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Edge Mode+: Better Hearing Has Never Been Easier

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All right, we'll go ahead and get started. It is the top of the hour. Welcome everyone to today's short course on Edge mode plus. My name is Doctor Amanda Wolfe, an education and training audiologist with Starkey. Before we get started, we do have a few housekeeping notes to take care of first.

If you have any questions that pop up during the next half hour, please feel free to use the Q and a feature for any of those questions. We should have a couple minutes at the end of today's course to answer any that are remaining as well. And then, as Anna said a few minutes ago, we do have the handout posted in the resources tab on your screen and that will also be available under pending courses on audiology online.

All right, well, I am really excited about this webinar today as it will cover the basics of Edge mode Plus as well as introduce some great new updates to this feature. So here are the learning outcomes for today. At the end of today's course, you will be able to list the products and technology levels that have Edge mode plus available, describe the patient benefits of Edge mode Plus, and list the listening intent options or otherwise termed patient driven controls available in the My Starkey app at Starkey, sound quality is job number one and we are continuously innovating to bring your patients their best possible hearing so they can go about their day with the peace of mind, knowing that they can connect with their family, friends, and community like never before. Starkey's Genesis AI launch a while ago, now marked all new everything and continues to exceed expectations as the leader in custom products. Starkey has always set the pace when it comes to fitting the best sound and most functionality and the smallest hearing aids possible.

Starkey Signature series, our smallest line of custom products yet, laps the competition once again. It gives you three one of a kind hearing aids that you can offer to truly wow your patients, differentiate your practice, and turn naysayers into converts. We continue our drive to deliver the most intuitive, convenient, and patient driven hearing products

in the industry, and we continue to be the best partner for hearing care professionals around the globe. Built off the industry's most advanced processor technology, our neurosound technology enables wearers to hear soft sounds without noise, distinguish words and speech more naturally, and significantly reduce their listening effort. Delivering 80 million hearing adjustments every hour, your patients can rest assured they will always experience crystal clear, transparent sound quality.

With neurosound technology, we have the ability to manage all the layers of sound within the environment faster and with even greater accuracy than ever before. Our artificial intelligence based sound classification system utilizes both slow and fast acting algorithms to maximize hearing benefits for all situations. Our speech and noise has been a true workhorse for our system because it reduces noise in between pauses of speech. Speech and loud noise delivers that binaural noise management and works with dynamic background noise to improve clarity and preserve spatial cues. The transient algorithm is designed to quickly attenuate those brief loud sounds that can be jarring or bothersome to patients, such as doors or drawers slamming shut, dishes clinking together, or even when various objects are accidentally dropped.

We also have slow acting management algorithms which are designed to address those more situational types of environments. These are our quiet or expansion algorithm, wind and machine noise, which are designed to increase listener comfort. Starkey's environmental sound classification strategies are adapting automatically every six milliseconds to continually optimize every setting for the patient, and the combination of fast and slow acting strategies allows for an authentic and natural sound quality in every environment. Neurosound technology uses a form of artificial intelligence called machine learning to classify sound, along with layers of noise management to prioritize the signal of interest. Working alongside our adaptive directional system, collectively, our automatic algorithms work together to deliver audibility and clarity for speech, superior sound quality for music, and reduced listening

effort in challenging environments by continuously pushing the edge of what's possible, Starkey will always be ten years ahead with groundbreaking innovations, and we know that sound quality is key when it comes to a successful experience with hearing aids.

That is why we have over 100 patents on features that contribute directly to sound quality. And while not the direct topic of today, our neurosound technology doesn't stop there. Comprised of our additive compression systems, wide dynamic range, and supported by our proprietary fitting formula and accurate environmental sound classification system I just mentioned, this is truly our best sound quality yet. But we know that listening environments can be very complex and that not only can there be many sound sources, the impression of what's a priority or an annoyance can vary moment to moment. Most modern hearing aids use an acoustic environmental classification feature to identify and classify the listening environment and automatically apply environment specific changes to gain microphone compression and noise reduction settings, as I've just described with neurosound technology.

