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Health & Wellness Via Connectivity

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- It is my pleasure to introduce today's course, "Health and Wellness Via Connectivity," presented by Luis Camacho. Welcome, Luis.

- Thank you, Juliet, and welcome everyone who's online with us here today at AudiologyOnline, and it's our pleasure at Starkey to be part of this first annual Industry Innovation Summit. And I'm excited to get into our topic today. So let's go ahead and get into today's session. My name is Dr. Luis Camacho. I'm Manager of Education and Training at Starkey. And again, of course, today is titled, "Health and Wellness Via Connectivity." And really the goal of today's session is to really show you how we at Starkey have really fully embraced this idea of connectivity, and in all areas of your practice, your patients' hearing healthcare journey, as well as supporting them in their overall health and wellness journey and the goals that they have for their particular lifestyle.

So we're gonna kind of hit a lot of different topics today. Of course, in a 30-minute session, we don't have time to dive into the details, but I really wanted to kind of just peak your interest in a lot of the different manners that we at Starkey are embracing connectivity, and maybe help you kind of rethink this idea of connectivity. I know many people and many professionals, when you say the word connectivity, you know, maybe one or two things come to mind. And I think you're gonna see how we at Starkey are really utilizing connectivity in a real variety of manners. Now it's something that we're all used to, us as hearing healthcare professionals, but also your patients as well.

I mean, people are connected like never before. If you look at some of the data that I'm showing here on the screen right now, you know, these numbers really kind of blow my mind. And in reality, these numbers are a couple of years old. So, you know, I would imagine, especially in the moment that we are in, all of 2020 with the pandemic, people being, you know, locked down in homes for extended periods of time, the amount of time people are using, sharing data, bringing in data into their homes or their

smartphones, or their tablets, has probably, you know, really gone through the roof compared to even these numbers from a couple of years ago. But it does just show you kind of how comfortable people are when it comes to sharing data and being quote, unquote, connected.

And again, these numbers are a little old, I would imagine that Netflix streaming numbers have gone up significantly. I know they have in my house. Same thing with communicating via other social media platforms like Twitter, and Instagram, and doing Google searches, et cetera. So everyone really is very comfortable living in a connected world these days. One of the things I wanna do before we kinda jump into the specifics of connectivity around the hearing healthcare system, hearing aids and everything that's involved into a connected hearing system today, is take a quick step back and just review a few wireless terminologies, because a lot of things, I get kind of mentioned, and people think, you know, one term is the same for every other form of connected technology or wireless platform.

So I did wanna just take a moment, and again, kind of review some of this terminology. So a common format, a platform in hearing aids today is 2.4 gigahertz, and commonly Bluetooth Low Energy, a lot of times referred to as BTLE. Now, the BTLE platform was created for low power, as it says, data transmission. This was an evolution of, kind of what we think of now as kind of the Classic Bluetooth platform, because Bluetooth historically has been very much a battery hog. It really required a lot of energy. So the Bluetooth consortium evolved the Classic BT platform to BTLE. Now, this is an excellent platform for connectivity between hearing aids and mobile devices, both Apple and Android operating system devices.

And it's really ideal for that pairing of the devices, as well as communicating between the mobile apps and the devices as well. So in this case, Starkey's thrive mobile app. Now the hurdle here is that BTLE is not designed for audio streaming, which is, of

course, very important when it comes to hearing aid usage. And we're gonna get into how that hurdle has been overcome here in the past, you know, five, six, seven, eight years or so. Another component of 2.4 gigahertz is a proprietary component of this platform. So Starkey, and, you know, let's be honest, all manufacturers have a proprietary 2.4 gigahertz protocol these days. And the proprietary component is used for connection between the hearing aids and the wireless accessories.

