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Game-Changing Hearing Tech: Starkey's Latest Innovations with Edge AI and LE Audio

Presenters: Dave Fabry, PhD, Holly Schissel, MS

Welcome to Starkey Sound Bites. I'm Dave Fabry, Starkey's chief Hearing Health officer and host of this program. And today we're going to talk about some exciting new advances in our hearing health technology. And there's no one better to talk about that than Holly Schissel, our VP of Product marketing at Starkey. So we've been long overdue to do this.

Absolutely. Happy to be here, Dave. Well, it's great to have you here in perfect timing. We just are in the midst of a new launch and let's talk and dive right in because I know that's people really like when we get right into the technical details, the details of what it is that is coming with this latest product launch. Yeah.

So latest product launch, Dave, is based on Edge AI, the launch that sort of took the industry by surprise last fall. So typically there's a longer release cycle. When we introduced Edge AI with our new DNN, really changed the game, gave those patients the extra edge. We continue to innovate and run. Right.

Never a dull moment around Sharkey. Yeah. And we know with Edge AI let us focus a little bit on where we've been. And a lot of times we start getting bored with our features and our story before the market even realizes it. And I think the market is still, as you said, we kind of took people by surprise because, number one, going to Genesis, we took for the rechargeable battery products, both custom and standard.

We took range anxiety off the table for hearing aid users to have the confidence that no matter what type of environments they were encountering, whether we're using our DNN technology or not, they had all day battery life. But then with that movement to Edge AI, with always on DNN, we had no compromise on that battery life. No compromise. In addition, we know that patients are concerned about speech understanding and sound quality, speech understanding, particularly in noisy environments. And we did some important benchtop testing with Edge AI.

And then leading into this latest launch, can you talk a little bit about some of the performance levels that we've been able to see in laboratory testing for the potential for speech understanding in noise? Yeah, sure. So with this product and integrating the DNN on that kind of direct audio Pat, we've been able to see a 30% improvement in speech identification. So once we identify it, then we can really do something with it. So in our bench testing, we've seen actually up to 13dB improvement in SNR.

Amazing. Yeah. Really, really big difference. So translate that into real world experience. Certainly there's varied conditions, but we're giving our patients that extra EDGE to perform better.

Yeah, and this has really been a sequential path that dated back. Really. The beginnings of it were with Livio AI, but then certainly with Livio Edge AI that we launched in 2020, where we first used that Edge mode, a situational program that incorporated DNN that enabled whether it was a quiet talker, distant talker, communication in noisy backgrounds to really optimize to the environment that a patient is using their devices in ways that no one else on the market does. I mean, a lot of people will tout how many millions of comparisons or listening environments they've monitored in. But the difference with EDGE and now Edge AI is that that customization, personalization is taking place combining the most sophisticated DNN processing with listener intent to say, yeah, you can train on millions of environments, but the one I want to communicate in is unique to me and you right now.

And that's where I wanted to optimize. And so with up to 13dB, 13dB of improvements, measured improvements. That's a remarkable bar and a high bar to set for the industry. So what else are we doing with this latest product that we can talk about? Sure.

We've made some performance enhancements from a wind noise algorithm perspective. So 85% improvement in the speed at which we adapt to those better conditions for the listener. So again, optimizing comfort, kind of one of our favorite topics, our accessories. We're also adding to our portfolio

the new table microphone as well as a remote microphone. So really covering all the angles for our patients.

Well, and that's a very welcome addition. I mean, we know that with Edge AI, we had the new radio, if you will, in addition to all of the other features to incorporate those speech and noise improvements. But that new radio, the LE audio compatibility, required that we updated the capabilities of the table mic, which is for many of my patients, their favorite accessory to go in combination with the hearing aid. Because as great as our hearing aids are, sometimes hearing aids alone are not enough. And even with the connectivity advantages provided by AuraCast and broadcast capabilities with AuraCast, and I hope we'll have a little time to talk about that, because that's kind of a big deal.

It is big for the future, for ubiquitous connectivity. But there still, I think for many patients will be situations where they go to dinner with a small group and they want to be able to have the convenience of taking the table mic out and setting it on the countertop or on the table or having, if they're with one guest, having them wear it around their neck and give them the confidence to provide improvements beyond what hearing aids alone can do. Even as impressive as what we're seeing. Absolutely. And we made some great performance improvements for our table mic.

So if we think of the table mic being a multi array system, we're starting the default condition so that it's looking for those people sitting around the table. So the mics closest to the user are not amplified. They can certainly simply select them and bring them back into the conversation. But not often you've got someone right by your side at a table. So I think those are really nice.

