Webinar Transcript - Identifying Children with Hearing Loss: The Key Role of School Nurses in Evidence-Based Screening – October 10th, 2024

We're at the top of the hour, a minute past. So why don't we go ahead and get started? Kathy, I'm going to turn it to you first. All right. Yeah. Sounds great. Thanks. So I am, I'm Cathy Yonkaitis and I'm the co-editor of the school Nursing comprehensive textbook and the editor in chief of the NASN School Nurse Journal. And I'm excited to participate in this webinar today. This really all came about because Doctor Iseman here, who I'm going to just introduce in just a second, and who's been speaking to us already, he reached out to me about how we might increase our school nurse knowledge around evidence-based hearing screening and referral. This resulted in the start of our professional friendship as well as this webinar and a newly published article in NASN School Nurse.

It's online only right now on this very topic. So, I'm not a hearing expert, but I am passionate about school nursing and about evidence-based care. I'm going to participate here and there. My two colleagues who are here today, who happen to be very involved in the hearing world and hearing experts, will share the best practices for hearing screening for children. With that, I'll let you take it from here. Thanks, Kathy. You know, a big thank you to NASN and the leadership of NASA, including Kim Granados and the new executive director, Terry Hinckley, whom I met at the NASA meeting this year. You all have been so welcoming to us and our questions, giving us opportunities to share the resources and information that we have. So we're excited to do that today.

I'm actually the director of the Early Childhood Hearing Outreach Initiative known as the Echo Initiative at Utah State University, which is housed within the National Center for Hearing Assessment and Management. Starting in about 2001, for over 20 years, the Echo initiative served as a national resource center with a focus on early childhood on Early Head Start and Head Start programs and other early care and education providers. Our goal is to help them implement evidence-based hearing screening practices that lead to the identification of children with permanent hearing loss. We have recently been expanding our focus to support evidence-based hearing screening and follow-up practices throughout the school years and are really happy about being able to share our resources with all of you.

When we're finished, we're going to open up a link. We'll open up the chat or the Q&A field for you to ask us some questions, but we're not going to monitor the chat throughout our session today. At the very end, just a reminder, we'll ask, we'll open up a link to evaluate us that will also generate a certificate of attendance for you if you need that. So be sure to hang around if that is of value to you today. I'm joined today by my good friend and colleague, Doctor Terry Foust. Terry is a pediatric audiologist and a speech-language pathologist who has served as a consultant and a trainer with the Echo initiative since its very beginning.

So Terry, welcome. Yes, thank you, William, and welcome everybody. As William mentioned, he and I have had a wonderful opportunity with many of our other echo team staff to work with many local collaborators in almost every state. We've been able to work with thousands of staff from Early Head Start, early intervention programs, and many other health and education settings. We're excited to be here to share some of what we have learned with you. I'm going to turn off my video now so that it's not distracting and distracting to me too. We want to acknowledge right off the bat how impressed we all are by what you all do as school nurses.

Much of our work over the past 20 years has focused largely on identifying children with hearing loss during those first five years of life. This year's NASN conference was the first time I had the opportunity to be exposed to the full scope of all that you are responsible for, and it was, to say the least, humbling. We just really want you to know that we are aware of all that you have on your plate. We want to be able to talk about this whole process of conducting hearing screenings and follow-up in a way that acknowledges everything else that you have to be doing. We hope that what we can offer will help you to be effective and efficient while also maintaining that overall robust goal of schools being able to identify children with permanent hearing loss.

We want to ensure that they access the appropriate support and services that they need. The work of the Echo initiative is based on the recognition that each day, children who are deaf or hard of hearing are attending school and receiving various health care services often without their hearing-related needs being known. Hearing loss is often called the invisible condition, so how can we reliably identify which children have normal hearing and which may not? The short answer to that question is that healthcare and education providers can all be trained to conduct evidence-based hearing screening and follow-up practices, just like you see depicted in these photos here.

