

This unedited transcript of a continued webinar is provided in order to facilitate communication accessibility for the viewer and may not be a totally verbatim record of the proceedings. This transcript may contain errors. Copying or distributing this transcript without the express written consent of continued is strictly prohibited. For any questions, please contact customerservice@continued.com

2026 Industry Roundtable

**Presenters: Christopher Spankovich, AuD, PhD, MPH, Dave Fabry, PhD,
Edmund Farrar, Lauren Fettig, Jessica Lawley, BA, John Pumford, AuD,
Tammara Stender, AuD, Brian Taylor, AuD**

At this time, it is my pleasure to introduce the moderator for our 2026 industry roundtable, Dr. Christopher Spankovich. He is from the University of Mississippi Medical center. And I invite you to Read more about Dr. Spankovich in our handout. I'll just say welcome to all of the companies participating today. CareCredit, Audioscan, OTO, CaptionCall, Starkey, Signia and ReSound.

What an amazing lineup. I'm very excited for today's course and I'm turning it over to Dr. Spankovich. Wonderful. Thank you, Carolyn. And thank you for inviting me to help moderate this session.

To get some new information about what's going on in industry, I'm going to run through a few slides here. Here are the disclosures for the presenters. You can review those at your own leisure. Here are some limitations and risks of the course. Here are the learning outcomes.

I'm not going to read the learning outcomes, but they are there for your review. And then we're going to go ahead and jump into our first topic here. And our first round is holistic innovation. Innovation isn't just about a new product. It can be a process, a new service or a unique partnership.

What is one recent innovation at your company that directly addresses a major pain point for audiologists or their patients? And leading off, we have OTO to talk to us about holistic innovation with Dr. Farrar.

Good morning, everyone. Or good afternoon for me because I'm based in Europe. And thank you, Dr. Spankovic. So I'm Dr. Ed Farrar. I'm the founder of a company called OTO.

Our products are digital therapeutic for tinnitus. Many of you will have heard of it. So I'm going to talk today about a scientific innovation of research, innovation that we are really excited to have announced very soon. And I'm going to take you through the results, actually of a clinical trial that we've just finished. But before I do, I want to set the context for that.

And the context is only 2% of patients with tinnitus get access to guideline recommended best practice, 2%. And that guideline recommended best practice is cognitive behavioral therapy. So if you manage or treat tinnitus patients, I imagine for most of you that do, you don't have someone local that you can refer patients to. And this is a problem because CBT is recommended in all of the tinnitus guidelines in the UK, where I'm from, in the NICE guidelines in the US, the AAOHS guidelines of 2014, they all recommend cognitive behavioural therapy. But the problem is that most patients never access it okay, you as clinicians, as audiologists, you don't have a practical way to offer CBT because there probably isn't a provider in your area.

If there is, you have to outsource it and you have to rely that the patient's going to follow through with that. So OTO solves this problem and we solve this problem with a digital therapeutic that allows any patient to access CBT from the comfort of their own home, a smartphone. And we have just. I'm really excited to announce, we've just quite recently finished the defined trial which was run by the University of Cambridge in the uk. And we actually compared OTO's program, OTO's digital CBT program to one on one cbt.

So if you use OTO with your patients, are they going to get, or are they going to get equivalent outcomes as if you were to refer them to one on one therapy as the guidelines recommend? So the defined trial, the largest trial of its kind, actually compared OTO's program to one on one cbt. In the intervention arm, the patients only had the digital therapeutic. There was no input from an audiologist or a clinician where the patient would get access to 5 to 10 minute daily SE that they can access from their phone. They'd also get access to sleep content, content to help with stress, some of the things that we know tinnitus patients struggle with.

And they had access to this for up to a year, up to 12 months. We then compared it to traditionally delivered one on one CBT delivered by a therapist, where they'd create a customized treat, a

personalised treatment program for them and they'd give them an initial 60 minute session plus up to six follow ups.

They would primarily be delivering CBT, but the patient would also get some relaxation and some education.

And what is really exciting is that we found that OTO's digital therapeutic, our innovation, delivers equivalent outcomes to one on one CBT, which is amazing because it means if you use lots of with your patients, they'll get the same outcomes as if you had referred them for therapy, referred them for one on one cbt. So here is a graph of the outcomes. You'll see that the outcomes were equivalent month one, month three, month six and month 12. We had a good age range, median age of 58, average TFI tinnitus functional index of 54 at start. And the results were the same, it was non inferior at all time points.

So we had an average TFI improvement of 15, which is higher than the clinically, the minimum clinically important difference, the mcid.

So the outcome is that audiologists, clinicians, you can now deliver guideline recommended best practice CBT to tinnitus patients without the need for an external referral. How amazing is that? We have solved the problem that we set out to, which was only 2% of patients get access to CBT. With OSSO, any patient can access to a digital CBT program. Great, thank you.

Thank you, Dr. Farrar. Next up, we have John, Dr. John Pumford from Audioscan. All right, well, thanks, Chris. So, as it relates to this question here, I think for audioscan's purposes, if I had to point out recent innovation that directly addresses a major pain point, it would really be in the area of bone conduction device verification, which historically, for those of you have tried fitting these devices, know it's been quite difficult, especially compared to air conduction systems. And so clinicians have often had

to rely on behavioral measures like the aided audiogram, for example, which we know has many limitations, including the port test retest reliability, limited frequency resolution, just to name a few issues.

And so, to improve the process and support best practice, our VeriFit2 evolved over time to provide objective verification capabilities with bone conduction devices by leveraging our skull simulator and the associated software tools that come with the product. And recently we've strengthened the platform by adding DSL BCD 2.0 fitting formula, which I'll get into in a minute, and some automated verification to target capability with cochlear Baha7 Bone conduction devices using VeriFit link.

Now, one major step that made all of this possible for audioscan was the introduction of the the VeriFit skull simulator that you see here. And for those of you who aren't familiar with it, it's essentially a coupler for devices that can attach to its abutment, and it provides skull simulation of the output via the mass and spring hardware that's contained within, simply just plugs into the test box coupler microphone jack, as you can see in that right image there, without the need for any additional power sources or adapters. And again, it was really this innovation that allowed us as a company to shift the fitting process for bone conduction devices from subjective methods to objective measurement, similar to what we see with air conduction systems. And so with this hardware, clinicians can now tap into several bone conduction device verification capabilities in the VeriFit 2, including those that you see listed here, for example, speech map verification, accessory verification with remote microphone technologies, if they exist and are paired with the bone conduction device adaptive feature verification, so directional microphones noise reductions if they're part of the system, and of course, your general basic quality control as well. So essentially, anything that could be conducted in the test box with an air conduction device now becomes possible with the skull simulator, where arguably the primary test procedure of interest would be speech map.

And so, for those of you who aren't familiar with speech map with bone conduction devices, we're similar to air conduction systems, presenting calibrated speech inputs and plotting device output. Only in this case, we're plotting it on a force level graph called an FL gram. So it's similar in concept to your SP eograms, only in this case, we're measuring mechanical vibration versus DB sound pressure level. And so on the screen you'll see plotted, for example, prescriptive targets, the patient's bone conduction thresholds and force level, and the device specific maximum force output or patient ucls, whichever is lower. And so in seconds, by looking at this graph, you're going to be able to quickly determine, for example, a speech audible for various input levels.

Something we might want to know about is the device meeting prescriptive targets and ultimately do any adjustments need to be made to the device to maximize the potential benefit to the patient.

And recently, to strengthen the speech map verification capabilities with bone conduction devices, further added the DSL BCD 2.0 formula, which provides additional capabilities especially relevant to pediatric fittings. And so these would include, for example, the soft band verification support for that and the ability to use standard bone conduction oscillator thresholds as an input to the formula. And so again, by adding the prescriptive formula, the DSL BCD 2.0, into the VeriFit 2, we're now enabling target driven fittings that are grounded in evidence and best practice, similar to what again, we would see with air conduction systems.

Now, no doubt skull simulators are valuable, but the reality is they can only be used with a subset of bone conduction systems, essentially those that can attach to its abutment. And we know there are many bone conduction devices that don't, including implantable transcutaneous systems. And so as a company, we're currently developing a real bone measurement microphone, which when available later this year, will be the industry's first head worn surface microphone integrated into a clinical test system, in this case the VeriFit 2.

And so instead of measuring vibration in the box, we're going to be measuring vibration directly on the patient's head. So still plotting force level, as with the skull simulator, still using prescriptive targets, but now applicable to a much broader range of bone conduction devices. And so overall, this RBM technology, this innovation, when it's available, will really expand our ability to address clinicians pain points around the verification of bone conduction devices.

And so if I were to summarize, you know, audioscan's innovation's focus in this area, we're essentially as a company, moving bone conduction fitting largely from subjective estimation to objective, prescriptive, measurable verification. And we're continuing to expand that capability going forward, again with the RBM technology I just touched on.

Thank you, Dr. Pumford. That first round was excellent. Two much needed resources, cognitive therapy assistance for our tinnitus patients and better ways to verify bone conduction hearing aids. Just awesome. I will remind everyone that we will hopefully have some time at the end for some Q and A.

