Tinnitus Management Like No Other, From No-One Else

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- [Instructor] Welcome to Tinnitus Management, like nothing else, from no-one else. My name is Dr. Andreas Hannan-Dawkes, and I'm a member of the education and training team at Starkey. I'm delighted you've elected to join me today to learn more about Starkey's new Multiflex Tinnitus Pro feature. Before we get started, there are a couple of housekeeping items to cover. I'm talking now, so hopefully you can hear me. If you have any technical difficulties, please stay logged on and call Audiology Online at +1 800-753-2160. They'll be able to troubleshoot whatever issues you might be having. I do know that the most common cause for technical problems is having other software or applications running at the same time that you're watching this class. So you might wanna take a minute to close down any other programs you're running. But again, if you have any technical difficulties, please contact Audiology Online, so you can fully participate in today's session. This course is available for one CEU hour or 0.1 CEUs. In order to get credit, you must stay logged on for the entire session. Attendance is monitored, then complete a short quiz, comprised of 10 multiple choice questions. For reference the quiz is available 15 minutes after a live course presentation, simply log into your AO account and the quiz can be accessed under your pending courses. You should also receive an email from Audiology Online within the next 24 hours with a link to the quiz. You have seven days to complete the quiz when viewing live courses and 30 days when viewing recorded courses. A PDF of this presentation is available for you in the file share pod found in the bottom left corner of your viewing area. So go ahead and download that if you would like. The chat box on the left can be used for questions. I will stop periodically to answer any questions you may have, so feel free to enter anything there that you'd like me to expand upon. And then finally, you can use the icon in the top right corner of the screen with the four arrows heading out in different directions to enlarge your viewing area. Learner outcomes for this course, as a result of participating in this course, you will be able to describe what sound therapy stimulus options are available with Multiflex Tinnitus Pro. You'll be able to explain how to use the Multiflex Tinnitus Pro wizard to create a personalized tinnitus stimulus. And you'll be able to explain how to adjust a tinnitus stimulus in the Inspire software. And

with that, I think we are ready to get started. So we're very excited to introduce Multiflex Tinnitus Pro with this technology release. It truly provides one of the features that is providing that unmatched fitting experience on every level. So it's joining REM Target Match and also live sessions synchronous remote programming at truly making our software and fitting our hearing aids, something that is easy, streamlined, and truly again, an unmatched fitting experience on every level. So, when it comes to our senses, we all have our own personal preferences and these preferences are shaped by years of life experience. Let's take just a minute and have a little bit of fun with the concept of personal preferences as they relate to our senses. So if you had to choose between these two items, which one would taste better to you? Are you more drawn to something salty or something sweet? Which one of these two do you think smells better? Lilies or the ocean? When it comes to our sense of touch, which one of these would feel better to you? Very fine, soft sand or satin material? And then finally consider which painting you find more visually appealing. Do you prefer the one on the left or the one on the right? The point of this activity was to demonstrate that when it comes to our senses, we all have personal preferences, which are sometimes shaped by years of experience. As hearing healthcare professionals, we deal mainly with the sense of hearing, of course. On a daily basis, we work with patients to meet their hearing preferences and their needs, and we often spend time making fine tuning adjustments to shape how hearing aids sound and function. How many times have you had the same exact sound quality complaint, but have had to address it differently from one patient to the next? And the same thing can be said for patients with tinnitus, right? So tinnitus is the perception of sound when no actual external noise is present. It's commonly referred to as ringing in the ears, but it can present in many forms, including buzzing, hissing, clicking and roaring to name just a few of the different possibilities. And it could be a temporary or ongoing health challenge that can be very difficult to live with. Tinnitus is one of the most common health conditions in the United States. The US Centers for Disease Control estimates that nearly 15% of the general public, or over 50 million Americans experience some form of tinnitus. The exact

