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Beltone Tinnitus Management-An Overview

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Partner: Beltone

- [Tobi] Hello everyone and welcome to Belltone tinnitus management and overview. My name is Tobi Ferrence, and I am the United States field trainer with the Belltone training team, and I wanted to thank you all for joining me today. I know right now, as a little bit of a crazy time for everybody in the world, and I apologize if you hear any noises or anything in the background. Obviously, you know, working from home and doing things virtually, my son is upstairs as we speak, doing some homework, so hopefully nothing will get in the way or interfere with our talk today. Before we get started with the actual presentation, let's cover a few housekeeping items. If you have any difficulty hearing me, or viewing the presentation, you can contact technical support for audiology online, and that number is 1-800-753-2160, and I had come on a little earlier and mentioned there is a handout of the slides for today's presentation in your handout box. If you click on that and you can download the file to your computer, wherever it's convenient to find for you if you'd like to do so.

And please feel free to ask any questions throughout the presentation. You can send them through the question box on your screen, and I will actually leave time for answers and any other questions at the end of the presentation. So some of you, this particular info, depending on if you've been utilizing some of our tinnitus management or not, it could be familiar to you, and others that are on the call, maybe it won't, or varying stages in-between, but I think this will give a nice overview of what Belltone has to offer when it comes to patients that are suffering from tinnitus. Before we get into kind of the thick of the presentation, let's review the learning outcomes for the course. So after this course, you will be able to describe the end-user benefits of using the tinnitus features offered by Belltone. Participants will be able to list the features available within the Tinnitus Calmer App, and will also be able to navigate through the belltone Tinnitus Calmer App and the Tinnitus Breaker Pro feature within the belltone Solus Max software, in greater detail. It is important for us to understand that a feature and a benefit are connected. You know, any time we are talking about our hearing instruments, and what we're providing for our patients, we always like to talk about features within our hearing aids and what the benefit or end result to that patient is

gonna be. So obviously understanding both, and realizing that they're connected, but they're not exactly the same thing, and so while it's important to understand the feature, it's equally important that you understand and can communicate that benefit of that feature and what it actually provides for that patient. Besides the patient, and sometimes it's any other potential customers, and conveying information to third party, people that you encounter that maybe ask you what you do for a living and you start talking about hearing aids or you start talking about some of the capability that we have and we provide, so being able to communicate that effectively is gonna be really important.

So this picture here shows the characteristics of Belltone's Tinnitus Breaker Pro, as a feature, and below it, how each characteristic provides benefit to the user with keywords, so for example, the Tinnitus Breaker Pro feature within the hearing aid can be beneficial when it actually provides a distraction from the individual's tinnitus. So distraction is really important in lessening what the experience, what the person is dealing with in the perception of tinnitus. Moreover, the solution is easy to use since it will always be with them, so the Tinnitus Breaker Pro, it's gonna always be with them. Conversely, while the Tinnitus Calmer App, which we're also gonna talk about, requires a smartphone, it does have a wider array of sounds, which while distracting are much more enjoyable to listen to, and we'll get into more of kind of the differences of utilization of each, but when you're talking about sound therapy tools, and flexibility, they're really helping in managing the tinnitus and reducing the tinnitus, which equals success for that end user. That's the benefit, and having both the app as well as Tinnitus Breaker Pro and the fact that it can be customized for that end user, it's making it more personalized. The app also, because it's user-controlled sound therapy, it's giving them ownership of their management of tinnitus, so personalization and control. And then the Tinnitus Breaker Pro, when it's being integrated into the HearMax app, you know, you have the tinnitus manager feature, that allows the patient to make some adjustments according to what's happening to them day to day, in what their experiences are with the tinnitus. So it's, again, having the patient have ability to

control their own tinnitus management as needed. So before we explore the Beltone Tinnitus Breaker Pro as a feature, we first need to understand what tinnitus is and why tinnitus sound generators exist. So as you see on this screen, the symbol, this is the symbol for notification that our Tinnitus Breaker Pro feature is actually on and attached to a program, and you will actually see it whenever you're in our HearMax app, so the circle with the little arrow, and we'll talk a little bit more about that later, but with tinnitus, it obviously can widely be described as the perception of sound when no external sound is present. This can manifest in a lot of different ways, but will often by the patient be described as ringing, buzzing, or humming. Now, they can describe it otherwise, so I've had a patient back in past history, I remember a gentleman telling me, that to him it sounded like steam escaping through a metal pipe. It was like a whistling type of sound.

