>> All right. They said we were good it begin so welcome to our presentation: Unilateral is not uniform. We are going to start with introductions. My name is Melissa Jensen. I am a parent advisor at sunshine cottage school for Deaf Children. I am a TOD by training. But right now I work with parents birth to three in our parent infant program. And I am a certified auditory verbal educator. And then these are my other two presenters with us today.

>> I am on Anh say. I also work in the parent infant program at sunshine cottage. I am a bilingual parent infant advisor and a certified listening and spoken language auditory verbal therapist.

>> Hi. My name is Logan Horner and I'm an audiologist at sunshine cottage and we're so excited that all of you are here to learn about unilateral hearing loss. We know you had a lot of choices today, so we feel very blessed and humbled that you are here to hear from us.

Thanks for being here.

>> Today we are going to be talking about unilateral hearing loss, how we rehabilitate and amplify those children at sunshine cottage. We are going to talk about the five common types of unilateral hearing loss we see and what we -- how we kind of approach each of those different profiles, how we approach the amplification and then how we approach the rehabilitation with -- they're getting started t oo -- with those kids versus those with bilateral hearing loss.

So we are going to start talking about why unilateral is different from bilateral hearing loss. The first is really the thought process that a lot of professionals and parents have when they find out that there is a child with hearing loss just in one ear. And that is, well, they hear fine. They have that better hearing ear, they have that typically hearing ear, so everything is fine.

We really work a lot with parents on yes, it appears that he hears fine right now, but there are lots of implications, lots of research about what that unilateral hearing loss does long-term and we want to get ahead of that before we start seeing delays.

We know that kids with unilateral hearing loss have struggles with localization. So they, in noise, in distance, in reverberation, they can't always tell where what they need to pay attention to is coming from and how to use the information they are getting from their good ear for the full range of listening.

We know that research has shown us that kids with unilateral hearing loss are less likely to read well, they're less likely to have language equal to their hearing peers, they're more likely to fail a grade and they're less likely to have an IEP in place to make sure that they get the things that they need including direct instruction, vocabulary instruction, even FM systems. So we know that these kids often get lost in the mix when there are kids with what others perceive to be worse hearing losses and more needs.

>> How many of you here have experienced where time issues with the hearing technology? Wear time issues with the hearing technology. I think the majority of us, right? About 45% of our children with a unilateral hearing loss in our parent/infant program use their hearing technology six hours or more. So getting to full-time use is a struggle for the majority of parents because their child has one good listening ear. Many people believe that one ear is sufficient for listening and daily communication.

So the fact that their child hears perfectly well with just one ear is very confusing for a lot of parents, right?

Even when parents comprehend the impacts of a unilateral hearing loss, it is very difficult for extended family members to understand, because a unilateral hearing loss is hard to see as opposed to a bilateral hearing loss, right? The child will turn when they call their name or when they hear a sound, but just because they detect doesn't necessarily mean they understand.

>> So I'm going to go over the five profiles that we are going to talk about today. They are five profiles that we have worked with at Sunshine Cottage. But before I do that, I want you to think about how hard it would be if I asked you to sit on your n on-dominant hand, put a piece of paper in front of you, and draw a perfect circle. Would be able to do that without having that other hand to steady? No, you would probably have to lean your head down and you would make it work, but it would be very challenging, right? So think about these profiles in that way. That's what these kids are having to do in a classroom setting.

So the first profile we are going to talk about is a conductive hearing loss. So microtia atresia while they're using a bone conduction hearing aid of some kind. The second one we are going to talk about is sensorineural hearing loss. This is aidable hearing loss where we know they will get benefit from a BT hearing aid. The third one we are going to talk about is severe to profound, when we've done imaging and we know that they have an auditory nerve so we're having them wear a hearing aid so that in the future they may be able to get a cochlear implant.

The fourth profile is when they actually get a cochlear implant in that ear. The fifth profile is when we've done imaging but we've found out that that cochlea is malformed or maybe they don't have an auditory nerve, so then they are going to wear that bone conduction hearing aid.

>> This is a new slide we're very excited about. So we participate in the outcomes and developmental data assistance Center for EHDI, which is abbreviated ODDAC, it is a 15 state program that is collecting assessment data from all these programs birth to age five, combining that information, and looking at the outcomes for children with hearing loss. At Sunshine Cottage, we have been participating in this assessment collection for many years and we were able to ask them to look at our children with unilateral hearing loss and kind of compare them to the rest of the collected group. We got some really interesting information about how we are looking and what we are doing compared to the rest of those programs.