Now, the outcome of a hearing screening program is that we want to identify children who are deaf or hard of hearing who have not been identified previously. Keep in mind that hearing can be compromised at all degrees of severity, and it can sometimes affect only one ear or both ears. If you look at these pictures, you'll probably recognize the procedure on the right. That procedure, where they've got the child raising their hand, is called Pure Tone Audiometry hearing screening, which has historically been the most commonly used screening method for children three years of age and older. You'll still see many early care and education settings and providers using it, and we assume that many of you may be using this method.

Now, on the left, you'll see a procedure called otoacoustic emissions or OAE screening. We'll probably call it OAE screening throughout the rest of our time together. This method is newer; it was introduced in the 1990s and was initially widely adopted as part of newborn hearing screening. Since then, it has really gained wide acceptance as a useful method for screening early childhood populations from birth to three years of age. It's increasingly recommended for children three to five years of age as well as older children. We'll be talking about both of these methods today.

You'll hear us emphasize evidence-based practice today, which includes three key components. These include using recommended methods specific to the age and developmental levels of the child being screened, implementing follow-up when children don't pass the screening on one or both ears in a recommended sequence and timely fashion, and documenting all screening outcomes. Gathering follow-up diagnostic data and facilitating access to intervention services are essential. These three elements are key to being sure you're implementing evidence-based practice.

Now, all too often, most of the energy, time, and resources are put into just that first step: conducting screenings. However, all these efforts are only as worthwhile as our capacity to ensure that children who don't pass are getting the follow-up that they need. That last component is an essential indicator of well-implemented evidence-based practice. Those responsible for hearing screening need to be able to report how many children they screened, what their pass and fail or

refer rates were, and very importantly, they need to report how many children were referred for an audiological evaluation.

They must track how many received that evaluation, how many were identified with a permanent hearing loss, and what sorts of support they're receiving in the school. You can really see that evidence-based hearing screening programs are much more than just using the recommended screening method and screening as many kids as possible. As William mentioned, we know it's a heavy lift when you have all the things on your list that you're responsible for. We aren't suggesting this is necessarily all your responsibility to implement, but we think it's important for all of us to know about evidence-based practice and to help you be effective in ensuring this is what happens for the children in your schools.

One of the things you're going to hear us emphasize is that we want to help you think about strategies to ensure that your screening efforts are not just solely focused on getting the screenings done. We also want to make sure that the follow-up and reporting steps are also occurring in a quality fashion because that's the ultimate goal: to identify and serve children with hearing loss. That's where we're headed today, and let’s set the stage with a quick review of the auditory or hearing system.

There are three main parts to the auditory system: the outer ear, the middle ear, and the inner ear or the cochlea. When sound enters the outer ear, it causes the eardrum to vibrate. This vibration then moves three small bones in the middle ear. That movement stimulates thousands of tiny sensitive hair cells in that snail-shaped portion of the inner ear called the cochlea. From the inner ear, that sound signal is carried along special nerves to the hearing centers of the brain, and then the individual experiences the sensation that we call sound.

While this is how the auditory system typically functions, there can be some exceptions. For example, there can be a temporary issue like a wax blockage, or there can be fluid in the middle ear caused by ear infections that we may discover and get addressed during a hearing screening process. However, the primary target of a hearing screening is the functioning of the inner ear or cochlea. In some instances, the sound travels through the outer and middle ear, but when it reaches the cochlea, the signal is not transmitted to the brain, resulting in what we call sensorineural hearing loss.

This condition is usually permanent, and this is the primary condition for which we are screening in our mass screening efforts with children. We need to screen through childhood because hearing loss can occur at any time. It can occur due to illness, physical trauma, or environmental or genetic factors. When this happens, it is referred to as late-onset hearing loss, meaning it is acquired after the newborn period. Permanent hearing loss is often called the invisible disability, the most common birth defect in the United States. Sensorineural hearing loss affects about three in 1,000 children at birth, and that incidence actually doubles to about six in 1,000 by the time children enter school.