And again, this is an area where a lot of times audiologists hearing professionals don't think of accessories as a connectivity component, but it really is, so in Starkey's case, we use a proprietary platform, a 2.4 gigahertz platform for connectivity, pairing, streaming, et cetera, between, you know, remote controls, remote microphones, TV streamers, any of those 2.4 gigahertz accessories. And we'll touch on those in a little bit more detail here shortly. Now, I mentioned Bluetooth Classic, and that's where a lot of people just use the term Bluetooth to cover anything 2.4 gigahertz. In reality, Bluetooth is a specific protocol. There are a couple of different ones for audio streaming, headset protocols, stereo protocols, et cetera. But you know, this is essentially an older form of 2.

4 connectivity. Again, it's typically quite power hungry. It was not designed for hearing aid use, you know, on the outgo, you know, when it was developed. And at Starkey, we do not use Classic Bluetooth because of these very reasons. Again, typically larger, typically a little bit more battery hungry when it comes to utilization. And obviously with hearing aids, battery capacity is extremely important. And that's why we have, you know, very much homed in on the Bluetooth low energy protocols, because it really allows us to have the best of both worlds. We're able to use small cell batteries, you know, whether it's zinc-air or lithium ion rechargeables to power the hearing aids, but to also power the platform and to stream for extended periods of time and not be worried about battery capacity at all for the the end user, for the patient.

Now, I mentioned that BTLE was not designed for audio transmission. So how do you utilize BTLE and get what, again, most people start to think of as connectivity, which is that direct streaming capability from a smart device, whether it's an Apple device or an Android driven device. And that's where the various operating system manufacturers have come up with their own proprietary BTLE streaming protocol. So Apple was the first to jump into this. They created what they call Low Energy Audio or LEA. This is something that Starkey's been using since the first made-for-iPhone hearing aid, the Halo device, and of course, this has evolved into today's current Livio Edge AI devices. But again, this is a proprietary protocol.

It works in conjunction with the BTLE that we use for for sharing, for pairing, for data sharing. And then we now have that direct streaming capability from Apple iOS devices. A few years ago, Android jumped into this area with what they call Android Streaming for Hearing Aids, or ASHA. And this is their proprietary BTLE streaming protocol. So again, you're using BTLE to pair to a variety of Android OS devices. There's a few of them listed there. This list has grown quite large over the last few years. And then we use their ASHA protocol for that direct audio streaming. So you have that, you know, true connectivity as many people think of it now with both Apple and Android devices.

And so this is what most hearing professionals and patients think of when you say connectivity in relation to hearing healthcare. It's what can I pair to my iPhone, and can I hear my phone calls or stream my music? Or can I pair into my Samsung phone, hear my phone calls, you know, stream my music, play videos? And the answer is yes, with these particular protocols that have now been developed by both operating system developers. Now, Starkey has three core pillars, I like to refer to them, when it comes to what we're doing with the the development and evolution of the hearing aid. Job one is always going to be provide the best hearing aids possible, best sounding, highest

performing, best sound quality, you know, dealing with all of the things and offering all the things that your patients want in a hearing aid.

You know, performing in all the different environments, giving them the most comfort and clarity, et cetera. So that's always job number one. The other two pillars are where we're really expanding the role, or really the definition of a hearing aid. So the second component is healthable technology. This is where we've integrated inertial sensors, artificial intelligence, to take the hearing aid from a single purpose device to a multi-purpose device. And you're gonna see where connectivity, really, can play a big role in this as well, but essentially allowing the hearing aid to do things like track physical activity, monitor the environments that the person's in to make sure that they're getting the auditory stimulation that they need, detect falls, et cetera.

And then the third component is what we call the intelligent assistant. I mean, our vision is for your patients to use the device that they're wearing every single day, their hearing aid, as their gateway to information to give them a unique way to interact with the internet, to control their hearing aids, to tap into the information that's literally at their fingertips now, and have it all be channeled through their hearing devices, have it be their intelligent assistant for practically everything that they might wanna do throughout the day. So these are our three pillars and you're gonna see today, we're mainly focusing on the healthable and the intelligent assistant components, because that's really where some of this connectivity comes in.