We are actually only one of four exclusively listening and spoken language programs that are participating in ODDAC so we thought it was very interesting and we would like to share with you what we found out we're doing differently than some of the other programs.

>> So as you can see from looking at this, we're using more hearing technology when compared to some of these other places that are out there. So when we look at Sunshine Cottage, 21% of the kids we have in the parent infant program which is birth to three, and our day school program which is three to fourth grade, 21% of those kids have a unilateral hearing loss of some sort. So when we break that down, the conductive hearing loss of microtia atresia, those kids are a majority. We have an extremely high prevalence of microtia atresia in our area. If anybody wants to study that, please do, because I would really like to know why.

We have a few kids that have that sensorineural mild to moderate. We have kids that have the severe to profound hearing loss with the auditory nerve and hearing aid. We have a couple of kids that do have a cochlear implant and a profound hearing loss. And then we have a few kids where we've done the imaging and found out they have an absent nerve but they're still getting benefit from that bone conduction hearing aid. ?

>> If you have questions about any of these profiles, we'd like it to kind of go back and forth because we know how it is when we're in a session and you're like I had a question and now I forgot it. If you have a question, please go on and come up here and we'll use the microphone and you can ask your questions. Oh, we already have one!

Lovely!

>> Hi!

>> Hi!

>> I was wondering if when doing this study, were you able to see if there was racial or ethnic groups this was tied to most with those who have microtia atresia.

>> We have a very large Hispanic population. I do think that has something tied to it, but yes. I'm asking y'all to use the mic so our captioner can make sure to get everything that's coming to you.

>> I've read some previous studies about this area and the higher rates of congenital anomalies and related to the Pedro chemical industry and also a lot of the different industries that are involved along the Texas and Mexico border that may be related to some of that.

>> That is interesting too. See!

Yeah. That kind of makes sense.

All right. So the first thing that we are going to talk about is unilateral microtia atresia. This example, it is the right ear that has the microtia atresia. You can see on here there's something going on in this part of the outer middle ear that is not allowing sound to get through. But we know that that cochlea is working. So if we can get sound to that cochlea, this child's brain can have access from both sides. Okay?

So these kids usually are good users of their technology because they see the benefit immediately. I also feel that having that outward evidence of the unilateral hearing loss makes them a little more compliant in wearing it. It's easier because you can see it, then you can see oh, I'm doing something to help that.

These kids usually, because they have some abnormality of that outer ear, sometimes that can affect their actual facial structures also. So we see our kids with microtia atresia, a lot of times their language is developing. It's that speech portion, they have articulation problems because some things are malformed throughout that whole channel that we have to use for spoken language. So they could have Ve lowpharyngeal things going on that we have to get corrected so they can produce speech the way we would like them to.

When we think about these kids, usually they're wearing a bone conduction hearing aid. The most common are Oticon medical and Cochlear Americas and we have kids that wear it on a soft band. When they are older they're getting it implanted and using an abutment or magnet. We don't have any kids in an os ya or something like that yet because our population, it's not really on label for them yet, but I'm so excited that they have that possibility because I've heard such great things from adults about that. I'm going to let Anna tell you a little bit more.

>> So the way our program works, when families enroll in our program, they are assigned an audiologist. We do have a loaner hearing aid program so families are blessed with the opportunity to start off with a loaner hearing aid, in this case a bone conduction hearing aid, until families are ready to start the process of obtaining their personal hearing aid.

For frequency of therapy, for the most part we see all of our children with a unilateral hearing loss in their families bi-weekly, so approximately twice a month, but we also offer parent group meetings and we host family gatherings, which gives families an opportunity to connect with each other. Parent connection really is key to parental empowerment.

So our rehabilitation includes educating parents on how their child can experience more difficulty understanding speech and sound. Localization can be compromised with a unilateral hearing loss, especially in the presence of environmental noise.

Parents really need to understand their child can experience reduced binaural benefit before we can expect them to consistently put the hearing technology on their child. So a big part of our job is educating and coaching families to get to that full-time use.

