Strategies for Successful Tinnitus Management

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All right, everyone. It is the top of the hour so we will get started with our course today: Strategies for Successful Tinnitus Management. My name is Lawanda Chester. I am an Education and Training Audiologist at Starkey Hearing Technologies and I want to welcome you to our course today. I know that it can be difficult to take out some time in your day, especially if you're in a busy clinic, to participate in a course like this, especially if it's an hour so thank you for your participation. Before we get too far along I want to go over a little bit of housekeeping information. If you're having any technical problems with today's course, please stay logged on and give Audiology Online a call at the number listed here. It's 1-800-753-2160. You may want to consider writing this numbers down for reference just in case you run into any technical difficulties long after we've moved past this slide. Once you give them a call, they'll be able to troubleshoot whatever issues you're having and get you back to listening to today's class. The most common cause for technical problems I've noticed is if you happen to have other software or applications running at the same time, you may wanna go ahead and take a minute to close down any other programs you're running because that could interfere with your ability to participate in today's course. If you continue to have technical difficulties after you've done that, again, stay logged on and contact Audiology Online so you can fully participate in today's session. So this session is available for one CEU hour or 0.1 CEUs. In order to earn credit, you must stay logged on for the full session, and then complete a short quiz comprised of 10 multiple-choice questions. If you happen to review the quiz before today's live course, I want give you a heads up that one of the questions have been modified so you may wanna take another peek at that before taking the quiz 'cause I have updated that quiz from when we originally posted it. I also have included a PDF of this presentation in the File Share pod. That's found in the bottom left-hand corner of your viewing area. So you just click on the file name and you can download a handout of today's presentation for future reference. Also on the left side, there's a chat box, excuse me, on the left side, that can be used for questions. So as we go through today's course, feel free to type in any questions you have and I will check in that chat area towards the end of today's presentation and address your questions you have. And then finally there is an icon in the top right-hand corner of the screen with four arrows that are sort of heading out in different directions. You can click on that if you wanna enlarge your viewing area of our presentation.

So our objectives for today is we're discussing strategies for successful tinnitus management and you will be able to identify the causes and-or triggers of tinnitus after this course, you'll be able to identify populations likely to experience tinnitus, and then you'll also be able to list those five steps you need to take for successful tinnitus management. Our agenda for today is here. First we're gonna start off by just giving a brief sort of definition of tinnitus and discussing its causes and triggers. We'll discuss those tinnitus populations that you'll likely see in your clinical setting, and then we will discuss those five steps to successful management in some detail. So let's think about our primary patient population, typically it's baby boomers right now, and what they're facing in the near future. A large percentage of this group will not only be at risk for hearing loss, but will also be affected by vision problems. These individuals will need to rely even more on their sense of hearing for input. So good quality audibility and clarity to both ears will be necessary for optimal performance, but let's consider how our brains stay in touch with

our environment.

Take a look at these two photos. Which of these two foods taste better to you, French fries or ice cream? Which smells better, flowers or freshly roasted coffee? What feels better to the touch, silky sand or soft fuzzy kitty? And then, finally, which painting is more visually appealing to you, A or B? So the point of that exercise is to demonstrate that when it comes to our senses, we all have our own personal preferences, and these preferences are shaped by years of life experience. Perhaps you love French fries and ice cream, but when asked to choose only one, you went with ice cream 'cause maybe you have a major sweet tooth like I do. Perhaps somewhere deep down inside ice cream reminds you of your childhood. Whatever the reason, the reason is your own. As hearing health care professionals, we deal mainly with the sense of hearing. On a daily basis, we work with patients to meet their personal preferences as we often spend time making fine-tuning adjustments to shape how their hearing aid sound and function, but how many times have you had the same exact sound quality complaint but had to address it differently from one patient to the next?

So the same thing can be said for our patients with tinnitus. So here's an example. We have a set of identical twins, John and Chris. Both report that their favorite food is pizza. They enjoy the same TV shows. Their upset the Game of Thrones has ended recently. They both have the same hearing loss, which is a genetic progressive loss, and they both experience tinnitus that measures in at 3,000 hertz. We fit them both with a combination hearing aid plus tinnitus device, combination device, and we programmed them each independently, we made adjustments. during that process we discovered that though these guys are in many ways alike, they actually have very different preferences for how their tinnitus sound therapy was set. So we see that shaping here is different between the two when many other variables that we consider with our patients are the same with these identical twins. This is a reminder that, like our hearing aid users, personal sound preferences are going to be an important factor when working to provide relief for tinnitus as well.