physiological cause for tinnitus is unknown. However, tinnitus research has consistently shown several likely sources that trigger tinnitus. The most common include noise trauma, which can occur from repeated unprotected exposure to loud sound over a period of time, like from working in a factory, construction or lawn care and landscaping, or from a onetime exposure to a close range, loud sound like a gunshot, firecracker or explosion. Hearing loss, which can occur for a number of reasons and is commonly associated with tinnitus. Although it's important to note that not everyone with hearing loss has tinnitus and not everyone with tinnitus has hearing loss. Another cause for tinnitus is a head or neck injury or trauma. Individuals often report the onset of tinnitus, following a head or neck trauma. In addition, it's very common for those who have temporomandibular joint disorders or TMJ to experience tinnitus as well. In addition, there are a variety of diseases and health problems that can trigger the onset and persistence of tinnitus. Some common ones include cardiovascular disease, hypo or hypertension and multiple sclerosis. And then medications as well. Tinnitus is cited as a potential side effect for over 500 prescription and nonprescription drugs. Medicines known to trigger tinnitus include aspirin, antibiotics, loop diuretics, chemotherapy, and antiviral drugs. So let's take a closer look at each one of these now. Individuals who sustain or experience some form of head or neck injury often report that the onset of tinnitus, or I should say, onset of tinnitus following the incident, and that could be very bothersome. Common head or neck traumas include a skull fracture, whiplash, a blow to the face or head and individuals who have TMJ or other jaw related problems are more prone to tinnitus as I mentioned earlier. Research indicates that individuals whose tinnitus arises from head and neck injuries, typically seek medical attention sooner than other tinnitus patients. And a possible explanation is that the head and neck trauma patients typically estimate the noise level of their tinnitus to be louder and suffer more daily problems because of their tinnitus. Several disease or health problems that are not directly related to the auditory system or associated with the presence of tinnitus, the exact mechanisms of how these conditions may cause tinnitus is not entirely understood, but some of the

most common examples include, cardiovascular disease, hypertension, thyroid problems, fibromyalgia, depression and diabetes. Another very common source, actually more than we even probably realize are the certain or the use of certain medications. And as I said earlier, there are over 500 over the counter and prescription medications that cite tinnitus as a side effect. Not every individual will experience these side effects and typically most people do not develop tinnitus. In cases where it does occur, tinnitus may be temporary or permanent. Often we see that tinnitus subsides within a few days or weeks after patients have stopped taking the drug, but there are no guarantees. Typically drug induced tinnitus is reported as a continuous high pitch sound in both ears, but a variety of descriptions have been reported. Some of the most common medications that can cause tinnitus include antibiotics, like amino glycosides, gentamicin and tobramycin, painkillers and anti-inflammatories, like aspirin and ibuprofen, chemotherapy drugs like cisplatin and diuretics like furosemide. This probably comes as no surprise, but noise is by far the most probable cause of tinnitus for the majority of our patients. And it may or may not occur simultaneously with hearing loss. A noise trauma can be due to repeated unprotected exposure to loud sound over a period of time or from a onetime exposure at close range to loud sound. The tinnitus that results from noise exposure, can occur suddenly or very gradually. When it occurs suddenly it's often perceived at a fairly loud volume and may persist at that level permanently. However, for some, the tinnitus is temporary and does not return. More commonly the onset of noise induced tinnitus is gradual and intermittent in its early stages. Patients report hearing a mild form of tinnitus for a short period of time, following exposure to loud sounds. Once the patient is removed from the noise source, the tinnitus soon diminishes and is inaudible until the next exposure. The intermittent pattern often continues for months or years with the periods of tinnitus becoming longer and longer until eventually the tinnitus is constant. We all know that noise trauma can lead to hearing loss, but we also know hearing loss can happen for a variety of other reasons. There are a number of auditory pathologies occurring throughout the auditory pathway that are associated with the report of tinnitus. So

while patients with tinnitus often have some degree of hearing loss, there are many who don't, just like many patients with hearing loss don't necessarily experience tinnitus. However, tinnitus is more prevalent among those with hearing loss than it is in the normal hearing population. When we look at factors such as severity of hearing loss, type and cause of hearing loss or onset of hearing loss, tinnitus seems to be a free agent. It can occur with any degree or type of hearing loss with any cause or type of onset as well. The severity of tinnitus is not related to the severity of the hearing impairment. Also, changes in hearing loss and changes in tinnitus, seem to occur independently of one another. The tinnitus can increase or decrease without any change in hearing, and the hearing can get worse, but the tinnitus could remain unchanged or even seem to fade. When we look at patients hearing thresholds with respect to how tinnitus is affecting them, research has shown that there is no correlation between tinnitus severity and hearing thresholds. Here you see tinnitus symptom severity as measured by the tinnitus handicap inventory plotted relative to the best hearing thresholds, and the results are all over the board. This tells us that the audiogram really can't in any way predict just how impacted the patient sitting across from you may be. Research does tell us though that regardless of age, as hearing loss increases, the likelihood for tinnitus also increases. This information may be useful for encouraging patients to continually use hearing protection when appropriate. In addition to multiple causes for tinnitus, a variety of other things can also aggravate or exacerbate tinnitus, things like alcohol, aspirin, caffeine, noise exposure, we mentioned, stress and anxiety and even salt. There is no cure for tinnitus, but it can be managed. Management falls into three categories, amplification, counseling and sound therapy. Sound therapy involves the use of external noise to alter the perception of tinnitus or a person's reaction to it. The American Tinnitus Association defines sound therapy this way, it involves the use of external noise in order to alter a patient's perception of, or reaction to tinnitus. Like other tinnitus treatments, sound therapies do not cure the condition, but they may significantly lower the perceived burden and intensity of tinnitus. A helpful analogy for sound therapy involves lighting a candle in a