So if you have any questions, you can start loading those up. And we're going to move on though, to stay on time here in round two, the Simplicity challenge. With technology becoming more complex, simplicity can be its own form of innovation. How is your company working to make your products, software or services simpler and more intuitive for providers to use and for patients to understand? And first up, we have Dr. Dave Fabry from StarKid.

Thank you, Dr. Spankovich. So could you go ahead and go to the first slide? If you guys advance my slides for me as I'm remote. So on the Simplicity Challenge, this quote from Stanford professor Mark Weiser comes to mind, and that is that the most profound technologies are those that disappear and weave themselves into the fabric of everyday life until they're indistinguishable from it. Next slide, please.

These data are from. If you go back there, these data are from the most recent Market Track survey showing that increasingly the expectation of patients is not only and first and foremost that they hear better, but that they are able to control their devices increasingly through the use of smartphones and smartphone applications. As you see the number four, and then as you go down, connecting and streaming to different devices are a very high interest of prospective or current hearing aid users. Next slide, please. What we see is that our perceptions from the clinicians perspective that, well, older patients are really not adapting or used to using technology in the form of smartphones.

And we've seen very rapid growth, certainly during the COVID pandemic and then continuing with even people my age and older purchasing smartphones at a very high rate. And to that end, I want to show you two areas where we're working hard to try to improve the Simplicity with which patients can connect to their smartphones and then also connect to accessories or streamless sources. So in the next slide just go and hold it before you start the video I'm going to talk about a little bit about and we have a little problem with the echo when the slide transferred but let's see how the audio is on. Now I'm going to connect to an Android phone to the devices. We know that iPhones for made for iPhones in 2014 have been the simplest way to pair.

But what we're seeing now is improvements in the way to simplify that process for Google phone as you'll see in this brief video. So I've pretty much lived in the all Apple all the time environment since 2007. I was a very early adopter to the iPhone and I've continued to live in that space using a Mac and an iPad and with Bluetooth low energy. The pairing process through accessibility hearing devices pair is pretty straightforward. And if you've used Apple products, Apple headphones, AirPods to connect that process is even simpler.

Recognizing globally that Android remains the most popular device phone on the market, I want to show you something really cool with our new devices. So here is a Google phone and I have On My

Omega AI's the latest firmware and I have the latest applications the my Starkey app on my phone as well as on this Google phone. And now what I'm going to show you is for my devices which I'm going to turn on, there's the right one and there's the left one that now it is recognizing that there are Omega devices nearby and I'm going to go ahead and connect in this case and pairing to the right one, Pairing to the left one.

Bam. And it gives a flash showing that I am now paired. And now if I put the devices in my ears and I go to the my Starkey app on the phone show that I'm going to connect to the devices to my Starkey searching I'm pairing into those devices my left and my right device connecting. I'm going to allow that.

Got it in this and now go to the next slide. Now this is available for both Omega AI and Edge AI. So I just pretty much lived in 2007. So go to the next one. What I do is and now in the populated app and if I go to hit stream and I show oracast broadcasts in this case I'm in now the WFA theater.

And now I'm connected and just that easily I'm connected to the broadcast and I'm streaming. So for Omega AI Naji with the latest firmware, once that update is made and with compatible iPhone or Google phones and Android phones, that pairing process is dramatically simplified for the Bluetooth low energy connection and the connection to Stream and the the ability for patients and end users to appreciate that ease of pairing. Ease of connection to oracast broadcast video is simpler than ever and I think it's going to be the beginning of great things with regards to connectivity for our patients. Thank you.

Thank you Dr. Fabry. Next up we have Lauren Fetzit from CaptionCall. Thank you for having me. The question of simplicity is on the forefront of everyone's mind. While we all hope to be tech savvy, or I guess at least I do, things tend to be more cumbersome the smarter that they get.

At CaptionCall, we believe the ultimate innovation isn't a new bell or whistle, it's the removal of friction. Working smarter, not harder There are four key ways in which I feel like we've hit the nail on the head when it comes to ease of use. There we go. First would be the unification of our CaptionCalled mobile capabilities. The CaptionCalled mobile app can function as a standalone tool or integrate with hearing instruments to optimize communication by improving signal to noise ratios in noisy environments.

Essentially, the app extends the versatility of your patients hearing aids. With ongoing innovation, our latest technology makes it easier to interface with other devices, creating a more robust ecosystem. Both CaptionCall Home Phone and CaptionCall Mobile can connect to Bluetooth, hearing aids and mobile devices so the user can get audio directly from their hearing aids while reading our captions. CaptionCall also meets a TIA standard for hearing aid compatibility and reduces interference. Our mobile application functions similar to the home phone options, allowing for your patient to have the same great features they experience in their home.

Whether it's saving a call from a loved one, understanding a voicemail with ease, or even the opportunity to locate the contact quickly and easily Connection in my opinion, there is always hurdles when it comes to connectivity. I am proud to say that CaptionCall has found a solution to overcome almost every situation that your patient may face when it comes to the functionality of CaptionCall. In order for our service to run with the best user interface, we require the Internet to make the captions fast and accurate along with a landline. While many people are cutting the cord but still desire a home phone solution, we have options. The best part is our fixes come on the back end.

No Internet, no Problem, Your customer no longer has a landline. We have a solution for that as well. They would like Bluetooth, their cell phone to the home phone. Done. It would be a benefit for their hearing aids to not only connect to their mobile device while using the app, but also the home phone.

We've got you covered. You no longer have to worry about what connection is needed for your eligible patients. You just have to identify those individuals that need our service service, our red carpet service. What I think is our bright shining star CaptionCall employees go into your patient's home to finalize all of the moving pieces of the connection for their new home phone or mobile application. Again, where the tech savvy part of me would love to shine through, but certainly does not.

Our amazingly qualified trainers spend time making adjustments to your patient's liking as well as walking them through features that will make the phone use seamless. This takes the guesswork away from all of us. I'd be remiss to say that the heart of making things straightforward is our service and support. There are so many things on everyone's plate on a daily basis that is difficult to remember requirements or how to submit a referral. Our team is the backbone of simplification.

The local account managers and trainers are the support system that answers questions, ensures that the installation is successful and that your patient feels comfortable and confident. Our customer support team phone number is programmed in every phone so they can't get rid of us and there's no question of how to get a hold of us if a question arises or more training is needed. Together we can make this a little less overwhelming so that social engagement is an all time high. We listen to your requests of making things less challenging about our service and quite literally try to take everything off your plate so that you can focus on your patient's well being.

That's all. Thank you. Thank you. Alrighty. Next we are back to Dr. John Pomford from Audioscan.

Thanks Dr. Stankovich. And I heard you this time, so I guess I did this the right way. So when I think about this question here, this is an important one for audioscan, particularly as we tried to increase the routine use of verification without making it overly complicated.

Because as we know, verification is best practice. The evidence is clear on that, with significant benefits for patients and providers. But unfortunately adoption remains inconsistent. And when we ask why am I travels? You know, often we hear about the time involved in the procedure, a lack of, say, confidence in the process itself or certain aspects of it, and just the perceived complexity of the Verification procedures.

And so our focus as a company has really been how do we remove those barriers without compromising accuracy? Because if we can make best practice easier to execute, then it's probably more likely to happen.

And so one example of this philosophy was the development of ProbeGuide, which has been out for a few years and is our software assisted probe tube positioning tool, which provides a real time indication on a simplified screen on our product of the estimated probe tube depth in the ear canal during probe tube insertion, which again aims to help clinicians with the process so that they can position accurately and confidently. And so rather than for example, adding steps or creating complications with this innovation here, it really guides providers through the process and helps to reduce uncertainty in arguably one of the most critical components of verification, which is probe tube placement.

Now, while ProbeGuide has been well received and as I mentioned a minute ago, has been out for a number of years, the reality is it was developed and validated with adult ear canals, which of course are quite different than pediatric ears. And so our recent release in 2025 of ProbeGuide plus really expands the application of this tool with a new pediatric based acoustic model. And we've also added some new capability to make the process easier. So for example, we've included auto stop once the probe tube is in the proper position, minimizing the number of clicks involved for the provider. And also now a new animated visual distractor or Audiosaurus as some are calling that follows the on screen estimated probe tube location to help with patient cooperation during probe tube insertion.

And so importantly, this approach has been evaluated independently. And so in a recent study by Western University and the folks at the national center for Audiology, they determined that ProbeGuide plus showed very strong agreement with traditional probe tube placement methods conducted by clinicians who are quite experienced in these techniques. With the recommended insertion depth of this tool matching the visual method and roughly 80% of years for children over 1 years of age and also finding in this study that test retest reliability was high, so demonstrating consistent reproducible outcomes. And we also took note of some of the clinician feedback in this study as well, which also highlighted the workflow efficiency and the clinical utility offered by this tool.

Now another example from audioscan relates to simplicity is innovation is the area of automated verification to target technology in our version of that which called verifit length, which again is a technology that's been out for some time. But as I mentioned, the first section has now been expanded to include the use of bone conduction devices with the skull simulator. In particular Cochlear Baha 7. Now, for those who aren't familiar with VeriFitLink, essentially it's an API that allows the exchange of measurement and control data between the VeriFit2 in this case, and the fitting software, such that the fitting software can directly run tests on the verifit, compare the first fit results to the targets on our system, and then, knowing the difference between the measured curve and target, can automatically adjust the programming of the hearing aid to match targets without the need for any additional manual programming on the part of the clinician. And so we can imagine with that type of technology there are potentially a number of significant benefits.