So let's define tinnitus. It's a constant or intermittent sound that's experience in the ears and-or the head. It does not have an outside source, and is described in a number of ways. Common descriptions include: ringing, buzzing, humming and chirping. Tinnitus is not imagined and it's not a disease, but rather a symptom of a malfunction that occurs somewhere within the auditory system. So now that we know what tinnitus is, the next question is: what actually causes tinnitus in the first place? We don't know the exact physiological mechanism behind tinnitus, but we do know there are a number of causes or triggers for the onset of tinnitus. For years, ongoing research has asked: is it a phenomenon of the ear, the brain or is it both? Maybe it's something else entirely. To be honest, we don't really have all the details worked out. We do you know that in majority of cases, tinnitus is not simply an ear thing. For a long time it was reasoned that the sounds of tinnitus had to arise from ear structure since the ear is responsible for transmitting important hearing information to the brain, but as researchers over time set out to prove this reasoning, they became a little bit perplexed, especially as they found, for example, that severing the auditory nerve failed to stop tinnitus.

So the fact that people without any significant noise exposure or hearing loss reported bothered from tinnitus was another reason that it sort of confused researchers. So this sort of hodgepodge of results and inconclusive information demonstrated that the sounds can also originate in the brain, potentially. Now again the exact physiological cause for tinnitus is unknown at this time, however tinnitus research has consistently shown that there are several likely sources that trigger tinnitus. The most common include: noise trauma, hearing loss, head and neck injury or trauma, disease or health-related problems and medications. Let's take a closer look at some of these individually. So 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, for example, working in a factory, in construction, or lawn care, or from a one-time exposure at close range to a loud sound, like a gunshot, firecracker or explosion.

The tinnitus that results from noise exposure can occur suddenly or very gradually, and when it occurs suddenly, it's often perceived at fairly loud volume and may persist at that level permanently. However, for some, the tinnitus is temporary and does not return. We all know as hearing professionals that hearing loss is of course associated with tinnitus, but know that it can occur with mixed and conductive hearing losses, in addition to sensorineural hearing loss, which is what professionals typically associate with tinnitus. I've had many patients where they reported tinnitus and I noted impacted wax when I looked in their ears, and once the wax was removed, the patient no longer reported tinnitus. So there are a number of auditory pathologies occurring throughout the pathway that are associated with the report of tinnitus. One thing to know, and that you may have observed in the clinic, is that 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 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, so to speak. Tinnitus can occur with any degree or type of hearing loss, with any cause or type of onset. 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 of hearing and the hearing could get worse, but the tinnitus could remain unchanged, or even seem to fade. A number of disease or health problems that are not directly related to the auditory system are 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, more than we probably realize, are the use of certain medications. 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 go unharmed, they don't notice any tinnitus. In cases where it does occur, the tinnitus may either be temporary or it can be 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. Again some of the most commonly known medications that cause tinnitus include: antibiotics, painkillers, cancer treatments, and diuretics, such as furosemide.

Now individuals who experience some form of head or neck injury often report the onset of bothersome tinnitus following the incident. Common head or neck traumas include: a skull fracture, a whiplash type injury or a blow to the face or head. Individuals who have Temporomandibular Joint Disorder, TMJ, or other jaw-related problems are also more prone to tinnitus. Research indicates that individuals whose tinnitus arises from head or neck injury typically seek medical attention sooner than other tinnitus patients. A possible explanation is that head and neck trauma patients compared with non-trauma patients typically estimate the noise level of their tinnitus to be 1/3 higher, and overall suffer more daily problems because of their tinnitus, so that may cause them to seek treatment sooner. Common aggravators or things that can make tinnitus worse include: caffeine, alcohol, high doses of aspirin, salt, noise exposure and stress and anxiety.

So who experiences tinnitus? Approximately 50 million people report experiencing tinnitus at some point in their lives. That's a little over 20% of the U.S. population, but a much smaller number of them will actually seek medical attention and approximate two million people feel like they're debilitated by their tinnitus. So that's a small percentage of the population or smaller percentage of the population, but this is a large number of people who need help from hearing professionals like yourselves. Now what do I mean when I say they suffer from tinnitus? Well, it's really dependent upon the individual. Those who experience tinnitus may find that they have impacts on their overall well being, their ability to sleep, concentrate or hear. Many tinnitus sufferers find that they're more irritable, anxious or stressed. The impact varies dramatically from person-to-person sometimes. Now anyone can develop tinnitus, but certain groups are certainly more susceptible. Those groups include men, especially those in professions that expose them to noise, like manufacturing and construction.

