

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

Make a Connection: Guiding Success with Assistive Listening Devices

Presenter: Keeley Layfield, AuD

Hey guys. My name is Dr. Keeley Layfield and I'm an education and training audiologist with Starkey Hearing Technology. And today we're going to talk about assistive listening devices. If you have any questions throughout the webinar today, feel free to throw it in the Q and A.

I'm going to be monitoring that at the end. So if I don't answer, you know, throughout, don't worry, I will answer it at the end before we sign off for good. And then the handout for today's course is going to be in the resources section of the classroom or in that pending courses section of your account. And you do get a CEU pending passing the exam for today's course. So after watching today's lesson, go and take that course so you can get your one CEU credit hour.

And if you have any need for assistance throughout today, feel free to throw something in the chat or the Q and a or email customerserviceaudiologyonline.com so today, here are the risk and the benefits associated with today's course. And again, that'll be in the handout. And then we also have three learner objectives to describe how assistive listening devices assist patients with hearing loss engage in their different environments. The second is to describe how to identify that a public environment is looped. And then the third objective is to identify at least one key learning so that you can implement it in your clinic to improve patient outcomes.

But diving into the content for today, you know, amplification is typically has the goal of providing audibility for speech and those other environmental sounds using that restore audibility, it may not be realistic for all patients. So I like to use the term provide audibility and it's a very subtle difference. But it's that subtle difference is while we may be able to bring softer sounds into that range of audibility, we're not restoring or correcting a profound deficit. And the second bullet point that you can see on this slide, you know, really kind of brings this into perspective. Even when audibility can be achieved, listeners with severe to profound hearing loss are more likely to have significant super threshold deficits than listeners with lesser degree of hearing loss.

So there are fitting goals that, you know, have often been described in those best practice guidelines that we all follow. And it's important for considering the overall treatment plan for your patient. But as with any list of goals, maybe not every single one of these is achievable for every single patient. So the British Academy of Audiology approaches some additional points that may add that quality of life experience so, you know, allowing for spatialization, the reliability of the device being really high, and then managing and meeting the specific expectations and the goals of your patient can again all play into those broader, more realistic goals on your patient's hearing journey.

Now, while today's talk is primarily focused on external assistive devices, I do want to take just a moment to mention Starkey's feature Edge Mode plus and our new DNN noise reduction feature in our Edge AI devices. So Edge Mode plus is even better because it again has that on DN in noise reduction. So in study after study we've been able to show consistently that Edge Mode plus improves patients speech intelligibility and reduces their listening effort. It's also consistently ranked among their favorite things about Starkey Hearing aids. When asked our participants again what they liked most about so not the focus of today, but I do like to mention it because it is a really great tool in your back pocket.

Now treatment options for those patients with hearing loss and communication challenges can be varying. So a treatment plan should be comprehensive so that you can provide your patient their best chance of success with the world around them. So some alternative communication styles such as texting or writing your communication can help ease understanding in a really challenging environment. Hearing aids or other hearing instruments may improve that signal to noise ratio of the environment and again aid in communication. So having that full comprehensive plan really is the best strategy for your patient.

So how do you start to begin to develop that comprehensive plan? Well, it starts with the patient assessment. So Seminars and Hearing published a volume on treatment of patients with severe to

profound hearing losses back in 2020. And this issue included best practice guidelines which point out the standard diagnostic information, while important, is really only part of the comprehensive to a treatment for patients with again those severe to profound hearing losses.

Sorry about that. So many of the patients that we see daily could benefit from the usage of an assistive device. And according to the niddcd, there are different categories of assistive devices. We have assisted listening devices which help amplify the sounds you want to hear, especially when there's a lot in the background. Aids can be used with a hearing aid or with a cochlear implant so that they can help aware hear certain sounds better.

There's also alerting devices such as connecting to a doorbell, to a telephone or an alarm. So we have this really loud sound or some type of visual notification to let with a hearing loss know that a specific event is taking place. There's also augmentative and alternative communication devices or those AAC devices. And these help people with communication disorders express themselves. So these devices can range from a simple picture board to a computer program that can synthesize speech from text.

