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Innovations in Sound Management: Using Starkey ProFit Software's Sound Manager Tools to Optimize the Sound Quality Experience

Presenter: Michele Hurley, AuD, FAAA

Hello everyone and welcome to Innovations in Sound Management Using Starkey's Profit Software's Sound Manager tools to optimize the sound quality experience. I'm your host for today's session, Dr. Michele Hurley, and I am really excited to spend a little time with you talking about the specifics of Starkey Sound Management resources and you know, how we might want to consider using some of these great tools when you're working with patients. So before we get started, we're just going to do a little bit of housekeeping.

There we go. If you do have a question, please use that Q and A area and type in your question. I will answer any of those questions at the end of today's session so that we can, you know, make sure that everybody gets a response. If you are looking for the handout for today's course that is available in your classroom in or in the classroom where we are right now, and then also under your pending courses in your Audiology Online account. If you would like to view captions, you have access to those by clicking on the Live Transcript CC button and you'll click Show Subtitle.

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Here is the information about the associated risks and benefits with this course so you feel free to review that at your leisure that will be accessible in the handout for you. Now my goal for today is for you all to be able to describe the sound enhancement tools that are available on the Sound Manager screen in the Starkey software, to be able to describe the directionality options that are available in the

Sound Manager screen, and finally to be able to identify where in profit to find educational resources related to optimizing the Sound Manager tools as well throughout the course. Today I'm going to have some interactive moments for you using a tool called Slido and so you can either scan the QR code or go to slido.com to join the session for this this course and know that if you don't get set up right now. Worries as we get into an interactive moment, you'll have an opportunity again to scan the QR code or go to that website. But I would really welcome your participation in this because that will definitely make the course more enjoyable for everybody.

Let's go ahead and get started with our content here. When we think about sound quality, we know that that is incredibly important for you and your patients. And at Starkey, sound quality is job number. It always has been and it always will be because that is such a key driver to the success and the satisfaction of today's hearing aid wear.

We really can't overstate the importance of sound quality when we think about that. Hearing aid satisfaction. The Hearing Industries Association Market tracks 10 study was focused on hearing aid satisfaction, and it confirmed that hearing aid performance and sound quality really are those primary contributors to hearing aid satisfaction for our patients. And, you know, we know from what our patients tell us that, you know, these four elements that we see represented here, natural sounding comfort and loud sounds, minimizing background noise and the ability to tell direction really are trot drivers of satisfaction for performance when it comes to sound quality itself.

When we group several aspects of, you know, the amplification characteristics together, a large majority of hearing aid owners who got their hearing aids in the last five years, and, you know, I think 85% I would consider to be a really good number, they're satisfied with the physical aspects of hearing aids and 81% are satisfied with the sound quality of hearing aids. But if we start to look more specifically at the characteristics related to noise reduction, that drops to 75, 77% now. That's, you

know, still a really nice number. But as you know, we all know, we're always striving to deliver the best possible performance. And so obviously we'd like to be able to increase that percentage of satisfaction, especially related to noise reduction.

You know, as we just talked about today, a majority of hearing aid, you know, owners have some level of satisfaction with their devices. A good number, and maybe about a fourth of them are still really not satisfied in those most challenging situations and that they are wearing their hearing aids. And that could be places like going out shopping, when they're wearing their devices, during transportation, when they're in large groups or conversations, especially when there's noise present as well.

If we think about the evolution of hearing aids, and I think it's truly amazing to think about what today's technology can do compared to when I first began practicing, it's a night and day difference, you know, when we think about when patients first had the ability to manually switch between an omni and a directional microphone to today, where, you know, we're incorporating artificial intelligence and using machine learning and all of these tools to, you know, deliver better hearing, we've really come a long way. Most modern hearing aids use an acute, an acoustic environmental classification feature that is able to identify and classify the listening environment and then automatically apply environment specific changes, whether that's to gain to microphone behavior, to compression and also noise reduction settings. When hearing aid algorithm developers are working on these schemes, you know, they're really thinking about what the majority of patients want to hear in a given environment, thinking of, you know, majority ruling in that case. So if we think about it as, you know, we're focusing on making say 90% of the people happy 90% of the time. And this is because, you know, these classifiers are having to make assumptions about what the listener wants to hear.

And we know our patients are human and even the best predictions will miss sometimes with certain individuals. And it's also the case that even assuming identical conditions, some patients are just going

to struggle more and need more assistance than average. And that's just human nature.

So if we think about, you know, a real life situation, and I think if we're thinking about, you know, sound and complexity, there's probably no more real situation than this image that was captured on Bourbon street in New Orleans. And you know, what we are seeing is a very complex acoustic scene. You know, we've got, you know, musicians playing, we've got individuals standing around. I'm sure there is a lot of music that's also emanating out of the, the bars and restaurants that are, you know, adjacent to the, to the street. You've got a carriage going through with the clip clop of the mules, you know, hooves on the pavement.

