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Advanced Hearing Aid Programming: Applications for the Pediatric Population

Presenter: Brittany Cuevas, AuD, FAAA, CCC-A

- [Christy] It is my great pleasure to welcome a new presenter to Audiology Online, Dr. Brittany Cuevas. She's a pediatric audiologist, and she's gonna share some programming tips today for our pediatric population. If you'd like to learn more about for the presenter, you can read more on her bio on the Course Registration page. And at this time, I'll hand the mic over to you, Dr. Cuevas.

- Thank you, Christy, and thank you all so much for being here and taking time out of your day. So today's presentation is on "Advanced Hearing Aid Programming: Applications to the Pediatric Population". So here are my disclosures. Here are the learning outcomes for today's presentation, and here is an agenda of the different topics that I will be discussing throughout this presentation. And so before we get into presentation, I do have poll question for you all. So the question is, how long have you been practicing as an audiologist? I wanna get an idea of who all is here with us today. So the answer choices are new graduate, one to five years, 5 to 10 years, or 10 plus years. So if you wanna go ahead and answer the poll question.

All right, so let's take a look at the answers to the poll questions. So about 18% of you are between one to five years, 15% of you are between 5 and 10 years, and then 68% of you are 10 plus years. So I see that majority of the guests that we have here have been an audiologist for 10 plus years and that is great. I'm happy to have you all here. I have been working as an audiologist for five years. And I was very excited to put this presentation together and truly have learned a lot while putting this presentation together. And within the pediatric field with hearing aids and software, we're constantly learning new things all the time, so we have to stay on top of that.

So the first topic is gonna be default pediatric settings. So Phonak-Junior mode consists of default set for certain age ranges. It is recommended that you apply the junior mode to the age range that applies to your patient. So typically, for new hearing aid fittings, this screen is gonna always populate unless you uncheck, always recommend, and then it will no longer populate. And this is just to remind you to apply

the junior mode setting if you haven't already. So Autosense OS or Sky OS is the startup program in any junior mode for Marvel and Paradise hearing aids. If you still have patient in Venture and Belong, they will start up in Roger. So Autosense OS is an automatic operational system, so switching into programs that is most appropriate that will allow the blending of programs for optimal listening environment, is always active and adjusting, calm and quiet.

It'll go into omnidirectional speech and noise, it'll go into directional. And here I wanted to show when you're in the fine-tuning and program manager, you can see where the Autosense, Sky OS is and you can see that it's the startup program. So omnidirectional is recommended for patient zero to three years of age to give them access to all sounds for incidental learning. If you want omnidirectional, you would need to make adjustments to hearing a microphone under fine-tuning program options. My rep wanted me to share with you all that Phonak puts forth a proposal based on the resource that has been completed. The pediatric advisory board either endorses or does not endorse that proposal. So therefore the default settings set in that software are based on the research provided by Phonak.

And the pediatric advisory board will either endorse it or maybe they won't, and they are not set by or result of the pediatric advisory board. Okay, so I wanted to show just an example of where you're gonna find that here in a microphone and how you'll be making the adjustments. So in fine-tuning at the bottom of the screen, you'll see program options, which we're taking here. And then at the top is where you'll see the hearing aid microphone. So the top image is an example of the default setting that the software saw fit based on the patient's hearing loss. And they have the hearing aid microphone set at four. And this is an example of a three-year-old that was fit at one year of age.

And so in most cases, I would want them to be an omnidirectional. So that's where you would move the slider far to the left and you can see that it's at zero, and it's an

omnidirectional mode, and then you'll go ahead and save it. So this is in calm situation, but you can also make adjustments to the hearing aid microphone and Speech in Noise, Comfort in Noise, whichever program you feel is necessary, You can make changes to the default settings for junior mode and setup. And I wanted to show that when you open up the software and you're in your home screen, the setup is gonna be at the bottom. Note that the changes you make apply to all patients in Noah, not just to your patient and target mode.

So if you wanna make changes that only apply to your patient specifically, you will want to add a program and program manager. So here is what you will see when you're looking for junior mode in setup. And so you can see at the top, there is junior mode and they have all their different default setups. And then the second image is just showing... I clicked fitting formula for example. So you could see the fitting formulas that were set for the certain age ranges, and then you can see a program manager and all the different defaults that were set for the certain age ranges. So reminder, when you're making changes in here, those settings will apply to all patients in Noah that utilize Phonak hearing aids.