Now, how can we do this? Well, a couple of years ago, we introduced Livio AI, the industry's first and still only healthable hearing platform. So utilizing a dual radio system, a multi-core twin compression architecture, and again, that integration of inertial sensors and artificial intelligence into the devices. We've since expanded and evolved this platform from receiver-in-the-canal products, BTE devices, to now including the industry's only custom rechargeable 2.4 gigahertz device. So we've got a

full range of healthable hearing products in a variety of styles, available in a lithium ion technology for ease of use and rechargeability for your patients, and taking advantage of this Thrive platform, taking advantage of, I think, a broader definition of connectivity, than, again, most people think of when it comes to hearing aids.

So the Thrive platform, a component of that with various styles is the dual radio platform. So a combination of NFMI for ear-to-ear communication, for BiCROS communication and CROS communication, and then the 2.4 gigahertz platform. And again, that 2.4 gigahertz platform is really a variety of platforms. So, you know, we kind of generically refer to it as 2.4, but really you're talking again about Bluetooth Low Energy for connectivity and pairing with phones. You're talking about a proprietary 2.4 gigahertz for accessories, and then utilizing that LEA and that ASHA protocol, depending on what operating system your patients are working with with their handsets, with their smart devices. So that really encompasses a lot of different protocols when we say 2.4 gigahertz.

I mentioned accessories. And again, here's an area that, again, when you say connected hearing aids today, a lot of times people don't think of accessories, but I think, in many cases, this is going to be maybe the first thing you should think about, at minimum the second, after pairing to their smart device, because accessories can obviously solve a lot of different problems. And we are using that proprietary 2.4 gigahertz protocol. So, you know, improving hearing the television with the TV streamer, improving signal-to-noise ratio with using either the Remote Mic Plus or the Mini Mic, or the table microphone for a variety of environments, whether it's small groups, business meetings, out at the restaurant, you can use it as a remote microphone.

And then, of course, something as simple as a remote control. So all of these things should be in your mind when you think, "Well, what am I gonna offer my patients that's

gonna connect them to the broader world?" It's much more than just, what can it pair to their smartphone, and can they hear their phone calls? Because accessories are using the same technology, and can be very, very helpful in, you know, unique, specific situations that your patient might be struggling to hear and understand. Of course, we do think about, well, what can that smartphone do? And that's where we do talk about our Thrive mobile app. We do think of this as kind of the ultimate control app, because it provides a level customization, a level of personalization, in terms of interacting with their hearing aids.

But also, again, with our Healthable platform, this is the way that they interact with the data that's being gathered on board with their healthable products, with Livio Edge AI and Livio AI devices. So that ability to quickly open up the mobile app and monitor what we call their Thrive score. So move beyond using the app just to turn up volume and change memories and create custom memories. You can do all of those things, of course, with the Thrive mobile app, but with a healthable product, you're getting direct information from those onboard sensors, that integrated artificial intelligence, visualized in the mobile app, and letting the patient utilize the app, again, as they normally would for typical remote control type functions, but dial into that overall health and wellness goal, that Thrive Wellness score.

So again, on the home screen, in the upper third, they can quickly just see, how am I doing with my overall score for the day? And then they can dial into the specifics, if they want to, by tapping on the data icon there on the menu bar, and see their individual body and brain scores. So now their hearing aid becomes their step tracker. We can take a look and see how many minutes of steps, or how many steps have they taken today? How many minutes of exercise? Are they standing? The brain score. We know that cognition is tied to hearing and hearing health. So here they can quickly see how are they doing from an auditory stimulation perspective.

And if we look at these with a little bit more detail, you can see how those scores are broken down. So each day a patient can have a maximum of 100 points for their body score, 100 points for their brain score. And of course, a total of 200 max for their thrive wellness score. So this really can focus them in on, again, let's think beyond just the best hearing possible, but how can we promote their health and wellness goals? And it's a simple matter of just wearing the Livio Edge AI devices and checking the scores periodically throughout the day to see what else they need to do. Along with that, of course, the Thrive app can help the patient control their accessories as well.