There's a lot going on. And when we think about that, you know, you've got individuals that are trying to carry on conversations. You've got some that are just trying to take it all in, others trying to enjoy the music, to be able to, you know, characterize a complex acoustic scene like this, you know, not simply label it as such, as well as take in a listener's goal, you know, into account. You know, that's a lot for the technology to do, to be able to optimally adapt to any sort of listening situation like this when we think about the hearing instruments themselves. So we need sophisticated, you know, artificial intelligence and machine learning models.

And here's how we're going to do it from the Stark perspective, the goal really of any AI based sound classification system is to be able to ensure that we are meeting those acoustic needs of the patient as as much of the time as possible by utilizing artificial intelligence principles and also machine learning, where we can train the technology to make decisions about classifying the multitude of sounds that that wearer is going to experience throughout the day. The sound classification is going to be what makes up our profit screen in our Starkey software and that's what we're going to be talking about today. That screen in particular is known as sound manager.

If we think about the incorporation of artificial intelligence and specifically machine learning, where we're trying to train the technology to, you know, do a task, you know, when that sound comes in, what are you going to do with it? Well, what it's going to do if we look at, you know, an acoustic environment classification system is, you know, extract the particular features, look at the features and patterns and classify those and then do the post processing and environmental sound classification that's going to deliver the performance for that individual in that particular moment. So you know, it's really, I think, amazing to think about all of this happening and it happening in real time. So there's no lag and you know, let down from that patient's perspective as they wait for their hearing aids to update for this moment in time.

Now we know that sound quality is king when it comes to that patient's initial first impression of their hearing aids. You know, every little sound matters for that individual and they don't really care how at all all happens. They just know that they want to hear well in any given environment as well as, you know, being comfortable in those environments as well.

In 2023, Starkey's Neural Processor really helped us redefine what a hearing aid could do. It was smaller, it was faster and more powerful than any chip before it. And with Edge AI, our latest technology advancement, we've integrated the benefit that comes from the industry's only NPU or neural processing unit into our everyday noise management system. That NeuroSound Technology 2.0 is our proprietary best in class listening experience system for our hearing aid Wears. It's really designed to encode that wears acoustic environment, be able to sense the movement and digitize that intent and then adapt it all in real time to be able to deliver a sound experience that really is unrivaled in the industry.

And that's something that we're really proud of with this technology.

A key piece of what allows the neural processor to do its work is that integrated NPU or neural processing unit that is actually embedded in the chip. This is by far the most advanced integrated circuit in any hearing aid that's available. And the G2 neuroprocessor is the way that we're really leading the way in the industry with being able to provide the best sound quality in real time for our hearing aid. We with Edge AI, what's so important is that the DNN or deep Neural Network element of that artificial intelligence is running in parallel with our sound management system. So it is always on with Edge AI and that allows us to deliver very efficient processing both in speed and also battery life.

And it's thanks to this really solid foundation that we have with Edge AI and the always on DNN that we've been able to incorporate even more complex FE and processing strategies so we can help our patients hear more effectively in any type of environment.

We think about, you know, traditional, you know, noise reduction. We've got that sound coming in, we're you know, taking that information again and digitizing it and going through that processing phase as we, you know, ultimately move towards that output that's going to deliver that sound quality for that patient. And we're placing that DNN right there smack dab in the middle of all of this processing so that it is a, of every decision that is being made about the environmental classification and the end result for that hearing aid wear. And with Edge AI, this is how we're really incorporating that DNN or deep Neural network all the time into our audio path.

And really what this has been able to allow us to do is introduce the industry's first DNN powered speech probability predictor. And it's 30% more accurate at identifying speech across an even more complex listening environment than our previous technologies. It appropriately classifies multi talk or babble as noise for a cleaner and purer signal for that that hearing aid wear. And it does that with a 6dB additional reduction in low level noise. So this is a very clean, very pure sounding circuit.

It just sounds very natural and it's also delivering that incredible performance in very challenging environments where often speech becomes part of the challenge itself for that hearing aid wear.

Now Starkey's profit software was truly designed for professionals, by professionals. We wanted our technology to be easy to fit, to incorporate this in your daily clinic flow so that you can optimize your fitting and follow up process.

With Edge AI, our most current product family, we've integrated that deep neural network learning into the main audio path. And we're using that to really deliver hearing. That is going to be a no brainer for our patients. We want them to just, you know, think, well my ears are working, I don't have to think about, you know, how I'm hearing and is my hearing aid going to perform well in this particular situation and different in another, you know, we just want our ears to work and that's what we've been able to deliver with Edge AI. Now where all the magic really happens and the focus of our session today is the sound Manager screen in Starkey's Profit software.

This is what drives that magic of Edge AI from that sound quality perspective and where that always on DNN environmental adaptation algorithm and directional choices can be managed on a per program basis by you, the professional. All of these noise reductions schemes that we're going to talk about today are going to reduce the gain in a particular channel on a per channel basis. And it's often based on the analysis of the signal to noise ratio in each channel. Most are going to reduce gain in channels where there is a, you know, concerning problem, you know, related to, you know, the type of noise that the algorithm in particular is focused on, say wind for example. These tools are, you know, there for you to be able to use to optimize the sound quality and comfort for your patient and to be able to do that again in any program environment.