Then it increases steeply to about 40 to 50 in 1,000 during the school years. We always want to point out that while hearing loss may be invisible, these children cannot be invisible; they need to be seen. I want to stop you here for just a second. I agree they have to be seen, but I think this blows my mind hearing these statistics. Are you saying that hearing loss actually increases in school-aged

children? Yes, it increases and by a lot. We can't just rely on screenings earlier in life because hearing status can change and it often does.

That's why we want to invite you to ask yourselves, with all the children that we've screened, have we identified as many as we should be expecting to see? Is the follow-up really happening? One reason hearing loss is sometimes referred to as the invisible disability is because it isn't easily observed and can easily be disguised by the children themselves. Children with mild or moderate hearing loss often use visual cues that lead us to believe they're hearing us much better than they actually are. They can use subtle visual cues that accompany a sound and sometimes turn toward the source of a sound and fool us.

They might simply copy their peers' behaviors even though they might not have heard or completely understood what was being said to them or asked of them. They may face challenges we may not immediately recognize, so their hearing loss remains invisible to us. They may not appear on our radar of kids to be particularly concerned about, until they fall further behind. Even then, if they haven't had appropriate hearing screening and follow-up, they're at risk for being misdiagnosed or described as having a learning disability, a mental health need, or even being on the autism spectrum.

This happens way too often. One of the earliest findings of the Echo initiative demonstrated just this among the children in our earliest studies. Many were identified with late-onset permanent hearing loss and were already enrolled in special education or speech therapy services. No one had evaluated or even considered hearing, and this is a problem we continue to see to this day. All the speech therapy in the world is unlikely to be very effective if there’s an underlying unidentified hearing loss.

So we absolutely do not want to wait until a child's hearing loss manifests in visible ways before we identify the hearing loss. That underscores the value of quality hearing screening and follow-up systems and the role that you can play in advocating for quality hearing screening and follow-up for all children, especially those already receiving special education services. Keep in mind that all too often, no one else in the life of these kids is really thinking about their hearing other than you.

Let's talk about the first component of evidence-based hearing screening: using recommended methods that are appropriate for the age and developmental level of the child. As we mentioned a moment ago, Pure Tone Audiometry and OAE screening are the recommended methods we'll be discussing today. The availability of Pure Tones and OAE screening means it’s no longer appropriate to rely solely on subjective methods we may have used in the past. Those are methods such as ringing a bell behind a child's head or depending solely on a caregiver's perceptions of a child's hearing.

Observations of a child's response to sound, especially the lack of a response, can be helpful, and we should pay attention to how children do or do not respond to their environment. However, these observations do not constitute a hearing screening because they're far too crude and unreliable. Frankly, we can do so much better than that because of our current available technology. You probably recognize the Pure Tones method, either because you already use it or because you've had your own hearing screening this way.

In this procedure, musical note-like tones are presented to children through headphones, and children provide a behavioral response like raising a hand to indicate that they heard the tones. Pure Tones screening gives us a good idea of the functioning of the entire auditory system, all the way to the brain, with the child showing us a physical or behavioral indication that they perceive the sound. It's a relatively affordable method, with the screening equipment costing somewhere between $800 and $1,000.

The equipment is durable and portable, enabling us to easily take it and use it in a variety of locations, and a wide variety of individuals, like yourselves, can be trained to perform the Pure Tones screening procedure. Here's a quick excerpt from our online training in Pure Tone Audiometry that demonstrates the screening process. We first take a look at the ear to ensure there is no visible sign of infection or blockage. If the ear appears normal, the screener instructs or conditions the child to listen for a tone and then respond by raising a hand or placing a toy in a bucket.