So simple adjustments start and stop a stream from a streaming accessory. Adjust volume, you know, mix the volume of the hearing aid and the stream. So you can bring in this further ecosystem, as we refer to it, with their accessories within Thrive as well. So again, this can be customized, and allows for super easy access and utilizing these streaming accessories when the patient needs and wants to use them. The Thrive Assistant. This is really a division of this main category of the intelligent assistant. So within the Thrive mobile app, you have a simple control to, basically, the patient can ask for help files, just using their voice. They can use what we call the tap feature, the double tap feature on their devices.

Simply double tap the hearing aids and state, you know, something like, how do I create a new memory or how do I adjust my tinnitus stimulus? And their voice will simply pull up the help files within the thrive mobile app. They don't have to search through menus for that. If they have an Amazon account, they can log into their Amazon account, and now they can do the same thing to search the internet for really anything. It doesn't have to be hearing aid related. They could double tap and ask for the weather. They could search for the nearest gas station. Whatever they need, they now have all of that information, again, literally at the tap of a finger on their hearing aids, and by speaking the question, the microphones on their hearing aids pick up their voice, and the information from the internet is streamed to their hearing aids.

They don't even have to wake up their phone. They can keep it in their pocket and their purse if they want to. So this is where we really get into using the hearing aid as their gateway to information. And with these voice commands, as we call them, again, we're the only manufacturer who have these voice activated commands, we wanna think of new and unique ways for your patients to interact with their devices, and in the end, interact with the world around them. So with the Livio Edge AI, the Livio AI 2000 and 1600, again, your patients can adjust their hearing aids by simply speaking and asking the hearing aids to do what they desire. So get a quick double tap on their device, and they can say, "Change my hearing aids to my outdoors memory," or, "Turn up my hearing aid volume.

Turn down my hearing aid volume. Mute or unmute my hearing aids." Not having to take the mobile app out of their pocket, not having to fiddle with a push button, or a rotary dial on their device. You know, it's a simple, intuitive way to interact with their hearing aids. And again, this might not be something you think of as connectivity, but we are utilizing all of these platforms, all of these base wireless and connected platforms to think of unique ways for your patients to make their life easier, really. You know, if your patient has, you know, poor dexterity, but they wanna turn up the volume of their hearing aids, do they need to find that push button on the back of the device?

No, do they need to take the phone out of their pocket, and open up their phone and turn their volume up? No, they can simply double tap on the hearing aid, and say, "Turn the volume up on my hearing aids." It's as simple as that. Very, very easy and intuitive. And again, another form of connectivity that we don't typically think of when we talk about hearing devices. So that's the Thrive app, a quick, quick review of the Thrive app. But what if we can take that same information, the data your patients own, you know, how long they're wearing their hearing aids, how many steps they're taking throughout the day, are they exercising, all of that healthable data, what if you could

then share that with a third party, with a loved one, with their caregiver, and that's really what we're doing here.

So for the longest time, we've had the ability to store hearing aid information in the cloud, going as far back again to our Halo devices. You know, the hearing aid settings were stored in the cloud. If, you know, a patient lost their hearing aid, or they got a new phone, maybe they needed to reset their phone for some reason. You could pull those hearing aid settings down from the cloud, restore them back into the replacement hearing aid, or whatever the case might be. Now we've got the information or the capability to take that information, put it in the cloud, and then send it through a secure connection to a caregiver, to a loved one, someone that's there, that their goal is to help monitor, you know, that loved one, to help take care of them.

And that's with what we call the Thrive Care mobile app. So again, this is the industry's only, really, caregiver-focused app that provides peace of mind to both the patient and the caregiver. And this is something that's done, again, in a very private, secure manner. The patient owns this data. They decide, okay, I want my son, my granddaughter, you know, my next door neighbor, the nurse that comes in once a week, to be able to see my healthable data. They send them an invite out through the Thrive app. The caregiver gets that invite via an email, downloads the Thrive app and sets up an account. And now, essentially, you can see whatever data the patient wants to share with them.

So they can see, again, are they exercising? Are they walking as much as they should? Are they getting up and moving around as much as they should? Are they wearing their hearing aids as often as they should? Are they getting into diverse listening situations to stimulate the brain more? The caregiver can dial into this data with as much detail as they want. It's from daily, weekly, monthly, annual data. And what it does is it provides information, so that if there's a moment where they think, oh, I noticed my mom hasn't

worn her hearing aids in two days. Maybe need to give her a call and find out. Is she out of batteries? Is the hearing aid broken?