So I'm sure you, as hearing care practitioners have heard in different manners other than ringing, buzzing, or humming, but these terms are what are typically most commonly described. Many will have experienced buzzing or ringing in their ears in the hours after they've attended a very loud concert, or an individual that works in a noisy type of environment, so they're construction or they work in a loud factory-type setting. Maybe they are a cop, and they have to go and shoot their guns regularly. Especially they will experience it when they're in a quiet environment and really hear and it be noticeable, and this phenomenon is actually called tinnitus, and it also can be pronounced tinnitis. Those two terms are interchangeable. I don't think anybody ever out there has truly said it's only one way or the other. In addition, most patients, approximately about 90% with sensory neural hearing loss may experience tinnitus, although some patients, they may find it really not bothersome, but others, tinnitus will actually impact their quality of life. It actually can be very debilitating, and interfere with every day-to-day activity. So the beltone tinnitus symbol that I was actually just talking about, it represents breaking the cycle created by problematic tinnitus, and tinnitus perception can create self-perpetuating cycles of where the perception of tinnitus actually causes stress, anxiety, fatigue, and all of this actually increases the tinnitus

perception. It really impacts the person's mental health. Broadly speaking, there is no cure for tinnitus. This means that any valid treatment of tinnitus needs to attempt to lower the perceived burden of tinnitus. So tinnitus perception, that is, how it sounds to the individual in terms of pitch and volume, is not necessarily correlated to the reaction to tinnitus. So for instance, two individuals, they may describe very similar tinnitus perception. For example, soft, high pitched ringing in both ears, but have very different reactions to it. One individual may find their tinnitus highly irritating and problematic, where the other individual may find it's not bothersome at all. In some cases, tinnitus can lead to anxiety, as I mentioned, but then even depression, so it really should be taken very very seriously.

There are a number of different therapies and programs which actually aim to help those with problematic tinnitus. The most successful programs and therapies actually focus on addressing an individual's reaction to their tinnitus, so that's what we wanna focus on. We don't wanna override or mask out the tinnitus so that it's still there whenever they're not utilizing the functions. We want to manage that reaction. Now, problematic tinnitus should always be managed by a medical professional, and the generated sound can be used as a distraction as sound therapy, which allows a user to become acclimatized to their tinnitus, making it no longer problematic. And you as an HCP having a good understanding of what is available out there, the different kinds of sound therapy tools, is key. There are some cases where tinnitus perception requires further investigation, as it may be a symptom of a greater medical issue. Any time tinnitus perception is described, obviously a hearing test should be performed, and ability to do acoustic reflex testing and otoacoustic emissions is very helpful, and if you have that available, utilizing that particular type of testing to get the whole picture is a good idea. I know a lot of us in our network, we don't have a tendency to have those pieces of equipment, so obviously doing what you can outside of that, doing your audiogram, doing your speech audiometry, and so forth, is important. And as mentioned, hearing loss and tinnitus commonly occur together. So addressing the hearing loss can help to lower tinnitus perception, and we're gonna talk more on that in

a little bit. Now, cases where tinnitus should be investigated further by medical professionals is when tinnitus is unilateral, meaning it's heard only in one ear, and when the tinnitus pulsates, meaning it has a rhythm like a heartbeat. This is where it really needs to be investigated by an ear nose and throat specialist, or a neurologist. In these particular types of cases, tinnitus may be caused by obstruction along the auditory pathway. For example, by a glomus tumor, or indicate hypertension, or obstruction of the carotid artery or jugular vein. Now, the reason why there is no cure for tinnitus begins with the fact that there are several different theories behind the cause of tinnitus.