Once the screener has observed that the child reliably responds to sounds as instructed, the actual screening starts. During the screening process, this listen and respond game is repeated at least twice at three different pitches on each ear, noting the child's response or lack of response after each tone is presented. If the child responds appropriately and consistently to the range of tones presented to each ear, the child passes the screening. That's an excerpt from our training system that you can access through kidshearing.org, along with a wide variety of other resources to help you plan for, develop, and implement your screening process.

As a screening process, the screener needs to step through multiple specific steps manually with each child in order for it to be valid. It can be trickier to do than one might assume. While anyone who's really good at working with kids can certainly learn to do Pure Tones screening, we can't emphasize enough that it's imperative for anyone doing Pure Tones screening to receive formal, comprehensive training and annual refresher training. This ensures that your screening habits don't drift over time, which we can all do if we're not careful.

In addition to the online training and other resources, we have a checklist designed to help you maintain full compliance with evidence-based practice. This checklist can serve as the basis for training as well as for monitoring and evaluating the quality of your screening practices in your program. We invite you to check this resource out along with all the other ones we have on kidshearing.org. Like many tasks that look simple from an observer's perspective, conducting Pure Tones screening can be quite complicated.

There are many things that can go wrong that can invalidate the screening. Some common mistakes jeopardize the integrity of our screening outcomes, such as not following a standard screening protocol, which includes appropriate screening frequencies and the number of attempts on each ear. Presenting tones and patterns that the child can predict rather than responding to the actual sounds as presented can also invalidate results. Improper placement of the earphones, like over hair or too far forward or backward and not centered, can cause issues too.

Sometimes, we provide visual cues, or we might even have reflective surfaces where the child can be cued when you're pressing a button without realizing it. Sometimes the best of us don't switch ears and test the same ear twice. We might fail to do an equipment check to ensure it works before we begin our screening session. Using a noisy room and not testing the sound levels of the room in

advance can compromise results. We've seen people increase volume to accommodate for a noisy environment, helping a child pass by raising that volume or giving them the benefit of the doubt.

Not recognizing if the equipment has failed during the screening, talking, or subtly prompting the child can lead to errors. Sometimes we assume that children who do not pass are receiving their follow-up screening and diagnostic services. However, we don't actually have the documentation or evidence to support that. Those are just some reasons why quality training and repeated training and review of quality practices are so important.

In a large meeting not too long ago, an individual raised her hand and said, “I don't want to brag, but I can tell you that I'm able to get almost any child to pass the hearing screening. I give them a little nod, or I raise my eyebrows to let them know they should hear the sound and raise their hand. Or I allow the tone to last just a little longer until they notice it, or I might simply increase the volume a little, especially if there's some noise in the environment.” None of those things are okay, and they reflect someone wanting children to succeed. But that is not the goal of hearing screening.

All those things require us to carefully check ourselves as we continue doing our hearing screening using the Pure Tones method. While using Pure Tones screening, there will be a percentage of children, depending on the age group you work with, who simply won't be able to be conditioned. You won't be able to proceed with the screening, and it's never acceptable to delay their screening to another time or year. Some children who are difficult to screen may be the actual children we’re trying to identify with hearing loss.

In younger populations, like five or six years of age or younger, we wouldn’t be surprised if maybe 20 to 25% of those children won’t be able to be screened with the Pure Tones method. There will also be children whose primary language is different from your own, or children with certain disabilities for whom the screening may not be achievable. Yet we want those children to be screened as well. Fortunately, we have an alternative: Otoacoustic emissions or OAE screening is the recommended hearing method for children from birth to three years of age.

The ease and speed of these automated screeners are causing many of us to reconsider the use of Pure Tone Audiometry with older kids. Some schools and healthcare providers are switching to OAE screening for all children so they have one method and one type of equipment to use across the age range. You can look at a document on our website that can help you and your team think through the dual use of OAE and Pure Tones screening.