Senior Citizens are more susceptible, Caucasians, and people with certain common health problems, some of which we've already discussed, like diabetes and hypertension. A particular segment of the population that's notably impacted by hearing loss and tinnitus are our Veterans. According to the 2015 Veterans Benefits Administration Annual Report, there are over 1.5 million Veterans who have an auditory system disability. This made up almost 13% of all disabilities reported at the time. In fiscal year 2015 alone, over 157,000 Veterans began receiving compensation benefits for tinnitus and over 85,000 began receiving benefits for hearing loss. These numbers are expected to rise. Other at-risk populations include: workers in loud environments, musicians and music lovers, and motor sports and hunting enthusiasts. There is no cure for tinnitus, but it can be managed, and successful tinnitus management will be the focus of the remainder of today's course. Now research has shown that amplification for those with hearing loss, sound therapy and counseling are treatment methods that can provide

relief to majority of tinnitus sufferers.

However studies have shown that patients experienced the greatest perceived benefit from tinnitus treatment when multiple methods are combined and an individualized treatment approach is provided. To define the individualized treatment approach that will best help your tinnitus patients, there are five steps: tinnitus evaluation, counseling and education, creating a treatment plan, fitting Multiflex Tinnitus Technology, and then follow-up care. We'll discuss details of each of these steps, starting with tinnitus evaluation. So first, the evaluation. Your evaluation should ideally include a thorough case history to gather otologic, medical, audiologic and lifestyle information. In addition you want to learn about the patient's subjective experience of their tinnitus and previous treatments they may have had. Here is an example of a tinnitus health history questionnaire where the patient can provide details of their tinnitus experience. It asks questions, like: How long have they had their tinnitus? What does it sound like? Is there a particular time of day when it's most bothersome? This gives you a clearer understanding of what the individual is experiencing.

Remember, no two tinnitus patients have the same experience. Now due to the subjective nature of tinnitus, there's no reliable and purely objective means for measuring it. However numerous questionnaires or inventories have been designed specifically to evaluate the patient with tinnitus. So these tools provide a means of evaluating the impact the tinnitus has on the patient. A tinnitus questionnaire can: identify problems of more specific areas of a patient's life that are affected by tinnitus, quantify the magnitude of that impact, and help you monitor a patient's progress with a particular treatment. These questionnaires can also serve as a counseling tool for you as you're helping the patient and as you're managing their tinnitus with them. The example I have shown here is the Tinnitus Handicap Inventory. Administering a questionnaire like this one, pre and post-treatment, can demonstrate patient benefit and it asks questions like if their tinnitus makes them feel upset, out-of-control or frustrated, and their score indicates the magnitude of tinnitus effects on their life, ranging from slight where they may or may not need any treatment, to catastrophic, catastrophic. Another commonly used measure is the Tinnitus Functional Index.

You'll also want to conduct a full battery of audiologic testing, including otoscopy, immittance, Pure-Tone audiometry, measures of MCL and UCL, speech recognition thresholds and speech discrimination. In addition to audiologic testing, you can do tinnitus-specific testing. Two of the most common procedures include loudness matching and pitch matching. Next, we'll discuss the counseling and education step. So once you've completed the tinnitus evaluation, it is essential to allocate time for counseling and educating the patient about tinnitus and the results of their evaluation. Patients with tinnitus often have misconceptions about tinnitus that can lead to maladaptive thoughts and behaviors which in turn can exacerbate their tinnitus. So hearing health professionals should be equipped to educate and answer questions the patient might have about tinnitus. Providing this education and counseling not only reassures the patient, but it positions you, the hearing health care professional, as the person who can help.

For some patients, simply having a better understanding about tinnitus and talking with a professional about their experience will be enough. For other patients, additional counseling and management options may be necessary. During this counseling time, also summarize the information obtained during the case history, the tinnitus questions and questionnaires and the audiometric evaluation of the patient that you conducted. Helpful information to include during your counseling and education session is about how the auditory system works, what tinnitus is and what tinnitus is not. If the patient has hearing loss, discuss why hearing loss and tinnitus are often linked. Discuss the prevalence of tinnitus. Discuss common known sources of tinnitus and the known aggravators of tinnitus, and again let them know that treatment and management is available and give the patient the opportunity to ask any remaining questions they may have after you've given them this information.