So of course, first of all, this would support best practice because once again, earlier verification verification of hearing aids is best practice. It also simplifies the verification workflow, especially for those who are not, say, quite familiar with all of the various steps, because it will guide the clinician step by step through the process. And as we see in multiple research studies on this type of technology, including Verifit Link, it importantly saves a significant amount of time in the verification process versus

manual methods. And importantly, doing this without sacrificing any measurement accuracy. And of course, by leveraging VeriFit Link and conducting verification, we can now tap into all of the associated benefits that we see from the research literature, including those I've listed here.

For example, improved audibility, patient listening outcomes and satisfaction versus unverified first fits.

And so for us, really, this concept of simplicity as innovation means designing tools such as those that I've described a moment ago, like Pro Guide plus and VeriFit Link, that really aim to make the verification process a little easier, more intuitive and hopefully more common in clinical practice by overcoming some of those barriers I mentioned earlier.

All right, wonderful. Well, so far we've heard about connectivity, accessibility and verification and simplifying those platforms. Next we have CareCredit with Jessica Lawley. Thank you, Christopher. I'm super excited to be here today.

Thank you for having me. So simplicity is the name of the game. And here at CareCredit we are trying to make it easier for our patients and providers. Providers. And so with that, I want to talk about the custom Apply link.

So with the custom Apply link, one link takes your patients directly to finance to financing. And the great thing about that, it is customized with your location's name and it provides easy navigation for your patients to pre qualify and to apply for financing.

Now you may be asking, okay, how does this work? So with the, the custom Apply link, so patients can see if they pre qualify with no impact to their credit score. They apply for the CareCredit card from their own device using a QR code and they can get a decision within seconds. And if they are approved, they can use that account the same day. The great thing about this is that patients can get access to

care, access to hearing aids, you know, within the same day.

They can also calculate monthly payments, which makes it very easy for them to see how much their monthly payments would be. And it makes it more accessible, makes more care more accessible. They can also pay with CareCredit online for services at your location using the CareCredit card, so making it very easy for you, your staff and for patients.

Now, what are the benefits of the custom apply link so you can access it from anywhere. Patients can use their mobile device. It's very easy. It's a paperless payment, so it delivers a secure contactless financing experience, but no need to pass any paper forms or a physical card back and forth. It also provides quick budgeting.

So there's as I mentioned, a payment calculator so they can easily estimate their monthly payment and they can fit that into their budget. There's also immediate credit decisions so again they can see if they pre qualify and then if they are approved, the patient can then use their card immediately to pay for care. This makes it simple again for your staff as well as for patients.

I would just like to say, you know, we at CareCredit are trying to simplify. We know our providers, we know audiologists and hearing instrument specialists are very busy. And we are, you know, consistently trying to find new ways to simplify, you know, your, you know, what you're doing each and every day. So this is just one, one way that we can simplify your business. Thank you.

Thank you, Jessica. All right, next up, we are back with Dr. Ed Farrar from Odo.

Hello again everyone. So the next question I'm going to talk about is how are we working to make products, software, services simpler and more intuitive for providers to use and for patients to understand? Well, well, let me start with the problem here. Getting buy in for patients with tinnitus

treatment is hard. Okay?

So you've got to the end of your tinnitus evaluation, you give the patient the treatment you're going to recommend and the patient just doesn't believe that it's going to help. Why does this happen? Well, because every person that the patient has gone to see so far has told them there's nothing you can do for tinnitus. So when you tell them we've got a treatment plan going to help. They just don't believe you.

And for the treatment, particularly cbt, to be effective, your patients need to want habituation, they need to want the outcome that you're promising and they need to see it as an exciting outcome. If you can do this, if you can get the patients bought in to the treatment that you're offering, if we can simplify this complex concept that many providers struggle to understand, your patients are going to be more motivated, they're going to be more likely to be compliant and you're going to get a better clinical outcome. So this is really important. Now this method I'm going to take you through is a result of four years of experimentation. And I personally have done over a thousand one on one calls with tinnitus patients over the last five, six years.

I've spent a lot of time talking to tinnitus patients and this is the explanation I would give.

So how do we get vines habituation? Well, we need to first in the history identify and label the patient's emotional response to their tinnitus. And you can do that by asking this question. When your tinnitus is bad, what's the emotion you feel? When your tinnitus is bad, what's the emotion you feel?

Make a note of that, that and then you fast forward before you've told them about the treatment you're going to give. We want to explain why they hear the tinnitus, what's going on in their head, how we're going to change this and then we're going to sell the outcome to them. We're going to sell habituation as something that's super exciting, something that's going to be desirable for them and they're going to get a buy in. We simplified this explanation. Okay, so here's the explanation I give right now.

Your tinnitus makes you feel, feel bad, makes you feel insert the negative emotion you took from the history. Anxiety, frustration, stress. Because it makes you feel bad. Your brain thinks the sound is a threat. So to protect you, your brain keeps checking to see if that threat is still there.

Of course it is there, so you notice it. Cycle continues. We need to interrupt this cycle so that its hinnitus no longer makes you feel bad. Your brain no longer thinks the sound is a threat. Doesn't need to keep checking, see if the threat's there.

Three amazing things are going to happen. One, your tinnitus is going to sound quieter. Patients love to hear that. That's what they want. Perception changes, reduces.

Two, you stop noticing it because your brain doesn't need to keep making you aware of it. And three, if you do notice it, it doesn't make you feel bad. And the end result is you get your life back. You can go back to the life you had before your tinnitus started.

So the end result of using that explanation is that you've explained habituation in a simple way. You've explained it in a way that's easy for the patient to take on and understand. And because of that, the patient is excited and bought into the treatment plan that you're going to recommend, and they're going to be much more likely to be compliant. You're going to get better results. So if anyone would like that, those slides or those diagrams, please just ping me an email.

Thanks.

Thank you, Dr. Farrar. It's all about simplicity. Okay, next we're going to move to a new topic, Hidden Gems. What is a feature of your product that is underutilized or misunderstood? And joining us here, first to talk is Dr. Tamara Stender.

Thank you, Dr. Stankovich. Today I'm here to talk about something that I found fascinating and something that really needs to be addressed. What is something that is in our technology that we think can help patients, but that is not being used or is not understood as well as it could be? So I asked a lot of people out in the field for their responses, and we came up with this. Not maybe everyone's most misunderstood, but definitely a main player.

What is the ReSound Environmental Optimizer, and how do you use it? So in order to illustrate this, I want to take through a case study. Let's say we have this patient here, and he is a chef at a restaurant. He's very often in a noisy environment. And other than that, he's very happy with the sound quality of his hearing aids, except in that noisy environment, he says it's too loud.

I'm sure that we've heard this many times before in clinical life. How can Environmental Optimizer help this patient? Well, backing up a step, classifying environments in hearing aids is very common in the ReSound universe. We do that in seven quiet, soft speech, loud speech, speech and moderate noise. Speech and loud noise, moderate noise and loud noise.

However, it's not quite as simple as it looks like in this slide. The environments are all working on a continuum where the listening environment is in real time being analyzed, and the probabilities of being in any one environment is being calculated. But as the real world is very, very complicated, you may not be in just one environment at a time. So the beauty of this system is that it will merge and balance more than one environment at a time and from there decide how much or how little of each feature to apply. So that's what really brings the beauty out in how we can help this patient.

He says he's being bothered in loud environments, but we don't always know exactly how loud is that. So the ReSound Environmental Optimizer acts like an automatic volume control that helps the user get appropriate gain and or noise reduction applications based on their complaints and helps make it be so

that they don't have to change Pro programs as much. So this is what it looks like in the fitting software. The defaults are different for every program, but I'm just going to take the first automatic program, which is our all around program, and you'll see these seven environments knowing in the back of your mind it's not quite as simple as this, but this applies different gain offsets like an automatic volume control per environment. And so we put it into the fitting software within the program so that you can have more control when you get these kinds of complaints.

The reason why we need this is because the instinct of me when I get a complaint like this is, oh my goodness, it's too loud for the loud sounds. I know where loud sounds come in. Those are gain input 80, let's first say. So I might be very tempted to do something like reduce the gains for the 80dB inputs. But before I do that, I'm going to take a look at the compression ratios here which you see on the bottom of the screen.

They range from about 1.2 to 1.9 for this user with a mild to moderate hearing loss. And you can see the corresponding targets and gains above in the graph. At ReSound, we believe in keeping the fidelity of the sound as good as possible. So we're going to go towards lower compression ratios as much as we can while still making things audible. But if I were to do what my instinct said and to reduce the gains for the gain 80 inputs, I just increased those compression ratios, thereby changing the sound quality of the sound, not only just for the loud environments, but for every environment.

And as you'll see in the graphs above, because of the way that gains are linked, I also inadvertently reduce the gains for 60, 65dB inputs. And that's so important for speech intelligibility. So I may have made a mistake here and actually made it harder for the user to listen in other environments in which he was doing well previously. So I don't want to do that. So instead I can go to the Environmental Optimizer 2 and I see my gains laid out.