It's important to know your different options for each of these categories, as patients may need different assistive devices based on the severity of their loss, the limitation of their word recognition, and their different communication needs. And again, may make various of these devices necessary even if they've already been fit with hearing aids. Now, this talk today is going to focus on ALDs, those listening devices, and alerting devices. We're not getting into AAC devices at all, but I do first want to talk about assistive listening devices. And there are many different types of these.

So I'm going to discuss each of these in the next section of the talk. And let's start with telecoil. So a telecoil, or also often called a T coil, is a coil of wire that is installed inside many hearing aids and cochlear implants, and it acts as a miniature wireless receiver. Now, it was originally designed to make sounds clearer to a listener over the telephone. It's also used with a variety of other assistive listening

devices, such as looping systems, FM systems, infrared systems, or personal sound amplifiers.

The telecoil works by receiving an electromagnetic signal from the hearing loop and then turning it back into sound within the hearing aid or the cochlear implant. This process eliminates much of that distracting background noise and delivers sound customized for a patient's own individual need. So for people who are hard of hearing, who do not have a telecoil equipped hearing aid or a cochlear implant, then a lot of times, loop receivers with headsets can provide similar benefit, but they don't get that customization or that correction for their hearing loss, because, again, that's more of a general thing, not going through their personal hearing aid and amplification. Many cochlear implants have a telecoil built into the sound processor or can use an external telecoil accessory. With both hearing aid compatible telephones and public looping systems, a simple switch or a T coil program performed, you know, swapping into that program performed by the user can activate the T coil in their device.

So when current is driven through a wire, as shown here in red, a magnetic field is created that radiates around the wire in harmony with that audio signal. So in a coil, the strength of that magnetic field is focused in the center of the loop. When a magnet is placed in the center of the loop, that magnet can be made to move with the changing magnetic field. So when another coil is brought into that magnetic field, it's influenced by that magnetic flux, which creates an electric current that may serve as an electric input. So telecoils and hearing aids rely on the magnetic field from a telephone or a loop system for that input.

So the telecoil orientation in the hearing aid needs to match the orientation of the magnetic field source. If a mismatch, as you can see here on the slide, is occurring, then there's poor or absent coupling in the signal to the accessory or the device, which means the sound quality may not be that great.

Now, there are a lot of advantages and disadvantages to telecoils. So for advantages, there are signal to noise ratio improvements. The hearing aid mic can be switched off or even be reduced so you can

kind of quell the interference from ambient noise or other noise in the environment. And basic infrastructure is already present in most hearing aids, especially devices that tend to be fit most on patients with severe or profound hearing losses. There's no conversion to a carrier signal that's needed.

And it's a very basic and a very simple process that doesn't necessarily need a lot of engineering and it doesn't take a lot of energy consumption. So, you know, t coils are still very widely used because of that simplicity.

And speaking of widely usage, there are thousands of assistive listening systems already installed across the United States under the Americans with Disability act or the ada. The following places are required to have some type of FM loop, telecoil loop, or infrared system. And that would be all indoor and outdoor areas or rooms with a public address system. These are often referred to as assembly areas, all courtrooms, and then anywhere that effective communication is needed, such as service counters and things like that. Now, as of 2022, Google Maps has started including hearing loops under their accessibility information with venues feature access to this type of technology.

So have your patient do a quick Google search and they can see if that's something they could take advantage of for different restaurants, theaters, things of that nature. And then the center for hearing features a list of locations state by state, that have hearing loops. So that's a great resource to use as well.

So we've talked a lot about the prevalence of telecoils, but let's look at their effectiveness briefly. So at Starkey, we performed a study looking at subjective intelligibility using different telephone options. Study participants were asked to rate the speech intelligibility rating and so this was for pre recorded connected speech test passages presented through various telephone listening conditions. So test stimuli were routed through real world telecommunication systems, passing from a voiceover Internet protocol telephone to either a second voiceover Internet protocol telephone or to a smartphone,

depending on the listening condition. For this particular study, we used Genesis AI devices, those RIC RT styles.