Additional appointments for counseling and education may be needed and should be based upon the needs of the particular patient. Don't be afraid of the counseling portion of your time with your tinnitus patients. You don't have to be a trained counselor to provide effective counseling. Just listening to the patient and addressing his or her concerns and questions is counseling. Now the third step for successfully managing tinnitus is creating an individualized treatment plan. Ideally the creation of the treatment plan has three components: You would make any appropriate referrals, consider the information you gathered and determine the patient's candidacy for different treatment options, then work with your patient to come up with a comprehensive and individualized treatment plan. While conducting your tinnitus evaluation, there are a few things you need to watch out for that require a referral. So patients who present with physical trauma, facial palsy and sudden hearing loss warrant an immediate emergency referral for medical care before any discussion of treatment of their tinnitus occurs.

In addition emergency referral is warranted for patients who demonstrate suicidal ideation or they'd say or do anything that causes concern for their well-being. It is not within the scope of practice for hearing health care professional to treat mental health issues, so refer as needed. Now an urgent referral where we want to get the patient in to see an otolaryngologist as soon as possible is necessary for patients presenting with pulsatile tinnitus, unilateral tinnitus, ear pain and-or drainage, symptoms related to head or neck movement and vestibular symptoms. So once you've determine whether a referral is needed, then you can think about treatment options. There are a number of available treatment options to consider for your tinnitus patients. They generally fall into one of five categories: medical, alternative, amplification, sound therapy and counseling. Currently there are no FDA-approved medical methods for the treatment of tinnitus. In some cases tinnitus caused by a treatable medical condition, such as TMJ dysfunction, may be drastically reduced by addressing the underlying condition. Alternative treatments include things like acupuncture, mindfulness-based stress reduction, biofeedback and relaxation exercises. Alternative treatments need additional study, but some patients have reported benefit. The third category of treatment option is amplification. This is something we are most familiar with as hearing health care professionals, but for decades numerous studies have shown that amplification alone can provide total or partial relief from tinnitus for many patients with both hearing loss and tinnitus.

Our fourth category of treatment option is sound therapy. In this approach, external sound is used to decrease the loudness or prominence of tinnitus. The type of sounds that can be incorporated in this approach include: music, different types of noise, relaxation-type sounds, like wind chimes, or environmental sound, like ocean waves or rainfall. No one sound form has been shown to be more effective than the next. It often will depend on patient preference, then the final but certainly not least important treatment option we'll discuss today is counseling. Research studies support that one of the oldest and best ways to help patients, especially with tinnitus, is providing them with information, as you've heard me say already today. Often people have those inaccurate conceptions or misconceptions about tinnitus and they start developing maladaptive behavior as a result which can make their symptoms and experience even worse. I've mentioned that before and recall that we talked about counseling as part of the evaluation process.

So counseling is actually very important through every step of the way in tinnitus management. Now hearing care professionals will typically utilize some combination of the last three categories: amplification, sound therapy and counseling. Remember, no two tinnitus patients are alike, and the best option or combination of options will be unique to each patient. When you have a tinnitus patient with normal hearing and also no red flags for medical referral, you'll most likely choose a combination of counseling, sound therapy, and follow-up care, like I just mentioned. This follow-up care is especially important for all your tinnitus patients, of course, but for your normal hearing patients, they often need a lot more information and that may be all they need, especially since you're not going to be providing amplification for them. For a patient with both hearing loss and tinnitus, a combination of counseling, amplification plus sound therapy, often in the form of a combination device, and follow-up care will comprise your treatment plan, most often.

These are your patients with mild, right into moderately severe hearing losses. And then for patients with more severe hearing loss and tinnitus, you would of course provide counseling and amplification, and then sound therapy will most likely need to be provided through an external sound source as opposed to a combination device that's in their ear. I would encourage you to try a combination device, but be aware that the patient may not derive benefit from it as the Tinnitus Stimulus may not be loud enough to overcome their hearing loss or the Tinnitus Stimulus may not be able to be made safely loud enough as exposure to loud sounds can further damage their hearing or worsen their tinnitus. Now if you're unsure of which direction to take regarding candidacy for a device, consider what you learned from the patient's questionnaires, what you've discussed with them thus far. For example, someone struggling with, you may think about a sound generator, possibly mindfulness relaxation techniques. For someone who doesn't seem like they would be motivated to use a combination amplification plus tinnitus device in their ears, then maybe you just may focus on counsel and education. So there's no right or wrong answer and it doesn't mean that if you try something with the patient initially you guys can't also try something differently some time down the road. Next we'll spend some time focusing in on Starkey Tinnitus Stimulus Technology that's built into our hearing aids. We call this Multiflex Tinnitus Technology.

