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Real World Solutions for Challenging Audiograms and Ear Anatomy

Presenter: Michele Hurley, AuD, FAAA

Hello everyone. Thank you for joining Real World Solutions for Challenging Audiograms and Anatomy. I am your host for today's session, Dr. Michele Hurley, senior Education and Training Audiologist at Starkey, and I'm really excited to spend the next hour with you talking about some very interesting cases. But first, let's do a little housekeeping. If you do have a question, please feel free to type that in the Q and A area and hit send.

I will be reviewing those at the end of the session and provide an answer before we close the session. If you are looking for the handout for today's session, there's a PDF of this presentation that can be accessed either through your pending courses on Audiology Online or by clicking on the link in the chat area in the classroom where we are right now. This event is available for CEU credit with a paid Audiology Online unlimited CEU Access membership. After the course is completed, you'll go to your pending courses on Audiology Online and pass the multiple choice exam. If you have any technical difficulties throughout the course of our session Today, please call 800-753-2160 or you can also email customerexperiencecontinued.com as you see there on the slide or simply use the Q and A window here in the room.

Here is a list of the risks and benefits for today's course. You can certainly feel free to view these at your leisure in the handout.

My goal for today is for those of you in attendance to be able to identify profile characteristics of a hearing loss that's related to a Meniere's disease diagnosis, to be able to list Starkey products that are Crosby CROs compatible, and to be able to list two Starkey product feature solutions that can assist a patient with visual impairment. So let's go ahead and get started with this topic. Today we're going to be looking at some challenging audiometric and anatomical configurations. And these are cases that are going to include a patient with Meniere's disease, one with a severe to profound loss, and more, and then also a case with Atresia. So we will be spending a little time looking at these and talking about how

they were fit.

And we know that each patient that we see is unique and they're all presenting different challenges. We can see two different patients with the same configuration audiometrically and they're going to have very different needs. And what do we do when we've got a patient that, you know, kind of doesn't fit that run of the mill type of sensorineural hearing loss, for example, you know, what unique needs might they present that we're going to need to factor into the decisions that we make as we recommend an appropriate product for these patients. Well, we're going to talk about some tips for fitting some of these patients in the categories that we just discussed and some considerations where, you know, maybe we have some limitations and how we can set up our patient for success with appropriate, appropriate expectations.

Now, all of the products that were fit with the patients that we're going to be discussing today are in Starkey's Omega AI product family. And if you are wanting to learn more about that product family, we've got a lot of great information about this product family. Specifically here on Audiology Online, we're going to be focusing on how we selected a product within this patient family to fit these patients unique needs. All of the patients that we're going to be discussing today were actually fit with Starkey technology by one of our customers. And so they are all actual patients.

The names and imagery have been changed to protect the innocent.

When we're thinking about selecting a technology, very often when we think about over the ear products, that means we also need to be able to couple that acoustically to that ear to be able to provide the best signal for our patient. And we will see some instances of maybe some unique considerations with acoustic coupling. Today as well, we're thinking about a more typical type of fitting. We often make a number of assumptions. One of those is that prescriptive targets are going to be appropriate for all hearing losses.

And one of the goals when we use a prescriptive formula is that we want to achieve full audibility. We want to be able to take a really broad speech input and fit reasonably well into that individual's remaining dynamic range. And that approach works well for, you know, the majority of hearing aid users, but doesn't always necessarily work for every patient, especially when they have an atypical type of hearing loss. Measurable hearing is usable hearing. You know, it is an assumption that if you obtain a threshold at a given frequency, that there's going to be a usable dynamic range there.

We assume that we can work between threshold and uncomfortable loudness level and put an aided signal into that region. And that's a reasonably safe assumption, of course, with those typical hearing losses, but not necessarily for unique configurations. When we start dealing with some of these more complex hearing losses and more complex patient scenarios, you know, we need to be able to factor in the ability of that damaged system to be able to use that amplified signal effectively a dynamic range doesn't necessarily mean that amplified speech in that range is going to be useful to that patient. And sometimes we get into trouble fitting aids when we think, you know, in a more one dimensional kind of approach. Finally, bilateral hearing loss equals binaural fitting.

Another assumption that I think we often make is that with, you know, two ears, we should be able to fit binaurally in most situations. And we know that the vast majority of fittings are binaural. Thankfully, some of the sub assumptions with this also so that we should be able to fit both hearing aids at the same time for a patient and that both ears are going to be able to work in the same way if the loss is symmetrical. And, you know, we often need to be careful about assuming that both ears are equal partners in that hearing journey for that patient. They both may contribute sometimes, but you may end up with one ear doing more of the heavy lifting in a situation than the other ear.

So, you know, we need to not just make an assumption based on the fact that we have two ears on whether we can actually fit successfully in that way or not.