lighted room versus lighting the candle in a dark room. The flame of the candle is very bright in the dark room, but once it's moved to a well lit room, while you can still see it, the flame becomes much less noticeable and bright. In essence, tinnitus is most noticeable when there is no environmental sound. This can make it difficult to function in a quiet room or for many to fall asleep. Patients will ask you and any healthcare provider they interact with, if there's anything that we can do to make their tinnitus stop. Because there is no cure, many healthcare professionals will often tell the sufferer that they have to learn to live with it. That however is not what patients want to hear, especially since they probably have already tried to live with it, have not been successful, and that's why they're seeking help. And that's where Multiflex Tinnitus Pro comes in. It Starkey's next generation feature for sound management, which extends the flexibility of our tinnitus technology with the addition of two new signals, audiogram-shaped and custom. Which will be available in all styles of Livio Edge AI. There is also a hearing aid performance update available to make these new signals available in devices already in the field. Multiflex Tinnitus Pro resides where you would expect it to in the Inspire software on the tinnitus screen. The dropdown menu allows the stimulus type to be chosen and all options offer a 10,000 Hertz bandwidth with 16 bands of adjustability. Let's take a closer look at each of these options now. White noise is the original Multiflex Tinnitus Stimulus and is available in all styles and technology tiers of Livio Edge AI, Livio AI, Livio and older products. The signal is based on the pure tone average, and provides equal energy distribution across frequencies. The challenge with this stimulus is that a flat response may sometimes result in segments of the stimulus being too loud or too soft, especially with a sloping hearing loss. Then interactions are accounted for in the real ear response, and the stimulus is adjustable. The new audiogram-shaped signal uses the patient's entire hearing loss to shape the stimulus. This eliminates the possibility that the signal will be either too loud or too soft in certain frequency regions and helps account for things like loss of low frequency sounds due to acoustic leakage. Stimulus gain is calculated in each channel with consideration for the hearing loss and coupling. And the new custom stimulus

allows custom shaping of the Multiflex Tinnitus Stimulus for a personalized signal with a greater degree of precision by using the audiogram and the patient's personal preferences and perceptions. Here, you can see the differences in the three signals for the same hearing loss, and some of the differences are significant. Now let's focus on how a custom stimulus is created. Personalized shaping of the Multiflex Tinnitus Stimulus is accomplished using the Multiflex Tinnitus Pro tool, which is a research based approach to improving the efficiency of the masking signal. The tool measures minimum detection levels and minimum masking levels to achieve personalized shaping of the tinnitus stimulus. To create a custom stimulus, go to the tinnitus screen in Inspire and click on stimulus personalization. Be sure to make any necessary changes to acoustic options before running the tool because they can't be changed during testing. Here you see the Multiflex Tinnitus Pro tool display. At the top, we can see the active frequency regions. The bottom left, we can see the instructions for the task, and in the center at the bottom, we can see the stimulus controls. The first measurement is the minimum detection level test. The goal of this test is to identify the softest detectable level of the Multiflex Tinnitus Stimulus. So first you'll click on the stimulus button in the bottom center to turn the signal on. The hearing aid microphones will mute automatically whenever the stimulus is on. Use the dropdown arrows to increase, I'm sorry, use the up and down arrows to increase or decrease the level of the stimulus in the frequency group displayed to identify when the stimulus is just detectable. And then use the right and left arrows to make measurements in other frequency groups. Frequency groupings are consistent with the low, mid and high band groupings in the Inspire software. And they are the same for every patient. Once minimum detection levels are measured for all three frequency groups, select next in the bottom right corner of the screen to advance to the next assessment, which is the minimum masking level test. The goal of the minimum masking level test is to have the patient identify the softest level of the Multiflex Tinnitus Stimulus required to just notice or mask the tinnitus, depending on the management approach of choice. You'll notice that the display and controls are the same for this test. This time we want to increase