I identify what kinds of environments he said I will never know exactly what his restaurant is like. So I'm going to look at the noise moderate and noise loud environment and I'm going to just decrease those. And what this means is that it's taken down all of the gains for those environments in a more linear fashion. So I don't affect the compression ratios and I don't affect his hearing in other environments. It even goes beyond just gains.

We can also control noise reduction changes per environment as well within the advanced settings. So I might go ahead and change his noise reduction, make it more strong in those noise environments. And furthermore I can do it binaurally by having those changes synchronized between the two ears.

This is one of the most misunderstood and underutilized features. I hope that this is helpful. Thanks so much for having me.

Thank you, Dr. Stender. Next we have Dr. Brian Taylor from Signia. Thanks Chris. Good to be with you. I am going to talk about a feature in the Signia world that is misunderstood a little bit.

I conducted a little due diligence out in the field and I chose this feature based on that. And the feature I want to talk about is called, the proprietary name is Real Time Conversation Enhancement. It's kind of the the foundation of Signia signal processing has been so for a couple of years now. I would consider it our one of our signature features and it's really a novel implementation of adaptive beamforming. And to before I get into a little bit of the details of why I think this feature is a little bit misunderstood.

Just to kind of make sure that we're all grounded in some of the research here, I think there is some modest evidence out there that adaptive bilateral beamforming does improve signal to noise ratio relative to other forms of directional microphones and with very little side effect. And that comes in the form of an evidence based review article that was published a few years ago in Ear and Hearing. And it's also important to remember that modern hearing aids, when it comes to directionality, integrate two

common approaches and we'll just call them unilateral, which are two microphone arrays and bilateral, which are four microphone arrays where the two devices are wirelessly connected. Both provide, you know, decent directionality. But that evidence based review article reminds us that slightly better with bilateral beamforming and of course beam forming is predicated on the ability of the system to sense the noise around it and change the null based on where that the intensity and location of that noise.

And regardless of the exact type of beamforming system that's out there, the idea is to ensure that sounds from the target direction are not attenuated. And of course in most implementations of beamforming or directional microphones, the target signal is usually set to be speech coming from the front. And that's important to remember because what's novel and really interesting and useful about Signia's implementation of bilateral adaptive beamforming and real time conversation enhancement in that feature is that there are actually three target targets from the front. So this system is designed and engineered to improve speech intelligibility and listening comfort in back and forth conversational situations. And it does that by implementing this four microphone bilateral beamforming array.

With the three front facing beams that are illustrated there in the purple. You can think of those as three acoustic snapshots that analyze incoming sounds and determine the direction or location of the talker even as they move if they're in the frontal plane. And of course this idea is the, this implementation is really to enhance conversation in dynamic real time, back and forth kinds of situations where there are multiple people talking. So here you see another illustration of that. Again, rather than having one target from the front with with real time conversation enhancement you actually have three targets from the front.

And that can only happen because of the way that the wireless microphone array is designed.

So I wanted to spend a couple of minutes talking about why I think this feature is misunderstood. And the main reason is real time conversation is always active. No manual program is needed. And

probably more importantly, regardless of how your auto steering your the way that the hearing aid, the multiple automatic memories might be set up. Regardless of all that, real time conversation is always active in the device.

As I mentioned it, it actively tracks multiple talkers in real time and or it enhances the speech inside of those three front facing acoustic snapshots. But here's my sort of my closing thoughts here. And it really important to keep in mind that regardless of how sophisticated this technology is, if you really want to optimize its performance on the individual, it's always important to be mindful that you need to closely match the gain targets. It could be the NOW or the dsl, it could be Signia's proprietary target target really doesn't matter. But match those targets as closely as you can.

Ensure that the frequency response is smooth and broadband. Make sure that the headroom is sufficient, which means that in some cases you might have to bump up the MPO it's always important to be mindful of the coupling system and remember that with a more closed coupling system, one with a more with a parallel venture works the best to optimize the performance of this feature. And then lastly, when you have a more closed coupling system, another proprietary feature inside of the Signia algorithm is something called OVP 2.0, which allows you to have a more close fitting without the side effects of the person's voice sounding too loud or too boom me. So that's my closing thoughts.

Thank you, Dr. Taylor. All right, some excellent hidden gems. Oh, sorry, we have CaptionCall here. Oh, we're still, we're still in hidden gems. I apologize.

All good. Lauren up. Yeah. There you go. Perfect.

Thank you.

So what is your feature or product that is underutilized or misunderstood? I love this question. I really think that our service can be so simple, yet the requirements are overlooked or appear complicated. So a few things that come to mind of features that are underutilized or misunderstood. One you probably don't actually know about but is our customizable settings.

So we can adjust font size, background color on the home phone and mobile solutions. We can also adjust amplification on our home phone solution. So what I mean by that is when a trainer arrives at your patient's home, he or she can provide precise amplification adjustments mimicking your patient's loss, including a boost mode that is capable of reaching up to 121dB Spo. So for some of those profound losses it can get really loud. So one, two, if your patient has their audiogram with them, we can kind of mimic that there for them.

This isn't just about volume maintaining the frequency shaping you've worked hard to program into their hearing aids. This feature is always one of my favorites to talk about. If you want to know more, please let me know because it's just, it's so fun. In my opinion, the most powerful tool that we have is solutions. So like we previously discussed in the last slide, our service to function is at maximum capacity with the landline, Internet and our Bluetooth requiring at varying degrees.

I can proudly say that we have solutions for any of your patients needs encompassing all of those requirements. Whether someone no longer has a landline or resides in a building where maybe community wi fi isn't extremely strong, we can still go in install and you no longer have to worry about diving into the nitty gritty details of asking your patients which they have, if they have Internet, if they have landline, Bluetooth, whatever. We take care of all of it. Now, kind of the easiest way for me to explain our solutions is I like to tell a story. One of our trainers shared this story with me the other day, so I figured I'd share with you.

A woman, lovely woman named Rose was referring to to CaptionCall by one of her providers. During the install, John, our trainer, was just chatting with her and she mentioned that she no longer had a landline. It was a little too costly for her and it had become pretty difficult for her to understand on the phone. So she decided to get rid of it. But the provider convinced her to try CaptionCall so she said, sure, I'll go along with it and give it a try.

Rose does live in a senior building which has community WI fi and typically that works for people. We were able to pick up the signal in the community WI fi building, but we do have what we call a CH1 Internet device that was able to boost the strength of that WI fi so that things are more seamless and accurate. While John was there too, he also asked if she had a cell phone. Happily, John paired her cell phone to the home phone which we're able to do. And so then when her cell phone range it will appear on the large screen so she can read it easier.

She can use the speakerphone if she'd like to do that as well. So just a couple different things there while she was there, she, while John was there, I guess I should say she made a call to her sister. She hadn't talked to her sister on the phone, I think she said, in like over a year because again, it was hard for her to understand. So her and her sister just texted. So while they were on the phone, of course there was a lot of crying because they hadn't spoken to each other and just they just thought it was so exciting.

So needless to say, a heartwarming reunion at that. Beyond that, we have hardware. The most underutilized feature is our saved transcript feature. I love this. Rose from above can use, you know, use this too.

So she could save conversations with her friends, loved ones, her sister that she hasn't talked to in a while. But she can also use it as kind of a copy critical medical tool. When a patient can reread doctor specific prescriptions, instructions, follow up details, they tend to be a little bit less anxious about what's

going on. It transforms a simple phone call into a reliable medical record for the patient, ensuring that you care and that your providers, any provider, that they have your clear conscious information, they can save those calls, they can delete them at any time. So it's kind of just like a wonderful, wonderful tool that, that we have that is underutilized.

There are several hidden gems we have within our service. I challenge you to adapt one of these items in your future discussions with your eligible CaptionCall patients. Thank you. Alrighty. Thank you.

All right, we are back to the future here. Future horizons. What future developments do you see that might increase the range and scope of meeting unique or challenging needs in the hearing industry? And to start us off, we have Jessica Lawley from Credit Car Credit. Thank you.

Yeah. So today I wanted to talk about a new product that we have coming down the line. Many of you have probably heard of Allegro Credit, which is our installment loan. And we also have our revolving credit card, which is the CareCredit card. And so with these two products, we are renaming the Allegro installment loan to Synchrony Pay Monthly.

And the great thing about this is that it will all be under one platform now. You will no longer have to go to the Allegro portal. You can do all of your transactions all in within the provider center. So we're calling the Synchrony Pay Monthly. And again, together with the CareCredit card, it just brings more financing choices to your patients.

And the way that I look at it is you're just, you're really giving your patients more options. So again, this is a one time use loan. So it's a fixed loan. There are fixed monthly payments as well as fixed apron. Again, there's no hidden fees or a prepayment penalty.

So this is very attractive to a lot of your patients. So let's say they come in and they're looking for a, you know, an installment loan and they want fixed monthly payments. You are able to, to give this option to them. So I look at it as a one stop shop. You're just giving your patient more options.