One thing that is agreed upon is that auditory deprivation plays a role in many tinnitus cases, and we know how auditory deprivation impacts people for hearing loss, and especially understanding ability, and this actually helps to explain the incidence of tinnitus perception and cases of hearing loss. Now, in some cases, fitting a hearing instrument is enough to diminish tinnitus perception to a sufficient degree, to warrant no further management, and additionally that extra sound provided by the hearing aid either provides stimulation to the auditory system, to reduce perception, or the increased level of sound provides sufficient distraction from the tinnitus. In all other cases, tinnitus sound generator or a sound therapy app should actually be used in the tinnitus management. So a tinnitus sound generator, or the abbreviation of that is TSG, can be best thought of as a distraction tool. A tinnitus sound generator, when it completely masks any perception of tinnitus, when active, is actually not gonna help the user manage their tinnitus when not wearing the generator, and is not helpful in the longer term. So typically, a tinnitus sound generator set to a level which allows for simultaneous perception of tinnitus is going to be the most effective in managing tinnitus perception over a longer period of time, and this is actually usually set to a level equal to or lower than the sound of tinnitus without completely masking that tinnitus. You can use the masking type of tinnitus periodically, but it should not be used as the standard sound therapy setting all the time, or ongoing, continuously. So let's look, or use, a different example of acclimatization that many of us will have

experienced in our lives. So say for instance you go out, you buy a new pair of shoes, which we do fairly regularly, and when we first wear them we will be very aware of the presence of those shoes on our feet. They may even begin feeling slightly uncomfortable, and I always think of myself and other females out there when we buy heels, and wearing heels, and sometimes when it's cramping your toes and different things, that they become uncomfortable. But if we persevere with wearing them through our day, we get distracted by various things that are happening and we acclimatize, or forget about the shoes.

However, if we were simply to take the shoes off when we became aware of them, or they became slightly uncomfortable, we would never acclimatize to their presence on our feet. Same thing with wearing a new pair of glasses. You're very aware of the presence at first, and eventually acclimate to the point of forgetting you're actually wearing, and this is similar to the relationship between the tinnitus sound generator and the presence of tinnitus. Acclimatization will only occur when the sound generator and the tinnitus are perceived simultaneously, and the purpose of sound therapy in more technical terms is for distraction, habituation, and relief. Those are the three key elements. So we're going to first explore beltone's tinnitus therapy and tinnitus sound generator app, which is called the Tinnitus Calmer App, and this is the actual symbol, if you've not utilized this with a patient or downloaded it yourself. Tinnitus calmer is possibly the most practical form of tinnitus sound generator offered by Beltone. Beltone's Tinnitus Calmer App is very interactive. It provides the user with customizable tools to manage their tinnitus, and also include information on sound therapy, which is great. The app is a multisensory tinnitus management tool, and the app not only provides auditory stimulus, it also has visual and tactile elements, so you get not only the fact that you're listening to something, you get to visually look at something. You also get the tactile, so actually touching, and that providing distraction. The app is actually available for Apple and Android handheld devices, and is free to download from the Apple App Store or the Google Play store, and it's supported by the recognized tinnitus associations, which is great. The generated sound that comes from

the app can actually be played direct from the iPhone or Android via headphones, or you could play it through the speakers of the app itself, or through the device itself, or it can be streamed direct to Beltone hearing aids if an Apple device or compatible Android is used. Now, if you don't have a compatible device but that device does have bluetooth, you can also stream it via the phone link too, so that's another opportunity to be able to use that. For sound therapy to be effective, the level should be set equal to or just softer than the perceived level of tinnitus, just like we were mentioning before. So when using even something like this, you want it so that you're able to hear both, happening at the same time. A user-controlled app can obviously be a powerful tool, and we find that a common complaint in cases of problematic tinnitus is that the individual feels a lack of control, and thereby feels disempowered.

So with many customizable options, the Tinnitus Calmer App gives the user ownership of their sound therapy, and also gives them a sense of empowerment. To learn more about the app, we do recommend you download it if you haven't used it and try navigating through it yourself. It is really easy to use, contains guiding tips to get you started. It also contains important information about sound therapy, including links to external information about tinnitus and sound therapies from various organizations and sources, so all different professional references, and you as the HCP can also go into those and utilize them for your own information, things for counseling and discussion with the patient. The main screen of the Beltone Tinnitus Calmer App is sounds, and each bubble on the screen represents a soundscape, and a soundscape is a combination of sounds that when played can help interact with the individual's tinnitus that is experienced by the user. Now, from this screen the user has a very easy ability, very quick way, of being able to play, edit, or even build new soundscapes, and a soundscape is actually activated by tapping on the bubble. Now, there's a bunch of preloaded soundscapes that already come with the app whenever you download it to your device, but then you also have the ability to create and customize your own as well. So tapping the plus sign in the lower right-hand corner of the app, now if you have a bunch of soundscapes you may have to scroll a bit until you get to the bottom