We also highly encourage the use of a remote microphone. Really it's after they're able to achieve that full-time use. Once they get to that point where they're putting on the bone conduction hearing aid on consistently, then we talk about this wonderful tool and remind parents to use it as much as possible.

In order to improve that signal to noise ratio.

We know that for microtia atresia kids can have craniofacial abnormalities, which, as Logan mentioned, can impact speech. We also, part of our job is encouraging families to connect with speech therapy services either through ECI or privately.

>> So the next profile that we are going to talk about is a sensorineural hearing loss in one ear that is somewhere between mild to moderately severe. So something that we know that we could get them benefit with a hearing aid. They still have enough cochlear hair cells and Firebase that and fibers that we can use that.

When we're looking at these kids, we also want to make sure that when we're testing them we can appropriately hinder that better hearing ear to make sure we're getting benefit from that hearing aid, right? Because we always know that that better ear is going to help out as much as possible.

Right? And the left ear's going to -- well, in this case the left ear, it's going to take advantage of that, right? It's going to take all the information it can get from there. So what we do for all of our unilateral kids is we try to compromise that system as much as we can in therapy and during testing.

So what we've started doing is everybody knows the foam ear plugs, right? You can get those at the pharmacy, grocery store, anywhere. On the back there's a decibel rating there. You can put that - - they go anywhere from like 15 to 35, 40, depending on the one you buy. That's saying that that's going to take down the sound by that much. Well, that's okay, but I really want to take out that ear. So we have the kids wear the little sponge. Ours are yellow, so I usually say, okay, we are going to put SpongeBob in your ear and he's going to help block out the sound and then you get to wear an ear hat!

So we use this ear must muff to put over that ear and that dampens the sound more. That's truly allowing us to say okay, what we think they're hearing from SoundField is at this level. We can truly evaluate whether this hearing aid is giving that brain access from, in this case, the left side.

Amplification, it's a hearing aid, I would say that Phonak and Oticon are the ones that we use for pediatrics the most at Sunshine Cottage but it's really up to the family and what they're comfortable with.

>> Just like Anna mentioned early on, where time is a real struggle with our kids with unilateral hearing loss, especially now that we are talking about talking about a mild to moderate hearing loss. This is a kiddo who is hearing really, really well in one ear and probably okay in the other ear.

So really explaining to families we want bilateral access to all the speech sounds we can possibly get and that's the purpose for the hearing aid. We also know that these kids rely on that better hearing ear so much. So as Logan talked about, when we start plugging and cupping over their b etter-hearing ear, there can be some resistance. We are taking away their connection to the world.

So starting in therapy very, very early of letting them learn to listen with their hearing aid side. So we start as little as possible introducing them to the ear plug, putting the cup on, just starting with a song that they really enjoy, that they will put up with while wearing the muff and cup.

We also talk to families about inching forward with wear time. Let's track how much did you have this week, how much did you have the next week, so that we can get up to that full-time wear. Another thing that we like to add in once we get some good wear time is that remote mic. Because that then allows the family to stream directly to that hearing aid and give them the opportunity to hear really well with the hearing aid so that the child starts to notice, hey, I am hearing from both ears and I'm getting good information.

So when we are talking about kiddos with unilateral mild to moderately severe hearing loss, some of the things that we're watching out for include enlarged vestibular aqueduct, so that can lead to progressive hearing loss in the ear with the hearing loss but also in the other ear, so it's really important that we get imaging and see are we looking at something that could progress across time, are we looking at something that we could lose hearing in the better hearing ear as well, along with that in progressive hearing losses, we have congenital CMV. So we want to make sure we know if that child is at risk for progressive hearing loss. Our audiologists always make sure that we are not just measuring the hearing in the ear identified with hearing loss, but we're making sure that that better-hearing ear stays stable.

We also like to make sure that families are coached on letting us know have you seen a change, have you seen their responses go down with their hearing aid. A lot of times with families with unilateral hearing loss, we will have them wear an ear plug for a day, just to see how exhausting it is to listen with one ear. I've had families come to our parent group. I say I want you learning new information. I want to see what it feels like for you to have to learn new information with just one ear.

And very quickly they realize what a big deal it is and how exhausted they are. It gives them kind of an understanding of why we push so hard for that amplification.