But sometimes, as you all know, what the hearing aid can do automatically for signal processing and noise management may not be adequate to combat those particularly challenging environments, resulting in an unsatisfactory experience for your patients. This is where Edge mode Plus can really be a game changer for both you and your patients. Edge mode plus is Starkey's second generation intelligent on demand feature that instantly enables powerful speech audibility and noise management adjustments when patients need additional assistance in challenging environments. And by challenging, I don't necessarily mean noisy. I mean when they're watching tv, trying to talk to their grandkids at a family get together, talking with their spouse in a car, absolutely anywhere.

So why is a feature like edge mode plus important? Well, we know that listening in difficult environments remains a challenge for many hearing aid users. In fact, results from the Marktrac 2022 survey of over 1000 hearing aid owners highlight the satisfaction levels with various listening situations. And while majority seem to have some level of satisfaction with hearing aids, a good number of users are still not satisfied with situations like shopping, transportation, large groups, or speech and noise. Further, data obtained from a large majority of owners who got their hearing aids in the last five years, about one in four are not satisfied with what they're getting from their hearing aids.

In terms of the basic noise reduction capabilities, what makes edge mode plus unique is that when activated by the user, the hearing aid utilizes a sophisticated form of artificial intelligence called the deep neural network to classify the listening environment and apply specialized changes to hearing aid features beyond that available in default hearing aid settings to promote speech clarity and comfort. Specific classification and adaptation schemes were derived via machine learning and the use of a deep neural network in which models were trained on a large number of real life sound recordings and refined via input from both clinicians and listeners. Exclusive to wireless hearing aids for the 24, 20, and 16 technology tiers. One of our most popular features ever, edge mode plus instantly optimizes sound quality to that place and time for either clearer speech or improved listening comfort, providing a unique adaptation changing hearing aid gain, noise algorithm settings, and directionality more aggressively than what can be accomplished by the regular automatic environmental classification system alone. Once engaged, the adaptations are fixed or static until the patient disengages the feature.

This is a great tool to use for patients who may need extra help in those extra challenging environments. Professionals who have been using this feature thus far with their patients often say it's their easy button or it's their turbo mode for the hearing aid.

So let's take a closer look. Edge mode plus, when activated by the hearing aid user, prompts the hearing aid to classify the current acoustic environment and then applies additional specialized setting changes to noise reduction, directional microphone, and gain over and above those supplied by the traditional hearing aid processing. These specialized setting changes are specific to the listener's current environment. The unique adaptation is then fixed with optimal settings for that specific environment. Because of this, as the environment changes.

Maybe they move from a noisy restaurant to their car, for example, it is recommended they disengage edge mode plus, turn it off, and then turn it on again if they feel like they need it in their car on the way home again. Edge mode plus is available on all wireless 24, 20 and 16 tiers of Genesis AI hearing aids and is now available on the signature series, non wireless CICR and CIC battery operated products, which are all top tier 24 level technology. We just recently launched that line to support and encourage the use of Edge mode Plus on these non wireless signature series products. The CICR and the battery operated CIC will ship by default with a push button. The push button can be programmed as a short press user control for Edge mode Plus activation.

Now, since these are non wireless products that do not have that ear to ear communication like wireless products do, for the best patient experience, it's actually recommended. Edge mode plus is activated on each hearing aid as close in time as possible or simultaneously as ideal, just to ensure that the hearing aids take the exact same environmental snapshot. Since the launch of what I refer to as traditional Edge mode Plus, both patients and professionals alike have asked for it to be automatic so patients wouldn't have to remember to turn it off and then turn it back on if they want to reuse it in a different environment. Well, I'm thrilled to say that we have listened and delivered. Now, Edge mode Plus is automatic exclusively for the Genesis AI 24

technology with a firmware update previously fit, Genesis AI devices will need a firmware update with the latest profit version to benefit from automatic Edge mode Plus.