Now the patient benefits is you really are giving your patients the ability to fit hearing care into their budget. Again, the payments are predictable, they're fixed and you can set up a specific loan payoff date. And again, with the custom link, they can pre qualify via a single application and they can see if they are approved with no impact to their credit score. And again, as I mentioned, when a patient applies, they can look and see which option fits, you know, is best, the best option for them. So perhaps the CareCredit card is a better option for their care.

Perhaps the installment loan is better for what they are, you know, for their budget. So it really just gives your patients the ability to choose what is best for them. And then again for, you know, the provider benefits, you receive payment in two business days. You know, this helps, you know, take the burden off your administrative.

And it offered a seamless payment experience for your patients. Again, you know, this is what we're calling the pay monthly installment loan. It's under one platform. You know, we're very excited about it. And.

Yeah. So please let me know if you have any questions.

Thank you. Next up, we invite back Dr. Brian Taylor from Signia to talk the future. Thank you.

So to answer this question, future developments, as tempting as I might as it might be to talk about AI and some of the newer features that are hitting the market inside of hearing aids, I wanted to look at it a little bit differently. So I think one of the real promising aspects of the future, and I think AI and

smartphones can definitely be a part of this, but I think there's an opportunity for all of us in the clinic to think much more broadly about the definitions, the definition of success for the individual with respect to how we might treat their hearing loss. And really, I think it's about treating hearing not as a problem that you solve with technology, but as treating hearing as a human experience. And I think there's some real opportunities for us with some of the new gadgets and technology that are out there to help us do a better job of more broadly defining success of the individual. And one recent publication that you see here on the screen, I think gets at this a little bit, measuring meaningful outcomes for adults with for adult hearing health interventions.

You can actually acquire this online. You can download a copy. Larry Humes did a fabulous 20Q a couple months ago that kind of summarized some of what was said here. But I think that rather than just look at at a couple of things, maybe on the cozy or in your sound booth, there's an opportunity for us to see the impact that hearing aids and other interventions might have on the individual's ability to be a more active participant in social situations, there's an opportunity for us to look at how our interventions boost confidence or empower somebody more effectively. Maybe looking at how our interventions help somebody appreciate the sounds of nature and improve their environmental awareness and how that might affect their mood and behavior.

So there's all kinds of opportunities. One that I've spent a little time collecting data on over the last couple of years is how our interventions can improve overall quality of life and fatigue. And so this is just kind of one example of how we can more broadly assess the effectiveness of of hearing aids and other interventions. Some of you might know that a few years ago the researchers at Vanderbilt, Ben Hornsby primarily I think was the lead author and investigator on this, developed the Vanderbilt Fatigue Scale. There are a couple of different versions of this.

The one you see here is the adult version with 10 items. And I think this is a great way to look at the impact that hearing aids have on fatigue and you know, which is an important aspect of quality of life. We've actually collected some data that shows when you fit somebody with hearing aids, you can really reduce their fatigue in a, in a, in a significant way. You see that here on the slide at one month and then at six months. And I don't have it on this graph, but we actually see that maintained for those that wear their hearing aids one year post fitting.

So I think this is a really good example of how a broader definition of success has a real impact on the real world effectiveness of hearing AIDS.

Thank you, Dr. Taylor. I'm not fatigued yet. We're going to keep going here. Send us over to Dr. Dave Fabry from Starkey. Thank you doctor.

Feel like we're on an episode of Audiologists like us. So I agree with what Dr. Taylor just said regarding this horizon and future horizon. Go ahead to the first slide please. One of the things that has been an important pillar for Starkey really since 2018 has been this focus on not only job one, which is better hearing, but also health monitoring aspects. And go to the next slide please.

Particularly for, for the aging population, we know that hearing loss has high correlation and even comorbidity with many chronic health conditions. And so we have for six or seven, eight years now believe very strongly that hearing care is an important element of overall healthcare. And the area that I want to point on and highlight a little bit is this issue that people with mild hearing loss already are three times more likely to fall and that that increase risk increases rather with increasing hearing loss for this reason. Next slide please. We've embedded inertial measurement units IMUs in our hearing aids since 2018.

And one of the areas that we were specifically focused on within the scope of practice for audiologists is hearing and balance. To go to the next slide please. To really isolate and focus not only on providing better audibility for hearing as others have talked about previously, but also the capability of being able to detect movement steps like a wrist worn device would, but also the presence of a fall. And if you'll go to the next slide. In 2019 we introduced our industry's first fall detection feature that just required the patient to wear their hearing aids, either monaural or especially biological, binaural and connected to their smartphone.

And we did a publication in 2020 in the journal of the American Academy of Audiology, which is listed on the bOTOM here, that indicated that the sensitivity and specificity for fall detection and fall alerts was comparable or better to the more commonly worn body worn pendants. To go to the next slide, please. This opened up the discussion for the professional and the patient and even family members regarding not only if that patient suffered a fall, but also at near fall, a trip. And it really enabled what is often a difficult discussion with and between patients, the family members and the healthcare provider regarding those trips and things that were near falls. And the reason that this is important is that while a fall detection feature, in my opinion, opinion is great and we've heard from the field, from patients, providers alike, that this has been a very important feature for detecting a fall.

So that if a patient is wearing their devices connected to their phone and their loved one that they're communicating to with a text alert in the event of a fall really prevents that image in their mind of the woman from the 80s who fell and couldn't get up. But if you go to the next slide, one of the issues is, is that while a fall detection feature is great, it's almost too late. And in my, my adopted state of Minnesota and my home state of Wisconsin, the number of fatal falls is increasing and those two states have the highest deaths related to falls in the aging population in the nation. So what we've been on in a partnership with Stanford. Next slide please.

Is that to incorporate a balance assessment tool borrowed from the CDC's steady protocol stopping elderly accidents, deaths and injuries using screening questions that are typically done in a clinical office, the exams. But we decided that what we wanted to do in partnership with Stanford was go on this journey to see if we could use specific elements of this steady protocol that isolated balance, gait or strength and really focused on measures that typically are done in a clinic, but could now be done in the convenience of a patient's own home. Next slide.

And provide feedback regarding whether the initial screening or any of the balance, gait or strength exercises in comparison to their peer groups were deficient. What we did was then develop balance training exercises once a gait, strength or balance issue is identified that the patient could work to isolate and improve that deficiency with the hopes in the long term of identifying and preventing falls before they occur. The next slide, it provides a QR code to a recent publication that we did in combination with Stanford on the use of hearing aids embedded with these inertial sensors and our AI to identify patients at risk for falling. We continue with this work, and we are continuing to find new and creative ways to identify falls when they're present. Hopefully be on this journey towards enabling patients to do some fall risk assessment in the convenience of their home, do balance risk assessment in combination with physical therapists to prevent falls before they occur.

Thank you very much.

Thank you, Dr. Fabry. Next we move back to Dr. Tamara Stender from ReSound. Thank you. So when I got this question, I really focused on one word, and it was the word challenging. And it got me thinking, where have we come at?

And how are we now in the most challenging need in the hearing industry, which is hearing in noise? So we can look at market tracks over time and see that we have made huge improvements as an industry of making a speaker more audible in a difficult listening situation such as this. Lots of speakers,

background noise, a family gathering, for example. But one thing that remains on the market track is that people still have complaints. Why is that?

Well, it's because the hearing aids don't actually know which speaker you want to listen to. There can be many speakers in a very difficult listening environment, but you are the only one who knows which one you want to focus on. And that can be exceptionally hard for a hearing aid to figure out. We have all kinds of technology now, but how does it know whether you want to hear your granddaughter who's telling a story that may be very, very charming and cute, but you can't hear the person that you were in a conversation with, who may be a little bit of a softer talker, but is also very much having that conversation. If you're unable to ignore or tune out conversations you don't want to hear, then you get fatigued or you can't hear the ones that you want to hear?

So that is the big challenge that remains with us today. So our hearing technology needs to be able to make it easier to hear in noise, but also let you decide what matters so that you can really hear the speaker in a very common situation such as this, with more than one person talking. We don't want users to miss the moments that matter, because that's actually what probably brought them to our clinics in the place first. First place they missed out. They were not able to have that witty response to a conversation that they wanted to have or they didn't hear it at all.

We need to let them hear and also Decide who to hear. So you can think of it as a human approach to AI. What do we mean by this? Well, we've got many different kinds of technologies and one of the latest and greatest in the industry is the use of AI in noise reduction. So if you are in a noisy environment such as this, DNN denoising in ReSound Vivia hearing aids will take the chaos down with less listening effort.

It's been shown in many studies that DNN denoising can reduce listening effort for the user. And this is definitely a help because being fatigued only makes listening and choosing what to hear even more.

But we're going to take it one step farther because remember, as you can see in the icons, there are several speakers even in this situation. How does the hearing aid know which one you want to listen to? They might all be in front, but which one is important to you?

So that is why at ReSound we're focusing on the user and putting them in the driver's seat. We're marrying the denoising of DNN with our directional beamformer so that the user not only reduces the noise in the environment because the hearing aid is not processing the noise when they're in that kind of environment, but they also are able to direct a beam former to where they want to hear that speaker that is important to them. And what we find is that we get a 13% improvement in speech, understanding and noise compared to the directionality and noise reduction that we had before. And 61% of users experience better hearing and noise with that clear focus directionality. All right, thank you so much.