to where the plus sign is, but this allows the user to create the new soundscape, and a user can layer up to five different sounds into a single soundscape, all at varying levels of each sound, and this provides that user with an element of control and customization, and you can see the graph, the graphic, on the right-hand side, it's where they go in and they choose whichever sound, and they line up at the bottom from left to right, and then they can vary the level, kind of like a volume control slider, up or down to how much they want of that particular sound, within the mix of the soundscape. They can create a special name for the soundscape to be played later, so right now at the top a generic numbering system comes up. It'll say soundscape 20, or soundscape 21, depending on how many you have created.

But you can actually exit out of that and create whatever name is familiar to you, to be able to find that soundscape. And when creating the soundscape you have the ability to use a mix of environmental, music, and therapeutic sound sources, and there's quite a bit of different sound sources in each category. Within the main screen of the app, there's actually a play bar at the bottom. The play bar allows you to set a timer for the soundscape, and you can actually set this up to 23 hours and 59 minutes. You also have the ability to play or pause the soundscape as you want to and you can edit a soundscape by a long press on the soundscape bubble, and an edit-remove option will appear, and this is for say you wanted to change the name of it, say you wanted to go in and change what one of the sounds or a couple of the sounds or the level of how those sounds are mixed, it gives you the option to do so. Now one way that, and we'll get into a little bit of uses of the Calmer App for, especially for tinnitus patients, but even whenever you don't have tinnitus, or you have a patient that comes in your door and they're coming in for just a hearing screening and it's found that they don't have hearing loss but yet they still experience some tinnitus, this is something that you can direct them to to be able to utilize when needed, because you can do it through the speakers or headphones without having hearing instruments. Now, I use this myself because I travel a lot and I'm staying in hotels. I sleep at home with a fan, and so I'm used to having noise in the background to fall asleep to. So you know when you're in a

hotel, that people coming in and out of their rooms, so the doors, and it's just, your room itself is quiet and sometimes the air conditioning or heating element isn't always kicking on, you can simply create your own soundscape, which I do, what's pleasing to me, and then you set the timer at the bottom for however long you want it to play, and it's been great. It's already in my iPhone and ready to use any time I want it. So anybody can use this. My own son, when he was a little bit younger, he had a hard time going up to his room and going to bed by himself, and so I thought about it and I was like, with his iPad, put it next to his bed and I explained what this would do, and I had him create his own soundscape of different sounds that he really liked, and he would put the timer on, and sure enough, he'd fall asleep, and it was the trick for every night, and he still to this day uses that and really enjoys it. It's just, like, it's a comfort, calming, to be able to fall asleep to.

So can also be used in that particular manner. So an example of the multisensory integration can actually be seen in the small little bubbles, which actually, the effervescent, they actually move through the home screen of the app, and these smaller bubbles can be popped with a single tap, and that tactile action of popping the bubbles ensures distraction from the tinnitus upon multiple levels. So again, you're getting a visual aspect, you're getting a tactile aspect, and you're also getting an auditory aspect with all of this. The home screen of the app provides further features and information for the tinnitus calmer user, and the various options are within the toolbar at the bottom of the app, so as we had first discussed, in that home screen where all the soundscapes are, that's called sounds, and besides the sounds, you will see relax, learn, and then my relief. These are the various options which we're gonna discuss coming up here, that the patient can actually go into. So the heart of the tinnitus toolbox is actually in the Relax section, which is the next selection over, and here the user finds the different tools to help manage their tinnitus, so the end user can actually utilize audio meditations, so that's the first graphic that you see here on the left-hand side, and these are where they can play the sounds and exercises for guided relaxation. Or they can choose to look at the visual soundscapes, which is the next

selection. So not only are they hearing the auditory aspect, they're getting a visual, calming type of environment for another type of relaxation. The app also contains breathing training, with the choice of normal, slow, or deep rhythmic breathing exercises, and it actually shows you and cycles in and out when to breathe in and when to breathe out, based on the normal, slow, or deep that you choose. And then lastly is something called behavioral nudging. Doing things you enjoy makes life with tinnitus more pleasant. That's the idea behind this. These are activities that the end user can set to have weekly reminders to do, so things like meet a friend for coffee, volunteer, write, paint, draw, or even learn a new skill, and there's several others that they can also choose from, and they can add these, and reminders will pop up to do, so again, it's something to create a distraction from what they're experiencing. The relax section obviously offers a variety of relaxing exercises that we just discussed, and these can be chosen at any time as the need arises, not only for tinnitus, or changes, or increase in tinnitus on a particular day, but also can be used for stress relief, so anybody not suffering from tinnitus could go in and use those, use the breathing exercise, listen to the guided kind of meditation-type things, to help with stress relief.