At a minimum, you'll need to have a plan for how to screen children you can't screen with the Pure Tones method. Some people just use OAEs for everybody, so you can look at that document to help you think that through. You’d want to have an audiologist participate in that discussion if possible. If you can't do OAEs on children, you can't screen with Pure Tones. Another alternative would be to refer all those children to an audiologist, which could be challenging in a different way.

The bottom line is we just don't want to delay children that are difficult to screen. One of the things we love about OAE screening is that we can screen children in a wide range of environments. What do you notice about these photos? They aren't being pulled into a foreign environment. They’re being screened in everyday educational or home environments where the children can happily

continue to do what they're already doing. In fact, Terry, what else? We can screen them while they're sleeping.

Absolutely! It's really great because the screening works best when children are familiar and comfortable with the adult doing the screening, and where they can play with a toy, be held, or look at a book while the screening is being conducted. Being able to go to children can really speed up the amount of time it takes to screen a group of children. Frankly, screening school-aged children with OAEs is usually a breeze. At that age, it takes just a few minutes per child.

Here are a few examples of handheld OAE equipment we're talking about. Incidentally, there are now two devices on either end of the photos you see that have both OAE and audiometry capacity. You can buy a version that is OAE only, but you can also get one that is both OAE and Pure Tones. The one on the far end costs the same as a regular OAE-only device, so you want to check that out if dual functionality matters to you. We don't recommend any particular brand, but we want to alert you to what's available out there. The combination units we've tried have worked well.

So, Terry, tell us about how OAE screening works. Unlike Pure Tone Audiometry, OAE screening is fully automated. Once you start the screening, the equipment completes that process for you. Your job is to set up the environment, insert a probe into the child's ear, and manage the child's behavior while the screening is completed. Just like with Pure Tones screening, we start by thoroughly examining the outer ear to ensure there's no visible sign of infection or blockage.

Here's a quick excerpt from our online training on OAE screening to give you an idea of how it works. A small probe is placed in the ear canal that delivers a low-volume sound stimulus. A cochlea functioning normally will respond to this sound by sending the signal to the brain while also producing an acoustic emission. This emission is analyzed by the screening unit, and in approximately 30 seconds, the result is displayed on the computer screen as a pass or refer.

Every normal healthy inner ear will produce an emission that can be recorded this way. Unlike with Pure Tones screening, the person doing the screening doesn't have to manually step through the various frequencies and tones being tested. Once the probe is fit in the ear, the screener simply presses a button, and the entire screening process is completed automatically. This can eliminate all sorts of possibilities for errors that we're concerned about with Pure Tones screening. Regardless, it still requires thorough training, which can be accomplished online.

Here's an unedited excerpt from our tutorial showing a screening of a child using the OAE method. The child is cooperative, but for most children you're screening, keeping them still and occupied won't be very difficult. So let's see how this goes. Ready? The probe is going in his ear there. The handheld device is not visible yet, but you'll see it soon. The result will be shown as a pass or referral, and they are rewarding him for his cooperation. There you see the device; she pushed the start button, and they have a result. That's as quick as it can be!

It looks easy, but it does require some training. With training, you can become skilled at using it under various conditions with different children who respond in many ways to having that probe in their ear. We've given you an overview of the two evidence-based methods: Pure Tones and OAEs. Using the recommended method is, in fact, the first key component of evidence-based practice. I

want to remind the audience that many states have mandated rules around hearing screening, and we're required to follow them.

This may include the type of device to use or the minimum grades in which a child must be screened. We all need to be aware of what our state requires, and I suggest that if a school nurse finds that state regulations aren't in line with the evidence-based practice guidelines we're discussing, they should work to have those regulations updated. Advocacy is likely most effective if you work with your state school nurse association to provide a united voice among all school nurses in your state.

I want to say one more thing about these two methods that we just reviewed. Sometimes Pure Tone Audiometry, because it's been around for a long time, has been called the gold standard screening method, but it's only that because it's been in practice for the longest time. Both OAE and Pure Tones screening have been assessed independently against the true gold standard, which is diagnostic audiometry, and both have been shown to have comparable performance as predictors of hearing loss revealed by the diagnostic testing.