Starkey's Multiflex Tinnitus Technology allows you to meet the personal preferences of any patient through its flexible design. We also provide you with flexible adjustment options, interactive features, and we allow you to provide the most personalized care possible for your patients. Multiflex Tinnitus is available in our Livio AI and Livio family of products. With the Livio AI your tinnitus patients will have access to the full array of Healthable Technologies, including language translation and fall detection. With the Livio family, there are five technology tiers available to meet the needs of any patients. Each of these devices is available in four different form factors, our newest being the Micro RIC 312 and the RIC Rechargeable. In addition Multiflex Tinnitus is available in our Picasso line of custom devices, including the Picasso Invisible-In-The-Canal IIC device. Now Multiflex Tinnitus is uniquely flexible, offering a multitude of options. Regardless of the technology level of the hearing aid, Multiflex Tinnitus Technology comes fully featured.

This technology was designed not only to incorporate multiple treatment elements, but to also be incredibly flexible so that it can be easily integrated any tinnitus approach or protocol a professional adheres to. Some of the features include: tinnitus shaping, stimulus shaping, customization within the Thrive app and the tinnitus-specific indicators for the patient. So when you enable Multiflex Tinnitus, a Best Fit is calculated based on the patient's audiogram. Here are three examples of the Best Fit calculated for three different audiograms. This device can be fit to individuals with normal hearing, as you see in our first example on the left. Simply plug in their audiometric thresholds and our ease-step fitting form best fit the device to provide enough amplification only to overcome insertion gain loss. In this case, the device will be used as a sound therapy device only. As discussed appropriate counseling and education is necessary and should be tailored based on the patient's needs. The Tinnitus Stimulus provided by Multiflex Tinnitus is a shape-able white noise that you can modify. It utilizes the full 10-kilohertz bandwidth and has 16 bands of adjustability. It should be noted that the two entry tier levels of Livio, the Livio 1000 and Livio 1200, have 13 bands of adjustability and go up to eight kilohertz of bandwidth.

So let's take a look at what you see in the software with our Multiflex Tinnitus feature and how flexible it is. So here I have selected Tinnitus from the left navigation bar. From the screen I have the option to enable Multiflex Tinnitus, which defaults off. At all fittings, it can be enabled on a per-memory basis, so having done so, my options for adjustments come to life. First, by clicking on Expand, I'm able to open up all 16 bands for adjustments on the bottom here with a bandwidth of 10 kilohertz. This allows me to further shape the frequency response of the Tinnitus Stimulus for the patient. Note that there are check boxes at the bottom so you can choose to have the hearing aid microphones on or off. This comes in handy if you have a patient who only wants to hear the Tinnitus Stimulus and no environmental sounds around them. Next I can choose my Modulation Rate and choose between slow, medium or fast. Modulation defaults off, but when it's enabled, it's offered in those three different speeds. It introduces an ocean-wave effect to vary the sound quality of the Tinnitus Stimulus. This feature provides the professional with an additional option for customizing the setting of this tinnitus technology based on the patient's needs and preferences.

So the K.I.S.S. Principle definitely applies here. You want to Keep It Super Simple. The patient is likely overwhelmed by the fitting process and they're new to the device, so try to keep this fit as simple as possible on the fitting day. You don't necessarily need to do too much on initial fitting. You can simply Best Fit the aids, Enable the Stimulus, and then make sure the patient is comfortable. Let's take a closer look at enabling Multiflex Tinnitus. So we're back and looking at a screenshot of our Inspire software. I've navigated to the Tinnitus screen. Next I check the boxes in the center of the screen to enable our Tinnitus Stimulus and now it's active in this particular memory. Next I can make adjustments to the white noise by clicking on the Stimulus Band on the bottom. Panel arrows will appear and I can make whatever adjustments I desire. Now often times we're asked, how loud does a stimulus need to be in order for it to be effective? Again, this varies from patient to patient, but it's important to note that the signal does not necessarily need to be set at a level that completely masks to the patient's tinnitus in order for them to have relief.