The learn section, which is the next portion over, offers users valuable and credible information that supports and reinforces clinical concepts. So it provides the end user with an explanation of what is tinnitus and what causes tinnitus, and it also gives help with changing thoughts on tinnitus in various manners. Most patients question why can't anyone help them, because there's really not a cure for tinnitus. They think tinnitus is ruining their life, or, "My partner is not supportive enough "with what I'm experiencing," or even loud tinnitus equals a bad day. This section really gives suggestions on how to change thoughts and perceptions to something less upsetting, so you can also access, in this same area, tips for better sleep, so a lot of different tools for that end user. So as we mentioned earlier, the learn section always provides the latest information on tinnitus, and as we update the app, as time goes on, if there's things that are developed and come about, they will be added on tinnitus and tips for improving the relationship with tinnitus. And then it also gives quick access to our

online hearing test, since we know that 90% of those suffering from tinnitus also have some degree of hearing loss, and this is a really relevant place to start learning about hearing loss as well. The learn section includes the option of further information as well, and I kind of mentioned this before, but this is where you would access the external links to important information about tinnitus and sound therapies from all the different various organizations and sources to help manage their tinnitus, and this is where you can also go as the hearing care practitioner for gaining more information and insight to convey to your patient. My plan, this is a function in the Tinnitus Calmer App that the patient can use, and what it does it starts with a short tinnitus screening. It's asking a variety of questions that have to do with how the tinnitus is affecting that person, how much time they're willing to commit and to describe their tinnitus as best they can, and then the results from my plan will create a weekly customized tinnitus management plan for the user to follow.

So some of the things that it is going to ask, they'll be questions such as "Does your tinnitus make it difficult to relax?" "Does your tinnitus make it difficult to concentrate and-or focus?" "Does your tinnitus make it difficult to sleep?" "Does your tinnitus have a daily negative impact on your life?" "Does your tinnitus affect your ability to communicate with people?" And "How many minutes are you willing to invest in my plan per day?" Which is really important. We all have busy schedules, and sometimes some days are harder than others, so that the patient really needs to think about what amount of time can they really do this, and they have different variables, five, 10, 15, 30, might even have longer. It's hard to see on the screen, I know. And then the next thing that it's going to do is it's going to ask questions regarding the type of tinnitus, and have the user select the sound which most resembles their tinnitus, so they'll have the choice of A, B, C, or D, they'll play each one of them, and then which sound that they hear resembles closest to what they're experiencing. And then after, it will ask which sounds are most pleasant to listen to, with the ability to balance the sound more to the right versus the left, or equal in both ears. My Usage is another section under My Plan, and what this does is it logs the use of the Beltone Tinnitus Calmer App, as well

as user preferences, on a monthly basis. In the My Plan, the user can also track their progress for the week, and the Tinnitus Calmer App, because of having all of these features and capability, it can be a really useful tool in so many ways to support those suffering with tinnitus, so you yourself can actually go in and look at how they have been utilizing what type of progress they're making, and use that as a counseling tool.

So we've discussed about tinnitus, we've discussed about sound generators. We've discussed about the Tinnitus Calmer App. Now we're gonna discuss about the Tinnitus Breaker Pro, and Beltone's hearing aids also contain the capability of having this feature, and what it does is it turns on the sound generator noise, what we were talking about earlier, or even nature sounds, to help manage and decrease the tinnitus the end user is experiencing. The Tinnitus Breaker Pro is set up by you as the hearing care professional, and this is within the Solus Max software. As far as the hearing aids that have the capability of the Tinnitus Breaker Pro, obviously your 17, your nine, and your six levels are always going to have that capability, and then the Ally products will have that, but when you get into especially with the lower-end version and more budget, when you get into origin, then you're not gonna be seeing this particular type of feature.