Otherwise, they'll be utilizing the traditional Edge mode Plus I just spoke about. So any new hearing aids of course ordered will come with that new firmware already and supporting this updated feature. So what does automatic Edge mode Plus mean? Well, when the user turns on automatic Edge mode Plus, the feature will now continue to scan, adapt and optimize as the wearer changes environments or as the environment they're in changes. Automatic Edge mode Plus has been the feature professionals and patients have been asking for.

It will provide smooth and seamless transitions as patients go about their day move from environment to environment. The only thing patients will know is that they're hearing in challenging situations more clearly and comfortably than ever before. So taking a closer look, the user will activate edge mode plus and they can leave it on as they change environments. So in the previous example I gave about going from a noisy restaurant to a car with the traditional or static version of Edge mode Plus, it's actually recommended, as I said, to turn edge mode off when they leave the restaurant and then turn it back on as they get going in their car if they wanted to continue utilizing the feature for that often challenging environment. But with automatic edge mode plus, the user can turn it on once and leave it on as they move from the restaurant to their car.

The feature will continue to scan, adapt, and optimize sound quality and comfort again as their environment changes throughout the day.

So, to reiterate, automatic Edge mode Plus is on all 24 level wireless Genesis AI products, from the CIC 312 to the RICC 312 with a firmware update.

Now you know what the feature is and how it works, but how do patients activate it? I've been speaking about patients turning it on and off for a little bit now, so how do they actually do that? Let's get into that. For our wireless products, Edge mode Plus will automatically appear on the homepage of my starkey as you see here for compatible technology tiers, tapping the icon provides a quick and easy way to activate edge mode plus for many people. And this is actually Edge mode Plus.

It's going to be a global term I'm going to use to refer to both edge mode plus and automatic edge mode plus. So even if somebody had automatic Edge mode Plus, their icon in the app would still say edge mode plus.

So if your patient activates edge mode plus through the app, the top two tiers have the ability to further personalize edge mode plus settings through what we call patient driven controls or listening intent controls. When hearing aid algorithm developers are working on hearing aid features such as noise reduction algorithms and classifications, they really have to think about what to do to satisfy the majority of patients who want to hear in a given environment. Think of it as they focus on making, say, 90% of the people happy 90% of the time. And this is because these classifiers or algorithms have to make assumptions about what the listener wants to hear. Our patients are still human, after all, and even the best predictions will miss sometimes.

It's also the case that even assuming identical conditions, some patients just struggle more than others and need more assistance. So this ability for the hearing aid user to actually choose their own listening intent truly optimizes those hearing aid features for that preferred outcome. So once the edge mode icon is tapped, patients will see a screen that says best sound, enhance speech, and reduce noise.

Best sound is the default setting of edge mode plus and is what edge mode plus thinks are the best settings for that environment. However, if a listener wants to hear speech

more clearly, they might select enhanced speech, or they might select reduce noise if they want a little bit more noise reduction. They can even go a step further and select adjust sound manually, which opens up an equalizer where they can adjust bass mids and treble plus. They can even save these edge mode settings as a custom program for future use. So if we think about the evolution of hearing aids, when patients first had the ability to manually switch between omnidirectional and directional microphones to where we are today with machine learning and artificial intelligence, we've certainly come a long way.

These different options and customization of edge mode plus can help shape your technology level recommendations for your patients. So again, while the top three tiers of Genesis AI have edge mode plus access via the mobile app, remember just the top two have those patient driven or listening intent controls of enhanced speech or reduced noise. The 16 level of technology does not have those patient driven controls and will simply offer an on off functionality. Still with that equalizer option and the ability to save the settings as a custom program.

For those that would prefer other ways to activate the feature, the remote controls favorite button may be programmed within profit on the accessory screen to turn edge mode on and off. So this is a great option for those that don't wish to use the Miser key app at all, or those who may want a more discreet way of adjusting their hearing aids rather than needing their phone. And for the 24 level of technology, it gets even easier. For these products, you can set up a short press user control, a really quick and easy way to turn on and off the feature. Or for the Genesis devices which have, excuse me, that built in sensor, the double tap user control may be programmed as such.