>> Severe to profound hearing loss. When we have done imaging and determined that we do have an auditory nerve that we could stimulate and the family, after learning the options, has decided you know what, we want to pursue a cochlear implant for this ear. So if that's the case, we want to continue to use a hearing aid on there so that that nerve knows what sound is; therefore, the brain does too. We're creating pathways on that side. They may not be as strong as we would like, but at least those pathways are there so that we can build on them once they have more access.

We have had a few kiddos that have gotten a cochlear implant unilateral hearing loss by the time they're 18 months old. And the way those kids function and listen, it's amazing what their little brain has learned to do with that. One thing that has changed for us that I think the industry thought, oh, this will really help us, when it came out that unilateral was approved for five years old, that meant that it restricted our surgeons from being able to do it earlier because now there was a standard for it. So a lot of times our kids in this situation, when we're waiting on that cochlear implant, we're seeing they have to wait til they're five years old, unless they have something like CMV or enlarged vestibular aqueduct so we can say there's a good chance hearing can change in the other ear and we need to capitalize on the other. So again, it's hearing aids until we can make that progression into a cochlear implant.

We have a question.

That's why I paused.

>> I completely agree with that approach. However, recently I've run across a couple of EN Ts who are suggesting to my families to not continue hearing aid use and they are looking at cochlear implants but they are on the trajectory of five.

>> Okay. And they're saying stop the hearing aid use?

>> They are.

>> Huh.

>> So I'm confused.

>> I would agree with that. I do understand them, the fact that we know what we're getting from that hearing aid could be some distortion in there, but with our kids that are in this situation, they are still doing better in noise once they get older and we can test that with that hearing aid than they're doing without it. So for me, that kind of says you know what, they are getting benefit and it's about stimulating that brain. And we don't want to lose that. And for a child, having them used to having something on that ear, it's a lot easier to go from having something on your ear to putting something else than from not having anything straight to it. I think we have a couple more questions.

>> Yeah, to add-on to that, I think for me, I have a hard time doing those VTE fittings. We've had more luck for getting implants for kids before they turn five, which has been really great, but my concern is always cross-over. I don't know how to fit that hearing aid. If I'm fitting it to a no response a udio, I'm expecting a lot of cross over going to the better ear which is not necessarily a better sound quality, based on what my understanding is. Then when I'm measuring benefit in the booth, it's really hard to appropriately mask or plug and muff that ear to know that I'm measuring benefit from the hearing aid and not auditory nerve rather than just getting cross-over. It's for our little ones, so if they're a baby, I don't know what their sound quality is like. It's been a hard decision within our clinic to go BTE or do we want to try a Baha and navigating specifically with -- sending cross-over to the better hearing ear.

>> I see that point too. I do.

In the way we measure how that is for us is by doing the plug and muff on that ear and kind of d ampening that to see, okay, how is that. And again, as they're getting older, the fact that we're seeing them do better with that hearing aid than without or with that hearing aid than with the Baha, that's where we've kind of waited as looking at our older kids. I think we had another question.

>> Yeah, just a comment. People may not understand why we're waiting on the single sided to implant a child with a cochlear implant. Unfortunately, it's the FDA guideline, which right now says five years.

And the impact of that is on insurance. And because the FDA guideline is five years, a lot of insurance companies won't cover. So we are working on that. Somebody has to go in with data. It's gotta be the CI companies. Unfortunately ACI Alliance can't do it. It has to be a manufacturer. And when that happens, hopefully we can get the change in insurance. And we've had a number of discussions with insurance companies about this issue and the impact that it has on leaving a child without hearing until they're five years old. You can't do that and expect decent outcomes at age five. It's an unfortunate artifact of the system and it's because we haven't collected data on the kids who are getting them early. And you need that data to be able to submit it to the FDA. We're working on it. It's going to take a little more time. I just wanted people to understand what the issue was.

>> I appreciate that.

I think we have one more question, Anna.

>> I was waiting until you were done to ask a question. Kids get tired, the same as o ther d/Deaf/Hard-of-Hearing kids, but with the unilateral hearing loss there's not a lot of recommendations to give to d/Deaf/Hard-of-Hearing programs or for 504. I think that -- they don't qualify for 504 plans. So where a re d/Deaf/Hard-of-Hearing programs that do provide unilateral hearing loss support? Do they have to go to these other programs or school? I hope those schools would still be d/Deaf/Hard-of-Hearing friendly, but I think that there's a gap because -- .