When we think about managing these more unique patient scenarios, whether it is a unique audiogram or possibly their ear anatomy or coupled with also unique, you know, lifestyle challenges and needs, these are things that, you know, we're going to need to, you know, take into account and may change our approach to how we obtain information about the patients and what kind of information that we need. And that's where discovery comes in. I think we really need to make sure that we're doing a, you know, deep dive on discovery with these patients because, you know, with a different type of hearing loss, there may be some limitations with certain products, there may be, you know, physical limitations that we need to factor into that decision making that we might need to ask, you know, questions about. And so, you know, we need to make sure that we can understand that patient and we want to find out what they want to focus on and what's important to them. Because that is a great way for us to have a really quick win.

When we're fitting somebody with a challenging configuration. We got, you know, to the right solution with somebody that, you know, was, was not run of the mill information that we collect is really going to be helpful as we think about additional features that might be really important for a patient, particularly in overcoming some of the challenges that they may have. We want to set appropriate expectations. You know, this could be around the style that's appropriate for their hearing loss and their anatomical configuration you know, often we know that as clinicians that processing capability of the peripheral and the central auditory systems, you know, can be more challenging when we're dealing with a severe sensorineural hearing loss. And, you know, the possibility of achieving, you know, high speech understanding may be difficult in certain environments with that type of hearing loss.

So we need to help our patients to understand what might be realistic given the information that we have audiometrically about that patient, as well as the types of environments in which they may find themselves more frequently. So we need to understand as well that, and let the patient know that

because of some of these complexities, they take just a little bit longer to get things just right for them. And that's okay. We want to be able to think outside of the box. We need to understand that we may need to dig a little bit deeper, go a little bit further than we do with some of these other patients and maybe use an approach that may be a little different from what we, you know, think about typically for our patients or maybe even learned in school and try something that might be, you know, a little bit out there, but that's okay.

And most times these types of patients are going to require a pretty robust follow up plan. We may need to see them more frequently and we want, may want to educate them about that being the approach so that they understand, you know, there's nothing wrong with that, them coming back maybe on a weekly basis. If you see most of your patients, you know, every two weeks during that initial fitting in that part of the journey. So making sure they understand what that follow up plan is likely to look like for them, I think can be really important.

Now, again, this presentation is going to focus on some adult patients and we're going to take a look at some real life examples, as I mentioned. So these are actual patients that were fit by some of our Starkey customers with Omega AI technology. So the first one we're going to take a look at is Victor, and he is an individual that has dealt with Meniere's disease. We take a look at, you know, what Meniere's disease is. This is going to be an inner ear disorder that, you know, typically will have severe dizziness as a side effect, tinnitus, hearing loss that very often is, you know, more significant in one ear than the other.

Sometimes we feel a fullness in the ear. With Meniere's disease usually affects one ear, but there are instances approximately 25% of Meniere's sufferers will have that bilaterally. We often see Meniere's in individuals that are within the age range of 40 to 60 years old. What causes it? We don't really know exactly what causes Meniere's disease, but those symptoms are very often associated with a fluid

imbalance in our labyrinth in our inner ear.

So in that balance area of our ear, we often see that, you know, fluid imbalance, and that is a good indicator, Meniere's being the diagnosis. Let's learn a little bit more about Victor. Well, he's a retired federal attorney, and he was diagnosed with Meniere's when he was in his 40s in the left ear. Initially, he dealt with episodic vertigo, and it was quite significant. But that has stabilized over time.

He has occasional mild vertigo, and that is definitely a concern for his wife. You know, as he's going throughout his day, his tinnitus was more noticeable early on, especially when he was stressed or tired, which is not unlikely if he was a federal attorney. Probably a lot of stress there. So that's something that he has seen as less frequent now that he's actually retired. Over time, he's noticed more difficulty in his right ear.

And although he was initially fit in his left ear, he has, you know, over the last course of being fit with competitive technologies, been fit binaurally. So he has tried to use technology in that right ear. Now, he had mixed results with his amplification to begin with. He found challenges in noisy environments, and that wasn't necessarily resolved in his previous fitting experiences. So he was kind of inconsistent about wearing amplification as a result.

So, you know, he's really, you know, a little bit on the fence, but, you know, very willing to try and see if something can be done to help him improve his lifestyle. Child, he really enjoys visiting with his family, especially his grandchildren, and he gets together with his buddies for coffee and card games, and sometimes those are challenging environments for him. He and his wife are also snowbirds, and so he and his wife would be very interested in finding out what options they might have for assistance when they are away from this practice.

So when we think about Victor's needs and, you know, what considerations we may have in his case because of the potential fluctuation with Meniere's disease, we know that technology that offers flexibility to be able to account for that hearing loss and possibly the tinnitus fluctuations is going to be very important. Victor's wife is very concerned, as we mentioned, about his balance stability, and then is interested in knowing what options maybe are available in that regard. So we want to think about, you know, what we can offer to ensure his safety and her wellbeing with balance concerns. And they're also, you know, as I mentioned, very, you know, curious about automatic types of adjustments when he needs them in the moment, if he's out with his guys and struggling in a particular environment. And then also, you know, about that potential for adjustments when he and his wife travel for the winter.