the stimulus level to determine the softest level required again, to either just detect or mask the tinnitus for each of the three frequency groups. If the minimum masking level is not identified before the maximum stimulus level is reached, a popup will prompt selection of the could not test button with directions to move to the next frequency group. You can see that there. And then once testing for each group is complete, you'll select the apply button in the bottom right corner to end the test and apply the custom shape to the tinnitus signal. Recent research by Fournier and colleagues suggests that MDL and MML measurements can be used to rapidly design a stimulus that is both efficient and effective at masking tinnitus. To efficiently mask tinnitus, only one of the only those frequency bands that are effective at masking tinnitus should be included in the stimulus. And the level of the stimulus in the various band should be no greater than needed to achieve masking. Stimulus personalization testing in Inspire, typically only takes a few minutes and is less time consuming than tinnitus measurements like pitch-matching. There will also be two white papers in support of the process and the feature. And those will be posted to starkeypro.com when they are ready. In addition, research has shown that people who are actively involved in their health and healthcare, especially when it comes to the decision making process, tend to have better outcomes. This is consistent with the hearing aid literature, which reminds us that success with a hearing aid fitting will improve when the fitting is customized according to feedback from the patient regarding his or her individual preferences. And now let's go to the Inspire software so I can show you a demonstration of creating a custom tinnitus signal. So let me go ahead and change the screen over. All right, let me go ahead and log back in. All right, now we are in the Inspire software. Let's go ahead and get rid of that, there we go. Now you should see the Inspire software. You can see that I have a few memory environments implemented here and memory one normal, memory two, I have labeled as tinnitus, restaurant memory in three, and then the outdoors memory in position number four. So what we're going to do, I've got my tinnitus memory here, number two active it's highlighted in blue. So I'm gonna navigate to the left panel and I'm gonna select the tinnitus screen. All right, now that we're on

the tinnitus screen, you can see that the Multiflex Tinnitus Stimulus defaults off. What we can do here is use the drop down menu to select the signal of choice. So white noise, right? This is the original Multiflex Tinnitus Stimulus and is based on the pure tone average. Now next we'll select audiogram-shaped, okay? Audiogram-shaped tailors the signal to the hearing loss by using the entire audiogram. And then if I go down, if you can kinda make it out, the custom signal is actually grayed out. I'm unable to select it, until we've actually created a custom signal. And there's also a tool tip that populates that says run the tinnitus customization wizard to set the custom shape, okay? So to do that, what we're gonna do is navigate over to the left side and I'm going to select stimulus personalization. This is going to launch the Multiflex Tinnitus Pro tool. So remember that there are two tests that comprise the tool, the minimum detection level, and the minimum masking level test. So the first step is to complete the minimum detection level testing or MDL. So the directions for the test appear on the left side of the screen. The task is for the hearing aid user to identify the softest detectable level of the tinnitus stimulus and three prearranged frequency groups that are consistent with the way the hearing aid channels are organized on the tinnitus screen in Inspire. So what we're gonna do is navigate over here to the stimulus button bottom center, we turn the stimulus on by clicking on the stimulus button. You'll see that it turns blue. The hearing aid microphones will mute automatically when the stimulus is on, but you can click the speaker icon over here on the far left to unmute them to talk with the hearing aid user if necessary. So maybe you wanna clarify directions or answer a question, so that's one possibility. So we can click on the speaker icon to unmute the hearing aid microphones, click on it again to remute the microphones or another way to do this is to simply pause the stimulus. So if I click bottom center here, I click the pause button that will automatically unmute the hearing aid microphones as well, okay? So a couple of different ways to do it. Keep in mind it might be more efficient or helpful to pause, to use the pause button to unmute the hearing aid microphones again, in case you need to answer a question or clarify directions. When you use the speaker icon on the far left, the tinnitus stimulus is still