If you only wanted to apply to just to your patient, you'll need to add a program and program manager. So Otikon-Pediatric Panel, when you open up the software, the pediatric panel will always populate, and this is exactly what you'll see every time you connect the hearing aids. So based on the age of the child, Oticon has their default settings that they will apply as well. So the default settings can be adjusted on your preferences pediatric setting, and you can find that at the top of the screen. I would say preferences and then pediatric settings. Again, if you make changes to the default settings and preferences pediatric settings, those defaults will apply to all patients in Noah.

If you want to apply changes just to your patient only, you can still do it in the pediatric panel, but in a different way, and then also by adding a program and program manager

or making changes to the more sound intelligence, which I'll be touching on in a little bit. So this is the pediatric panel that you're seeing on this slide, and you can find that at the top right corner, it'll say pediatric panel. So when you click on that, this will populate, and this is where you can make changes if needed. I wanted to bring attention to the directionality settings that I had noticed, and I wanted just to provide some clarification. So for the fourth, 18-year-old range, you can see that the directionality setting is open automatic, and that just simply means open sound navigator, which I will clarify in just a minute.

And then the zeros to four age range, you can see that it's pinna omni. That means that the microphone is an omnidirectional mode at all times with a little bit of pinna effect, which allows for more focus. So next we'll be discussing Feedback Manager for Phonak. Running Feedback Manager gives an idea of overall fit of the hearing aids and the amount of gain available as a result of the fit. So they recommend to run for new fittings, following program adjustments, and new earmold fittings. They also recommend to run for own voice pickup via Bluetooth. So for example, when you're streaming calls, this is particularly important for the Marvel and Paradise hearing aids. I was told that the hearing aid microphone is picking up the individual's voice for the person on the other end to hear them.

And so sometimes feedback can occur as a result of that. So they recommend to run the feedback test just to help eliminate that. So WhistleBlock is an active and adaptive phase canceler that cancels out any momentary feedback. So for example, wearing a hat or giving a hug. And this feature can be adjusted and found under Fine Tuning program options. When you are in program options and if you needed to make adjustments to the WhistleBlock, your options are gonna be weak, moderate, or strong, it's recommended to run the feedback test first and start with the default whistle block setting based on that test. You may find yourself needing to adjust the whistle block, so maybe increasing it.

And you would do that if the patient has grown, and their earmolds are loose-fitting so they're getting a little bit of feedback until they get their new earmolds. And then reminder, you wanna run that feedback test again for the new earmold fittings. I wanted to bring attention to the feedback test screen and just kind of talk about what are we looking at and what are we supposed to be seeing after we run that feedback test. So the curves represent the red and blue curves. They represent the available gain for 50 dB speech input. The purple line is the feedback threshold line. So the red and blue curves are the feedback measurements from the hearing aids, and we want there to be space from the threshold line and the red and blue curves.

So this is just showing an example of running the feedback test. It looks great. There is space between that feedback threshold line and the red and blue curves. So in this case, you should hopefully not hear any feedback from the hearing aids. If you felt that you needed more gain, you can check the allow gain to exceed more than a maximum 5 dB and matches a simply allowing an additional 5 dB of gain. They are the WhistleBlock, it is recommended to keep this turned on with pediatrics. And this is simply just gonna help manage that feedback when the patient hits the growth spurt and their earmolds are loose-fitting. I did ask the question of, if there would be a time when whistle block would be turned on without running the feedback test, and it was advised that the only time you would consider doing that is if you cannot run the feedback test.

So maybe the patient's intolerant of the loud sounds, or maybe just the room is too loud and you can't get it quiet enough, that's when you would turn the WhistleBlock on without running the feedback test. So Oticon recommends to run Feedback Manager as needed. They have automatic feedback management features, and they believe that other adjustments can be made to alleviate feedback prior to running Feedback Manager. So here are the different feedback management features for OPN Play and for the Play PX and more. I will not read all this to you guys, but you can see just at a glance that the features are pretty similar between both hearing aids. The slight

difference would be for the Open Sound optimizer, it provides more gain and allows for more open fittings without compromising sound quality or audibility.

And then for the More Sound optimizer, it gives access to speech details with more natural sound, increased comfort, and improved speech understanding. So ideally, the kids can be active, wear hats, helmets, give hugs, all without the presence of feedback because of these features, I did want to make a note that if needed, you can make adjustments to both the Open Sound Optimizer and the More Sound optimizer and automatics feedback management. There is a low setting option, and if you were to choose that, you're just simply allowing the presence of a little more feedback so it's not as aggressive towards providing improved sound quality, less gain reduction. So here I wanted to show you where you can make adjustments to that Open Sound Optimizer or the More Sound Optimizer.