>> Yeah, you're completely right about that.

>> I just wanted to say at Sunshine Cottage -- .

>> So I get that your medical model is your l ane, that you fix an ear, but I want to talk more about the community life experience and sometimes it gets lost in the medical model.

>> Yeah, so at Sunshine Cottage, we serve all children with any sort of hearing loss, one ear, two ears, mild to profound. And we specifically serve families who are choosing listening and spoken language. So we also collaborate with our local partners through the regional day schools for the Deaf in Texas and they have early interventionists as well who meet with families who want other services besides just the listening and spoken language that we p rovide.

So many, if not most of our families also receive services through Texas State School for the Deaf and their regional programs. They have teachers of the Deaf who serve birth all the way through 21. So many of our families are choosing to kind of have the opportunity to have the best of everything that's available to them. Our focus is specifically listening and spoken language, like we said at the beginning. Anna and I are both auditory and verbal certified but our families do have the opportunity to make the choice for what they think works best for their child and for their family.

>> And to kind of show you, a lot of the school districts, when we think about looking at the child as Ia whole, they still want data to prove that so they can implement it. So the way that we provide data is I will say we are very blessed because our kids are right down the hall, so what I usually do for my unilateral kids is I test them -- well, most of my kids, I try to test them at the end of the day because I know that will take into consideration their auditory fatigue. They have been listening all day long.

So I want to see how much are they able to use their system at the end of the day. For my unilateral kids I have them take off all of their equipment and do a listening test in noise and look at that and say, okay, if we are not wearing anything, what is that like for that child. And having those numbers to be able to say in a report, hey you know what, this is what is happening to Johnny in a typical classroom really is impactful and helps explain to teachers and parents that this does make a difference so that they can meet the whole child and say, all right, we do need to have these listening breaks and have these times where we're not having to listen to learn and just taking a break, because that is so important, you're right.

>> So for a child with this degree of hearing loss, using a hearing aid, like Logan mentioned, we start off with the hearing aid with the idea that a cochlear implant may be -- may give them the best access to sound in the near future.

So a great deal of our rehabilitation is really just focusing on listening and kind of desensitizing that better-hearing ear, getting kids used to having something plugged up their better-hearing ears. We recommend for families, when they're at home, maybe use some headphones, try and listen to music at first before we try to plug up that ear.

And then again, we really encourage the use of the remote microphone, especially when we're dealing with a severe to profound hearing loss and we think that the child may not get all of the access to sound in order to develop spoken language with the hearing aid. We're constantly reminding parents to use their remote microphone. And like I said, it's something that you constantly have to bring up, because the remote microphone is another thing for parents to be in charge of. They have their cell phone. Now they have the hearing technology. Now they have the remote microphone and they have to remember to charge it.

And also, really educating parents about when they can use their remote microphone. Sometimes families will tell me, well, we're going to Disney World in the summer, or we went to the grocery store. So I'll ask the question, well, did you use the remote microphone? Are you planning on taking it? Sometimes, even though I'm constantly talking about i t, they forget.

>> We love the questions!

I'm going back. I work in Rhode Island and I have children. In fact, one is scheduled in May, who will be three in August, and he has unilateral loss and is having a CI then and there are other kids.

>> That's great.

>> I'm sorry, I don't have the articles off the top of my head, but there were some in 2019 the regulations were changed in allowing that. So it does occur at a younger age. There's some research that's been done that shows positive outcomes with that.

>> Yeah. You know, we've had it done too and seen those same positive outcomes. A lot of our surgeons, like we talked about earlier, a lot of the insurances go off of what the FDA is and then specific state regulations that are on there. And so in our area we've had a harder time with it. I'm glad to see that that's not in every area, because that's what we need to have to happen to change. We need that research and that data to prove that because everybody in this room knows those little brains are primed for sound and we need to get the fastest and best we can. One more question.

>> One second.

I was wondering how often would you encourage parents to do the plug and muff method at home, because right now I'm just thinking about how in classes we learn about how if you don't use it, you lose it. So what would be the best way to not prevent a progressive hearing loss in that better ear?

>> Well, you can't prevent progressive hearing loss, but as far as plugging and muffing, I think it really depends on the kid and their level of understanding of what's happening.