In fact complete masking of tinnitus for some patients is too loud to tolerate. Both complete and partial masking of tinnitus have been shown to be effective, though partial masking has been shown to be an effective means of distracting from perceived tinnitus, and that even over time, partial masking can facilitate habituation, meaning that the patient hears both the sound therapy and tinnitus, but has a neutral response to it. Therefore, it's not perceived as bothersome, but simply just there. So again you don't necessarily need to completely mask that tinnitus. A great analogy is lighting a candle in different environments. If you light a candle in a dark room, the flame of the candle seems very bright, but if you light that same candle in a well lit room, while you can still see that flame, it becomes much less noticeable and bright. In essence tinnitus is most noticeable when there is no environmental sound. For tinnitus sufferers, this can cause difficulty focusing on tasks when in a quiet room, or many times, they have difficulty falling asleep. So the goal isn't necessarily to completely cover the tinnitus, just to find a way to make it less noticeable and bothersome. So we've done some initial fitting.

Next you wanna counsel extensively on the use and care of the devices as you would with any initial fit and allow for plenty of time for the patient to ask questions. You can guide them toward resources that provide reference materials they can look back to after they leave your office. If they're using Livio AI or Livio, you can show them how they can adjust their Tinnitus Stimulus in their Thrive mobile app, which we'll talk more about next, and then be sure to also counsel the patient regarding acclimatization. We know that it takes time to get used to hearing with the hearing aid and it's always important to discuss that, but there's also an acclimatization process with any sound therapy. The patient may notice that their tinnitus sounds different or they may need adjustments to their sound therapy stimulus over time. This is completely normal and it's why we recommend a follow-up appointment one to two weeks after the initial fit. Also, let the patient know that over time, they may find that they don't even notice their tinnitus or even the sound therapy, and that this is a good thing.

Now let's shift focus to the Thrive mobile app for our Livio AI and Livio users. This app provides unprecedented control and personalization for those devices. It provides the Thrive Wellness or

to users of Livio AI and control of 2.4 gigahertz streaming accessories and the Multiflex Tinnitus Stimulus with both Livio AI and Livio. Let's take a look at a quick video showing how a patient can make adjustments using the Thrive app. So here we have our Home screen and we're going to switch to a memory that has Tinnitus enabled. With Tinnitus enabled, you see on the bottom, you have two little dots that tell you that you have two screens. You can swipe over to adjust the volume of your Tinnitus Stimulus on an ear-by-ear basis or if you put your finger between your two bars there, you can adjust that volume for both ear simultaneously. So the patient has full control over that. In addition, the patient can adjust the speed, which is the modulation rate. If they move the pins towards the turtle, it's slowing down that modulation, that ocean-wave effect. If they move it towards the rabbit, they're speeding that up. So they have control over that at their fingertips through the app depending on how they feel at a particular moment when they're using their Livio AI and their Livio hearing aid and you have that Multiflex Tinnitus enabled for them. So pretty easy for our patients and giving them lots of control.

So you've done your initial fit. At follow-up appointments, there are a number of things you can do to address various patient reports. You can enable and use SoundPoint Tinnitus. You can do more fine-tuning adjustments to that Tinnitus Stimulus. You can configure additional memories. You can personalize user controls and you can add an accessory. Let's talk about SoundPoint Tinnitus first. So SoundPoint Tinnitus allows you to better engage with your patients and involve them even more in their tinnitus fitting. Research has shown that patients who are involved in their health care and health care decisions tend to have better outcomes. We don't know exactly what our patients are experiencing or what truly provides them with the most relief from their tinnitus, so giving them the ability to be actively involved and personalize settings is a huge benefit, and they can do that with our SoundPoint Tinnitus feature. So SoundPoint is accessed to the right of the Tinnitus screen, we're back in our Tinnitus screen. If we click on the right-hand side where it says SoundPoint Tinnitus, that will take us to this function. When you're getting ready to run it, an example of how you instruct the patient will be to say: You're going to hear a sound or a noise through the hearing aids. Tell me the point at which the noise is almost blocking out your ringing or your tinnitus, but it's not so loud that it's keeping you from understanding my voice. You or the patient may find that it's beneficial for them to close their eyes so they can concentrate on this listening activity and you can vary your instructions a bit based on your goals.