And so this allowed for bilateral telephone listening conditions to be tested. And participants provided three ratings for each of the testing conditions. Here you can see that patients reported a benefit from using bilateral phone listening solutions, including their telecoil. And this is in agreement with previous research on T coils.

We also wanted to gather data from real world hearing looped scenarios and do a kind of a comparative laboratory set up. And so we wanted to look at the telecoil performance in real world scenario. And so what we were able to find is that telecoil significantly improved speech understanding even when the patient was in a very degraded or degraded listening condition. Which again, just further proves and backs up these findings that, you know, telecoils can provide a good benefit in these real world scenarios that may be looped.

And then telecoils are not the only option though. There's a lot of different ones out there and there are many, many different free captioning phone options available. These are either funded by or work with the FCC to provide captioning services for people when they're on a live phone call. So this allows users to both hear and read the phone conversation in real time with very minimal delays. And many of these services are now working with different smartphone applications as well as kind of the society moves away from landline phones, which I think is really cool.

Sorry, not fast enough on that one. Infrared systems distribute an audio signal in the form of an invisible light throughout the room. And the audio signal is fed into an infrared modulator, which then converts the audio signal into that RF signal. The modulator sends this RF signal to an infrared radiator that transmits it in the form of the infrared light across the room. And then portable battery powered infrared receivers are used by individuals to convert this infrared light back into audio, which is then fed into

hearphones, headphones, or if they're a hearing aid wearer, maybe an induction neck loop.

Each system user can select their channel and adjust their personal volume if that's something that's offered by the individual system. There's no limit to the number of receivers that can be used on a system. And so we see a lot of infrared systems used in like concert halls, theaters, auditoriums, council chambers or rooms where like speech, privacy and confidentiality are required because this infrared light can't penetrate walls or ceilings, which makes it very safe within sealed room. So this makes them again ideal for venues that require multiple systems across multiple rooms. You're not going to get any bleed over with an infrared system.

We also have FM systems, which stands for frequency modulation. And an FM system is kind of like a little tiny radio station with its own frequency. And there are two parts to an FM system. There is the microphone that is worn by the speaker. That microphone will then send a signal to the receiver.

So the receiver can be worn on your ears or connected to your hearing aids. If you're using a personal FM system, if you're using a sound field amplification system, then that receiver would be like speakers throughout the room. Now you can use FM systems almost anywhere. They can be in classrooms, restaurants, meetings, nursing homes. We've seen them used in theaters, museums, or in other large areas.

Typically in those larger areas is when you're going to go for those more sound field amplification FM systems. But oftentimes you can also get again those FM receivers that connect to individual hearing aids or to headsets to wear. So a couple of different ways of connecting with FM systems.

Now, I've tried to include all of the different accessibility symbols throughout the talk, but just in case you wanted them all in one spot, here you can see, you know, the different symbols associated with different accessibilities that are provided. Telecoils are probably going to be the most commonly seen

one in our realm of things, but I've run into others in various public venues as well. So.

And then accessories are another form of an assistive listening device that allow again that sound to be brought closer to the listener. So improving the signal to noise ratio is arguably the most important outcome after audibility in the goals. For individuals with severe to profound hearing loss, remote microphones and direct or wireless connection to other devices bring that sound source closer to the user, thus improving, improving the signal to noise ratio. Now, while deep neural networks don't necessarily bring the sound closer to the listener, the power of advanced processing can offer optimism for the future when effective real time computational power can be included in hearing aids, so reducing listening effort for those patients. So in order to use streaming and use accessories within hearing aids, you need to have a radio in both the accessory and in the hearing aid itself that is capable of that.