So we're going to talk about each of the features that are part of the sound Manager screen more in depth. Now it starts with one of our newer features that is found on the sound manager screen and it's

called motion based optimization. Using the power of sensory technology that is actually embedded inside our Edge AI devices, our adaptive directional microphones are going to be able to distinguish activity based motion versus small movements with this feature. And it works in two different way.

First is situational awareness. So when activity based motion like walking or running, so step based type of activity is detected, the microphones are going to switch to an omnidirectional mode if they're in a directional mode to ensure more awareness of the patient's surroundings and also to deliver the best listening experience. Now this is exclusive to the 24 and the 20 levels of the Edge AI technology. And you know, when we think about directional microphones, they can tend to be a little bit noisy and so switching into omnidirectional can be more pleasant from the sound quality perspective. But it's really, you know, about that situational awareness and you know, from a safety perspective that's really Critical.

So being in an environment, you know, outside, being on the move and switching into omnidirectional is going to allow for that situational awareness to make sure that we're safe when we are out in that type of situation.

Now, the second element of the motion based optimization is reduced feedback. Small movements that may impact the hearing aid placement. You know, when we think about chewing or putting on glasses, these could be movements that could trigger feedback and that could be perceived as chirps or squeals. We know with digital technology it can sound a little bit different. When the feedback potential is detected, the hearing aids are going to automatically switch to the strong feedback cancellation adaptation setting for as long as that motion is detected.

This is going to reduce the risk of feedback and promote a more optimal hearing experience when that individual is going throughout their day. So we're going to make sure that they're protected from that annoying feedback if something is going to trigger it. The element related to feedback cancellation,

Formosa based optimization is exclusive to the 24 level of technology. For Edge AI, this feature will default on for both, you know, the 24 and the 20 levels of technology. However, if a patient were to notice, and I think the key word is object to the switching of directional microphones or the changes in the feedback canceller edit settings, you can turn the feature off on the sound manager screen.

In doing so, know that this will turn the feature off in all programs. So it is a global setting. And from a clinical perspective, I really haven't run across a scenario where that would be something that, you know, I would feel much of a need to do. But we know that, you know, every individual is different and there may be somebody that is, you know, aware of what's happening with this feature and you know, most importantly, objects to what's happening, and you do have the ability to turn that off.

The constant brightness is the next feature. And this is related to our adaptive feedback. It's not adaptive feedback. Our adaptive compression system, where we've got both a fast and a slow compressor running in parallel. Constant brightness, specifically controls the fast compressor and allows, you know, that to do what it's designed to do, which is quickly and accurately identify consonants in speech, especially those that can be easily missed by the listener when they're kind of at the front of a word or phrase.

At the 24 level of the technology, the constant brightness can be made more aggressive, which would control, of course, how fast the compressor is working or make it less aggressive.

Now, when we should think about considering maybe adjusting the constant Brightness feature might be if that patient perceives, and again is unable to accept, fluctuations in hearing aid volume that may occur as a result of that fast compressor. And that might be when a transient sound occurs in the presence of a steady state background noise. In this scenario, that fast compressor is responding to that transient sound by quickly turning down the hearing aid gain, trying to make sure that it can focus on speech. And the patient may notice that as it returns to that original level after that transient event,

the fast compression gain adaptation may particularly be noticeable if there's a greater degree of hearing loss and more gain is being used in a wider range of perceptual loudness. So some patients, you know, may have described this as a pumping type of sound.

Again, is it objectionable or just making them aware of what's happening and its role in delivering, you know, the best hearing possible may be all that's required. But if those, you know, volume fluctuations are occurring, counsel the patient about what the hearing aid is doing. They're unable to accept that, you know, you can set a different constant brightness setting in the 24. I do have a range of adjustability in the other tiers of technology. It is on by default, and I can choose to turn it off.

So you've got a different range of adjustability depending on the tiers of technology.

Now we're going to take a look at all the elements that make up the sound enhancement, the situational sound management, and the directionality features of the sound manager Screen Speech and loud noise is a fast acting binaural noise reduction feature. It's designed to reduce the interfering sounds from the sides of the listener and preserve the inner aural level differences that are really important when we think about localization. You know, it works through an audio exchange between the hearing aids and a binaural fitting. And what they're looking for is coherence on both sides of the listener. If the signal is coherent, no extra assistance is provided because the assumption is that, you know, the listener is hearing what they want to hear.

But if they are, you know, if the hearing aids themselves are detecting an incoherence, or left ear is getting a little bit of a different information than the right ear that is presumed to be something that would be less appealing. And so that's going to make a reduction of that, you know, noise, especially when speech is part of that noise. So think about this as something to design to really be beneficial in a social gathering, you know, cocktail party, any type of environment where speech can become part of that noise. And especially if each ear is Hearing that a little bit differently, the hearing aids are going to

respond to attenuate that.