So Beltone's Tinnitus Breaker Pro is available in all, which I just described, of the current Beltone hearing aids. It is found in the Solus Max software under the menu, so we call that the hamburger menu, located to the top right of most screens in the fitting software. Here you'll see that we are in the first program tab, which is called All Around, and the Tinnitus Breaker Pro is activated per program in the software, so that it can be used as a hearing aid user sees fit, and in this tab, sorry, it flipped screens for me, in this tab we have the option of activating the tinnitus sound generator by switching it to on. So when you go ahead and do that it turns it on in just that specific program, so you can choose which programs you wanna utilize it in, or which programs you don't, and that's really just gonna be patient-dependent, on what they need and what types of environments that they go into. So once on, the options

actually for manipulating the tinnitus sound generator are available. Now the actual hearing aids will be playing generated sound, as shown, by the shaded area on the dB SPL frequency graph for the right and left ears. So you see the audiogram within there, and then you see that gray shaded area showing how much of the sound generator is covering or being utilized for that individual. This picture shows the tinnitus sound generator options for the right ear, and the volume bar is represented by this slider, where you can go up and down, and the level in this particular image is set at 55 dB SPL. Now, as mentioned, the recommended level for the Tinnitus Sound Generator is equal to or less than the perceived level of the hearing aid user's perceived tinnitus. The level should always be set with the hearing aid user present, and providing feedback on the level of the generated sound compared with their tinnitus. That's very important to make sure that you are not overstimulating, or giving them too much generated sound that could be harmful to the user's ears, but also to make sure that it's definitely audible and functioning appropriately and giving them what they need for managing the tinnitus.

So one method of setting the level is to actually first match the generator to the perceived level of tinnitus and then drop the level by approximately five dB. That is provided the generated sound is still audible to the user. It needs to be audible in order for it to be able to do anything for them. Another method of level setting is actually called threshold of audibility, and I'm gonna actually pull up the steps. This is where the threshold of audibility for the tinnitus sound generator is established, so where they first hear the sound generator. Then the level needed to completely mask the tinnitus perception is established. And then the level is set five to 10 dB above the threshold for the tinnitus sound generator, ensuring it does not exceed the masking level. So find the threshold of white noise, then find the lowest level of effective total masking, and then set the volume slider five to 10 dB above threshold. So what sound is played by the Tinnitus Sound Generator is actually determined by sound preset, and can be customized by the hearing care professional by manipulating the frequency range of the sound played. So there's different sound presets, and then the range, it defaults to

a broader range within the Tinnitus Breaker Pro software version. The default for the noise is white noise, which is a wide-band sound, and the energy is skewed to the higher frequencies. Now, generally, the best sound for a patient is to choose what they prefer or is the one that's the least irritating to the user. Now, white noise, high frequency noise, we've got the ability to do speech noise, we've got the ability to do pink noise, pink noise is where the intensity decreases as the frequency increases. So those are the kind of particular things that you can set. Again, white noise is the default, with a broader frequency range. Now, matching the pitch or frequency of a tinnitus sound generator to that of the perceived tinnitus, this is known as frequency or pitch matching, is sometimes used by hearing care professionals, but there's no unequivocal evidence that this is more effective than a broadband signal. However, it could be beneficial, or considered beneficial, in circumstances where perceived tinnitus is relatively loud, and the tinnitus sound generator should not mask environmental sounds or communication.

So that is where then you actually narrow the response closer to that surrounding the frequency that the person is experiencing, the actual tinnitus, but we do find in most cases, using the broader scope is the better idea. Aside from setting the level and type of sound generated, amplitude modulation can also be added. Amplitude modulation actually causes the sound to decrease in level and then return to the set level by a specified amount. The cycle can be thought of like a wave, so like a rolling wave is kind of what it sounds like. And then the speed at which this cycle occurs can also be manipulated. There are three settings for modulation speed, slow, which has a cycle of approximately eight seconds, medium, which has a cycle of approximately four seconds, and then fast, which has a cycle of approximately two seconds. Adding modulation can help in ensuring the generated sound does not become irritating and is more of an effective distraction, and it should, the use of it, should be determined, again, by that user's preferences. So it really will depend on them whether they like it or not like it, or to which level they like it at. Ear-to-ear synchronization, so the option that's actually shown here defaults on, affects amplitude modulation. So when it's

turned on, it ensures that the cycle of amplitude modulation, if added, is synchronized between the two devices, so the two ears, right and left. With the cycle synchronized, generated sound will be less irritating to the hearing aid user. So to kinda give you an example, back before we had ear-to-ear synchronization, and this was available in Tinnitus Breaker Pro, sometimes what would happen is if you had amplitude modulation on, because the ears weren't synced the right ear would end up modulating different than the left ear, and it was irritating to the patient, and so sometimes you would actually end up turning the modulation off because of that. Now it's gonna keep the cycles the same. Also available for manipulation is the function of the volume control, so that's here kind of at the bottom, and if the volume control is selected, any volume changes will not change the level of the surrounding environment.