Thank you, Dr. Stender. Okay, we are moving on to round five. And this is, I believe, our final round. And this round is broken into three mini theme areas or clusters. And so we're going to be talking about elevating care and the AI revolution.

We are going to talk about clinical precision and evidence based practice and communication and access. And to lead things off on the AI revolution, we welcome back Dr. Brian Taylor. Thanks Chris. Good to be back with all of you. And here is my question.

How might AI based features and hearing aids change the way that audiology is practiced? So I think you probably already heard some fantastic presentations on AI driven features. You probably hear a few more presentations on that same concept. And I want to talk a little bit about how AI based features might change the way that we practice audiology. The way I like to look at this is the role of audiology in an AI driven world.

And this is down the road probably a few More years. I don't think we're there yet. But you can think of yourself, yourself kind of like a sommelier with wine, where you might pair the AI driven algorithm to what the specific needs of the individual might be. Just like a sommelier will pair the type of wine with the meal that you might be having. And as this little illustration shows you, the audiologist is the expert in explaining why that pairing might be occurring.

I think you're already starting to see now that every manufacturer has their own different flavor or version of DNN based noise reduction. And I think, you know, maybe driven by battery capacity limits and size of the chip and things like that, the AI driven feature or the denoiser can't do all things or be all things to all people. So I think we might be in a world, we might be practicing and fitting hearing aids in a world in the not too distant future where if you decide that the patient might be at risk for cognitive decline, you might pick one brand of AI based features. If the highest priority of the patient is deemed by you to be socializing, that might be a different flavor of AI based noise reduction from another manufacturer, another brand, or if listening fatigue or some other issue is deemed to be the most important, you might pick a third brand. So I think it leads to more precision audiology.

And along those same lines, I think you're going to be hearing much more from hearing aid manufacturers about agentic AI, which is really where the AI has a mind of its own. It can make predictions about where the wearer is about to enter. Maybe it's a noisy room and it can preemptively adjust the device. You might find features, features in hearing aids where it identifies the most important sound, a parent speaking, for example, and actively steers the microphones to that sound in a seamless and instantaneous way. And it might even be able to.

And again, this is one of the weaknesses of all of these environmental classifiers out there today. As sophisticated as they are, they still don't know the intent of the wearer. And with more sophisticated AI, there might be an opportunity for us to be able to actually do that much more accurately than we can do

today. And I think all of that kind of goes under, that will be under the hood of all hearing aids, which allows us then to practice what I call humanistic audiology, where we can spend more of our time counseling, listening with empathy and trying to empower our patients to take action around their hearing loss. And those are superpowers that I would argue that cannot be replaced by even the biggest, best artificial intelligence.

Thank you Dr. Taylor. All right, and we welcome back Dr. Stender. Thanks again. So my question was how do today's AI enabled hearing aids translate to real world benefits for patients? Because I think that there is so much going on in the media with artificial intelligence that it can be hard to see where it actually makes a difference to our patient who will after they see us go to the grocery store and then go get lunch with their best friend.

So how do we take artificial intelligence, the ability of machines to do tasks that historically only humans could do, to make sense in a hearing aid? Well, there's many different sorts of artificial intelligence. We've had machine learning. It is a big field and it's the ability of machines to automatically learn without being able to being programmed. But then we have a more recent addition and that is deep learning.

And those are algorithms with brain like logical structure called neural networks that make the decisions after being trained with vast amounts of data. So all of this is very much esoteric and doesn't really relate to what I just started with, but it is the backbone of how artificial intelligence is used in technology, including hearing aids. But what we want to do to make it make sense to our patient who's later going to the market into lunch, is that we used to you we need to use this intelligence to augment their experiences rather than to dictate how they will be experiencing the world. We want to help and not replace the human. So what it is is a con in the ReSound universe.

It is a conscientious combination of directionality with AI enabled noise reduction that is all designed to support what the human does best. The core processor in the equation is going to be the human brain. We know that we will never know exactly what speaker the user wants to hear. We just assume that they want to hear something, but we don't even know what. So we're going to remove noise in difficult environments only through the DN engine chip and use all of our features as they are on the 360 chip to help support that human processor.

So Here on the 360 chip you see all of the features that we have had previously and we have a dedicated chip that has been trained to denoise the environments when the going gets tough and it's really difficult to listen. So for example, in a world where there's a lot of noise, the 360 chip is running. And in parallel processing the DNN chip in those difficult situations is able to take the environment, separate out the Noise and reduce the noise, maintaining the speech level.

So let's see how it applies to Peter. Peter is a restaurant consultant. He has a severe hearing loss in the high frequencies, and he. He prefers to experience restaurants when they are at peak hours. But he's having some problems with fatigue because it's very difficult for him to hear who he wants to hear.

So what are we going to recommend? Well, number one, we need to make sure that he has the ability to choose who to hear. So for Mike beamforming directionality, that would be our clear focus. That way, when he looks at a speaker, he can hear that speaker in that noisy background. The DNN will take care of the background noise, the tinkling of silverware, but we want to make sure that it is doing it in a right way.

And what we are trying to do is we're trying to emulate this kind of figure to the hearing aids. For example, you can see in this graph that as the signal to noise ratio improves, it becomes easier and easier to get 100% speech intelligibility. That's the solid line. But listening effort is shown to be extremely high with poor signal noise ratios, but then decrease. But even when you get to 100%

speech intelligibility, you notice that listening effort is still there.

What we want to do is reduce listening effort, and that's what noise reduction has been shown to do. With DNN AI, it is more powerful than we ever had before to help address the challenge, challenges that we continue to have. And then for the most difficult listening situations, of course, we have accessories. We have aura cast, we have direct streaming. And these things can further support the user.

So the philosophy is to have help from the machine to empower the human and not to empower the machine over the human.

Thank you. Thank you, Dr. Stender. All right, we move back to Dr. Dave Fabry from Star Starkey.

Thanks, Dr. Spankovich. I want to build on what both Drs.

Taylor and Stender have talked about within this mini section of this final phase to address the way that Starkey is using DNN AI to improve patient satisfaction and benefit. I know many of you may feel like you are a little overwhelmed by AI, maybe a little fatigued from AI, consistent with some of the previous sessions that we're talking here about avoiding fatigue with hearing aid use. Our journey really began back in 2020 with the use of DNN in hearing aids aids. Go to the next slide with a feature that we called edge AI, and it's edge computing. Requiring only the patient use their hearing aids.

They don't even need to be connected to their phone in order to incorporate a situational intent based if you will to build on as we developed it for situational acoustic snapshots that could provide additional benefits beyond the automated acoustic environmental classification at the time Next slide In a publication that we did from internal testing and then also in a partnership with Stanford, we found that as Dr. Stentor just talked about, the primary benefits of DNN in this case were to reduce listing effort, improve satisfaction by denoising the situation. Next slide shows the publication and again a quick read

code code that will enable you to find this publication that really addressed that first generation of edge AI. And now I want to talk more recently in building on the last segment that I did where with the embedded inertial measurement unit sensors in combination with directional microphones the ways that DNN can improve hearing aid performance. Next slide please.

DNN can improve by fusing sensors sensors click and showing really that ability to incorporate directional and omnidirectional microphones plus those inertial measurement units to know whether the individual is stationary or moving. Click to improve the way classification in terms of the patient's ecosystem enables that device. Click one more time to adapt to any acoustic environment, the way that we do this in our DNN is covered in the next three or four slides here. Now if you'll go to the first one, we're talking about that important function of certainly improving. Click that Speech audibility and DNN speech enhancement by always trying to provide audibility without discomfort as others have discussed.

Go to the next slide please. And what we have is now our industry's first DNN directional microphone system that in addition to the noise management systems that you've heard about, we are now incorporating directional microphones to provide not only that improved sound quality and reduced listening effort, but improved signal to noise ratio beyond what other DNN systems use on the market today. Then click one more time. The final DNN training is involved with regarding to the important element of spatial awareness, preserving that ability to tell not only that speech is present, optimizing signal to noise rate ratio, but ensuring that a patient can identify where a sound is coming from in addition to that is present. Next slide please.

I'm going to isolate and just break down the way our new feature in Omega AI called DNN360 does this if the patient is wearing their devices and there is no noise present in the environment. Our speech probability predictor monitors for active speech but remains in omnidirectional microphone to ensure

that that spatial awareness is available for the patient to detect if a person of interest or a sound of interest comes into their environment. The next slide please. Secondly, if noise is present in the environment but there is no speech present or no target speech identified, we're monitoring and continuing to monitor over time for active speech, but again remaining in omnidirectional and low frequencies, fixed directional in the high frequencies to maintain speech audibility and detect signals of interest to then be able to go into that situation where now once speech is detected, go to the next slide please. Then when noise is present with that speech probability indicator indicating DNN directionality should be used with adaptive null steering.

And this really optimizes and improves signal to noise ratio beyond what we've seen with noise management based DNN systems available from other products on the market. Last slide is the way that we're incorporating motion based optimization. So now that inertial measurement unit detects whether the person is walking or running or engaged in other activities and in this case remains an omnidirectional for additional gain for general environmental awareness awareness, but using fixed directional for the high frequencies to ensure that precise sound localization. If a person is wearing their devices and has a voice moving next to them, it will be able to flip and steer the null over off axis listening instead of always making the assumption that the target of interest is in front. This is the way that we're combining sensors using directional microphones, microphones and inertial measurement unit input to really move.

