened in that case.
WILL EISERMAN: So let's see with this question says. The child health report for Pennsylvanian has a checkmark that says has the child received all all age-appropriate screenings listed in the routine preventative healthcare services currently
recommended by the American Academy of pediatrics? Yes, or no with a checkmark. If this is checked, yes, should we not assume that the hearing screening was done according to standards? It also has a place next to it for vision.

Okay, so. The American Academy of pediatrics Bright futures guidelines do not specify a physiologic screening after the newborn period until four years of age. We have been working with them to update that. But that pretty much means that they may
or may not have had a hearing screening. Most likely they have not had a physiologic hearing screening. Each program can abide by whatever guidelines they want, but the American Academy of pediatric guidelines were set forward for what pediatric or
pediatricians would be doing would be doing in their visits with families they do not see children every

day or as often as many early childhood providers do. If they did, you can bet that those requirements would include a hearing screening
somewhere along the way during those first four years of life. Remember that those guidelines are minimum standards for pediatricians. They are not to be interpreted necessarily for those of us who see children on a regular basis.

We encourage you to do as much as you can to monitor hearing screening, not as little as you are required. Anything to add to that, Terry?
DR TERRY FOUST: No, I think you are well covered that.
WILL EISERMAN: We are 10 minutes after the hour and the questions keep coming in. If there is anything that you do not find your answers to by looking at our website, kidshearing.org, feel free to text us or e-mail us through our website and we
will get back to you with an answer to your questions. Terry, thank you for your time today. Thank you again to our captioner into our technical support folks and to all of you for all you are doing to do right by the children of families in your
program to make sure that children have the best possible opportunity to thrive by always having access to language regardless of whether they have some degree of hearing loss or not. Remember kidshearing.org, go there, go there soon I go there
often. You will find lots of useful tools there. Thank you. Click on the survey and certificate generator in the chat box before you go back to whatever you are doing.
(CONCLUDED AT 3:11 PM) captioner