So we begin very early, like I said, and I'm going to give different advice to different families with different hearing losses. So if we are talking about when we're about to get into cochlear implant, we are going to say you need to make sure that cochlear implant ear is getting re. Habd. If we're talking about a kid who has microtia atresia, I'm never going to recommend it. It really depends on the type of hearing loss that the kiddo has and the amount they're able to get with the technology that they're using. The reason we talked about the muff and cuff with the hearing aid mild to moderate is because once they learn to listen with that hearing aid, they will get great benefit and they will be able to learn through that ear as well.

So I think it really depends on the type and level of hearing loss that you're talking about.

>> And as far as time, we talk about setting a realistic goal. So starting off maybe, if a child will not tolerate their better-hearing ear being plugged, starting at a minute and then working up to maybe five minutes. So like I mentioned before, starting off with something fun, putting headphones and listening to a song or a video, a cartoon. And then eventually moving up to the link sounds, practicing the conditioned play with the Ling sounds for maybe five minutes a day.

>> Do you have a question?

>> I am a pediatric audiologist and a r esearcher, so research is my primary area now. I'm just concerned about the plugging and muffing from an evidence perspective and from a neuroscience perspective. When we have a profound hearing loss, you can't really plug and muff the better ear enough to truly provide stimulation to the ear with profound hearing loss. What you're doing is giving a hearing loss to the ear that has auditory access. And with this little ones, it really concerns me in terms of brain development and language development and audio visual perception that all of the literature is showing is so vital for children to learn language.

So I'm really concerned about that approach.

>> So we're doing it for specific reasons. So for example, I want to know can the child detect all 10 link sounds. So I need to in some way make sure that we are not using the better hearing ear to detect those link sounds.

>> [Away from mic].

>> I mean, are you talking about a profound kid with only a hearing aid or with a cochlear implant?

With just the hearing aid?

>> You know, I totally agree with what you are saying, but a lot of our families need some sort of not proof, but they need to see something that this is working. So it's not something that we're doing for a long period of time. This is like five to 10 minutes in a session and 10 minutes in the audiology booth.

And it's -- I get neurologically what you are talking about, but the families also need to understand that it is giving some sort of benefit to that too. And this is -- go ahead.

>> Yeah, and I'm sorry, I don't want to create a debate about it. Only to say that it's impossible with this particular scenario to be able to plug and muff enough. Okay.

>> That's where we use the remote mic and encourage that use.

>> Yes.

>> Because we know it's going to that hearing technology.

>> So when we start talking about rehab with the cochlear implant we are going to talk a lot about how we have to use streaming because we can't possibly ever get it quiet -- covered enough to get completely rid of the better hearing ear. And Logan will talk about masking later, so when we're doing testing in the booth using sound masking and things like that as the children age.

>> So our next one is profound sensorineural hearing loss where we know they have an auditory nerve and have gotten a cochlear implant. With that cochlear implant, a lot of times when we're rehabbing that, we really start off after we've validated that we have that cochlear implant set appropriately, we start off with that remote mic technology or streaming something through bluetooth so we know it's going directly to that ear and to that auditory nerve. And I try to make this fun for the kid. I make it something that they enjoy doing.

Last week I had an initial activation and the first thing the little girl wanted to do was hook up to bluetooth and listen to tailor swift so that's what we did because she wanted to hear Taylor Swift through her implant. So things like that to make it more fun, and we know that is going directly to the ear that we want to rehab.

So again, cochlear implants that we would do advanced bionics, Cochlear Americas.

>> It's me. Whoops. Yeah, so like we talked about. When we talk to our families about cochlear implants for unilateral hearing loss, we talk a lot about the effort that it's going to take for rehabilitation. This isn't a turn on and everything is perfect and now they can hear with both ears. It takes work. It takes effort. We know that there are great benefits if the child learns to use that device.

We do a lot with remote microphone and direct streaming. Those are really the only way we can be sure that we are only working the nerve that is being stimulated by the cochlear implant. So we talk to families about how they can use it in their everyday life. We make sure they have it with us when we're doing our therapy sessions. When we were on Zoom, that was actually really helpful because they could direct connect for therapy in that way.

Like we talked about, the biggest influencing factor right now for these kids is whether or not their insurance will cover implantation and at what age.