And again I echo what the other said about using the DNN and environmental based classification in combination with this additional sensor input to augment the user's experience, not to replace the role of the professional, but to provide that additional benefit. And with that, that is a quick read code for additional resources beyond what I can cover in this speed dec format of that feature. And that will direct you right to our pro site. Thank you.

Thank you, Dr. Fabry. All right, now we are changing topics here. We're staying within the elevating care, but we're moving on to clinical precision and evidence. And to lead us off here is Dr. Farrar.

Thank you very much. So, so let's get into this. Okay. How's our recent research shaped the way clinicians evaluate what effective tinnitus care should look like? So I think the first thing to answer about this question is what do we mean by effective?

What's the definition of that word? And this is a really important definition to clarify with tinnitus care because there's a lot of options that frankly aren't effective. So what do we mean by effective? Okay, there's three definitions or three aspects to this that I think are important to highlight. Number one, symptom change alone is not enough.

Okay, Number two, short term improvement is a low bar. So if you got an intervention that, that results in improvements in two to three months, but then at six months the patient's back again where they started, that's not good enough. And three, real world efficacy is just as important as what we see in the studies. So does it work in the real world? Does it work in clinical practice?

And actually the benchmark that we think should be used when assessing new clinical tools with new tinnitus treatments, new tinnitus interventions, should be comparing to the existing best practice.

What is the existing. Sorry, go back a slide. So what is the existing best practice for tinnitus? Well, we know. So the guidelines state that the recommended best practice for tinnitus treatment is two interventions.

Number one, a hearing aid if the patient has a hearing loss, and number two, cognitive behavioural therapy. So in order to determine whether something is effective, we need to compare it to those two things.

So here's a framework for, here's a framework for clinicians that you can use to determine whether something is effective. One, how does it compare to the guideline recommended equivalent? So if someone's coming to you and saying, here's a new app for tinnitus user cbt. Okay, how does it compare to one on one cbt? Two, are the outcomes sustained and are they clinically meaningful?

Is there a statistically significant difference tinnitus difference and did they reach the minimum clinically important difference, which for TFI is 13. Is it scalable? This is really important. So there's a new intervention for tinnitus. It needs to be scalable to the large number of tinnitus patients that you'll see in your practice.

And does it reduce the clinical burden? Does it reduce the clinician burden? We know how time consuming, meaning it is to manage tinnitus patients. Does this reduce the burden on your clinic, on the amount of time it takes to manage these patients? So yeah, just what I would really emphasize here is what is effective?

How do we define what is effective? And if you look at the research that we've done at OTO, we've used this framework to determine how we assess whether OTO is clinically effective, whether our digital tinnitus program is effective. And if you, when the research is published very soon, you'll see that these, these principles have been, have been We've stuck to these principles. Thank you.

Thank you. All right, we are moving next to Dr. John Pumford from Audioscape. Welcome back, John. We haven't seen you a while. That's right, yes, it's been a while.

Thanks. Thanks, Chris.

And so, in terms of what I'm going to attempt to cover here in this, I guess, four minutes roughly, is this particular question here, which, which often comes up in my travels. And so I'll essentially just try and highlight a few practical steps that clinicians can focus on to reduce variability and increase some confidence in their, their verification measurements. And so, first off, I think we want to start at the foundation of all of this, which are your measurement microphones and considering calibration so that you know, for example, before verifying, it's always a good idea to make sure your measurement equipment, your measurement system is functioning properly. And so in this respect, you're going to want to follow your manufacturer's microphone calibration recommendations. So they'll usually provide some guidance around that.

And so if you see, for example, some unusual or inconsistent results, you know, jagged peaks, curves in your responses, or something that just seems quite off, perhaps you may want to take just a few seconds and rerun your calibration of your microphones as a troubleshooting step. And thankfully, a lot of verification products will actually flag if there's an issue with your calibration that could lead you down the path of solving some of these issues. Because really, the reality is sometimes the variability or the issues that you may see in your measurements are not caused by the, by the hearing aid.

And then when we think about test box measurements, you know, variability here often comes down to the physical setup. And so you're always going to want to make sure that you're using the correct coupler coupling for the testing question. And so, for example, with the VeriFit 2, you're going to want to use our Blue 2 CC CC couplers for ANSI measures or IEC measures, and then our Silver Point 4cc couplers for all of the other test box tests. You're also going to want to check for the possibility of slip leaks or loose coupling when you've attached a device to the coupler. So if your results look unusual, for example, again, jaggy peaked responses or significant roll off in the low frequencies versus what's anticipated, just ensure that your device is properly attached to that coupler coupler.

And of course, positioning matters too, in the test box. So we're going to want to ensure that the reference microphone that is designed really to monitor what's coming out of the test box, speaker that that's placed correctly. So that would be roughly within 1 to 3 millimeters of the front hearing aid, front facing hearing aid microphone. And then just consider also simple things like fully closing the test box. You know, environmental noise into the measurement space can impact your results.

And also try to minimize any tabletop vibration which could impact repeatability. You know, in many cases, for example, a failure in an ANSI test on a noise measurement is simply just due to vibration or external noise in the test space.

And then when we come to real ear measurements at this point, the room becomes part of the equation, right? And so this is where we need to consider our patient and equipment positioning that really matters. And so there is some guidance out there in this respect. So ideally we're going to want to seat that patient at 0 degrees azimuth, directly facing the loudspeaker, about a meter or so from the loudspeaker, and away from any reflective surfaces that might impact your measurement measurement. You're going to want to be aware of that room noise again, in reflections in the measurement space can introduce some variability that could be mistaken for hearing aid issues.

So you know, should you, for example, again see rati curves, peaked responses that are not anticipated many times that's noise or reflection. So you can try to, if you can, move the patient away from these reflective surfaces, closer to the loudspeaker and so on, and manage, manage that issue. Basically, controlling the environment in many cases will reduce your uncertainty before you even insert the probe tube, which of course is a key component of real ear measurements. And it's likely, I would argue, the single largest contributor to variability in your measurement. We know, for example, that shallow or inconsistent placement of a probe tube can especially impact high frequency measurement accuracy.

And so you're going to want to try and aim to the extent that you can for the probe tube to be placed within roughly 5 millimeters of the eardrum to give you sufficient high frequency measurement accuracy. And while doing this, of course, we want to take advantage of otoscopy while we're placing anything in the ear canal, including a probe tube. And you may also want to think about leveraging some of the various tools that are provided by verification systems from a hardware or software perspective. So whether it's the markers that you see on probe tubes to guide you with insertion to the intertragal notch, or software assisted tools like ProbeGuide that I discussed earlier today to support, support accurate placement, and of course, then resulting in the potential for greater accuracy in your measurements.

And finally, you may want to just consider taking advantage of all of the various educational resources that are available in the verification space to strengthen your skills and reduce the potential for variability or errors in your measurements. And so audioscan, for example, we're proud to offer an array of in person hands on workshops where you can learn more about conducting verification, various webinars and on demand tools, many of which are available on our partner page at AudiologyOnline. So shout out to AudiologyOnline for their support, support. And of course, if you have any questions, you can always feel free to reach out to us either support@audioscan.com or by scanning the QR code that you see on the screen here. We're always happy to assist you.

So in closing, I'd simply like to thank AudiologyOnline and Dr. Spankevich Today for putting on this great session and to thank all of you for taking the time out of your busy schedules to be with us here today. And again, always feel free to reach out to us at audioscan if we can be of any help with your verification needs.

I'm sure the emails are already flowing. All right, we're going to move on to the next section underneath our elevating care, and that is communication and accessibility. All right, and so we are going to start

off with Jessica Lawley from CareCredit. Thank you, Dr. Spankovich. So today I want to talk about a, you know, how can audiologists change the conversation with patients about hearing loss prevention and proactive baseline testing?

So, you know, back in 2024, Synchrony did a large research study really to look at the importance of preventative hearing health care. We really wanted to look at the younger demographic and look at how they are looking at preventative hearing health care. Are they getting tested? Do they feel that hearing care is important? How are they getting their tests done?

Are they going to an audiologist? Would they be more apt to get in online hearing screening? And you know, this is really near and dear to my heart. I was born with hearing loss, a mild hearing loss. And as I got older, it continued to progress.

So a year and a half ago, I made the decision to get hearing aids. And it was the best decision, one of the best decisions of my life. And you know, it really gave me the ability to, to kind of come out of my shell and to be in, you know, loud environments and be able to hear conversations that were, that were going on. And so for that reason, you know, I really wanted to change how we, how we talk to our providers, how we talk to our patients. It's not just about, you know, hearing tests and hearing aids and hearing care.

It's really about the prevention, it's about awareness and it's about, you know, reaching this younger demographic to protect their hearing, hearing before it's too late. And so with that, we created a lot of different assets for our providers to reach this younger demographic. We created website content, different banners and social media content that providers can put on their website to reach this younger demographic. Because we just feel it's so important to reach this, this group to protect their hearing. We did, we recently did a social media influencer campaign.