So this is instruction I typically use because I tend to aim for partial masking of the tinnitus and so I'm asking them again to tell me when it's almost blocking out their tinnitus, but I still want them to be able to understand my voice. Your instructions may vary. So when you start SoundPoint Tinnitus, you come to this screen, you'll hit Start, and you move the mouse around the screen and real-time changes to the stimulus can be heard as the mouse is moved. As you're moving around the screen and your patient tells you that they like a particular sound, you can click it and drop a pin at any point where that patient finds relief. You can drop it in a multitude of points, like we've shown here. I recommend no more than three to six different spots so that this process doesn't take a terribly long time, but for each of these areas you're able to see exactly the shape of the stimulus at that particular point. And then once you find the

sound that the patient likes best, so you may do an A-B comparison between the blue pin versus the green pin, for example, and then eliminate one of those and then say, okay, let's compare the green pin to the purple pin. Once you and the patient find a stimulus that provides relief, you can click it again and you save it, and that becomes their new Tinnitus Stimulus. For some patients, their preference may differ significantly from the Best Fit, and that's okay. So a benefit of having SoundPoint as an available tool for clinicians is to help the patient find what works best for them. Again, completely, it's completely subjective. So here's an example of an Initial Best Fit calculated for a particular audiogram and what the patient decided they liked best through SoundPoint. There are differences between these two graphs. So SoundPoint Tinnitus allows the patient to again to become an active partner in this process in shaping the stimulus in real time within his preferences to find whatever's gonna provide them the greatest relief and help them be satisfied with this Tinnitus Stimulus. Also for your fine tuning or, excuse me, your follow-up adjustments, you could do some fine tuning.

So here's some examples of some reports patients may bring back when they come in for follow-up appointments. For instance, if the patient says, "The sound is distracting," you could try decreasing the overall level of the stimulus. You can enable modulation rates, or maybe it was off, and maybe they want to hear the ebb and flow at a slower rate of that sort of ocean-noise effect. You can also assign a memory with the Tinnitus Stimulus disabled. So if they're in a particular location or environment where they're finding it distracting, they can listen or switch to their program where it's not on. Another example, if the patient says, "The stimulus sounds hissy," you could try decreasing the high-frequency bands or increasing the low-frequency bands. If the patient says, "The stimulus is roaring," you could try decreasing low-frequency bands, or increasing high-frequency bands, or both. Configuring additional memories may also be beneficial for select patients.

So I've already given you one example, but let's show you how you would go about that. So this particular patient mentioned that there are times when he only wants to hear the Tinnitus Stimulus. You can create a separate memory for that. So I'm gonna go over to the next available memory bank that I wanna put this in, memory bank three, and I'm going to choose from my pull-down menu my memories, selections, and choose Normal here. Next I'm gonna go back to our Tinnitus screen by navigating through our left navigational bar, and then once I'm on my Tinnitus screen, I'll check the boxes in the center to enable that Tinnitus Stimulus. For this particular patient, because they don't want to hear sounds around them, I'm gonna be sure to go to the bottom and uncheck the Microphone-On box so that they're only hearing the Tinnitus Stimulus. In addition I'm gonna navigate to the Indicator screen, and for this particular memory in memory three, I'm going to change their Speech Indicators. So I'm gonna select my Memory indicator, and then go over to memory number three where I've put that Tinnitus Stimulus and turned off that microphone and have their speech indicator say Tinnitus so that it's meaningful for them and they know which memory is the one that only has their Tinnitus Stimulus if they're scrolling through their memories. And finally I wanna point out to you that when you have a memory where you have turned the microphone off and you view that memory in the Quick Fit or Fine-Tuning screen, where you'd normally see the frequency response in the top we give you

a message that says: Tinnitus Only, Microphone Off, as a reminder to you, the professional, that there is no frequency response to adjust here. The microphone is off in this instance. Next, let's talk about personalizing user controls. So on our User Control screen, you can give the patient access to being able to turn up and down that Tinnitus level.

So in this example, what I've done is I've chosen Tinnitus level up and down to be utilized or to function within our push-and-hold gesture. This means when they push and hold the right button, the Tinnitus level is gonna go up, and when they push and hold the left button on the left hearing aid, they can turn the Tinnitus level down. I wanna point out that on this screen you also have the ability to print out the device guide for the patient. So on the right-hand side, on the upper portion of our screen here, you can hit Print, choose the Device Guide and it will print out a quick and easy guide for the patient. It's just a couple of pages that describes for them how their user controls are set up, what they'll hear, how they can use it, and then which indicators appear.