So in hearing aids, we discuss radio options in a couple of different ways. We're looking at how we can connect hearing aids to accessories, how we can connect them to cellular devices. And then we're also looking at the radios that allow for communication ear to ear in the hearing aids themselves. So wireless hearing AIDs have a 2.4 GHz radio within them and this allows the user to have direct connectivity to smartphones and to manufacture specific accessories. So the high frequency nature of that 2.4 GHz signal results in a short wavelength that does not propagate well through or around the head and body.

It's affected by water. Our bodies are majority water. So though 2.4 GHz does have a lot of advantages because it's really fast data transmission, it's pretty low power consumption in a lot of cases. And in addition to this, it's got that really excellent stereo sound quality and you can get a range of about 30ft within line of sight, which is pretty decent range. Now each phone manufacturer currently uses their own Bluetooth Low Energy or that BTLE streaming protocol.

So Apple's proprietary streaming protocol is called LEA or Low Energy R Audio. And one of the main features of this protocol is Live Listen, which essentially allowed the user to use their compatible iPhone or iPad as a remote microphone without the need of an additional accessory, which is really cool. Now Android uses the ASHA protocol or the audio streaming for hearing aids. And again, this is the solution for Android devices. So that's what you'll see with those.

Now it's important to discuss a new Bluetooth streaming protocol called Le Audio. And so this was released back in 2020, but we're now starting to see more and more devices come out on the field with this. And so LE Audio operates on that BTLE radio, but with the newest Bluetooth core specifications of Bluetooth 5.2. So LE Audio is not a new radio, but it is a completely new protocol which is really cool because it's going to be a more global protocol. So this will allow for multi stream support.

This will also allow for standardization of protocols across Apple devices, Android devices, hearing aid devices, accessory devices, and so on and so forth. So again, it is a global protocol where everything eventually will speak the same language, which is going to make compatibility awesome in the in the future as we move more towards this. So there are some benefits of this new LE Audio protocol because again, it's going to have a much wider range because it's actually made for audio streaming, not necessarily just for data transmission. It's also even more lower power consumption than btle and so we don't necessarily have to worry about increased battery drain even if patients are streaming more often. And again, my favorite thing is the connection will be universal.

So this means that compatible Apple and Android devices are going to use the same streaming protocol, which is awesome. And then wearers are going to be able to connect their hearing aids to more than one outside device, like an iPhone, like a compatible laptop, like a tablet, maybe potentially a tv. So again, we're going to be seeing more things in the industry transition to this LE Audio protocol and we'll see it improve accessibility and participation, which means more people can use it.

And so coupled with this, you know, there are current assistive listening systems that I've talked about already, telecoils, induction loops, things like that. And they've been a great benefit for people with hearing loss that suffer from a number of challenges. But those things tend to be limited in their deployment because oftentimes they're high cost to implement. Sometimes there's lack of privacy with the implementation or maybe poor sound quality because again, you're kind of limited to that sound frequency range of telecoil, which is, you know, not the full frequency rate. So the Bluetooth Special Interest group worked closely with the hearing aid industry to define and introduced the next generation of assistive listening systems, which is oracast.

So public locations, including conference centers, movie theaters, transportation centers, think airports will be deploying AuraCast in the future to promote better living through better hearing. I do have a quick little video about oracast for you guys right here.

Bluetooth introduced the world to wireless audio. A better way to call, listen and watch. It's part of the fabric of our lives, making us safer, more productive, more joyful. Now Bluetooth will bring us even closer to each other and our world, augmenting our reality through audio broadcasting. Introducing AuraCast.

With AuraCast, you can invite others to share in your audio experiences.

You can unmute what was once silent and you can hear your best wherever you go.

AuraCast broadcast audio. A new energy for audio, a new energy for life.

So Edge AI devices is, will still continue to support the old BTLE protocols. They're not going away anytime soon. But we also are ready for LE Audio and AuraCast enabled devices. So that is really cool. We're, you know, seeing this transitional period in the industry.

We're ready, we're going to kind of work with everything. We are also using that LE Audio protocol in our starlink Edge Excel accessories. So we've got a couple of different accessories that you can choose from with Edge AI devices. So we've got that table mic, remote mic and our TV streamer. Now both the table mic and the remote mic are the unicast portion of LE audio.