This means that the hard numbers in terms of sensitivity and specificity are comparable for OAE and Pure Tone Audiometry. There are studies currently underway comparing the two methods head-to-head in ways that haven't previously been done. We'll be really interested to see those results, but so far, the findings indicate we have two options to select from based on factors like whether we're doing mass screenings within specific time and place restrictions or whether the children being screened are of different ages and developmental levels.

Do we have control over the environment and noise levels? All these factors should be considered when choosing between these methods. This document you see on the screen is an excerpt from one on our website at Kids hearing.org to help make those decisions. One of my colleagues, Doctor Dylan Chan, an otolaryngologist and an ear, nose and throat doctor, who is currently the PI on a study at the University of California, San Francisco, is looking at the equivalence of Pure Tones and OAE.

He says it's like comparing an electric car versus a gas car. They are user-related decisions, situation-dependent cases where you might choose one method over the other, but both have been demonstrated with clear evidence that they will get you safely from point A to point B. So just something for you to think about now, regardless of which method you use, you're eventually going to have a child who doesn't pass. So what then?

To be evidence-based, your screening process must include a follow-up protocol for when children don't pass. We must emphasize that our screening efforts are only as good as our ability to systematically follow up on children who don't pass the screening on one or both ears. Let's take a good walk through a commonly used follow-up protocol. One good thing to remember is that the steps of the follow-up protocol will be the same regardless of what screening method you are using or how old the child is.

This follow-up protocol is the same. There's one 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 gotten the results. That's right. We really want to

caution everyone that a screening process is not complete just because a referral has been given or a letter has been sent home. These are the only conditions under which we can really say that the screening is done for a given child.

If an ear passes the screening right off the bat, then the process is complete for that ear. If the ear doesn't pass, we're not exactly sure why. Sometimes an ear may not pass due to screener error or even a temporary condition like a head cold. It wouldn't be practical for every child who doesn't pass the first screening to be referred to a health care provider or an audiologist. If an ear doesn't pass the first screening, instead of making an immediate referral, we wait about two weeks and then we screen again.

By the way, if one ear passes the first screening and the other doesn't, you don't screen the ear that passed a second time, just the one that didn't pass. If the ear passes the second screening, 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% or fewer of the children won't pass this screening and will need to have their ears checked by a health care provider using tympanometry or pneumatic otoscopy.

It's not uncommon that a wax blockage or fluid or inflammation in the middle ear has prevented the screening of the inner ear from being completed and caused a non-passing result. At this point, you'll want to intensify your monitoring of the child's follow-up. Consult closely with the health care provider to find out the results of the middle ear evaluation and any treatment that's being provided. We always want to document the results of that middle ear evaluation, and keep in mind that since the ear hasn't yet passed the screening, we still don't know if the inner ear, the cochlea, is functioning properly.

Most health care providers do not have hearing screening equipment, so they can't complete that screening process in-office. You'll need to confer with the health care provider about when that ear should be rescreened. After the middle ear evaluation, we conduct a rescreen. Keep in mind that this is just a small fraction of the total number you're screening. It could be as few as 8 or 5 or even fewer out of 100 that will need these follow-up steps.

But it is essential that these steps are completed, so you rescreen them after they've been to the health care provider and treatment is completed. In most cases, they'll pass at this point. Given that most of you are school nurses, if you have the ability to do that middle ear evaluation yourself, you could do this. You could perform the middle ear evaluation after the first time the child doesn't pass. If you see signs of infection or wax blockage, you would stick with the sequence of the protocol as shown here.

However, if you don't see any signs of infection or wax blockage and you've screened that ear a second time to see if you get the same result, then you could move on to the next step in the screening protocol: referring the child to a pediatric audiologist for evaluation. This is where our level of concern is heightened because the child has repeatedly not passed. We really don't think that there's a middle ear condition to explain why the child isn't passing.