So when the FDA came out, we were like, Whoa!, maybe this will open the gates so we can do more cochlear implants with unilateral hearing loss. And it was for like a little while. They were like yeah, go ahead, go ahead, but now we've seen a little bit more push back with insurance saying yeah, FDA says five so we are not going to cover til five.

Yeah.

And this is actually a really, really small portion when we covered before, most of our families with hearing loss in one ear is microtia atresia and the next biggest group is this last one we are going to talk about, which is profound hearing loss, no auditory nerve at all.

>> So we like to have imaging as soon as possible, but again, I'm not the one who orders the imaging. So as soon as we can get that, we like to know, because that helps us determine what technology is going to be best for each child. Sometimes we'll know by the time they're six months, sometimes 9 months, sometimes 18 months, 12 months. In the meantime, before you know what is the best option? Do you put a hearing aid on that ear with a hearing loss like this? Do you put a Baha on the ear? It's kind of a debate with some of our doctors and with us of what is the best option, but luckily we have a really good relationship with the doctors where we can talk about that.

So once we find out that maybe that cochlea -- we find out the cochlea is compromised or the auditory nerve is, we go ahead and go forward with a bone conduction hearing aid.

Again, bone conduction is going to be Cochlear Americas and Oticon Medical. These kids a lot of the rehabilitation, you can have more of a struggle with these kids wearing that Baha, from what we've seen.

>> Absolutely!

This one is a lot about parent education because we need the parents to understand that we are not using that ear that doesn't have an auditory nerve. There's nothing we can do for that ear. What we're doing is attempting to provide access to sound on both sides using the better-hearing ear. When we look at the ODACC results we saw we had about twice as many bone conduction hearing aids fit than the rest of the programs in the United States. And we can't say for sure, but our best guess is because we are fitting single sided Deaf no nerve kids with bone conduction hearing aids. What that bone conduction aid is going to do, it's going to take in sound from the side that they do not have access on, play it across the bone, and the better-hearingy better hearing ear will have a sense of sound on that sound. There's a couple of things that happen with families. The first is it's ugly. Okay? So it is not the most attractive thing in the world, especially when you have little boys.

So we get a lot of families saying he hears fine, we are not going to wear that headband all day long. So really talking to them about what the bone conduction aid will provide, what it won't, but that there is still good evidence that tells us that it's better than nothing. So talking to them about, yes, this is new, this is different, but we know what we talked about in the beginning, that our kids with unilateral hearing loss are more likely to have reading struggles, they're more likely to be referred for special education once they fall behind, they're more likely to have failed a grade.

So if we can get a jump on this, make sure that they never fall behind, they never have to catch up.

So we do a lot of talking about how are we going to keep language growing, keep our kids age appropriate throughout their childhood rather than waiting to fall behind and catching up. And that's what our rehab is focused on and why we go ahead and fit families with as much technology as is available to help them in their particular circumstance.

>> So here is just a picture of the ear muff and ear plug. That's what it looks like. We have one here.

For -- .

>> I have another question.

>> Sorry. I have so many questions.

>> That's okay.

>> I was just wondering why it's encouraged to use a bone conduction hearing aid instead of a cross-hearing aid.

>> So working in a school and working with a cross-hearing aid, some of the manufacturers, you have to choose between doing FM or using a cross, because the RF signal needed for that, you have to choose. So that has always been kind of a roadblock.

Now it is more -- the companies have kind of found a way around that and you can use it. We have had kids lose the cross because it is so small. It has fallen out of their ear. Last week we had a kid, she had it on for three days, we were trying it, and it was gone. So that's what we found, that it's just not durable enough for a child.

It works great with that, but that's why we're using the bone conduction more, because we feel -- .

>> Can you explain what the cross does versus the Baha?

>> Yes. A receiver is worn on one ear that is going to pick up the sound and it's transmitted to a hearing aid that's on the other ear. But that hearing aid isn't amplifying anything; it's just sending the signal over there.

So for unilateral audiology testing battery, we always do unaided testing, because we want to make sure that their hearing hasn't changed. Then we are going to program their hearing technology based on age appropriate targets. We are going to do aided frequency testing and word recognition in quiet, because I want to know in an ideal situation that they will never be in except in my audiology booth, how are they going to do. And then the most important thing we want to do is do testing in noise in different situations.