You know, always looking for those, those little tweaks bring it up another level for the patient. Yeah. Really refine the functionality, improve the user interface, as you said, sort of beginning with the assumption that you don't have someone sitting right next to you, but rather they're out here, you can still, as you have before. For those people who've gotten used to the user interface of being able to

either have it automatically select from the eight beamforming microphones or select still up to two of their favorite, if they're just with two other people, they can freeze those locations and use it as they have before. And otherwise the performance, the user interface will be very similar.

Very similar. Subtle differences. But I think despite all the promise of LE Audio having now the remote microphone and the table mic as something that a patient can have to use on demand, in addition to the remarkable achievements we've achieved with the devices, is a welcome addition. Absolutely. So I think we've got that solid audio performance of the Edge AI products alone.

But this just situational awareness sometimes I say, you know, first fit the loss with the hearing aids and then fit the lifestyle with the accessories. Yeah. And it is always sort of mystifying to me that more patients aren't aware of some of these accessories. And I think it really is not just for patients with severe to profound hearing loss. We're finding increasingly people that have had noise damage over time or simply aging of the ears benefit from being able to pick up those high frequency cues in noisy environments that are often obscured in the cacophony of other voices around in a challenging listening environment.

So really glad to have that back in the stable and with improvements, as you mentioned. Yes. But one thing that I thought was interesting is I think we watched through the years that accessories have this low attach rate. So I think as what you just said, people think hearing aids alone should do it. But the number of suggestions and requests from the field that we got from These products really gave me heart that people know the right place and the benefit they can provide patients.

So we're really excited to get them out there. Yeah. So many of the patients, certainly those with more significant loss, large signal to noise ratio deficits for speech beyond what their audiogram might suggest. But even some of those people who are in noise a lot of the time, and the professionals for those who are listening can see those patients in data logging where they're in speech and noise and

communication environments that are challenging. Don't forget that the combination of the accessory like the table mic and their devices can provide people with that additional almost.

I say it's like their third ear or their superpower. And I think it's important to sort of address for a minute that the pairing is done directly between the table mic or the remote mic and the devices. So that heaven forbid, if a patient wanted to leave their smartphone at home, they could take simply the table mic and their devices go out into a noisy conversation and just turn the volume up and down directly on the table mic, activate the function, turn it on and off, and even if when they're finished, turn it off and then they're back on their hearing aids. So as blasphemous as that seems for many of us who are tethered to our smartphones, some people don't always want. They want to be present.

And having that accessory gives them additional confidence and performance. My mom thinks it's rude. Right. When she takes it out, she wants to keep it hidden during that conversation. So.

Absolutely. And speaking of that, one more user interface that was a welcome addition on the recent launch, but still, I think been given a lot of attention or may just again be part of the story where we're wanting to focus on signal to noise ratio benefits. But once again we have an Apple Watch compatible user app and talk a little bit about the functionality of that. How can a person use. What's a use case for how they could use the Apple Watch to more discreetly and less rudely, to your mother's point, make adjustments to their hearing instruments?

No, I think it's the volume and program changes that they can make more simply so discreet. If you've left your phone behind, it's a quick way to make an adjustment. And I think sometimes if something is quite loud or you want to make a quick adjustment, it's right there at your wrist. So I think we're always just looking at ways to make sure that the technology is seamless. It integrates into that patient's Life that wherever they are, they've got the solution for them.

How would someone decide between the table mic and the remote microphone specific to the accessories? I think it's again, it's kind of looking at those lifestyle situations. So interesting with the table mic is it can certainly be used as a table mic as the name states, but it also can be worn. So if somebody finds that they're in multiple situations, that might be the best one for them. I would say remote mic is probably better for those one on one conversations.

So it's really going to be dependent upon their lifestyle. Yeah, I think it's that really simplified user interface to just be able to put it on for when there's another talker, one talker, where the table mic is really an all around player. And interestingly some people may not be aware that with the table mic, as it goes from horizontal to vertical in position, it will automatically turn that top microphone on the one up closest to the source that a person wearing the device would be speaking. Yeah, simple user interface. Another nice improvement we've made on the remote microphone is that when it's not streaming, when you're not using it as a remote microphone, you can actually use the volume control buttons to control the volume on your hearing aid as well.