So as we think about the Omega AI product, family and what we know about Victor, I want you to kind of think for a moment about what style and what technology would you recommend for Victor in this, this case? Well, his professional chose the RT and he was fit by gnarly with 24 tier technology. And this gives that professional the flexibility to be able to offer the best possible sound quality and to be able to, you know, have tools and resources if there are fluctuations, to be able to navigate that very successfully. It also offers great multiflex tinnitus technology, if that is desired with this patient. It's going to offer us some ability to provide automatic tools such as our Edge Mode Plus.

And I'll present that in just a moment that might help Victor when he needs help when he's on the go. We also have resources with telly here to be able to deliver assistance when he and his wife are traveling. And finally, you know, she's in particular very concerned about his balance. And so what can we offer in the area of balance tools? So we'll discuss that as well.

Well, to prepare for Victor's fitting, he was set to experience level three, which is 100% match of target. During the fitting, he felt that the volume was a little bit strong. Since he has been sort of inconsistent with technologies. We need to get his brain kind of in the mode of amplification again. And so he was

actually decreased with about 4dB of gain adjustment.

He was also accustomed when he had technology in the past to a restaurant program, you know, so that he had somewhere to go when he was in those coffee shop types of situations. So that was provided for him since that was, you know, kind of a comfort zone for him. We also often find with our Edge Mode plus feature, which we'll talk about that, that often is not necessary because it delivers a custom program whenever and wherever that patient needs it. So he might not even, you know, navigate to this restaurant program once he starts trying Ed Mode Plus. The user control was set for volume and program and so he can have access to reaching that restaurant program if desired.

The aides are paired with his smartphone and he was counseled on using the Edge Mode plus feature via the app as needed. So when Victor and his wife returned for their first follow up, the reports were that he was hearing well and his wife was really pleased to report that he was hearing better than he had in years past. So this seems to be, you know, an improvement from his previous technology. One of the things that he indicated that he had noticed was he's struggling to hear his seven year old granddaughter on the phone and they talk daily. She always calls him when she comes home from school and, you know, they talk daily.

Even in the summers he's having a little difficulty hearing her. Although he's usually doing well with other voices on the phone. He hasn't really been to coffee yet with his buddies. He's been a little hesitant to kind of step out in the world with his new technology, but he is, you know, concerned about, you know, what if I need help in this, those situations, what could I do in that type of environment? So at the first follow up, we took a look at Victor's data log and we can see that he wore his aids about 13 hours a day.

So, you know, a nice wearing schedule. A couple of key points we can see is that he hasn't tried the Edge Mode plus feature that he was educated about. And he's mostly been in quieter environments

since the initial fitting, which kind of tied in with what, you know, he described. He was a little hesitant in kind of getting out in the world with his hearing aids, wanted to test them out at home first. Well, his gain was adjusted to target as we wanted to move back towards that, you know, maximum audibility and he was comfortable with that adjustment.

Now one of the issues that he mentioned was wanting to be able to hear his granddaughter better on the phone. And with that we can look at Starkey's dedicated audio streaming configuration. It's found on the flyout menu on the left and allows us to be able to adjust either using the quick fit and the fine tuning screen, a dedicated audio streaming configuration that is optimized for streamed input. This is something that, you know, is an industry exclusive with Starkey and a really nice way for us to be able to maximize streaming performance entirely separately from, you know, typical acoustic types of environments. So with this we have the capability to actually do a demo of live streaming while in the software and make adjustments in real time so that we can evaluate, you know, where we are with that patient and whether we need to make some further adjustments.

This, you know, is a, you know, a huge benefit because, you know, we no longer have to get out of the software, have those conversations with the patient about the adjustments that we made, have them, in this case, make a call, and only to find out that, you know, maybe we need to make some further adjustments, jump back into the software. So now with Starkey, we can do that right there in the software with Omega AI and Edge AI Technologies. So in this instance, we had Victor place a call to his granddaughter so they could talk while the audio streaming configuration was being adjusted. And we made that adjustment to suit his needs. We even have the possibility of muting that stream momentarily to have that sort of conversation about where we are with those adjustments.

And we can find a great solution right there in real time. Again, this is something that is a Starkey exclusive that has been a real game changer when it comes to navigating, you know, streamed input

and providing adjustments for that very important category. Now, I've mentioned Edge Mode plus, and this is an industry first feature as well. This is on demand DNN that is evaluating the environment and providing an option for the patient that might improve their performance for comfort or noise management, wherever they are. So think of it as an I need help button wherever and whenever that patient needs it.