We worked with Daisy Kent, who was on the Bachelor, and she was just fabulous to work with. But, you know, just, just talking about getting your hearing tested. And at CareCredit, we also have an online hearing screening and we saw great success with that. So part, part of our research, we saw that the younger demographic, when I say younger demographic, think 18 to 35, they were more willing to get their hearing checked on an online screening or an online hearing test and then they would potentially go to an audiologist. So with this social media influencer campaign, we led to an online hearing screening where they were able to get their hearing checked and then they would be directed to a local provider in their area.

So, you know, again, this is something very near and dear to my heart. I would love to share this research with you and as well as share any type of content or website content, social media resources that you might find useful for your practice. Please reach out to me. Also you can go to the website listed here and you can get more information. But again, thank you for having me here today.

I always love attending this webinar and thank you. And thank you, Dr. Spankovich, for hosting as well.

Thank you to CareCredit. All right, wonderful job. Next we will move to CaptionCall and Lauren Fedig.

Thank you. There we go. Thank you. So our question is, how can consumers find out about and access a federally funded program like CaptionCall First, I guess a little bit of background on us. Just go to the next slide here.

As most of you likely know, CaptionCall is a no cost, federally funded program due to the Americans with Disabilities Act. So the ADA requires telecommunication companies to make their network accessible to individuals that are both deaf or hard of hearing by requiring assistive services to qualified users in any state at any time at no cost. So this in turn led to the both the development of relay services and captioned television telephone services. So just a little background there. Which leads to

the other question of what is the easiest and most effective way for consumer to find out about CaptionCall or ipcts, which is Internet protocol caption telephone service.

I would say the easiest way for consumer to learn about CaptionCall is through their holistic patient journey within the hearing healthcare provider's office. You know your patient's needs best Our goal is never to replace hearing aids, but rather to be a tool for your eligible patients along their journey. Hearing aids obviously are the gold standard and while technology continues to advance, we still do find that there is room for ancillary technology. Market track data revealed that the second most important listening environment behind one on one communication is always communicating over the telephone. For example, you might have a patient that's struggling with a child's voice or maybe a softer tone where captions are needed.

Our service allows for both captions to be turned on and off, so if there are times that captions aren't required, the patient can certainly turn those captions off. Simplicity is the journey we've been discussing all morning and I think the ease of access for all of you is also essential. Our service is accessible to you through most of the office management systems that you like and use in your clinic, whether whether it's Suno, Cycle, Counsel, Ear Blueprint, just to name a few. We also have our own specific NOAA module, an online web form that you can access at the CaptionCall website. You can connect with your local account managers to submit a referral form for your patients via email.

We'll even still let you mail in a referral form if you would like to do that. As previously mentioned, our local account managers are a wonderful source of knowledge for you and your team and if you don't know them, please reach out so that we can get you connected with your local account manager. You know your patient's hearing journey best, therefore you are the most qualified person to refer him or her to the CaptionCall service, whether it be our home phone solution, our mobile applications, or both. Let's go here. Thank you for the opportunity to let me be a part of this discussion today at CaptionCall.

Our mission is sending simple to remove the barriers that keep patients from staying connected. Everything I've shared today, from simplifying referrals to aligning our technology, comes back to supporting the work you do and ensuring no patient's life is limited by hearing loss. When you introduce CaptionCall as part of the standard hearing care journey, you're not just offering A tool. You're restoring confidence, independence and connection. We're happy to join you in elevating access, easing communication, patient and making every step of your patient's hearing journey a little simpler.

Thank you.

Wonderful. Thank you. And thank you to all of our speakers. We will have some time for some Q and A. So if there are any questions, you can go ahead and start posting those now or writing them up.

And I'll give a little summary here though of my thoughts. So we've heard about connectivity, accessibility, evidence based practice, the future of holistic health and going beyond the ear. And of course technology advances. And so I think we've had a wonderful discussion so far. I'll lead off with a question and then hopefully we'll have something from the audience.

All the things that we're describing, whether it is accessibility issues, dexterity, hearing, tinnitus, balance, balance, these are all physiological things and they also have obviously a very pronounced psychological element as well. How do we, as we talk about technology, bring the human into the fold? The role of the audiologist, the hearing health care professional? What skills do they need to continue to really advance advance when the technology becomes something that is, is, is moving at hyperspeed and not, and not getting lost in the mix?

Dr. Faber? Well, I think it's a great point and that is that we can't do technology for technology's sake, especially remembering that the majority of our patients are 61 years and above above for using this technology. And so I'll go back to the Mark Weiser quote that our focus is really to try to embed this

technological sophistication in a seamless or frictionless as others have said, fashion as much as possible while still giving those technophiles the capability to go under the hood if they need to. But, but it's a great point is that we can't. Cannot.

You, you led off this discussion by talking about invention versus innovation. And many inventions have died a lonely death because they didn't meet the market need. And in our need it's really not appealing to the 25 year old engineers that are often developing the new technology, but the 75 year old end users and even the 65 year old clinicians trying to keep up at with this warp speed. And I guess we all have to get comfortable being a little uncomfortable comfortable. But, but it's a great reminder to all of us.

Dr. Farrar, I think I saw your, your hand raised. Did you have a comment? You certainly did. Thank you for picking that up. Look, so with, with, with tinnitus you're not going to get good outcomes with your patients if you just fit a device or give them a widget or give them access to an app.

It's all about the human elements. It's all about making them feel heard and communicating them, the condition, why they have the condition, where it's come from, how they're going to get better. So if you don't do that in the right way, if you don't use those interpersonal skills that you trained and you learned and you practice with during your time in your training and you don't communicate the condition effectively to your patients, you're just not going to get the outcomes. It's not good enough to just give, give them access to a, you know, to a cool bit of tech and, and let them get on with it because they're not going to get better, they're not going to want to get better. They're not going to understand what it is that you're trying to do.

So I think where the audiologist or whether clinician comes in, in tinnitus particularly, it's all about that, that, that communication piece, that, that human element, that technology just, just I don't see replacing for a very long time. Yeah, I, I agree specifically with Tenus. I, I do a little bit of that myself. And I can

tell you, many audiologists and AD students get very focused on, on this, the ear and don't realize that ear is connected to the rest of a body. It's connected to a brain, it's connected to all of our entire health.

And so we have to go beyond simply the ear and ear health to consider overall physical health, mental well being, all being factors in our hearing and balance health journey. Dr. Pumford, I see your hand raised there, John. I think you're muted. You want to start over?

Yeah. You think by now I would have figured out a microphone. Right. Sorry, I had problems with the headset earlier. Now the microphone.

Okay. Yeah. So I think from our side of the equation, I think it's using the tools available in clinical practice to inform some of the counseling aspects, the family centered care, so to speak, to open up the black box of why someone is a candidate for a particular technology, the benefit of your service and the impact that it can provide. So we've heard about a lot of wonderful, careful tech here today. Right.

But sometimes it's helpful to just kind of really simplify it down, whether it's some of the counseling tools for family members, you know, in terms of why someone is a candidate for Amplification, it's using some of the tools in terms of just simple objective measurements to show what is audible for a patient pre and post your treatment. Right. In addition to all of the interesting tools to show the impact of things like the noise management systems that everyone talked about today. So, yeah, I just think sometimes people can get overwhelmed by the tech. And so just to be aware that there are some current tools available to help inform some of those conversations with your patients.

Thank you. And Dr. Stender, I see your hand is raised as well. Yes, thank you. I feel like our industry has come so far in the last 10, 15 years that we do have ways to help address the problems that people have been talking about. And yet we still see that it's not perfect.

And so I think recognizing and acknowledging to patients that the technology can only take you so far. The humility of it, the human is really the only one that matters. And so we can build tools to help support what the human wants. We know that the hearing aid never knows exactly which speaker you want to listen to. So let the human use their own innate human abilities to decide side.

As humans, when we want to listen to a speaker, we tend to orient our heads towards that speaker to look at the speaker. It helps us pick up speech reading cues, contextual cues, whether there's sarcasm or not, whether there's a smile or not. This kind of support is something that the humans have used, humans have used forever. So using technology to support innate human habits for listening better and also acknowledging that our ears are facing forward to help us hear better, better does make sense when we design technology.

Thank you. And I want to thank our, our speakers that, that was a wonderful final thought to leave off on there. So thank you very much to all of you. I want to also thank the, the audience. Thank you participants for, for sticking around and, and listening to us.

Hopefully the exam quiz part of this is really, really easy. Um, if, if he, if you, if you don't know an answer, just email John. He'll. He'll. He gave you that audio scan.

Email.

Thank you so much, Dr. Spankovich, and to all of our companies and our people who participated today. We actually had a lot of Q and A happening behind the scenes folks asking direct questions and getting their answers viewed in the Q and A. So thanks. As Dr. Spankovich mentioned, if you're earning CEUs today, that exam will only be in your account for seven days and then it will miraculously disappear into the ether world. So please take that exam so you can earn your ceu but most of all, I just want to thank the industry folks here.

They have a lot on their plates and this a lot of work going into this behind the scenes for you all and we are really grateful to them. So thanks everyone. Hope you have a great afternoon, a great weekend, and we'll see you soon on AudiologyOnline.