So again, kind of simplification getting that multi purpose device so you don't have to have a remote and your phone and all of these devices. It's just simplifying. If you just want one clean accessory, that's really a nice addition actually because then you don't need a separate remote control. Now that remote control is very nice again for those patients that we've already had with Edge AI and that continues with this latest launch. But that simple remote that enables people who don't want to use a smartphone to not have to always use the onboard controls for their device, but they can even engage edge mode if that's assigned to one of those functions on there.

And talk about advances in terms of edge mode automatic on the top tiers. And do you think that this helps providers defend higher tier technology for that edge mode automatic in that the departure really from being an on demand feature to one that continuously updates? Yeah, I think it's really important

again kind of that seamless integration into the patient's life. So we recommend edge mode as that on demand experience. And it's certainly the settings are going to maybe be a little bit more dramatic than our typical everyday program.

So when they go into edge mode sometimes they then forget. Right. They leave that situation that they called upon edge mode for. So if they walk out of the restaurant, if they get back in the car, it'll automatically update to that new condition and be an appropriate listening response. I think it's just that seamless.

Right. The more user friendly, the better we can optimize that hearing experience. It makes a big difference on that top tier. Excellent. Yeah.

And I see again that alone that feature of the patient being able to select whether or not they want to emphasize speech or reduce noise or that compromise, if you will, of best sound, which is still more aggressive offsets than in the personal program. But I'm finding many of my patients, you know, even during the day, they may say if they're in meetings or they're at a conference and they want to hear to enhance speech clarity. But then later, as the social events start occurring, they may want to reduce noise more. So even within the same individual, at different times throughout the day, they may select a different element of edge mode. Increasingly, I'm seeing that patients are moving away from, at least in my hands, they're moving away from manual programs like restaurant, crowd, outdoor, and then instead using personal plus edge mode to characterize and personalize to all of their environments.

I don't know whether we've seen that in a larger sense. I know we saw it in one of our clinical studies when we first brought out that edge mode feature. So it's again that patient preference for the settings that it adapts to. So I think as we think about, not only do they prefer that unique situation, it's just the ease of which they can come by it. They don't have to think about multiple programs or did they get to that one?

It's just a simple process to get there. Yeah. For those patients who specifically want to use designated clinical fitted programs, we can still have up to those four programs that can be configured. But I agree that we want to really enable that ease of use and ease of application for those patients who just want to set it and forget it, but also those who want to get in under the hood and add manual programs on their own, that hasn't changed a bit. Yeah, I think of the product line, you know, it gives patients an edge and it gives professionals an edge.

So it's a flexible enough user interface in our profit fitting software that you can address every patient's needs. Well, so we've talked about the DNN processing and the way that we're incorporated this. We've talked about accessories, we've talked a little bit about enhancements in terms of Edge Mode. And we briefly opened with LE Audio. So talk a little bit about.

Talk to me as if I were your mother in terms of why would she want to consider updating to products that use LE Audio versus what she has with the hearing aid as sort of a standalone device. Sure. So there's a few reasons. So one is AuraCast technology. So that's really what is the wireless tech of the future.

So we're waiting for the time when that starts. It's now integrated into concert halls. We've seen. We've seen televisions, we've seen streaming services. But imagine a day when you can actually hear the airport overhead cast because it can be through Auracast.

So it'll start to be integrated into more of these public spaces. From an integration perspective, the other big improvement that we sometimes overlook is just the audio performance improvement. So really less packets are dropped. So what does that mean? What does that mean?

I was just about. Yeah. So it's. When you start to. It speeds up or you drop a packet.

The hearing aid, it sounds like a drop in the signal. So crackling. Just audio artifacts. So the new LE Audio will kind of address those things. So you've got this real clear streaming experience.

And it's better connectivity if somebody's walking around while they're streaming, et cetera. More range. More range. Yes. And, you know, we talked about sort of the future of this.

You mentioned. I think one of the great use cases is indeed the airport. I mean, we both spend a fair bit of time in airports, and in our Minneapolis airport, some of the gates are relatively close together. And. And when there are amateurs flying and you're not careful to listen to which gate the announcement is coming from, they'll say, well, they got three gates all boarding at roughly the same time.

People are getting up and feeling sheepish as they get up. Did you announce for me, we'll really be able to, once the infrastructure develops around this, be able to use, let's say, a QR code or some sort of way to signify that I want to link up to gate 13 announcements versus gate 14 announcements and really prevent that embarrassment of getting up at the wrong time. For me personally, that's a big one and just a convenience factor. Absolutely. Give me some other use cases that you might see benefits for this in a public setting.