So this is a feature that, you know, again, is something that is related to a technology that is incorporating a dual radio system from a Starkey perspective. So it'll have both a 2.4 GHz wireless radio as well as an NFI NFMI or near field magnetic induction. And that is going to be the RIC RT and the RIC 312 specifically. So you'll see that feature in those technologies and you will not see it in other, you know, styles of products. So when we think about, you know, the defaults for this feature, you know, again, it's something that, you know, you can manage in the software if the product has that particular type of radio to make the feature available.

If we think about our speech in loud noise types of algorithms, speech and noise is one that's really been a mainstay in the Starkey line. It is a monaural noise reduction algorithm and it's delivering fast acting digital noise reduction fast enough and sophisticated enough to identify and reduce noise even between the pauses and syllables of speech. It is pretty much active the majority of the time, making a lot of very fast decisions about a wide range of input levels. So this is a workhorse in Starkey technology. Now you'll see with the different tiers of technology, you will have different levels of adaptation and a different default that the technology will land at.

So if I'm in the top tier technology, the 24, for example, my default will be at that third setting and I can make it more aggressive by going to the fourth setting. In all other tiers of technology, my options are going to be starting at the default and reducing that, that aggression by moving to the left. So I have my most range of flexibility, of course, in the top T premium technology.

Now, you know, one of the benefits of the speech and noise feature is not only ability to really capture noise very quickly and keep that listener comfortable and optimize speech, but also to reduce listening effort. And there was a great study done that really took a look at the significant cognitive benefits of reduced listening effort, especially related to this feature specifically. So this is something that we're

really proud of. We really focus on, you know, having well researched features and knowing that they're going to accomplish what we say that they're going to for your patients. And this is definitely a feature that has truly been a leader in being able to not only deliver, you know, comfort for speech in a challenging environment, but also reduction of listening Effort, which I think is a real value.

We think about being able to deliver less fatigue at the end of the day. How, you know, beneficial that is to reduce that cognitive load for your hearing aid.

Now with the dedicated NPU and the DNN processing that's happening all the time with Edge AI, we are seeing, you know, great results with this and especially when we think about that speech and noise type of concept. So we talked a little bit earlier about that 30% more accuracy in terms of identifying speech. That's what that DNN being incorporated. We're making even better decisions with our speech and noise algorithm than ever before before.

The quiet feature is doing its work by managing those soft sounds that may fall below the WDRC compression knee point and keeping those from becoming bothersome. This could be things like the refrigerator hum, you know, maybe even the turn signal on a car, for example. So the things that are soft enough not to trigger that compression knee point, but, you know, there may be a real awareness from that hearing aid wearer's perspective of those sounds. And so this gives us a way to keep those soft sounds soft in the environment and make sure the hearing aids are quiet in a quiet environment. So again, you know, we know that we have a range of adjustability depending on the tier of technology that will allow us to adjust this feature.

And, you know, it's a feature that I think is really valuable, but there are individuals that would like to hear a little bit more of, you know, that environmental sound around them. And that would be something we would do, you know, an adjustment by moving to the left and reducing the aggressive adaptation, or if somebody's really bothered by those sounds, we in the top tier technology can increase that

expansion all the way up to the maximum.

Next we're going to take a look at our situational algorithms. Of course, these are ones that are designed for specific types of situational use and they're going to be the transient algorithm, the binaural wind and binaural machine noise. The transience is really designed to combat those sharp, sudden sounds, things like a door slam or getting ice from a bin. We know that can be really loud with refrigerators sometimes. So the transient acts as a fast compressor.

So we can quickly adapt and reduce these bothersome noises that are so sharp and sudden. The transient noise reduction is really attenuating those in a level dependent manner. And more attenuation is actually being applied in a quieter type of environment, and less attenuation is given in louder environments. And that's, you know, expected because, you know, we also have other things going on that are probably dampening the perception of those sharp sudden sounds when there's other noises present. So transients is something that I think is really important.

We think about user comfort, especially when you are in a comparatively quiet environment and somebody slams a door or clapping begins to happen. Those things that are really kind of sharp and jarring. That's what this feature is designed to focus on. As with all of our other algorithms, they are going to be tier dependent in terms of the range of adjustability that is offered. The default being in that third for the premium technology with that ability to again go to the right to make it more aggressive in reducing those transient noise impacts, or to the left to make that less aggressive.

Our next algorithm is going to be the wind algorithm. This is designed to keep your hearing aid wearer comfortable when they are out in a windy type of environment. We know that turbulence across the hearing aid microphones could be loud and you know, really have, have a negative impact on sound quality when you are out in those type of environment. Environments, particularly if the hearing aids are in directional mode. So the wind algorithm is designed to keep them comfortable when they are outside

in a windy type of environment.