So that is a one to one connection. So one accessory to one pair of Edge AI devices is now the TV streamer is that broadcast version or that oraCast version of Le Audio. So it could be one TV streamer to an unlimited number of devices, which I think is really cool. And then Edge AI hearing aids can be paired up to 10 streaming accessories, but they can only actively stream from one of them at a time. So just a heads up on that.

So what would you do if your patient says they can't hear in restaurants? Or maybe you have a patient that's a student and they're struggling to hear in the classroom? Maybe they're struggling to hear people that they're riding in the car with. To me, these are all perfect examples of when your patient needs a remote mic mic. So that remote mic is going to stream audio directly in to the patient's hearing aids.

So it's a lapel mic designed to be clipped by the speaker and then again sends that wirelessly to the patient's hearing aids. So it gives that binaural streaming and enhances that one to one conversation even in when the patient is in a noise environment.

Now if you have a patient who's struggling in like a conference room type setting, or they have big family gatherings where everyone's kind of sitting around a big table and are all kind of talking over each other and they struggle for those, to me, this is the perfect time to recommend a table microphone because the table mic is going to use eight directional microphones with beam forming technology to enhance the listening for the patient in those challenging environments. So the Starlink EDGE table mic

that works with Edge AI hearing aids at Starkey has multiple listening modes. We have that automatic mode, our manual, our surround sound mode, and our remote mic mode. Now for the best listening experience, we do recommend that the table mic be placed as close to the conversational partner as possible. And we also recommend that the table mic be placed where the power button and the volume control button face the hearing aid wearer that's just going to keep all of the mics, all of the antennas and everything in the optimal position to be the best sound quality for patients.

Now here you can see the speech understanding and noise benefit using the hearing aids alone versus using the hearing aids with a table mic that's using directional microphones. So again, that table mic uses eight directional microphones. With beam forming technology to really enhance listening in those very challenging environments. So you can see patients get even more of a boost with the table mic than what they do with just the hearing aids themselves.

Now, let's take a moment to talk about some obstacles our patients may encounter. You know, understanding speech and the presence of background noise consistently rises to the top of challenges that, you know, those with hearing loss face. So remote microphones have, have demonstrated significant benefit in enhancing speech understanding in a wide variety of environments. So, you know, we're really pleased at Starkey to offer several different remote mic options that are designed to meet your patient's specific needs. So remote microphones are a really powerful accessory because they can provide significant benefit for speech understanding, which is going to allow patients to hear more of the conversation and use less effort to do so.

It can also be worn by the speaker of interest so that even if that patient is way far back as a distance from that patient with the new remote mic, they can be up to 50ft away. They can still understand them very clearly, like they're very close to them. And then it reduces the distraction from competing background noise or competing stimuli because it allows those patients to understand and participate in

these conversations. Because again, you're taking that speaker's voice and streaming it directly into their hearing aids, which is a really cool thing.

Now let's say you have a patient who comes in and they're like, look, me and my wife fight over the volume of the TV all the time. Or some of the, the shows that I like to watch with my grandkids, they just talk so fast, I just don't understand them and I'm really struggling to follow along. Then these are perfect examples for that TV streamer. Our Starlink Edge TV streamer is really cool because again, that wireless range is 50ft and it is really tiny. It is 60% smaller than our previous TV streamer.

But my favorite feature of this is, is an unlimited number of users can connect to the TV streamer and use it at the same time. And I did already say this, but this again is using that broadcast version of LE Audio. So not only will it work with Edge AI devices from Starkey, but it will also work with other, other auracast enabled hearing aids as well. So the user with other AuraCast enabled hearing aids will need to search for the broadcast and accept it every time they wish to stream from. The Starlink Edge TV streamer connection can be easily managed from that AuraCast broadcast assistant on an LE Audio enabled or compatible smartphone phone.