The technology is doing a great job in most cases, but it's always nice for the patient to have that control to go to another place if desired. And that's what Edge Mode plus delivers. There's three convenient ways in which it can be accessed, either through the My Starkey app on the home screen by setting it up as a user control function onboard the hearing aids themselves, and also with our Starlink remote control, it is a function that can be established for that Favorites or Star button as well. For that second follow up, Victor returned and continues to report that he's hearing well, and his wife has that same feeling. He's been experiencing a little bit more social engagement, trying to get out of his shell a little bit with the technologies.

And he reports that Edge Mode plus has been helpful when he tried that out. So that was something that, you know, he hadn't really investigated much to begin with, but now that he's getting a little further in his acclimatization, he wanted to try that and it worked well. They are interested in setting up Starkey's exclusive Fall alert in case he does have a Vertigo episode. And they also want to talk about tinnitus management. It's not usually too much of an issue with him, but it can flare up and he wants to be prepared for that.

And again, what can we set up in terms of remote programming assistance when they are traveling. So for that second follow up we look at that data log and we can see he's been consistent and is aware of his technologies. He's also tried Edge mode since his first follow up visit as well. And if we look down at the lower part of the screen, we can see a little bit more social engagement that is being referenced

there, as well as more challenging environments than when we looked at his speech and noise time previously. So we can see that he's really kind of getting out and you know, trying the technology more in more challenging environments.

And we know that social engagement is so important for our patients when it comes to balance assistance. Starkey has, you know, really led the industry with offering a Fall alert and detection technology for quite some time. We've also expanded that capability to also include balance assessment and also balance and stability exercises. Let's take a close look at the Fall detection technology.

Your hearing health is important and so is maintaining your safety and well being. That's where Fall Alert comes in. The app feature that enables your hearing aids to detect when you fall. Then send a text message with your location to the people you choose so they can get you help if you need it. False alarm?

No problem. You have time to cancel an alert before the text message sends. To set up Fall Alert and invite a contact, just follow four simple steps from your app home screen, tap the health icon. Next, scroll to Additional Setup and tap Setup Follow Alert Alerts. Learn about Fall Alert on the two welcome screens.

You can sample the sound indicators you'll hear through your hearing aids if you fall to familiarize yourself. When ready, tap Next A permission box may appear asking a Fall Alert can access your contacts. This would allow the app to enter your contacts details using your phone's contact list. If you choose not to allow this, simply complete the fields yourself. Now send your Fall Alert invite.

Your app will then confirm the invite has been texted to your contact. You can also invite another contact. If you'd like to find out if your contact has accepted your Fall Alert invite, tap more.

Next, tap App Settings and then Fall Alert settings.

If your contact is listed as pending, they haven't accepted your invite yet. Here. You can resend the invite if you'd like. If your contact is listed as active, they've accepted your invite and will be notified if you fall.

At Starkey, we, as I mentioned, have long had fall detection technology and is incredibly accurate. It is more accurate than pendant worn systems in terms of correctly identifying a fall as well as correctly rejecting a Non fall. But we were always looking at how we could work towards preventing the fall in the first place. And we introduced last year the balance assessment feature that incorporates the CDC steady program and balance assessment tools to be able to allow that hearing aid wearer to be able to gain an awareness of their balance with a self guided at home evaluation that's made up of four standing into chair exercises. We also offer the industry's first balance builder and this helps that patient build balance and stability through a series of guided exercises.

So this is something they would do at home themselves to try and build up their balance and stability capability. So all great tools for Victor in terms of tinnitus. We've got some great solutions available through the software with Multiflex Tinnitus Pro. This delivers personalized sound therapy and there's a number of different options. Those that are white noise weighted are going to be, you know, based off of that white noise type of signal.

And they can be either, you know, customized with the, you know, testing to be, you know, as customized for that patient as possible or simply audiogram shaped where we base that best fit based off of your audiometric thresholds. We also have low frequency and high frequency weighted options. So there is a wealth of tools to, to help provide solutions for a tinnitus patient through the software. If we want to set up sound therapy within a program or programs, we also offer the Starkey Relax app. This

is an app available for both Apple and Android that allows the users to be able to manage their tinnitus control with their, you know, you know, technology, whether that's hearing aids or even just headphones, you know, through that app is something that, you know, has a lot of great information and resources about tinnitus through the app.

And it features 12 different soothing sounds that the patient can choose from to enjoy. And they can actually customize and save those settings so that they can tweak that crackling fire, for example, to how they want that to sound. So it really is a nice option in this case for Victor because his tinnitus has become very, you know, situational. This gives him a solution he can stream directly through his hearing aids whenever he needs that. Let's talk about telehear and how we can provide some assistance for Victor when he is traveling and that makes it easy to care for any of our patients whenever and wherever they are.

Well, Starkey's telehair feature requires that the patient, you know, have, you know, our current wireless families of technologies, the my Starkey app to be able to, you know, Set, set the, you know, connection up with the professional and they're going to need an Internet or wi fi or cellular connection at the time that they use it. From the professional perspective it's going to require our profit software, an Internet connection, Internet browser and then highly recommended a webcam and microphone and speakers. We invite our patients to be, you know, part of that telehear experience as professional. So you know, we, you know, make sure that it's an approp feature for them. We do that by logging into the telehere account in the profit software.