Less than about 1% of children typically need this step, but it's obviously very important. We want to encourage you to check out our website, kidshearing.org. We have referral forms, this protocol

described, and lots of resources to help you ensure this complete process is built into your screening and follow-up.

There's an important exception to this protocol. Whenever a parent or caregiver expresses concern about a child's hearing or their language development, that child should be referred for an evaluation from a pediatric audiologist, even if they pass that hearing screening. This is true because there's no perfect hearing screening method; they're just not all 100% accurate or perfect. To be on the safe side, whenever there's an explicit concern about hearing or language, go ahead and make a direct referral.

You can screen the child and send those results along, but we want to make that referral regardless. This brings us full circle to what we were saying about children already receiving speech and language interventions. We really want to see them get an audiological evaluation so that if there is a hearing component to their speech and language concern, we know about it.

So, we've addressed the two key components of evidence-based practice. The third is about holding the first two components together as a complete and coherent process by documenting all of the screening outcomes, gathering follow-up diagnostic data, and facilitating access to intervention services. We have documentation forms, a tracking tool spreadsheet that you can use to know exactly which children are complete and which are not.

We have referral letters; all of these things are free on our website for you to download, use, and adapt in whatever way makes sense to you. This begs a giant question: Who is responsible for all of this? Is it solely your responsibility to implement evidence-based hearing screening and follow-up practices that can lead to the identification of children with hearing loss? After all, that is the goal. What resources are needed to make that happen?

Who's assistance is needed, what assumptions do we need to check, and what needs to be considered and factored into a complete programmatic plan to be evidence-based? Here are just some of those considerations: How will we track who is complete and who needs follow-up? What follow-up steps can occur on-site? How do we ensure that nobody assumes that just because a referral letter was sent to parents, that will actually lead to follow-up?

Who can help explain the results to parents? Who can help schedule those follow-up appointments, remind parents of follow-up, and obtain the results if it needs to happen off-site? Who are my helpers? Is there administrative support? Are there volunteers I can look to? Who can I recruit? How else can I find out the results of referrals, and how can I summarize outcomes, tallying children screened, referred, and identified?

Kathy, do you have any additional insights? I mean, you're a school nurse. What strategies might be helpful to ensure this whole system is held together, particularly the follow-up? Well, I don't have a crystal ball or a magic wand, even though I'd love to help solve this issue. You've done a great job hitting on the main considerations for getting this all done. This is a really big question, and for me, the key is to use others when you can.

It may be a volunteer, another support staff member, or even having a substitute nurse to assist, covering the office while you do screening or rescreening. If you use a volunteer, be sure to have them sign a confidentiality agreement to ensure your students' privacy is maintained. Another

option might be someone within that building, like a community or family liaison within the school or district, who might be a good fit, especially with helping to connect families to referrals and to do some of the follow-up.

The last thing that comes to mind is whether we're using referral forms that parents can understand. Are we ignoring the health literacy of the people we're working with? Are we considering the language they speak at home and probably read at home? What are we doing with these referral forms? I'm excited to check your website to see what options you've provided.

If anyone has a great referral form or process, I think it would be a great manuscript to discuss with others about how we can effectively and efficiently get that referral process happening. Thank you, Kathy. The forms and letters we have on our website are actually the product of a lot of people's input, who have used those forms. If you have good tools you want to share, we'd be happy to share them through our website as well, which is kidshearing.org.

Let me give you a quick look. This is our landing page right here. The first section is all about planning. You'll find big picture resources related to finding local audiologists, information about screening equipment, and how to select equipment. Under screening equipment, you'll find that document I referred to earlier about considerations in selecting whether to use OAEs or Pure Tones or both. The next section of resources is all about accessing training for OAE and Pure Tones.