Right now, those LE Audio compatible smartphones are only Android, but hopefully we'll see a change to that in the near future. But There are about eight to 10 Android devices that currently support this, so that is really cool. And then the unique broadcast name and broadcast code are etched on the bottom of the TV streamer itself. So if you just flip it over, you can find that there and that will help you know what to select that oracast broadcast assistant.

So a TV streamer, again, allows for that wireless connection where you can send the TV signal directly into the patient's hearing aids so that patients can enjoy, you know, TV viewing with a loved one at a volume that's comfortable for both parties. You don't have to blow out the other people in the room. And an unlimited amount of wearers can stream from the TV at the same time, which they just have to agree

on what to watch. But everybody being able to use it again, they can have that volume at that comfortable level for themselves, which is really cool. And you can have multiple streamers in the home environment, you just need to have one per tv, don't need one per hearing aid wearer.

So you have lots of flexibility with this device.

So we've covered assistive listening devices pretty well. But I want to talk about some assistive living features also, because, you know, at Starkey and with our Edge AI devices, we have a lot of unique assistive features that can really provide assistance and allow those patients to kind of take a bigger active role in their overall health and wellness. So wearable technology, you know, really started being popularized back in 2008 with the introduction of the Fitbit. And then we saw a huge explosion of tracking devices, fitness devices, fitness apps, all of this. So we kind of really saw this, that ear is the new wrist come about when we first introduced sensors in our hearing AIDS back in 2018, 2019.

So along with sensors for motion and apps that track movements, we were able to expand this into, you know, fall alerts, reminders, and other features in our hearing aids as well. And so we really do continue to build upon this philosophy of the ear is the new wrist. And we want to give patients alerting features specifically for help, both for safety and for connectivity. So hopefully you're familiar, but if not, you know, I want to talk about our fall feature. You know, so we have so many patients who are concerned about staying active.

They've, you know, purchased a Fitbit or they want to keep up with how they're tracking things, so they can do that with our Edge AI devices. We'll count their hearing aid usage, their steps, their stand, their exercise, what types of environments that we're, you know, they're utilizing the hearing aids in. But we're also going to kind of look at these comorbidities as well because there's a lot of comorbid balance systems that are known to occur with hearing loss loss. And we know that there's an associated risk of falling for those with hearing loss and it appears a lot more pronounced in those with more severe

losses. So having the addition of transmission or sorry, transmitting alerts is really important, which is why I love our fall alert feature.

So this allows patients that are potentially at risk of falling to safety set up three contacts so that they can receive an alert if a fall is detected. They don't have to set up all three. I do recommend at least two though, just in case you have one who's like my mom who never knows where her phone is. She would not be a good contact. But again, you can set up up to three.

Now there are two different ways that alerts can be set. We have auto alert and manual alert. Auto alert is when a fall is automatically detected by the signal or by the system. Manual alert is when the user control is pushed to initiate an alert. So manual alert can be used as a backup or you know, maybe you have someone in a parking lot, they're not really feeling very safe in that environment and they just want someone else to know where they are.

Or it can be used for non fall related events. Now users can have both auto alert and manual alert active. They can just use auto alert or they don't have to use either one of them if they don't want this. But it is a good system to use. So I love to use this story about manual alert because it's one that is near and dear to me personally.

But say you have a patient that's outside doing yard work work and they're prone to leaving their phone just outside of their arms reach while being outside. And maybe they, they throw their back out, you know, they bend over and they just like, they can't, they can't move anymore and they're kind of stuck. They didn't fall per se, but they're immobile so they can't reach their phone to call or text for help. So instead they, they push that push and hold that user control button and they trigger the manual alert feature and it will send that alert to their spouse indoors. My dad uses this feature frequently, which is why I say this tool is near and Dear to my heart because he is a diabetic and sometimes his sugar may start to bottom out and so he can trigger that manual alert so that my mom knows, oh, he needs juice,

he needs a cookie, a cracker or something to get his sugar back up so that he doesn't pass out in the yard.