You enter their mobile number and click invite and it's going to send a text message or SMS message that the patient will be able to use to make that connection with that professional. They'll be able to post this in their My Starkey app and that will establish that connection with that professional so that when they need to take advantage of remote programming services services, it's ready. We offer three

different solutions and that can be dependent on technology as synchronous strategy which is going to be a live virtual session with the professional, an asynchronous strategy where it's going to be cloud based. It's not taking place in real time. The patient has a request for help that is sent to the professional and they'll be able to view it through the portal, be able to provide a solution and send that back via the cloud to that professional to evaluate at their convenience as well.

Well, we also recently introduced an industry first with generative AI called TeleHere AI. This allows that patient to interact with that gen AI technology and get real time changes right there in the moment. Let's take a look at that. When we're looking at using this feature the patient goes into their My Starkey app and they're going to type in what the issue is. In this case they said that they're not hearing clear which is kind of a.

So it actually smart enough to ask for more detail and so they're going to then share that that difficulty is with more female voices. And so talher AI is going to look at using Starkey's knowledge base delivering some solutions that might be, you know, worthwhile for that type of issue that the patient can evaluate. So they're going to be able to try the new setting and compare that with their current setting and decide what they would prefer to have. They'll be able to then make that selection. If they select that new telehere a generated solution, it's going to be referenced on their home screen and it'll also be referenced back through the software.

So the patient would. The professional will be able to see that that patient has made a change as well. So a really great solution for a patient on the go with all three of those options. So as we take a look at Victor and how we were able to meet his needs, he and his wife are very happy with the results. They have the resources to have fitting flexibility and tinnitus solutions as needed that balance assistance that was important in particular with his wife's peace of mind and to be able to have automatic adjustment tools like edge mode whenever and wherever he needs it.

And finally, those telehealth solutions that provide an answer for that concern when they are on the go, traveling in the winter or any other time. So we did a great job with Victor. Now let's take a look at our next patient, which is Amelia. And she's dealing not only with atresia, but also with a single sided hearing loss.

When we take a look at atresia and what that really is, just in general, it's an absence or an enclosure of a natural passage of the body or maybe it is the, you know, the absence of a particular anatomical part that, you know, is not allowing information or, you know, whatever the function is to occur. We look at that more specifically, you know, with our ears. We're dealing with a lack of a fully developed ear canal, eardrum, middle ear space and ossip vesicles. Or we're going to talk about another way in which atresia might occur as well. So Amelia, you know, presented with, you know, atresia and obviously a single sided hearing loss that occurred when she was traveling and she fainted.

I went to the hospital and was diagnosed with a vestibular swanoma. So, you know, she, you know, obviously had immediate surgery for, for that in this case. And, you know, at the time was not really aware that there was maybe treat hearing loss on the other side. You know, everything was kind of approached from dealing with that single sided hearing loss. She's also had vision issues that actually worsened following that emergency surgery for that vestibular schwannoma.

Now this is Amelia's ear on the left side. So we can see that this is where that atresia occurs. And it's actually surgical atresia. So this is something that sometimes can be or needs to be done when we're dealing with an acoustic neuroma and it's done via translambling approach. This results in an intentional closing of that, you know, ear canal.

So it was permanently sealed and closed. And that's what happened with Amelia. So this wasn't, you know, necessarily congenital atresia in her case. And sometimes this approach is used when, you know, we're, as the medical team, not able to, you know, focus on hearing preservation. It's all about

preservation of language life.

So this is often used when the tumor is quite large. And that was, you know, the case with Amelia. Now she's also dealing with that single sided hearing loss as a result of that surgery. And we noticed that she's got treatable hearing loss in that right ear, which she was not aware of. And so a Bycross solution may be really effective for her.

And that's what we would consider when we've got an unaidable ear and one that, you know, has a hearing loss, but is significantly better on the other side that is atable. And we're going to be able to deliver that awareness from that unaided side, be able to provide a boost in speech understanding. And this can really result in a reduction in listener fatigue and enhanced safety. We think about the ability to be able to localize sound from that offside as we think about, you know, needing to, you know, address a Bycross, you know, consideration and also dealing with a very challenging situation with atresia, you know, what do we need to think about, think about? She also mentioned that she's got visual issues.

And that is something we need to factor into our decision process as well. So with Starkey, we have two options for cross by cross, and that is going to be our rechargeable RT with up to 29 hours on a single charge, which is truly impressive when the product is streaming constantly. And then also the RIC312, if the patient prefers a battery powered solution, which offers up to four days of battery life when fit crossbody micros. When we think about, you know, that challenging ear on that unaidable side, how are we going to couple that transmitter? As you recall, we were dealing with an ear that has no remaining ear canal.