So through your hearing aid microphone. They will change the level of the tinnitus sound generator. This can be beneficial for those who experience different fluctuating levels of tinnitus, sometimes that they get whenever they have fatigue or stress, the tinnitus seems to exacerbate, or increase. Now, when you set to stimulus level, when it's set to that, the level of the tinnitus sound generator can only be manipulated using the HearMax app, not through the regular volume control, or a handheld volume control, or anything, only through the HearMax app. So the option of environmental steering actually acknowledges that tinnitus in most cases is going to be more perceptible in quiet situations, relative to louder situations, and the level of the tinnitus sound generator will change depending on the environment the hearing aid user is in, so this is combined with the volume controls, that any changes to the level of the tinnitus sound generator, created by the environment, so what the environmental steering, and it allows it to be overridden. However, since environmental steering automatically changes the volume of the generated sound, it can be a more desirable option as a volume control, itself can be counterproductive. It makes the hearing aid user focus on their tinnitus more. So it really just depends on the patient. It's something that if you want to try and utilize, you can. You don't necessarily have to.

And then it also will depend on the patient's own function of regular volume control, what types of environments they're going into. You could have one program set with this on, you could have one program with this set to off. But to kinda take it a step further and explain a little more, when you're talking about environmental steering this graph helps to show what will happen to the level of the tinnitus sound generator in different types of environments. These environments are determined by the hearing aid's environmental classifier, so in our system, our environmental classifier includes seven different listening environments that the hearing aid actually detects. It can detect whether it's speech, whether it's noise, speech and noise, how loud it is or how soft it is, and our environmental classifier is 98% accurate. It's really really good, great at adjusting the hearing aids based on the situation that the person is in.

So what'll happen is it will be loudest in quiet environments, where there is less sound input, and thereby also less distractions. The inverse of this is that in louder environments the level of the generated sound will be far softer, as there is more sound input and thereby also more distractions. Environmental steering also functions on probability. So the level is determined by the probability of the classified environment being quiet. The level in quiet will be the level set in the Solus Max fitting software, so if the probability of quiet is 100%, then the generated sound is played at the set level, so if your set level was 55 dB SPL, that's what they're talking about. If it's probability of quiet 100%, that's what the generated sound is playing at. If the probability is less than 100%, then a reduction of zero to minus 20 dB from the set level is selected, and that will vary depending on what it finds as the probability, but anywhere, of a reduction of zero to minus 20. So another option that is available is the level of the microphone relative to the level of the tinnitus sound generator. This option is by default set with environmental microphone equal to the tinnitus sound generator, so you also see this in our hearing instruments when you are using, so say for instance myPAL Pro, you have the ability to balance what the hearing aid microphone is bringing in versus the streamed signal from the myPAL Pro, or the TV Link 2. You also will see it under the programs in your features tab when you are taking a phone call. So you have the ability

to balance how much the person is hearing from the hearing aid microphone versus the actual phone call, so this is very similar in nature. If mic-off is selected, the tinnitus sound generator will be the only thing playing through the hearing instrument, so just that sound generator noise, and this is likely to decrease environmental awareness, but can be useful as part of a sound therapy program, so you can do a TSG-only program. Increased sound stimulation delivered by a hearing aid can be key in reducing perceived tinnitus, and may be preferred by the individuals enrolled in a sound therapy program, so that's the combination of having the hearing instrument amplification as well as the tinnitus sound generator happening at the same time. This is more commonplace utilized when it's the TSG-only program. Sometimes that's used where a patient goes to that program, maybe they like reading a lot throughout the day, in quiet. Maybe they live at home alone, and they just want to reduce the level of the tinnitus sound when they're in that situation, or when they take a nap, or go into bed at night, if they decide to wear their hearing instruments in that particular manner, they could set that tinnitus sound generator only program.