So when engaged, the wind algorithm is going to reduce the gain typically in the first three channels. This is where most wind energy dominates, and force the hearing aids into an omnidirectional mode. So you'll see that as we move through those levels of adaptation, the default for the top tier technology is up to 26 decibels, which is quite significant. And we, we have in that premium level the capability to actually increase that to up to 35 decibels. So very aggressive wind adaptation is possible in that premium technology.

For all of the technologies. We've actually made improvements to the wind noise algorithm so it's automatically detecting and adapting faster than ever before. And also more sensitive as it's making those adaptations so designed to really deliver that great performance in those challenging outdoor type of environment environments where wind becomes a problem.

The machine noise adaptation is designed for comfort. For loud, steady state types of noises. This could be things like blenders, vacuum cleaners, or any type of, you know, really loud types of machinery that have that steady state type of signal that differs so greatly from a speech signal, which is highly variable.

You know, as with all of our other noise reduction features, we have the defaults that, you know, start, you know, lower for our lower tiers of technology. And that ability to have greater flexibility in terms of adjustment increases as that technology tier increases. As well to a maximum with our premium technology of up to 22 decibels for that machine noise type of input.

I'm going to give a brief review of our directionality options that are available with our technologies that offer directional microphones. We have two categories essentially, automatic and fixed. A fixed directional setting means that when I am in a program that has been designated as omni or directional,

I'm going to be in that mode until I change to a different program. Now the automatic mode will have the capability to be able to make a smart decision based on the signal noise ratio in the presence of speech to switch into directional based on the choice that we have made as a professional for programming a particular program in the technology. So just to break these down a little bit more further, of course we know with omnidirectional we're getting that input from, you know, all of the microphone sensitivity.

All angles are going to be incorporated. We have no directional being applied. Applied. The other fixed option is going to be a fixed directional setting. This is going to be a fixed hypercardioid microphone response.

So we're going to be getting that primary microphone sensitivity from the front of the patient and the attenuation to the side and particularly behind that individual. So the fixed options, again I designate a program as omni or fixed directional. And when that patient is in that program, that's the behavior that will happen until they change to a different program. Now the automatic options again are going to make that smart decision about where to go. And the, you know, the most common choice is going to be the adaptive directionality.

This will be the default for most of our programs because it's using a multi channel adaptive null steering and speech ID to identify where speech is around that individual, protect that and reduce noise anywhere that is around that individual. So it's got that 360 ability to be able to identify where the speech is, focus on it, and also shift that null and attenuate the noise wherever it is as well. And we've been able to identify that this can prioritize conversations with up to 6dB of speech enhancement so your patients can be able to hear better and participate in conversations regardless of where that is around the individual. The other option in terms of the automatic is going to be the dynamic. And this is going to be making a smart decision to go into the directional mode based on the signal to noise ratio and speech.

But when it does, it will be that fixed cardioid type of pattern. So it doesn't have the null steering like the Adaptive does, it's going to take on that same sort of microphone behavior as that fixed directional hypercardioid response.

Now, I think one of the best things to keep in mind is that as Starkey is designing our technologies and the software and the environmental outcomes algorithms, you know, we want the, the best fit from the first fit. We know that, you know, fitting hearing aids is quite complex in today's world. And, you know, we want you not to have to make a bunch of programming changes to get your patient to that satisfactory experience. And I think the good news is we can see from this information that the sound manager defaults are really quite effective. 85% of professionals leave the sound manager settings at the default, and 99% of professionals do not have to any changes to the directional setting.

So, you know, that typical default of that adaptive directionality has been really, really effective in terms of, you know, leaving the directionality alone, letting the technology do its work to deliver that best experience for your patient.

Now, all of the algorithms that I've been discussing that are found on the sound manager screen with our Edge AI technology, there's up to 20 million adjustments that's possible, possible per hour. And the hearing aids are having conversations about each of these algorithms and directionality every 6 milliseconds. And that's designed to give that effortless hearing experience at any moment that your patient changes from one type of environment to the next. So there's a lot of work that's happening behind the scenes with all of these different algorithms and the directionality at any given moment for your hearing aid wear, which I think is truly amazing to think think about.

I think it's really important when we think about Starkey sound management system and how it's evaluating the surrounding environment, what's happening around that hearing aid wear and that every six millisecond, you know, decision making that's going on, if any change is necessary to really optimize

the hearing in that particular moment. So I think it's important when we're thinking about that discrete adjustability across more channels and a greater level of adaptation as we talked about being available at a more premium tier of technology that gives us, you know, that ability to be able to have more flexibility to deliver a, you know, even better experience for our hearing aid wear depending on their technology needs. So it's really important, I think if we break this down from a per channel basis to see what's happening as those hearing aids make those every 6 milliseconds decisions. And if we look at, you know, in this case the 24, we can see there's a lot, you know, of independent adjustability that's possible at any given moment. If we go to the next level of technology in the Edge AI family, which is the 20 level with 20 bands and channels, we're going to see that we, you know, now have 20 channels to work with.