So we'll do it in their everyday listening situation which would be using their technology in one ear and then the other ear not being occluded. And then we'll do that with a personal assistive technology or hearing technology. And then we are going to plug and muff that ear to try to compromise it.

You know, while explaining to the parents that this doesn't totally take out that ear, but it lets us know, okay, if a child had an Eve ear infection one day, how much are they going to get benefit from that hearing technology. And then like we talked about earlier, I do testing in noise with no equipment on. And I try to make it really challenging for the child. So I'll usually do single words with multi-talker babble because that way they have no context clues for what is going on and I'm truly able to see what they are able to do. I like to do this at the end of the school day if possible, because then I'm taking into account that listening fatigue that they have.

So when we look at that, what does that look like for a child in this unilateral condition, you can see here in that ideal situation, at 50, we're getting 100%.

At 35, soft conversational speech, we're getting 96%. In everyday listening condition and noise, 80%. With that Pat technology, 96%. If we are going to do listening in quiet by compromising that other ear, 9 6%. We put them in noise, 76%.

No equipment, 0%. So it really shows how that technology is helping them in those situations even if that other ear is compromised. Another thing I always note when I'm doing this is I saw a change in their physical behavior. This child would lean forward or lean their better ear towards the signal. This child needed something in his hands to be able to play with to focus his energy. All of those things help me be able to convey to his team, his world, his family, that he is going to struggle in these situations and this is what we can do to help with that.

That is our last slide. What questions do we have?

>> Do you ever look at their everyday when they are not wearing amplification, so not just I'm going to with amplification and their better hearing ear plugged and muffd? I could see how that could tell you they get some thing from whatever technology they're wearing, but are they truly getting more than if they are not wearing technology and they just have better -- to their better hearing ear?

>> With normal equipment ...

>> So with the normal -- .

>> That's that last situation. So she takes off the hearing aid, the CI or bone conduction and then in noise. So that's not plugged or cupped.

>> I just had a question if you guys have like any advice or strategies for -- I feel like a lot of the families that I see with kids who have unilateral loss are the parents are totally into it and trying to be good about wear time but they're having trouble getting their own families to buy into it, especially if they leave their child with the grandparents for the weekend and they will come back to school and we're like where's your hearing aid and they're like I don't know where it is. We have to get the families who may not be there all the time but who may be watching the child get buy-in to it.

>> Absolutely. So we say when we start our early intervention sessions, I want to work with whoever loves your child. So if she's with grandmother all day, it is imperative that I see grandma. If she's in daycare, it's imperative that we get into the daycare as well. So we don't just do sessions with parents; we make sure that we're looking at where the child is every day. We have and Anna mentioned we have parent groups. It's great to bring grandma to parent group because she can ask all the questions that maybe don't get to us filtered through by Mom. So giving the other people in the life access to the same data that we're giving to Mom because Mom cares because Mom knows. Mom knows there's a difference, she sees it, so making sure that other people see it as well.

>> Yes, we love to invite family members to our sessions, to our gatherings, to parent group meetings. Sometimes even just as family members go into the school and see that there are other kids wearing different types of technology, that really helps them understand that it's not just their grandchild who is experiencing that.

>> I have a question. I work at a Deaf school. And in the years that I have been teaching, I have two students who have the unilateral loss. But one is in an interesting situation. When they first started public school they struggled. And they had recommended, well, also the father wanted him too to go to the Deaf school. So they said no, he's not D eaf. The Deaf school said no, he's not Deaf. And I said he can't hear on one side, so there's a struggle. I'm just curious if there's anyone that has contacted you or if they can come and explain clearly what does unilateral deafness mean so then that way both sides can have a better understanding of wait, this kid, what are their true needs in order to have full access instead of it's like falling through the cracks.

>> Yeah, and there's all that incidental learning that we talk about so much. Did someone make plans for the playground on their left side and they have no idea that that's going to happen? Are they able to have access in the cafeteria to what other people are saying? Can they even order their lunch in that noisy environment and know what the cafeteria worker said back to them? It definitely, in real l ife, becomes much more apparent after birth to three, because in birth to three, a lot of our parents are like, well, he's at home and it's quiet and he's only one foot away from me and he hears me great. But as they grow it becomes much more obvious what these kids are missing out on.

>> We have , I don't know, maybe a minute or t wo.

>> We're done, but if you all want to come up and ask questions, we'll stick around.