In that case, patients simply just need to tap twice on the body of the hearing aid to activate that sensor and thus edge mode plus.

There are many benefits to using edge mode plus over traditional hearing aid processing methods, one of those being the on demand capabilities that give your patient the control and they don't have to guess or remember which hearing aid program you told them to switch to for which environments. I think we've all had those patients with whom we fit with the hearing aid and we start talking about adding in additional hearing aid programs and their eyes kind of glaze over, right? Or they come in for a follow up and they say they struggled an XYZ scenario. You ask if they tried a different hearing aid program and they say, oh, what's that? Well, edge mode plus can be thought of again as that easy button.

Like any user control, all your patient has to do is remember to turn it on when it's needed. Also, recall that this feature applies additional specialized setting changes to noise reduction directional microphone and gain settings over and above those supplied by the traditional hearing aid processing, or what can be achieved through adjustments in the Mysarchy app. In other words, even if you had a hearing aid program set to all of the noise reduction features, maybe say we're at maximum edge mode plus, it's capable of being even more aggressive than that maxed out program. So let's look at some data. One goal of edge mode plus was to improve user outcomes like speech understanding and listening effort in the most difficult listening scenarios, while also adjusting for the listeners for the user's listening intent.

So this particular study assessed whether the edge mode plus enhanced speech setting improves listeners speech recognition and noise. So twelve experienced hearing aid users wore starkey. Genesis AI 24 received run the Canal devices programmed to Starkey's proprietary fitting formula, ESAT 2.0, with audiometrically appropriate occluded earbuds or earmolds. In general, participants had sloping mild to moderately severe hearing losses, and their average age was 71 years old. For this experiment, the participants task was to repeat sentences presented in the context of a real life recording of Russia noise.

So this noise was unique in that it included several noisy distractions that would be typical in a restaurant setting, people talking in the background, radio music playing, and clattering dishes. The target speech was always presented from the loudspeaker directly in front of the seated participants, so the speaker in green, while noise was presented from the seven loudspeakers surrounding the participant, the speakers in red, the restaurant noise was presented at 63 dBA, and the level of the target speech was individualized for each participant. Specifically, speech was presented at the level needed for that participant to achieve approximately 70% correct speech recognition while listening in that restaurant noise with default hearing aid settings. So this level was chosen to ensure that the listening task was neither too easy nor too difficult for each participant, so a brief pretest was administered to determine each participant's individualized target speech level. The target speech was lists of IEEE sentences spoken by a female native speaker of American English, and after each sentence, participants repeated what they heard and were scored on the number of keywords reported back correctly.

Participants performed this speech task twice, once with default hearing aid settings and edge mode plus turned off, and once with edge mode plus on. With that enhanced speech enabled and, of course, the order of the testing was randomized and the participants were blinded to which condition they were being tested in. So in the default hearing aid settings condition, participants on average recognized 62.6% of the speech in restaurant noise. However, when edge mode plus with enhanced speech was enabled, speech recognition improved by about 10.7 percentage points to 73%, which was a statistically significant improvement. Thus, enabling edge mode plus and enhanced speech allowed participants to understand significantly more speech in a realistic, noisy background.

Now, as I wrap up today, I do want to mention some details you may find helpful as you start or continue to utilize edge mode plus with your patients. First of all, it is available in all acoustic programs. So programs that utilize the hearing aid microphones is what I mean by that. Also, again, no matter how you have your patient programmed in profit, this does not limit or hinder the capabilities of this feature. And for those of you fitting Genesis cross devices, it does work on that cross receiver.