In the next group of resources, there are lots of practical resources for preparing for your screening day: letters to parents and others in your program and school, our protocol spelled out, documentation forms, referral forms, letters, and even scripts for what to say to parents at different points in the protocol process. Lastly, in the follow-up resources, we have a tracking tool, which is a spreadsheet that can be really useful for keeping track of a group of children at different stages of follow-up, and then some monitoring program quality tools.

That's all on kidshearing.org. We have a few minutes for questions. Let's open up our Q&A field. Keep in mind that in a moment here, we're also going to open up a link for giving us feedback on today's webinar that will generate your certificate of participation. If you need that, be sure to complete it before you leave. We hope everyone will because we'd love to get your feedback on how we addressed your learning needs.

One question we often get is about those difficult-to-screen children. Can we rely on newborn hearing screening results, especially when children may be difficult to screen? Terry, do you want to comment on the use of newborn or other previous hearing screening results? That's a great question. As we alluded to earlier in our conversation, when we talked about late-onset and progressive hearing loss and the increase in incidence as children go up through school age, that tells us we can only rely on those screening results for a period of time.

We recommend that newborn screening results can be good for just about the first year of life, but then we want to do another hearing screening. The next question is a reality-based question: "We get so many referrals to speech and language. Would we be sending 50 to 100 kids to an audiologist if we sent them all?" This is why we want to ensure that all kids are getting their hearing screened at a minimum. We raise and wave the flag that somewhere in their evaluation process, they are considering hearing.

It may not have to be done by you, but perhaps the speech-language pathologist needs the capacity to do that. The starting point is the screening, right? Yes, the next question asks about OAEs only providing information on whether the structure is present in the ear. Are you saying that OAEs are as effective as Pure Tones? Yes, they are as effective, but OAEs actually look beyond the structure. They measure a response that comes from the inner ear.

When stimulated, that inner ear sends back a response we can measure, so it goes beyond just the presence of a structure. The next question is related to recommended age ranges for OAE versus Pure Tones. Are they equivalent for all ages? OAE is recommended for children from birth to three, while Pure Tones is recommended for ages three and over. However, as we addressed earlier, there are pros and cons to both methods.

Many are using OAEs with older age groups because a large percentage—up to 20%—of children may not be able to participate in Pure Tones screening due to developmental challenges. There may also be noise issues we can't control, and the skill level of the screener can affect results. OAE can sometimes be difficult to screen children with, but they are both recommended methods. As William said, it’s electric versus gas cars; they'll both get you there, but we want to customize based on the population you're working with.

We’re at the top of the hour and have posted in the chat our evaluation link, but we’ll hang on for a couple of minutes to answer a few more questions. The next question is, “You mentioned that OAE is found to be as reliable as Pure Tones. Does the OAE pick up the brain hearing piece? For instance, a child who has had an intraverbal bleed or auditory neuropathy?” Terry, what do you think?

We need to balance our overall goal, which is to screen and identify children. There are conditions that neither method will pick up, like a very small percentage who may have an intervertebral bleed or auditory neuropathy. OAE may not catch those. However, when looking at the 15-20% who can’t be screened with Pure Tones, the percentage of children you're missing is much greater.

We are going to respect everyone's time and thank you for all of your questions. If we can answer any additional questions via email, please reach out through our website. Before you take off, be sure to go into the chat and click on the Qualtrics survey to generate your certificate of attendance. A huge thank you to all of you for all that you juggle every day, including you, Kathy. Thank you, Terry.

All of this is about serving children to the best extent we can. Hearing is sometimes minimized in the eyes of folks who don’t always appreciate how directly connected it is to overall school success, socialization, and emotional health. We appreciate you as you think about how you can implement evidence-based practices so that children with these needs can be identified. Go hang out at kidshearing.org.

Yes, this webinar has been recorded and will be on kidshearing.org in the next couple of days. Share it with others who didn't attend or if you need to review it again for yourself. Thanks, everybody! A giant thank you to NASN for your friendship and collaboration. Take care, everyone.