And so there's going to be a reduction in the adjustability in terms of the, the channels, of course, and then we also have less flexibility in terms of those sound manager settings. I start at my default and I can reduce the adaptation, but I can't increase it. So it's important to keep that in mind as you're talking about technology levels with your patient. And finally, in looking at the entry level of the Edge AI technology, the 16 tier, we're going to see that we have again, 16 channels of adjustability. And my algorithms are going to be on by default and I can choose to turn them off, so I don't have a range of adjustability.

So it's important to keep this in mind when we think about a patient's lifestyle and, you know, their noise management needs as we're making those, you know, decisions about technology for them and also thinking about some of the other tools that we may have at our disposal. And one of those tools from a Starkey perspective, is going to be a feature called Edge Mode Plus.

This feature is really my Starkey favorite feature. It is one that is designed to improve the listening experience by giving that patient an easy, on demand way to be able to enhance speech understanding

and listening comfort in those extra challenging instances and to do that without the need of a manual process program. So I like to think of it as our SOS button. When a patient needs, you know, extra comfort or extra clarity in any situation, they simply engage the feature. So you can think of it as them taking you, the provider around in, in their pocket.

But it really goes beyond what is possible with the signal processing in the sound manager screen, the gain adjustments, and, you know, gives us something that can, you know, be even more aggressive than you have the capability to program in that particular particular moment. The Edge Mode plus was really one of our first incorporations of DNN or deep Neural Network technology in our products. But now it's an extra layer of DNN in addition to that, always on dnn, working with Edge AI. And so that's something that makes it truly unique. This feature was designed as a kind of a fixed setting.

Once it was engaged, the patient would have those settings that were designed to optimize that moment in time. Time. So when that moment changes, say example I go from a restaurant where I engage the feature to go get out of my car and drive home. The situation is no longer the same. So I would be best served by disengaging the feature and then re engaging it on an as needed basis.

So it was designed to be an I need help button when you need it. Now we had a lot of interest in why can't my patient be in Edge Mode plus all the time? We don't always need to be in a more aggressive state. That could be too much in some situations. But we wanted to of course, you know, respect what you know, the wishes of our customers and their patients might be.

So with our 24 level of technology we've introduced automatic edge mode plus. Once it is engaged, it will continue to, you know, evaluate by scanning, adapting and optimizing the environment for that where as that changes. So in my example of the restaurant, if I engage it in the restaurant and then I get in the car and maybe it's particularly noisy, you know, because I've got the top down or something, you know, it's going to adapt to that situation and then as well as I go home to my office or wherever my

get wherever I may go. So it really kind of, you know, speaks a little bit to that. Why can't I be in Edge Mode plus all the time?

You could engage it at the beginning of the day and let it move throughout you, you know, throughout your day with you and you would have somewhat of that sort of always on kind of capability with it. You still need to engage it, but once you do, you go throughout your day and you know, all you're really thinking about is I'm hearing better in whatever environment. Now the tier technology differences for Edge AI and Edge Mode plus specifically are going to be. I've got the most tools at my disposal in the 24 level of technology because I have a number of ways that I can engage it via the patient driven controls on the hearing aid as well as a remote control. And then within the app I'll have a range of adjustability as well as well and the ability to not only engage Edge Mode plus but also enhance speech or reduce noise if I want to shift that focus the way I want it to be.

That same capability exists in the 20 level of technology via the my Starkey app and in the 16 level it's going to be at that optimized best sound for Edge Mode plus. But I don't have any further levels of adjustability in terms of steering my intent as the hearing aid. So this is something that is a really great feature and we've seen incredible results with this in terms of research when we think about improving word recognition scores and reducing listening effort. The Edge Mode plus feature and especially with the addition of the enhanced speech layer of that, have really demonstrated the power of it in terms of these factors of word recognition and reduction of listening effort effort. So next we're going to really kind of do a little bit of real world examination, you know, about patients and what you might recommend for a successful patient experience relative to the sound manager tools.

Our first patient is Chuck Taber and Chuck is actually a golf professional. He lives alone with his dog Trinity, and he's a golf instructor. He also works in the pro shop and he's finding that he's struggling to hear his patient and his patients, his customers as well as his students on the golf course course. So

sometimes, you know, when he's staffing the, the club, you know, the clubhouse, that can be a little challenging for him as well as when he's out on the course working with his students. So he is new to hearing aids.

You can see he's got kind of a nice, you know, general loss that looks like it should be relatively easy to fit with with Chuck. And here's our first interactive moment. So again, you can scan that QR code or go to slido.com to be able to join, join in. But as we think about the features that we've just been discussing on the sound manager screen, what do you think would be more important for Chuck's lifestyle? So, you know, select, you know, one of these choices, whether it's Edge Mode plus, motion based optimization, transients, quiet, could be all of those.