Finally you can add an accessory during your fine-tuning appointments or just with the follow-up appointments. With our Livio family, Livio AI, as well as Picasso, we have a range of accessories that are compatible and that you can fit with your patients. The hearing aids come equipped with this wireless technology and these accessories can be utilized to allow patients to take advantage of direct-to-hearing-aid streaming of TV, MP3 players, computers and cell phones. For your tinnitus patients, there are features that allow them to manipulate their Tinnitus Stimulus. Specifically I wanna point out the Favorite button on our remote controls. There are different remotes for different devices. The SurfLink Remote is one, and here we see a picture of the Starkey Hearing Technologies 2.4 gigahertz remote that works with the Livio AI and Livio. The different remotes all look similar to this one. On these remotes, there's a Favorites button, indicated here by the blue circle. Its functionality is programmable in Inspire based upon your patient's preferences. So you have a lot of choices for how they can utilize the Favorite button, listed here, and today I wanna highlight that one of the options is to turn on or off the Multiflex Tinnitus Stimulus at the touch of a button.

So the final step for success in tinnitus management is follow-up care. It's very important to maintain contact with your tinnitus patients. Here's an example of a follow-up schedule. Although not all of the appointments will be necessary for every patient, the schedule should be presented to the patient in the treatment plan, as discussed. Any or all of the following may take place during follow-up appointments: fine-tuning, programming the Tinnitus Stimulus and-or the hearing aid response, evaluation of the treatment efficacy, and of course patient-centered counseling will be ongoing.

Some additional tools and resources for you to know of. One is this Starkey Relax app. It's a mobile app that is both an informational resource and a self-management tool for patients. This app is designed to be implemented along with your sound therapy protocol. So the patient can find information on causes, symptoms and treatment of tinnitus right in the app, as well as stream one of 14 different Tinnitus Stimulus directly to their hearing aids and also create their

own customized tinnitus relief sounds. We also have a number of resources that are specifically designed for you, the professional. We have a Multiflex Tinnitus Technology Handbook that's available on StarkeyPro.com for download. It covers the basics of tinnitus, treatment options, recommendations for using Multiflex Tinnitus.

We also have a Tinnitus 101 presentation or our Tinnitus Lunch & Learn available at Starkey Pro that's designed for you to use with patients. You can use it as an educational seminar. We also have Tinnitus White Papers and questionnaires on our website, like the Tinnitus Handicap Inventory. So StarkeyPro.com is a great resource for you on tinnitus management, but also any of our other devices, and then we also have our QuickTips documents on Starkey Pro. These are specific PDF documents that give you step-by-step instructions on how to do a number of actions, activities, or fitting things for the hearing aids.

Since we're talking about tinnitus, I wanna point out two specific ones here. We have our Tinnitus Technology Initial Fitting Protocol that's available, again step-by-step instructions on setting up your Tinnitus Protocol within our devices. A second one here, we have our SoundPoint and SoundPoint Tinnitus QickTip that walks you through setting and using SoundPoint Tinnitus and then finally we have our Livio AI and Livio Initial Fit Protocol. It doesn't specifically focus on tinnitus, but it does is walk you through your initial fitting of those two devices highlighting our other features.

So we have discussed quite a bit today: defining the tinnitus, causes and triggers of tinnitus, looking at those tinnitus populations that you're more likely to see and those five steps for successful management. If you have more questions about Multiflex Tinnitus, please feel free to contact us at Starkey. And then here on Audiology Online, we have a number of live and recorded sessions available that cover a variety of topics on features related to the Livio AI and Livio family of products. Look for these. They are ongoing and we do have them periodically, and like I said, we do have them recorded. So if you intended to take a live course but you just couldn't make it because a patient appointment ran over or something of that nature, we do have them recorded, available for you to take at your convenience. So that's it for today's course.

Thank you for your time. I'm gonna take a moment to take a peek over in the chat area to see if we've had any questions. It doesn't look as if we have, so I hope you all have found this information useful and that you will be better equipped to really help your patients who have tinnitus as they come into your clinic today, tomorrow, or even sometime in the future. Thank you very much and have a great day.