audible. So you certainly can talk with the hearing aid user, but they'll be hearing your voice and the stimulus at the same time. If you pause the stimulus, right? Then you take away that element. So it may be easier to communicate with the stimulus off than with it on, okay? So let's go ahead and turn this stimulus back on. You can see our first frequency group highlighted in the purple bars in the graph. And now what we do here is we can use the down arrow to decrease the signal level, okay? To find the point where the stimulus is just detectable. So that's the task we've presented to the listener. So let me go ahead and reduce this until we get to that just noticeable, just detectable level, okay? And now what I do is I use the right arrow to advance to the next frequency group. So you'll see that update here in the graphs, okay? So there's our second frequency group, same thing here, you need to turn the stimulus back on, all right? We're gonna go ahead and decrease to find that just noticeable level, use the right arrow to advance the last frequency group. Okay, turn the stimulus back on, and then find that just noticeable level as well, okay? Once we've completed the measurement for all three frequency groups, we go to the bottom right corner and we select next. And this is gonna automatically move us to the next test, which is the minimum masking level test, okay? That you can see that again, the display and controls are the same for this test, but this time the task is to have the hearing aid user identified the softest level of the Multiflex Tinnitus Stimulus required to just notice or mask the tinnitus, okay? Depending on the management approach being used. So for example, the goal may be to find a point where both the tinnitus and stimulus are audible, like when using tinnitus retraining therapy, or some may prefer to find a point where that stimulus provides complete masking of the tinnitus. So there's some very nice professional flexibility here based on how you want to use the tool and certainly in the way that you give the instructions to the patient. So I'm gonna turn the stimulus on with the stimulus button, okay? And this time I'm going to increase to find that designated level to meet that goal that I've defined. Okay, so we'll increase that a little bit, use the right arrow to advance to the next frequency group. I'm gonna go ahead and increase this one as well. Okay, there we go. And then the final group here using

the far right arrow. Turn the stimulus on, gonna go back up here, great. And I think I may have forgotten to turn the stimulus on for that second frequency group. So I wanna show you the flexibility here, I can use now the left arrow to revisit that second frequency group, okay? Turn this stimulus on. All right, and let's confirm, there we go, we're gonna go up one more step here, right arrow to proceed. Again, just showing you can use those right and left arrows to move between the different frequency groups to make measurements, okay? When we're all done, we're gonna use the apply button in the bottom right, but before we do that, I wanna point out those could not test buttons at the bottom of the screen, okay? So again, you would use those if you reach the maximum stimulus level before the hearing aid user has indicated the signal to be satisfactory. So you use those buttons if you can't increase the signal anymore. And then again, when we're done, we go ahead and click the apply button, okay? And that is gonna return us back to the main tinnitus screen. There we go, all right. So now you can see the stimulus that is populated here says custom, all right? It may be advisable to check the overall loudness level of the custom signal to make sure it's acceptable once those hearing aid microphones are back on. If an adjustment is needed, I would recommend using the all button down here, bottom center, okay? So I'm gonna click on all, you'll see that it selects all the different channels and let's expand that out so you can see all of them here. Okay, there we go. So the value in using the all button is that it's going to preserve the personalized stimulus shaping that was accomplished using the Multiflex Tinnitus Pro tool. So if for example, the patient found the signal to be just a little bit too loud, I could have her here and then use my down arrow to decrease the signal a little bit, okay? If you wanna go back to baseline measurements, you can go back or navigate to the far right side of the screen and hit target match tinnitus, okay? So I just wanted to point out a couple of those elements here in the Inspire software. So hopefully you can see how easy it is to create a custom stimulus, it's quick, it's easy, it's not time consuming. And it's really a wonderful tool to incorporate that personalization element for the patient, okay? So with that, we will navigate back to the presentation. So give me a second to do that here. So I hope you

were able to see how easy it is to create a custom stimulus for your patients. The process is streamlined, it's quick, it's clear. And I think you'll really enjoy using this tool with your patients who suffer with tinnitus. All right, I wanted to share a few helpful, good to knows with regards to creating a custom stimulus. So keep in mind that the stimulus will turn off when you're moving between frequency groups. So during the MDL and MML tests, you wanna make sure that the stimulus button is blue when you're testing, that will be important. And then I know I mentioned during the demonstration, how to mute and unmute the hearing aid microphones, but just a reminder, that you've got two ways to do that. The hearing aid microphones will automatically mute whenever the tinnitus signal is on, the stimulus button is gonna be blue, and whenever you see that the signal is on, so of course you can pause the stimulus or click the speaker icon on the left side of the screen to unmute the hearing aids if you need to answer a question or provide some direction. So you've got a couple of options there and I do prefer and would recommend using the pause button because that will turn the stimulus off. So as you're talking with them, they're not actually hearing the tinnitus signal at the same time. By way of canceling testing, if you are midstream with MDL or MML testing, and you cancel for some reason, do know that all of the measurements are lost, they will be erased. So you'd need to go back and start over to create that custom stimulus. And always use a strong battery when you're creating a custom signal, that's gonna be important. If for some reason the hearing aid loses connection with the software, you will get a popup message to let you know, but you won't be able to reconnect a hearing aid in the middle of testing. So that will require you to cancel testing and the measurements will be lost or erased, and then you'll need to repeat the measurements. So definitely check the battery status and integrity before you create a custom signal. By way of the custom stimulus level, after completing the Multiflex Tinnitus Pro tool, you do again, want to ensure the overall loudness of the signal once those hearing aid microphones are back on. So as I showed you in the software, just to use the all button on the tinnitus screen, to select all of the bands in the stimulus, and then use the up or down arrows to increase or