There are many different ways of using the manual alert button, so don't be afraid to get creative with this one. I think it's a really cool tool. Now, manual alert can be enabled from profile on that user control screen and it can be set up as the push and hold gesture and it is on both ears. Like you can't make push and hold the right ear and something else, the push and hold on the left ear, it is on both, which is good. You don't want your patient to have to remember which ear.

They can trigger it from either side. So now just from a heads up, even if you set this up, that doesn't set up the full system from a manual side or an automatic side side. Your patient has to go and set up the contacts through My Starkey for the system to be fully active. So heads up on that.

And then Edge AI and My Starkey can also give patients access to onboard language translation. So select the language that you are starting with I. E. The one that you speak, speak in the first blank, the language that is needing to be translated in the second blank, and then press the microphone and go from there. You will both see and hear both languages through the hearing aids.

And then transcription allows conversations to be converted into text that can be shared or shaped, shared or saved as needed. So this is a cool tool as well.

And then Smart Assistant is akin to Siri or Alexa. Through the hearing aids. Patients can troubleshoot their hearing aids, their accessories. They can use Smart Assistant to change the volume, change their program, set up a reminder. You can really make this feature as big as you want it or as small as you want it.

For our less tech savvy patients. I'm a huge fan of making this feature very small. But for your patients who are very techy and looking for a wow factor, pretty much tell them to treat it like Siri or Alexa. It can do a lot through it, which is really cool.

And then our last assistive feature that I do want to talk about through Edge AI devices is Reminder Reminders. We have both basic and intelligent reminders. Basic reminders can be configured for whenever your patient needs a reminder of taking a medication, walking the dog, doctor's appointments, whatever it may be. So you can set those up as needed. I like to use birthdays reminders for birthdays because I am horrendous at remembering those.

And then those intelligent reminders I think are really cool because they will remind you to perform basic maintenance chores or even remind you just to wear your hearing aids. Maybe you have a patient who's non compliant. This intelligent reminder is a good one for them. But these are controlled in my starkey.

And so we've discussed assistive listening devices and assistive living devices, but now let's discuss different alerting devices. So alerting devices for those deaf and hard of hearing individuals. Individuals often will utilize visual cues, visual cues, vibrotactile cues, you know, so you may have flashing lights, vibrating bed shakers, smartphone notifications, things like that. And there's a lot of different tools within this field. So again, we see different kind of, we see tactile devices and we see visual, visual devices.

Those tactile devices are going to, you know, vibrate to alert the hearing impaired user. So you may have a vibrating bed shaker, a vibrating wristband, some type of specialized baby monitor that will provide a vibrotactile cue when the baby is crying, things of that. And then again you've got those strobe device or those visual devices that may have strobe lights or some type of flashing light indicator. A lot of these will also integrate with different smart home systems so that maybe it's like

when the lights flash green, you know, someone's at the door or you know, things of that nature, which I think is really cool.

So after years of continuous research and development, not impossible Labs, with technology solution support from Avnet has engineered a complete platform for composing, translating and sending audio as vibration wirelessly to a user's body with zero perceptible latency. So this is music not possible. And it's a combination of wearable hardware, software and different wireless tools. And so it's battery powered, wireless, wearable harnesses wristbands and ankle bands so that we can supply eight different distinct areas of vibration across the user's body so that these users can have a surround body experience. Experience.

So I'm going to play just a quick little clip of what this is.

You guys are the first people to have ever experienced a live show with music. Not impossible.

Sam.

I remember what deaf people used to do. We would pass out balloons in the concerts and we'd hold them to feel it. But this is way better than the balloon experience. It feels like with the best. We are the balloon now I feel absolutely immersed in the music.

It was amazing. Honestly. I think all deaf audiences should have this vest. They would feel more involved in the music it and it's really important for them to feel it just like a hearing person.

My mind is absolutely blown.

So I am a huge concert goer and so I love that. You know, we're trying to put some research into making the concert experience accessible for all all. So each element of that music not possible system is going to give that kind of polyphonic musical expression across the skin. So again, it's that vibro tactile approach. And wearers can adjust the intensity of the vibration and then they're also going to get a visually represented different of an LED light, so they can kind of make that customizable as well.