You know, is there something more severe going on? Maybe I need to drive over and check in on it. I can set up notifications to see, you know, are they meeting the goals that they've set in there? So it really provides this additional way for caregivers to interact with their loved ones, with the person that they're looking after. It's easy to use. It supports safety and independence. And it's secure and private. Again, the patient is in charge of the data. They decide who it's sent to, and it's being managed through a very secure cloud system. So again, another way to think of connectivity beyond, well, can my hearing aid connect to my cell phone? It's can we bring in another way to help support the patient via the caregiver and give some additional peace of mind and another way for the caregivers to interact with the patient.

Then, of course, there's a variety of other mobile apps that can be thought of. And the one that I'm gonna bring up here is the Starkey Relax app. This is an app, you know, targeted towards those patients that have tinnitus. It's an easy to use app. It can stream directly to the hearing aids, if the patient so desires. There's information and resources on there from the American Tinnitus Association. You've got a variety of different audio files that can be selected. They can be personalized. You can add a modulation in there, a sleep timer. So you've got 12 different stimuli. So it's very flexible, and it's something that the patient can, again, interact with and personalize for their own needs and use around tinnitus and tinnitus relief.

And, you know, a lot of times we don't think of apps beyond, well, my remote control app to control my hearing aids. But with, with apps like the relax app, you've got another way to interact and provide support to the patient via connectivity. And just as an aside, we have a lot of resources around tinnitus at starkeypro.com, that's for your information that you can also use to help support your patients that have tinnitus, along

with maybe the use of the Relax app. And then the final component of connectivity. It's something that's really kind of come into its own, over the last year, is remote programming capability, interacting with your patients, and making adjustments to their hearing aids remotely.

And with Starkey, we have our Hearing Care Anywhere system. This is available for all Livio, Livio AI and Edge AI devices. Again, both Apple and Android compatible. And we have two systems for Hearing Care Anywhere, which sometimes allude to the the FaceTime and the Facebook versions of Hearing Care Anywhere. We've got live sessions, which is live synchronous, you know, live appointment, video chat, video adjustments, essentially. And then we've got what we call our remote adjustment, which is asynchronous or a store and forward approach. So you've got both of these options to work with your patients. And there are advantages to both. The remote adjustments or asynchronous strategy. Your patient can send a request any time they want to.

In the moment that they think of it, it gets stored into the cloud. You, as the professional, can pull down those requests when it's convenient for you. There's no appointment necessary. You do it throughout the day when it's appropriate or convenient. You send the adjustments back to the patient, and they can download them into their hearing aids. The synchronous strategy, of course, is a live session. You set up an appointment, you open up the Inspire software, you use your camera and your microphone just the way I am right here. The patient uses the camera and microphone on their smartphone, and you do a virtual programming appointment, they can hear things in real-time, et cetera. So you've got two options, both that have tremendous advantages.

So you can see, at Starkey, we are really thinking of connectivity beyond that one little thing, of, well, can we connect to the phone? Of course we can. Can we stream

directly from the phone? Of course, we can. But what else can we do to expand this world of connectivity to promote overall health and wellness? Well, number one, let's provide the best hearing aids possible, the best hearing, comfort, clarity. Let's get them thinking about their overall health and wellness through healthable technology, and support them in their healthcare journey, and give them a new way to interact with the world of information through the intelligent assistant. So that brings me to the end of the 30 minutes. I want to thank everyone for joining me here.

I do not see any questions in the Q and A, so I'm going to assume there aren't any coming in. And I just wanna thank everyone for joining me, and thank AudiologyOnline for having us part of this Industry Innovation Summit. And we will see you at AudiologyOnline in the future. Thank you.

- Thank you so much, Luis, for your time and expertise today. And thanks to everyone who participated. This concludes the course. Have a great rest of the day.

- Thank you.