decrease the signal as needed. And remember that by using the all button, you're gonna maintain the personalized stimulus shaping that was accomplished while you were using the Multiflex Tinnitus Pro tool. All right, the next few slides will cover a few tips and tricks for establishing a custom tinnitus signal. If the hearing aid user comments that the signals heard during testing do not match their tinnitus, just simply explain that the signals may not align with their tinnitus and refocus their attention on the level or volume of the stimulus as needed for each task. And it would probably be a good idea to acknowledge this and the initial directions before testing begins. That way you can kind of avoid any question or concern that may arise during testing if the patient is not perceiving the sounds they're hearing to be in line with their tinnitus. Also, if the hearing aid user reports asymmetric tinnitus. So perhaps it's louder in one ear than in the other ear, your solution here would be to run the Multiflex Tinnitus Pro tool bilaterally, as you normally would, and then adjust the overall level for each year as needed on the main tinnitus screen and Inspire. So, and we were just talking about that, right? Using that all button is gonna preserve the shaping that was accomplished during the custom stimulus creation. So you definitely want to do that, but do know that you can adjust for each ear as needed. And then finally here by way of something that we learned. If the hearing aid user can't identify a minimum masking level for all three frequency groups during testing, right? And that's when you, I was saying, you'd go and use that could not test button. So if they're not able to identify a minimum asking level for all three frequency groups, that's going to result in the inability to generate a custom stimulus. So what you wanna do is rerun the Multiflex Tinnitus Pro tool and use the maximum level that's allowed for each group prior to selecting that could not test button. So on rare occasions, this could happen. But our research team found that using the maximum level for each group did lead to a helpful custom stimulus for some individuals. All right, by way of some ear specific considerations, all Multiflex Tinnitus stimuli take ear-specific hearing thresholds into consideration. So asymmetrical hearing sensitivity is accounted for. If a hearing aid user has unilateral tinnitus, any of the stimuli can be used in just one hearing aid by using the right or left

buttons at the top of the tinnitus screen in Inspire. And if creating a custom stimulus for just one ear, the right or left side may be selected before or after selecting the stimulus personalization icon. Modulation, okay, it's gonna default off, but when enabled, is offered in three different speeds. So this feature provides the professional with an additional option for customizing the Multiflex Tinnitus signal based on the patient's needs and preferences. So you can see modulation can be off, slow, medium, or fast. Stimulus modifications. All of the stimuli can be modified. So frequency shaping intensity and modulation are all available on the tinnitus screen in Inspire. And then like I showed you during the demonstration, there is a target match tinnitus button off to the right hand side that will reset any of the signals back to their baseline. So sometimes if you get into a place where you've done quite a bit of adjusting, and you just wanna go back to start, that can be a helpful tool for you. It is possible to use different tinnitus stimuli in different memory environments, but only one custom signal can be created for each patient, okay? Also know that there is a copy tinnitus button on the right side of the tinnitus screen as well. And that will allow you to copy any of the tinnitus stimuli into another memory environment. So while you can only create one custom signal for each patient, you could copy it into another memory environment and then make some modifications to it on the tinnitus screen. So there's quite a bit of flexibility to meet the needs of each individual. User controls, there are, or there is the ability to manage the tinnitus level via the user controls with Starkey hearing aids and in the Inspire software, we've got the available user controls that populate on the left side of the user control screen in blue. And then it's a drag and drop approach. So you can click and drag the desired user control and then drop it into the position that's available. The user controls that are available for each technology will populate depending on the hearing aid that's connected. So do know that tinnitus level can be added to the short press or to the push and hold user control, so some flexibility there, which is nice. And then also you can manage the output range in step size as well. So on the user control screen, if you go down a couple of tabs, you've got the ability to decide if the tinnitus level will change on the order of two DB or four DB. And you can