So what was recommended with Amelia is going to be the RIC rt, which can be fit in that bicrost configuration. That gives us the capability to be able to deliver the solution she needs for both of her ears and gives us, of course, a lot of programming flexibility. And we have to think about, you know, our customization of that mold on that, you know, transmitter side. So that's something we'll have to, you

know, evaluate what might make sense with her, you know, ear canal or lack thereof. And then also her needs in terms of visual assistance if necessary.

If you're looking for a partner with ear molds, I would encourage you to consider Starkey. We have a great ear mold guide that will allow you to see the number of solutions that we have in this category, category for your RIC and BTE patients, as well as for hearing protection as well. So there's a lot of choices when it comes to material, style, and also forms. Now, when we think about, you know, needing custom RIC molds, and that's something that I highly encourage because it gives us much better sound quality and much better retention capability. It's something that we can do in all types of styles.

You know, it gives us the capability to meet that patient's needs and preferences when it comes to how we're going to couple that RIC device. But when we think about that very challenging situation with Amelia, we have an ear that doesn't really have much of a canal to speak of. We really had to build that mold a little bit differently to be able to reflect that and provide some greater assistance, you know, in the, you know, area of the helix and the concha for, you know, retention when we didn't have much canal really, to hold that device in. So this is a image of both of her custom Rick molds.

Now, we've also talked a little bit about her having visual issues and know that we have many solutions for patients that have very specific needs, whether that's visual, whether that's dexterity, or we need to factor in, you know, cognition as something that we need to provide some, you know, better tools for them to identify the different ears. So know that we've got a lot of options in this area, and we're happy to customize our products to meet your patient's specific needs for any of these types of, you know, concerns. You know, one thing to note when we think about visually impaired options is that, you know, we've updated the removal handle, so it's now made from that CIC removal line type of material. We also have, you know, options that I think are great when we think about dexterity and being able to

identify left and right, that may be very beneficial for your patients. So know that these are available by special request, and for assistance or to request them, I recommend that you speak with one of our great customer service representatives.

This is the actual scan of Amelia's impression as we were trying to navigate her challenging ear. To prep for her fitting, she was set at experience level three, which, again, is 100% match of target. Since this was her first experience with Amplification on that right ear that she didn't think was treatable. We started her at our familiar level, which is 85% of target. So we're going to easily ease her towards that maximum audibility of 100%.

Our feedback cancellation was initialized and looks great.

And one of the unique options with Starkey, when we think about a Bicros solution, is the capability to be able to manage that balance control between receiver and transmitter. And we can do that as we can see through the profit software. What really sets Starkey apart in the industry with Crosby CROs technology is the ability on a per program basis to be able to establish a program as bicros, as we wanted to do in Amelia's case, CROs and hearing aid only. So you have the capability to have all three of those systems in one. And that can be really flexibility and benefits that your patient can really utilize with this type of technology.

Her user control was configured for volume and also an additional option of Smart Assistant via the Double Tap, which we'll talk about in just a moment, and the importance of what that means for Amelia in this case.

Our real ear results look great with Amelia, so she went off to try out her new technology. When she came back for follow up, she was hearing really well. Skeleton moles were fitting perfectly, so comfort was great there. We increased her back from an experience level of 2 or 85% to level 3 or 100% of

match of Target. She's also interested in talking a little bit more about help for her video, visual concerns that she has around, you know, using her hearing aids.

And I mentioned Smart Assistant and how that was established for user control for the Double Tap feature. This allows the hearing aids to be able to, you know, use a feature that is going to be able to, with a simple gesture, allow them to ask to turn volume up, change a program, mute my hearing aids, ask for directions or any kind of information that you would ask from a Siri or Alexa type of search engine. Because this is using a search engine and it's using Gen AI to be able to have a really conversational type of interface. So this is something available with, you know, the Double Tap feature and also an icon, of course, on the home screen of the My Starkey app, which might not be, as, you know, applicable, certainly for Amelia, which was why it was provided with Double Tap at that user, you know, control level with their hand hearing aids. There's also options that we can consider in assisting our patients with their smartphones.

Just, you know, as seniors, it's nice to have some, some solutions and so know that both Apple and Android offer some great solutions. We can, with Apple enable assistive access and that's going to provide some, you know, great digital display issues that may help for visual concerns. And it also can keep that home screen really simple. We know the screens can get pretty complex for individuals, especially seniors. Now Android has some great solutions with their senior friendly Android launchers as well.

Gives you the capability to increase that keyboard size as Apple has as well be able to manage things with an easy mode that again, keeps the phones really much more simple for a patient. We think about Amelia. She was very happy with the results and really likes being able to have the resources that she has with a smart assistant to be able to easily make changes without having to find buttons or things on a screen. So that's something that was really, really helpful in this case. And I think this is a great

example of the custom craftsmanship that's possible with Starkey to be able to handle a very unique ear and to be able to couple a transmitter on a side where we really had no canal to work with.