I think that it can go to multiple people in the same space. So as we think about telecoils, certainly an important part of access for patients, but that'll start to be integrated with Auracast. That like you said, it can be a simple QR code that can allow you to be connected. So the other reference people talk about, you know, the gym, when you've got the. You're there often, Dave, you too, you got your tennis shoes on.

So we could go right now after this. But yeah, they'll have like 10. We got three screens in back of us here and they might all have different video, but the audio isn't typically played because you could

never sort out the audio from all of those different. But being able to link to that sports bar same way in Minnesota, I can guarantee you that if they begrudgingly have a Packer game on, it never has audio. It should be outside and it'll be outside.

And so now at least I could link to that television and get the audio. But you know, I think you alluded some of the things that are a little nearer term. I mean we're already seeing the potential for this. And I think as opposed you mentioned telecoils people in general, Starkey has been one of the manufacturing partners to hearing aid users still supporting the use of telecoil in custom and standard devices. Until and unless there is no reason to have those systems be compatible, we're going to continue to support those people who've had loop systems installed.

Very few people. I'm going to make a statement, I'm going to ask you to correct me if I'm overstating, but I think very few people are using telecoils for the purpose of telephones anymore. I would agree. And it instead is more for assistive technologies in places of worship, in adult learning centers, you know, places where they've had that maybe at home they've put in a loop system and had that installation. Is Auracast designed to eventually improve that situation without requiring an installation?

Are there any situations where you can think aside from the fact that in a small community or in a place of worship where they already have the loop installed, they may, they may want to save their budget to see at the appropriate time that it's worn out or that the technology will be much better to replace that. But do you see that this will duplicate some of the types of group environments that a telecoil would. Yeah, duplicate is probably a good term. There certainly is going to be this period of overlap. I think it's just most important that patients have access to, to these types of life changing features.

So I do think, you know, sometime in the future that's what we'll start to see. Yeah, yeah. And what do you think? Well, I agree, you know, I think as I said, we're going to support for as long with form factors and custom and standard devices that incorporate the telecoil because we think it is and remains a very

important way for a lot of people to communicate. But I think the potential for improved sound quality, not having to sit in that defined area.

And then I think the thing that's different about AuraCast is that in addition for applications for hearing aid users, it also will apply to people who are using earbuds and other means of communication, wireless communication that will also incorporate LE Audio. So this is a much bigger potential benefit to people in those sports, bar, airport, group listening situations, museums where you could be getting an audio tour that linked to various locations. And I think for that reason we need to accelerate our timeline to make sure. And we've done that with this technology, with our LE Audio. We're designed to be the most open in our space to really be compatible with all LE Audio transmitters or as many of them as are possible out there in the field.

So that we give that confidence to the end user that their technology will work if there is an LE Audio broadcast mode transmitted somewhere in common spaces. Yep. That confidence, we even have it in our WFA auditorium. So those customers of ours who will be coming to Eden Prairie if they're fitted and then they have a smartphone that is compatible with that. And that's again the infrastructure that has to develop around the smartphones.

Is that ability within the app or within the phone to be able to detect the presence of LE Audio and then pair and join a broadcast? Absolutely. So the issue even closer term on this is TVs. It's likely now only half kidding I say I was the remote control growing up in my family. My dad would say change the Channel 5 and I'd get up and go and turn it.

But you know, we kept the TV for 10 or 15 years in those days. People are replacing television sets. Okay, Boomer. People are replacing television sets much more routinely and frequently now. It's likely the next television that you buy will have the potential at least to be able to have Auracast compatibility for home.

Now that wouldn't be the same broadcast, but. But the AuraCast capability would enable, let's say, multiple family members to have the same stream from a TV set without necessarily requiring a separate TV streamer. Yeah, absolutely. So in the meantime, we do have a new and improved TV streamer with LE Audio capability that we've had since Edge AI and continuing. But I think that's.

That's perhaps one of our accessories that in the long run will be on the endangered species list in the sense that unless you're traveling and you want to couple that to a TV set that you don't know is AuraCast capable. But at some point, is it a reasonable thing to believe that people will be able to expect that they can stream directly from a television set to their hearing aids to the phone through the hearing aid? I hope so. I mean, absolutely. That's one of the promises of this.

Great. For patients. Then moving even closer term, we talked about with iPhones and Android phones. There are a limited number of them right now that are AuraCast capable, but we still have the QR code that. Or we can go to.

Where can people find out if the phone that they presently have will be compatible with our LE Audio? Yeah. So there is a QR code like you referenced. Many of the professionals we work with have that QR code in their offices, and if not, we can certainly get them one. It's Also on our Starkey.com where our patients go for a lot of great information about hearing aids.