also click and drag the little radio buttons, if you will, to change the step, the output range. So some nice personalization capabilities there as well. The device guide that you can print from the Inspire software provides a customized report for the patient, based on how the hearing aids are programmed. So it's a nice compliment to the generic user manual that comes along with the hearing aids. And again, based on how you've programmed the hearing aids, there's a nice report that is generated, you can print that out and give it to the patient. So highlighted here, I've got tinnitus level plugged into the push and hold user control on the left device. And so there's a little description there that the patient can read. So that's a really helpful tool as you customize and create the user control options for the patient. So keep the device guide in mind. Also now, let's see, let's jump into the Thrive App, there we go. Tinnitus stimulus volume and modulation can be managed from the Thrive App when you're in a memory environment that has the tinnitus stimulus enabled, three dots will appear at the bottom of the Thrive App. So, let me see if I can engage the arrow here. Down here under the memory environment, they've got three little buttons here, or three little dots I should say. Tapping on the middle dots will provide access to adjusting tinnitus stimulus volume. So the patient can do that for themselves, right in the app, you know, adjust the right ear, the right hearing aid, the left hearing aid, or both stimulus levels, depending on what they wanna do. And then if you tap on or they tap on the third dot, then they'll have access to make adjustments to modulation. So both of these controls, you know, are really nice for providing flexibility and managing the signals in different environments. So I really like what the Thrive App brings to the table with regards to tinnitus management. Now let's talk for just a couple of minutes here about the Relax app. The Starkey Relax app is both an informational resource and a self-management tool. The app is designed to be implemented along with a hearing care professional sound therapy protocol for patients who've been diagnosed with tinnitus. So this is the compliment, if you will, to the broadband signal that's provided through Inspire and in the hearing aids. So the Relax app can be downloaded from the Apple App Store or from the Google Play Store, free to download. And it contains a variety of soothing

environmental sounds. So it's a really nice tool for individuals who would prefer something other than a broadband, if you will, based signal. So it's provide some helpful information with regards to tinnitus, and there are links to both Starkey and the American Tinnitus Association that can be accessed through the Relax app. And I really like that because sometimes we have patients, well, many times, right? They Google tinnitus and up comes a million hits. Many of them telling them what pill they need to buy, but no, right? So a trustworthy source for information and guidance, there are a variety of signals, I believe up to 12 different signals actually at last check. What I wanted to show you here, here we've kinda got the air, wind signal, if you will. And the patient through the app can select the stimulus of choice and then they can manage the volume of the signal, the rate of fluctuation, and there's even a sleep timer. So it's a simple slider to be able to manage the volume control, and you can see that in the first image there. And then rate of fluctuation, so this, you see in the second image and this taps into that modulation concept. So off, slow, medium and fast. And again, there's no prescription here, if you will, it's all based on the preference of the individual. And then the sleep timer you can see on the far right. This is a nice tool, there are a variety of tinnitus apps available out there. Many of them, however, will, the tinnitus signal will stop if the phone goes to sleep. So maybe at bedtime, for example, even if they set a 30 minute timer, if when the phone goes to sleep, the tinnitus signal will shut off, but that is not the case with the Relax app. So it'll stay on, if you set 30 minutes, it's gonna stay on for 30 minutes, so that's a wonderful tool. So they can stream these different signals directly from their smart devices to their hearing aids if they have compatible devices. So all of the Apple devices, of course, and a whole host of the Android devices as well can stream directly to the Livio Edge AI, Livio AI, and Livio hearing aids. And it just can be a wonderful tool or they can play the signal from, or through the speaker phone on their smart device. So a lot of individuals won't wear their hearing aids to bed, of course, so it's possible to play just through the speaker on the phone, right? That can be a nice option. So you see a couple of images here, the fan noise, the crackling fireplace, there's a babbling brook, and rain and ocean waves, and a whole

variety of different signals. So I think you're really gonna like that. The other thing I wanna mention is that the different environmental stimuli can also be personalized. So within the app, there is the ability to go in and navigate around the screen and change the overall signal quality. So they can even further customize any of those signals. So a really, really exciting options for personalizing and really meeting the needs of each individual. And then I just wanted to make a comment here about Multiflex Tinnitus Pro you know, tinnitus Pro's Custom Stimulus, and the Relax app, they really provide helpful personalization, which is so important in healthcare today. And I really think that's summarized well by this quote, "The quickest way to ruin a customer experience "in healthcare is to treat every patient the same "or everyone the same. "Patients don't wanna feel just like just another number. "They crave personalized service that helps them find "the right solutions." So I think you'll be delighted with Multiflex Tinnitus Pro and all that it offers along with the Relax app as well. So I do wanna mention several resources that are available to you at starkeypro.com. So we've got a Multiflex Tinnitus Pro quick tip that will give you the ABC, one, two, three, with pictures of how to use the Multiflex Tinnitus Pro tool, how to create the custom stimulus, if you will. So everything that I've been talking about today will be outlined nicely on a one page document. So that it's quick and easy for you to use, get comfortable with, and of course, implement. We have an incredible Multiflex Tinnitus Technology Handbook, you know, with everything soup to nuts, everything about tinnitus. And so definitely check that out as well, you can download a copy of that at starkeypro.com, lots of professional guidance. Again, touching on all aspects related to tinnitus and Tinnitus Management. The tinnitus handicap inventory questionnaire is also available for you, and I'm gonna touch on that in a little bit more detail in just a second, but it's a wonderful tool for you. There is a tinnitus consumer in office poster that you can order. There is a patient education brochure as well, and then a tinnitus technology options brochure as well. So a variety of resources to really help supplement your understanding and your ability to implement this technology, talk about tinnitus and encourage your patients to find some solutions. So, and then I want to, I did mention I'm gonna expand just a little bit