Or maybe we want to highlight a couple of things in particular, A and B specifically that might be more important as we're thinking about Chuck's technology option, when we think about those features and what we just talked about, I think in particular for somebody that, you know, leads a active lifestyle and is seeing the need in several different types of environments for benefit, that both Edge Mode plus might be a really valuable feature because it can become that custom setting in whatever moment I find myself in. And that motion based optimization could be really key that as well, because he is spending quite a bit of time outside. So A and B in particular, I think would be real key features. When we think about an individual like Chuck, when we think about technology tiers and somebody with Chuck's lifestyle And his needs in terms of his challenges. Which Edge AI technology tier do you think you would recommend for?

You know, Chuck, you know, I think that, you know, we've got some great choices there, but you know, when we think about somebody with the listening challenges that he's finding, the 24 level is going to give us the greatest level of flexibility. And as we look at the tiers and what our options are available, as well as, you know, what we discussed in terms of the level of adjustability I would have, that 24 level

really would be a nice option for him. And the 20, certainly as a fallback if that is, you know, something that we need to evaluate from a pricing concern. So as we think about, you know, Chuck, I think those are some great ideas to think about. A patient of that nature that's just getting started with technology, but what about somebody that's already been fit?

Our next patient is Betty Williams and she actually is a pottery artist as well as an instructor. She has been fit with the Edge AI20 micro rick technology. She's come back for a follow up appointment. We can see her loss there again, a nice gently kind of sloping loss. But she's indicating that the pottery wheel can be, you know, a little bit loud.

And you know, that's really impacting her ability to hear her students when that wheel is running. And of course, you know, that's the objective when they are there with her. So, you know, when we think about those features again, what would you think would be the best for Betty? And you can select all that might apply. So you can, you know, select more than one in this case.

So we've got things like quiet, that speech and noise algorithm, our situational algorithm algorithms, Edge Mode plus as an option. And also keeping in mind that she's in 20 level of technology, is that something that maybe, you know, we need to talk to her about what might be a better option for her, you know, with her needs and a different tier of technology that maybe wasn't addressed, you know, during that initial recommendation. So I see a lot of, you know, a lot of choices here. And I think, you know, the, the most important point with a patient like this is there are a lot of things that could factor. And she's finding difficulty with the machine noise.

So that certainly could be a valuable algorithm. Having that Edge Mode plus technology could be really nice. But one of the things that we don't have with a 20 level of technology is that automatic behavior. And that may be something that would be really important. We think about somebody like Betty because she is working with pottery, so her hands are going to be dirty and busy throughout the day

and she's not going to have the ability to make a change with a feature like Edge Mode plus or programs very easily, easily as she goes throughout her day.

So that would certainly be, I think, an important consideration early on when we were doing our evaluation to be what the needs might be where she might expect to have difficulty. And you know, talking about the importance of a technology tier that gives us more automatic behavior might be important because she can engage that 24 level technology in edge mode plus first thing, you know, in the morning and it would continue to move throughout her day so she wouldn't have to touch her hearing aids or the app to be able to make those changes as she would be required to do with the 20 level of technology. So definitely, you know, important considerations about understanding the patient's lifestyle needs and having those conversations about the technology recommendations that are going to be most suitable, especially when you have something, you know, as specific as somebody who either has dexterity issues or in Betty's case, you know, the job and the, you know, pastime that is going to maybe impact the ability to have direct contact with both an app and hearing aids. So really a unique situation, but one I think is important to keep in mind. Now our final patient is Susan Lee.

Susan is a hearing aid wearer that is a retired school teacher. And she was fit with Edge AI 16, Micro R Technologies and open earbuds, which, you know, not surprising thinking about the loss that we see represented there. She's coming back on follow up and indicating that during her weekly lunches with her friends, sometimes she doesn't hear like she thinks she should. So what might we do to approach Susan's concerns? You know, when we think about, you know, what she's presented to us, you know, I don't really hear like I think lot of a I should.

That's pretty broad. So you've got some selections here that you can choose from. What would you maybe do to approach, you know, what you think would be the next step for Susan? Give you a moment to kind of think about this. And you know, I think it's a really, you know, important, you know,

concern because it's one that we hear often as hearing professionals that struggle with maybe hearing people at another table better than the people at our own table or are there other types of sounds in that type of restaurant environment that really are at the heart of her issue.

So, you know, you've got a lot of different things to really consider here. You know, when she says, I don't hear like I think I should, that could mean a lot of different things. And so, you know, maybe we need to further identify what the real concern is. And then many of these options that are presented here could be possibilities. You know, Edge Mode plus could be a great option to use in that.

That case. It is smart, but it might not know who she wants to hear. And so it might be making a decision of focusing on somebody at another table who is more loudspoken. And that might be part of the challenge and concern that she has. So, you know, that restaurant program with a fixed directional setting could be really important in that type of scenario so that she has somewhere to go so that it does have a better, you know, focus.

Focus on who's across the table from her and the ability to attenuate those other tables that are found in that sort of space. So, you know, I think really digging deeper is probably first and foremost of, you know, what our next step should be. But then considering what other types of solutions make sense. If she's in a 16 level of technology, her edge mode plus is going to be more limited in terms of its functionality. So, you know, maybe an accessory like a table microphone or a remote microphone, microphone would be a really good solution in that type of scenario, especially if she's, you know, going out weekly with her friends and having a similar challenge whenever they do that.