It's listed there as well as on our Starkey Pro site for professionals. So we try to have it in many places just to make sure that people can find what they need. Another area, another use case that many of my patients have been asking for, many are younger and still working or actively using their computer in addition to their phone, is that now they want compatibility with their computer, whether they're a Mac user or a PC user. Talk a little bit about that. Is that possible?

Absolutely. So that's right where we're going. So it's trying to make those integrated earpieces. So it's that hearing aid that aids many different parts of their life. So that information is also there on the site.

So it gets to be pretty complex. Right. So it's which wireless technology are they using? So our goal is to always simplify that information. So the QR code is probably the easiest way because it can determine what type of cell phone is reading this QR code to serve that patient up the compatibility information.

We try to keep it all straight for them. Yeah, it does get complicated. And I know many people feel like they have to become an Apple genius or a Geek Squad member, not to exclude anyone else, but just to really understand that compatibility. But you can go and find that@starkey.com and find the chart of what's compatible, because I think the real goal here is to enable that sort of seamless transition. Like when I'm on a teams call and I'm on my phone and then I transfer over to my computer.

To just have that audio be transferred over without intervention is the objective right now. Perhaps the reduction in pain that's the most welcome is that, let's say, because I'm an iPhone user and a Mac user, that I go through the accessibility hearing devices and then pair that initial time. I don't have to go through that process again as long as I've done it once with my iPad, once with my phone, once with my Mac. Then as I go between those devices, I may need to simply toggle off Bluetooth on the device that I'm connected to. As long as I've previously paired with the computer or with the pad, it will pick up that connection and route the audio there pretty seamlessly the majority of the time for myself and for the patients that are using this technology.

Yeah, absolutely. We've been really excited about that. That connectivity is, I think, increasingly becoming table stakes with the expectation by hearing aid users that not only connected to their phone, but connecting to other peripherals is why we've built this into this technology moving forward. So we both know what's on the roadmap. But you want to tease a little bit about anything coming in the future.

What else do you envision without giving away any confidence to give our competitors any lead time on this? But where do you see technology going as somebody that's in the driver's seat, you know, you're in a catbird's position of being able to see where the competitive market is, where we are. I think increasingly we have to broaden who our competitors are to consider, you know, a broader array of competitors than in the past. But what do you see as being the biggest opportunity in the next three to five years? I think it's always keeping our eyes on what the patient needs, so looking at them, and that drives what we do.

So I think we'll continue to see those performance enhancements for patients as we move forward. Yeah, I think the health and wellness features we probably. I mean, again, I'm biased, but immodesty aside, I think in 2018, when we incorporated inertial measurement units to start enabling physical activity, social engagement, fall detection, now fall risk assessment. We really, I think, have led in the area of sort of helping raise awareness for the fact that hearing loss doesn't occur in a vacuum. It often is accompanying other issues that people are dealing with in aging or at any point throughout their life.

And I really, you know, I think that focus isn't going to change. I think using more and more of the intelligent assistant functionality, I think DNN and OpenAI and using some ChatGPT kind of functionality has been something that we've continued to enable and lead moving forward in comparison to the rest of the industry. Anything you want to talk about or tease on at all? If you keep pushing me, I know it's my job. You know, I think that's the kind of cool thing about Starkey.

If we think about surprising the industry last fall when we launched Edge AI, I think there are more surprises to come. Okay, well, I did my best for those who want to get a glimpse of the future. I think one of the things that I'm really pleased with is whether my hands are full or whether people have manual dexterity issues. That functionality to be able to not only query about how to clean my hearing aids. I think the self check feature is something that is now, it hid in plain sight for a number of years

and now it's, I think after Edge AI, I think it's the second most widely used function beyond volume control and program change.

And really I see more and more clinicians starting to enable and empower their patients to use that self check feature to determine when they need to replace Wax Guard and when they need to come in for a follow up appointment. And I'm really pleased to see those types of features that are always patient driven. And I know that you really stay on top of that in the market too. We try. Well, I appreciate the time today and I think that's a good little teaser.

But you appropriately are preserving Fort Knox for the future for us. There you go, There you go. But Holly, I thank you for sitting and talking a little bit today about where we've been, where we're going and I hope this is helpful to you about a glimpse into the latest technology from Starkey. Stay tuned because the technology is changing very rapidly and I guarantee you that Holly is one of the people behind the curtain making these improvements that are always patient focused and also with the professional in mind to take our technology with the expertise of the professional to optimize results for the patient. So thank you.

Thank you, Dave.