So depending on the level of technology of the hearing aids have, so for instance when you look at 17 versus nine versus six, and things like that, depends on the product to newer versus older in our product line. The extra feature within the tinnitus sound generator that can be available is called nature sounds, and nature sounds are generated soundscapes that are mimicking six different natural water sounds, and these sounds were chosen, they did a bunch of internal studies, which showed the most popular natural sounds for sound therapy were based around water, so breaking waves, water creek, calming waves, beach surf, ocean, and shoreline, and you have the ability to turn that on or off if you want the patient to utilize it. Now, each nature sound is described, obviously, by its name, as I just mentioned, but all sounds actually have their own modulation characteristics, and they mimic the ebb and flow of water in different environments, and it's important that the nature sound selected is the same for both ears. If the user wishes to manipulate, through the tinnitus manager in their HearMax app. If they have two separate options, so say they choose breaking waves in

one ear and ocean in the other, the tinnitus manager options for adjustments will disappear from the app. Nature sounds can be modified with regards to frequency, and how to do that is in the Solus Max fitting software, you as the hearing care professional can click show advanced settings, and this will reveal options for removing low, mid, or high frequencies from the nature sound, so that again will depend on the patient, specific to them and what they need to hear, and how utilizing it. When the tinnitus sound generator is active, and how that's active is if you have the Tinnitus Breaker Pro set in a program for a patient, then they have the ability, if they have the Beltone HearMax app, to be able to utilize this functionality, and what they will do is they will see that Beltone tinnitus symbol, so as I mentioned before, the circle with the little arrow emanating out from it, they'll see that not only on the program card up in the program carousel where it's pointing right now on any program that that is being utilized or turned on from the software. And the tinnitus manager itself, you can access through the sound enhancer, it flips you over into the sound enhancer settings, and then you can actually select the tinnitus manager, and all of your settings for managing the tinnitus are going to pop up.

So the hearing aid user will have the ability to change the pitch of the signal provided, and add, remove, or modify modulation of the signal, and then when nature sounds are active, the hearing aid user, you know, in the Beltone HearMax app, again, they'll see the same tinnitus symbol on the program card and program carousel, and they can access the tinnitus manager and be able to switch between the nature sounds. With that, the hearing aid user will also have the ability to change the nature sound generated back from that to a standard white noise signal by pressing the play button above. And then if they are using that white noise signal, as I mentioned, you can narrow or broaden that frequency response of the white noise signal that's being presented. So in summary, Beltone's tinnitus sound generator provides comprehensive options for relief from and assistance in managing problematic tinnitus. And today we discussed the end user benefit associated with the tinnitus sound generator options. We highlighted the features of the Beltone Tinnitus Calmer App and Tinnitus Breaker

Pro. We have shown in detail how to navigate both the Beltone Tinnitus Calmer App and Tinnitus Breaker Pro within the Beltone Solus Max fitting software, as well as described the appropriate level setting for a tinnitus sound generator within our Tinnitus Breaker Pro. So that is all I have for you to today as far as tinnitus management from Beltone, and hopefully this gave you some helpful tips to take back and implement into your practices for working with patients that are suffering from tinnitus, and I just wanted to take a moment and thank you very much for attending today and joining me, and taking time out of your busy schedules.

If you have further questions, please feel free, send them to me in the question box on your screen, and I will stay in the classroom for a bit longer to see if anybody has any questions. If you would choose to do so, for other information on our Tinnitus Breaker Pro feature, as well as tinnitus in general, there are a few courses on our Beltone University training platform that you could also take. So does anybody have any questions? Hopefully some of you have been utilizing this. I really love the Calmer App because it can be used in so many different ways. I even, when I'm on planes, I'll be talking to somebody next to me and something will come up and I'll be like, oh, you need to download this, and sure enough, we have them hooked into the Calmer App, and it's not only showcasing that but it's showcasing Beltone in general, so something that you can always talk about. So it doesn't look like there are any questions, but again, I wanted to thank you for joining me. I want everybody to stay safe and healthy out there. I know it's a tough time. Hopefully at some point we are going to start up having some seminars that we actually will physically see each other for continuing education, but until then, you know, hope to talk to some of you, and take care, and I'll talk to you soon.