So I think you've got a lot of things to consider here with an individual that presents with this type of concern and especially, you know, important to dig a little bit deeper and have them elaborate. And by asking the right types of second and third level questions, we can get to the heart of the matter and find out if it's the people at our table that she wishes she hears better or she wishes she didn't hear the

cutlery and the other background noises that are happening in the restaurant. And that's what's impacting her satisfaction. So I think the bottom line as a hearing professional is really to recognize when we need to ask for more information, dig a little bit deeper so that we can apply the appropriate solution. And that could be that we make programs, changes.

It could be that we make counseling recommendations about positioning oneself in a space like a restaurant. You know, could it be finding out, has she even tried a feature like Edge Mode plus, which her technology has, you know, to be able to get better performance in that environment. So, you know, you've got a lot of things to consider and Fortunately, a lot of great tools in the Sound Manager screen to be able to address needs for individuals like Susan. So as we move towards the conclusion, I just want to touch on a couple of Pro Fit tips that you might not be aware of before today. You do have a great help menu up there in the upper toolbar that is going to allow you access to a category called Help for Profit.

So when you tap on that option, you'll be able to, you know, access where we can drill down a little bit into Help for Profit. We can select a particular screen or feature. In this case we'll select Sound Manager since that's the screen we've talking about. And to be able to drill down into what a particular feature is doing or how we may want to address changes. And even access to some of the tools like our quick tips that might give us recommendations to handle a particular issue.

We also have a great area called troubleshooting. It's the little life preserver icon that's found in the left, you know, banner. So depending on how your screen is oriented, it will be vertically on the left or if you've pinned your screen so that your screen tools are there all the time, it will be in the horizontal orientation. But troubleshooting is where you can make the targeted changes to the hearing aids based on a specific patient comment or complaint and you can apply a correction automatically and then you can undo that change if the patient doesn't prefer that and choose to go a different current direction.

This is a great resource, especially when you're newer to our technology or you're learning how you might want to, you know, maybe make a change that, you know, maybe you don't see often, even though you are very experienced with Starkey software.

So this is a great way to really look at how we recommend resolving particular issues. And these were responses and solutions derived from, you know, researching with many professionals like you yourselves. So these are real world solutions. We also offer a tool called Audiology on Demand and this will allow you to connect with one of our remote audiologists or our technical support team to be able to get a quick solution, whether that is, you know, how I may wish to make a programming change for my, my patient, or whether you're having technical support issues with software or, you know, your database. That's something that they can assist you, you with.

So when you click on that icon, it's going to direct you to the information about how you'd want to connect. And that really starts with a phone call to Starkey to be able to connect it with a specific member of this team to provide you the pin for them to be able to connect into your system, see exactly what's going on. So you'll simply follow the prompts and you know, call into our headquarters and that will allow you access to this amazing group of individuals. They are ready and waiting to be able to provide you great assistance at any time Monday through Friday.

Now we also have some great resources that you know, I think can help kind of solidify a lot of the information that I've talked about today. Our quick tips are simple PDF step by step instructions for a particular feature for a particular screen or accessory. So these really are a great way to be able to get some detailed information in the moment and they are found through that help for profit. You can access those as well as our Starkey Pro website is an easy way to be able to get into the library of quick tips. We also have a variety of reports and they're not necessarily going to give you solutions for example, but they may be great additional resources for your records to be able to, you know, make

sure that you have all the information you or your colleagues need as you're working with your patient.

Now I mentioned our pro site starkeypro.com this is a great resource for everything Starkey, whether it's products or software. So visit starkey.com and you'll be able to access our research information, those quick tips that I mentioned as well as educational videos and further training opportunities for greater detail on particular Starkey technologies or features. So there's a wealth of information that is at your disposal with the Starkey Pro website. As we think about, you know, our role as hearing care professionals, it's really to ensure that our patients are going to be able to be connected and fully engaged in their lives and that really starts with better hearing and most importantly I think sound quality. Starkey delivers a full portfolio of hearing solutions that are going to allow you to have the leading edge of technology to be able to fit your patients unique needs and their unique lifestyles with products that are going to be incredibly durable, built to last, deliver industry leading battery life and allow them to access the sounds that matter most using the tools that we've talked about today.

You have a wealth of resources there in your Starkey profit software on that sound manager screen to be able to address any of those sound quality concerns that a patient may provide. I think the best news is very rarely are adjustments or very many adjustments needed. And so you know that's something we're really proud of. And I look forward to, you know, helping you to deliver the best experience for your patient when we think about sound quality and the sound manager screen. So I want to thank you all so much for joining me today and I look forward to seeing you again at a Starkey event in the future.

I appreciate your time and attention and participate, participation and have a great day. I'll end with the resources for any of the research information for this course, and you can access that as well through

your handout. So thanks and have a fantastic day.