In all products, Edge mode Plus is not available during streaming, either with a smartphone or with a wireless. So this would include when using a telephone program such as that ear to ear phone streaming, when one ear sends the landline signal to the other signal and they hear binaurally. That's what I refer to as earphone streaming. Or of course not applicable when using a telecoil either. So now kind of on the topic of phones, if, say, your patient is using edge mode plus and they get a phone call, or they start a stream from an accessory, edge mode plus, excuse me, will turn off and then it will resume when the streaming ends.

However, if they're using that, I call it like the landline ear to ear phone streaming program that you as a professional would need to enable within profit.

And Edge mode Plus is on, and that ear to ear streaming begins, Edge mode Plus will turn off, of course, and will not turn back on after that phone stream itself is complete because we're not quite sure what the patient wants to do. So a little different behavior there I wanted you to be aware of. In addition, Edge mode Plus will also turn off if your patient changes their hearing aid program, of course, turns their hearing aid off and on, or if auto sleep, which is the new name for the former auto on off feature, is activated.

So I wanted to end with a couple of frequently asked questions we usually get about edge mode plus. At this point, some of you might be asking, okay, well, if edge mode plus is so fantastic and provides so much benefit, can my patients just turn it on and

stay in it all day? Or in other words, if edge mode plus is so great, why isn't this just your normal processing behavior of starkey hearing aids. Well, recall that the feature is capable of making aggressive changes to hearing aid settings, and patients likely will not need those aggressive settings in every environment they're in all day long. Therefore, while they can remain in edge mode plus all day, it doesn't mean they should.

At the same time, this is not Starkey's default processing behavior, because it has the potential to be so aggressive, and patients likely don't need those aggressive settings all day long. Also, while automatic edge mode plus continuously scans and adapts to the patient's environment, the patient's listening intent may change throughout the day. So, for example, if they were listening to edge mode plus and they selected the listening intent option of enhanced speech within the mobile app, but then they moved to a noisier environment, automatic edge mode plus would continue adapting, of course, but maybe the patient's not perceiving still enough benefit, then in that case, we would recommend they disengage and reengage the feature just to get a fresh new scan, and maybe even then select that reduce noise option if they would like. So on the bright side, if the patient does opt to stay in edge mode plus settings, either on purpose or maybe they forget to turn it off, having the feature on does not have any appreciable impact on battery life, no matter how long the feature is used. So you and your patients can rest easy knowing you won't have any mystery battery life issues to figure out.

So the other question we often get is, how is edge mode plus any different than a regular hearing aid program? So again, think of edge mode plus as your turbo mode, and it again, regular hearing aid programs are great. They provide a modified frequency response suitable for a specific environment, and may also even provide that aggressive noise reduction or a different directional response. But they're kind of static

in the environment that they're doing. So if you program in a restaurant memory, it's going to reduce gain in the mids and highs.

But really, the noise reduction features in that memory are pretty much the same as what's in the personal program, and those settings are going to be the same pretty much if they use it at Applebee's at 06:00 on a Friday night or at egg and I on a Sunday morning at 07:00 a.m. Whereas edge mode plus is capable and more limitless, if you will, of making those aggressive changes, making those more unique adaptations than a regular hearing aid program.

So at Starkey, you can really count on us for the kinds of innovations that make your job easier and your patients lives better. Edge mode plus is truly that feature. An artificially intelligent, driven on demand feature provides another tool in your tool belt for patients who may struggle from time to time with those default hearing aid settings. Think of it as your patient's easy button, a hearing aid turbo mode, a true industry game changer. To take a deeper dive into all things edge mode plus, visit starkeypro.com for access to the feature summary and a very recent research based white paper that goes into more details about the proven benefits of this feature.

And to learn more about Starkey's latest technology, I encourage you to register for more audiology online courses about Genesis AI. Here's just a snapshot of what we have to share with you, and stay tuned, of course, for more courses to be added as we make our way through 2024. And as always, if you would like more one on one training with Genesis AI, please contact your sales rep to help set up a time with an education and training audiologist in your area. Thank you so much for your time and have a great rest of your day.