on the tinnitus handicap inventory as well, or the THI. It's really a very valuable clinical tool created by Newman, Jacobson and Spitzer. It's a brief, and easy to administer and reliable measure of the impact of tinnitus on daily living. And the outcome of intervention. It is a self-report measure consisting of 25 questions. There's a simple response that's required by the patient, yes, sometimes, or no. The questions are organized into three categories, so, or three subgroups, functional, emotional and catastrophic. So the patient is not aware of that, of course, but the idea here is to really give you as the professional, some insight into the impact that the tinnitus is having on the individual. And what's really great about it, you can use it pre-fitting to assess the impact of tinnitus on daily living, and then you can also use it post-fitting as well as an outcome measure to monitor the patient's progress. So it's quick, it's easy, it's reliable and just an incredible tool. So definitely look for the tinnitus handicap inventory at starkeypro.com. So it's gonna help identify problems or specific areas of a patient's life that are affected by tinnitus, quantify the magnitude of the impact tinnitus has, and then help you monitor a patient's progress with a particular management approach, so a great tool there, all right. And then what it'll do, I kind of populated here as I'm advancing, there's severity scale that you have as the professional. So based on the score from the worksheet, there's a nice description for you, helpful description regarding the severity, so I wanted to be sure you saw that as well. Okay, so in conclusion today, you can see here the Livio Edge AI ecosystem, it really provides everything you need to meet the requirements of any patient. The world's only helpable hearing technology with Livio Edge AI, and Livio. The most complete line of rechargeable technology, including the world's only rechargeable custom devices and the world's smallest, most powerful rechargeable, behind the ear style device. Easy to use all-in-one chargers, and the only turbo charger available. A full family of 2.4 gigahertz, wireless accessories, and patient-focused, Thrive mobile and caregiver focused apps. So the Thrive Care app as well. So there's really something here for everyone. So I definitely want to encourage you to learn more about all of these things. I know you won't be disappointed in using this technology. So Starkey is really

delighted to bring you industry leading innovation, both by way of technology and features and truly exceptional customer service and experience with customer driven features. So very important to us at Starkey is always considering what it is that your patients need, what it is that you need. And being able to make those things become a reality and helping individuals engage sooner with technology, instead of waiting, making hearing aids something that not only provide exceptional sound quality and performance, but truly do impact overall health and wellness as well. And so Starkey is really at the forefront of the technology these days, and really again, bringing you that innovative technology. And we always pride ourselves and are very passionate about customer service as well. We always wanna help, we always wanna make a difference. So please don't hesitate to reach out to your account representative if there is anything specific you need in any dimension or in any facet, as it pertains to Starkey technology or business operations or anything. And then just finally today, I wanna encourage everybody to learn more. There are a whole host of additional courses available through Audiology Online. We've got one hour CEU courses, you can see them here, Livio Edge AI, the best just got better, advancing the leading edge of hearing aid fittings with real ear measurements, that's gonna focus on our new REM target match feature. Thrive Mobile app, the best mobile app just got better. So you'll learn about updates to the Thrive Mobile app. Rechargeable technology, you'll get a have access to a detailed presentation on all of the rechargeable devices, which is really great. Inspire and Hearing Care Anywhere. We're excited to have some updates and to introduce our synchronous remote programming, which is an incredible compliment to the asynchronous strategy that we've had, so be sure to check out that course as well. You've just participated in Tinnitus Management, so you can check that one off the list and do know that also offer a variety of short courses that we call Starkey at a glance. These are quick, you know, 10, 15, 20 minute courses that are focused on a particular, you know, feature or product. So there are no CEUs for those Starkey at a glance courses, but it really gives you a nice opportunity to go in depth on a specific topic area, if you will. So with that, I wanna thank everybody for joining me today. I really

appreciate your time and attention and I want to wish everyone well. Time and attention and I want to wish everyone well.