Our final case study is going to be Martha, and she suffers from a severe depression, profound sensorineural hearing loss that we see referenced there. When we think about a severe to profound loss, typically this is, you know, permanent. If it's sensorineural, that's going to usually be the case. And it makes not only hearing but speech understanding really, really difficult without amplification at all. And we know that often there are many causes of a sensorineural hearing loss.

You know, it could be, you know, damage over, over time, you know, to those, you know, hair cells. And the inner ear could be caused by men years like we saw with Victor head trauma. It could be genetic or there are medications, of course, that are ototoxic that will have that same kind of effect. And very often that could be very severe. Now, in Martha's case, she's not only dealing with a very challenging hearing loss, but she also has pinnas that are very close to her head and you know, that makes that space behind her, her pinna, very, very difficult because those, you know, pinnas are very, very inflexible.

She barely has room for her glasses to fit back there. And the cartilage is also very, very rigid. So because of this, you know, difficulty with her tight, tight pinnas, she also has some malformation with her concha bowl. So it's a little bit misshapen as well in that space. Martha is primarily Spanish Speaking.

And so typically we have been, you know, communicating with her through her grandson. She does understand English fairly well, but she does live with that grandson who's bilingual. And that, you know, is a comfort zone for her to be able to communicate in Spanish in this case. Now, she has worn hearing aids in the past, but it's been quite some time as financial challenges have existed, listed, and she's been using strictly a pocket talker for the last number of years, has to be turned up to the max and of course it's feeding back constantly. So, you know, as we think about Martha and we think about what

we're dealing with, with that anatomy and that hearing loss, you know, can she wear an over the ear product not only comfortably but effectively?

And, you know, if we are thinking about being able to deliver appropriate gain with that hearing hearing loss, could it be done without feedback concerns? So as we think about the Omega A I options that we have, what style and technology maybe would you think of for this patient? Well, in this case, Martha was actually fit with Omega AI CIC Wireless 312 technology with Ultra Power Matrix. And in Our Technology Level 16, based on her financial needs, that was kind of where she needed to be. And that CIC gives us some really interesting ways to be able to think about navigating that, you know, anatomical configuration that is so challenging with her.

You know, this really suits her needs. And, you know, I think because of Starkey's highly effective feedback cancellation system and ability to navigate gain in small spaces so well, this was a great option for her. We can take a look at the scans and we can see the challenges, you know, that we faced as those devices were being built, terms of how to position that face plate because of, you know, not only the, you know, malformation of that, that concha area, but also we're dealing with Ultra Power receivers, which of course are larger than, you know, lower gain receivers. And we have to have room for that technology as well. So here are some actual images of Martha's devices to show you how truly customized they were were.

So, you know, I think it's really interesting to see what those look like from several different angles. And here's what they looked like in Martha's ears. So we can see that those cics were actually a very beautiful fit as we're looking, you know, directly onto the pinna and as we take that view from behind again, we can see that they are very recessed and how discrete those devices actually are. So she was very pleased with, you know, with the fit Initially, you know, when she came in for her fitting in terms of prepping the devices, she was set to experience level three, match of target, you know, which is not

surprising, certainly, with that severe to profound hearing loss. But it's been a long time since she's worn hearing aids.

And it was determined that that experience level three, she was feeling a little, you know, overwhelmed there. So the aids were actually adjusted to that familiar, or 85% of target to begin her journey with her new technology.

Now, if we look at the feedback cancellation, it was initialized, and of course, we can see that we don't have a lot of flexibility in terms of adjustment before feedback might become a potential concern. And that's not necessarily surprising in dealing with that hearing loss. They're also set for our strong adaptation, which is, you know, a great setting for when feedback, you know, is maybe a little bit more likely. So it's more aggressive in terms of being able to address that feedback if and when it's going to occur. And Starkey's feedback cancellation is truly, you know, unique because we are canceling that feedback rather than managing it.

We take a look at Martha's real ear. We can see we've got some good results there. We also did some things to really kind of, you know, further assist Martha because of her, you know, bilingual, you know, communication and really being more primarily Spanish. So with our indicators, we set those to Spanish male. So that gave her the capability to hear more familiar, you know, dialogue when things like, you know, program changes or volume or low battery, which are all verbal indicators, are being presented to her.

So that's a great solution. We've got many, many different languages to choose from. And in her case, Spanish male was a great solution, especially with our hearing loss. Picking a male voice. Those indicators can easily be demonstrated for the patient through the demo mode over there on the right of the indicator screen when we press the little hearing aid, hearing aid button.

And we can also demo those for the loved ones, in this case, her grandson that was with her through clicking on the additional icon to the right, which is going to give us that presentation through our computer speakers. So a great way for him to understand what she's experiencing. We also have other language assistance tools that can be set up for the patient and personalized. One of those is our device guide, which is kind of the cliff note of user manuals. We can create a device guide and print that out in a wide range of languages.