So again, just trying to bring that full experience to all concert goers, even those who are hearing impaired, which I think is really cool.

And then iPhone sound recognition is a really great accessibility feature for hearing impaired users. And I've got a quick little video on it as well. With sound recognition, your iPhone or iPad can listen out for certain sounds and notify you when it recognizes them. First, we'll need to turn this feature on in settings. Scroll down and tap accessibility.

Scroll down and tap sound recognition and then tap to turn it on. Next, tap sounds and choose which sounds you'd like your device to listen for. If you have hey Siri, turn on, you'll see a message saying that this feature will not be available when using sound recognition. To continue, tap turn on sound recognition.

From now on, you'll receive a notification whenever your device detects one of those sounds.

Once you've turned on sound recognition for the first time, you can quickly access it by opening control center and tapping the sound recognition button to turn it on or off. Or touch and hold sound recognition to access the sounds menu, you can then tap a sound to add or remove it from your list. And that's how sound recognition can alert you to important sounds you might not want to miss.

So this is a really cool one that you can turn on. There's also a lot of other iPhone accessibility options. Lens, you can enable that LED flash which will make that camera lens flash for notifications. So this could be useful for people who miss audible alerts. You also can turn on music haptics so you can experience, you know, music through those vibro tactile cues by holding the phone, which is really cool.

There's also live captions on iPhone that can be turned on so you can get that real Time, transcription of spoken audio and live caption will work with a lot of apps. It'll also work on like facetime calls or podcasts as well as for live conversations around you, which I think is really cool. And Android phones are not left out as well. They have a lot of really similar features built into them. So they have that sound notification that you can turn on where you know if it detects a baby crying, a dog barking, things like that.

It also has many Android phones have a live captioning feature as well. And again, they can use it on videos, phone calls, audio messages. They also have a tool called Sound Amplifier with wired or Bluetooth headphones that allow for filtering, augmenting and amplifying sounds in the environment or sounds from your Android devices. So kind of of like a very, very, very, very basic amplifier, which would be pretty cool. And there are so many different applications that exist out there now for hearing impaired users.

I'm not going to go over every single one, but I'm just going to hit on a few. AVA will transcribe live conversations into text, which makes it really easy to follow group discussions. I mentioned live captions on both. There's also Google Live Transcribe or again like caption call Captel. A lot of those now have mobile devices for phone calls where it'll caption them even if you're on a cell phone.

Those sound amplifier or volume boost on iOS will amplify output and try and filter out background noise. There's also OTTER AI that can be used for automated note taking in meetings and live captioning. There's the Brassi Sound Alert, which allows you to record sounds in your environment and

then gives you visual and vibrational alerts when it recognizes them. So many more out there. We live in a great timeline where accessibility is front of mind and front of house for a lot of people, which is great.

So now assistive technology is an ever expanding list of options. We have those tried and true methods of alerting devices of the past, but again we're seeing a huge explosion of new technologies that are continuing to enter the field and provide benefit for hearing impaired users. So this is a really cool thing. Keep your eye out. There's always something new coming to market, but there are again are so many different assistive technologies.

So finding a solution for your patient really has never been easier. It's difficult in the paradox of choice, but there's not lack of options, which is great. And so I'm really excited to see what the future holds for many of these avenues because I anticipate again and expansion and offerings as accessibility and technology continue to intersect with each other. Now, I threw a lot at you, and if you want to learn more about Starkey's assistive options, like our telecoil, our DNN Edge mode, any of our accessories or whatever it may be, feel free to check out our website, Starkey Pro. We've got white papers, quick tips, you name it, we've got it.

But with that, I say thank you for giving me an hour of your time today. I really appreciate that. I am going to open up the Q and A and just make sure there's no questions, and it looks like that there are not. So I thank you guys, and I hope that this was a beneficial meeting for you, for you all, and thanks for giving me some time. Y' all have a good one.