Of course, in her case, Spanish being the choice that we would make, and so we can see that it's going to deliver that information, customize to her technology and how it's programmed, all in Spanish. In this case, that includes information about how her user control is set up. Includes our smartphone compatibility, QR code, code and tips for success, all in her case in Spanish. So Martha went off to try her technology. Now when she came back for follow up, she's been wearing the hearing aids.

In this case a follow up, you know, the final one that we took a look at occurred about three months after her initial fitting. And they are very pleased with her ability to be able to communicate even with conversational level speech. So certainly something that was a tremendous improvement for her from what she had been using in the past, especially that pocket talker. She was reporting that the right ear seemed a little bit softer than her left. And so her professional increased the gain four steps overall on the right and she was able to hear much better in that case.

Now one of the things that we saw happen as that gain was, was adjusted and we got things, you know, know, set so that she was at that, you know, experience level three, match of target, plus a little bit more gain to bring that right ear up and have those ears leveled. She's getting a little feedback now from the hearing aids. That's something that, you know, we could address that further by making a gain adjustment. But she and her family are really happy with where she is and they don't want to, you know, risk, you know, compromising her audibility by making that adjustment. The feedback is happening

very, you know, situationally, and that's something that they really are okay with dealing with because she can actually hear them so well now.

So that was their choice in terms of how they wanted to, you know, navigate this particular, you know, situation. So if we think about, you know, Martha and, you know, delivering truly really custom craftsmanship with custom cics, which really were the best solution with her, you know, unique anatomic configuration. You know, this was something that I think was really a successful fitting and something that was truly, you know, thinking outside of the box. Not many people would look at that hearing loss and think that a CIC would be the path to successful fitting. Now when we think about fitting, you know, what constitutes a successful fitting can really differ from one patient to the the next.

And I know we, as clinicians and professionals, we are striving for an outcome that can result in not only, of course, comfortable physical fit, but great audibility and a feedback free patient experience. It's important to recognize that that measurement of a successful Outcome might be different for the patient themselves. And Martha's case was really a great example of this. The patient and her family are thrilled with her restoration of her ability to communicate with her new dev, and they under, you know, she's understanding conversational speech, you know, so much better than she was previously, so she can actually be part of, you know, their. Their daily lives again, which has made both she and her family members so, so happy.

And so, you know, they were able and, you know, very willing and made the choice to accept that situational feedback as a small price to pay for the ability to hear better, better again. So, you know, I think this, you know, is a great scenario of we could have done something to try and, you know, address that feedback further, but it might have compromised some of that audibility. And because it was so situational that the feedback was occurring, the path to success with this patient was to, you know, accept that when it did happen because of the improvement she was getting overall with her

communication. So I think that it's important that we, you know, remember that, you know, our definition of successful outcome and the patients may be a little bit different sometimes, and that's okay. So I think these three cases were really a great example of that team approach between not only the professional, but also Starkey's team as well, in terms of being able to deliver patient success in cases that really presented, you know, any number of challenges.

While Victor didn't have anything, you know, anatomically unique, you know, he had, you know, some uniqueness around his Meniere's diagnosis and some of the resources and tools that could really define success for him when it came to tinnitus, balance, and, you know, remote programming solutions. So I think that was a, you know, great example of, you know, more of a typical type of fitting that we could do some unique strategies to deliver great success for some unique situations. In Amelia's case, we were dealing with a truly unique anatomical configuration and a challenging type of hearing loss as a bycross. And so very interesting to see how we were able to couple that transmitter on a side that had literally no ear canal to speak of and do that so successfully, as well as deliver some visual solutions to help her be able to navigate using her device devices successfully, you know, by more tactile means or, you know, even doing something like smart assistant to ask to have volume change when she needs it. And finally, with Martha being able to deal with, you know, again, a unique anatomical configuration and a very significant hearing loss, that can often be very challenging to fit successfully.

And this was a great successful case as well.

Well, I think when you're dealing with cases where, you know, patients and professionals have maybe been told it can't be built, Starkey's proving that it's possible to meet and even exceed the expectations of these patients to be able to hear better and consequently live better. I think those are, you know, examples that we really saw with the three patients that we discussed today.

As I wrap up today, I do want to direct you to our starkeypro.com website site. We've got access to a wide range of resources and information that includes our white papers of our research, quick tips which are simple PDF step by step instructions for any of our features and functionalities. There's truly a quick tip for every topic. We also have great instructional videos and further training opportunities. Information is accessible there as well.

Know that here on Audiology Online we've got a library of courses that are accessible in recorded form. So if you are interested in going back and learning more about Omega AI in particular, we've got great presentations to focus on that or any of these topics such as tinnitus or balance as well. So know that that information is there available in recorded form or live as we are today. So I am going to thank you again for taking the time to join me and talk about these very interesting cases. This was a lot of fun to work on getting the information about these particular patients because they were so challenging and it was great to see the success that our professional had in being able to work with these particular patients.

So thank you so much and I look forward to seeing you in the future at another Starkey event.