So you have your automatics on the left side bar. You'll see the feedback management, and this is an example of the Play PX. And then you can see it's off, low, or normal and it's defaulted to normal. For the OPN Play, your option is either just gonna be on or off. So I wanted to bring attention to Oticon's feedback analyzer and again just talk about what are we looking at and what should we be seeing after we run the feedback test. So the shaded area is the area of feedback risk. The solid and dotted lines are the simulated coupler, a real coupler difference and target insertion gain respectively. So the solid line is the gain going into the hearing aid and the dotted line is the DSL target.

So we want to be looking at solid line. Typically, both lines will overlap, but the solid line will change based on RECD input or gain adjustments. We also want there to be space from the shaded area and the solid line. So again, this is showing you an example of we ran the feedback test. And you can see there's a space between the shaded area and the solid line, and it looks good. You should hopefully not hear any feedback. I did want to point out that what you're seeing on this feedback analyzer

screen, you will also see on the fitting screen, and there's a reason for that. So here you can see now we are on the fitting screen.

So where you see a dip from the dotted line, which you're looking at the 4,000 hertz is where there was feedback. And the feedback analyzer had decreased to gain automatically to eliminate the feedback. And so that's what's happening. So the feedback analyzer detecting feedback. And if it sees it, it's going to automatically decrease the gain where it's occurring to eliminate it. And again, in most cases, we won't hear the feedback. Patient reports good sound quality, you'll move on. But if you happen to be concerned about how a significant gain was decreased to eliminate that feedback, you can clear it and then manually decrease the gain yourself until the patient no longer or you no longer hear the feedback.

Something to note, when you do clear it, the dip, the dotted line is gonna go back up to where like the solid line is because they're touching each other. And so you just have to kind of make a note of where the feedback was occurring, and then you can highlight it and then decrease the gain. So next, we will be discussing noise reduction management. But before I get into that, I do have a poll question for you, guys. So have you used Phonak audibility and/or automatic Fine Tuning to program your patient's hearing aids? So the answer choices are yes or no. So 40% of you have said yes and 53% of you have said no. So that's a pretty good amount where some of you were saying yes and some of you were saying no.

So that's pretty good. And we'll be talking about audibility and automatic Fine Tuning. So on your program manager, there is Speech in Noise, which is improved speech intelligibility and comfort in noisy environments. Then there's Comfort in Noise, which is improved listening comfort in noisy environments. I did wanna mention that these descriptions of these certain programs or features, they can be found in the software. So for Speech in Noise, there'll be an eyes symbol next to it. If you hover over it, it'll give you the description of Speech in Noise. And that can be found throughout the

whole software when you're wanting to know about certain features. Under Fine Tuning, there is the audibility and automatic Fine Tuning.

This is a really great tool. I use this quite a bit. And what is providing you are categories. So if a patient is pressing a certain noise concern, like maybe for example car noise, you can go into audibility and click the noise category, and then you can see like traffic noise, car noise, or wind noise. And then you can click on car noise and then you can see what the software is recommending to make adjustments to help with that. I saw that for audibility, it's just kind of more general, but if you go into automatic Fine Tuning, it's more specific, and it actually has like specific issues that could apply to your patient. And so if you're doing the car noise, they may say it's just too loud.

So then you'll go into automatic Fine Tuning and you'll click overall too loud fix issue, and then the software will automatically fix the issue for you. I use this quite a bit for patients that might also report like issues with their own voice. So like if their own voice sounds echoey, and I know that's pretty common for new fittings, but sometimes after they've worn the hearing aids for some time, they can still feel like their voice sounds echoey. So I'll go into automatic Fine Tuning own voice echo and then just fix issue. And that has been very helpful. So every now and then, a patient's gonna express a certain concern that I just not sure what I need to do to help that.

And so I like to go into audibility and automatic and just see, are those categories and those scenarios in there? And if they are, then I'll use that to help me to make adjustments. On your program options, there is NoiseBlock, which reduces uncomfortable environmental noise while maintaining optimal sound quality. There's also SoundBlock, which reduces sudden loud noises. And then there's WindBlock, which reduces wind noise. I actually wanted to share a situation with a patient. I had a patient last week who was in the Audéo Paradise Rec, rechargeable. And he works around a lot of loud machines. And he was expressing to me, like, "Hey, I have a very

hard time hearing people when they're talking to me when these loud machines are continuously going.

And I still wanna be able to use my hearing aids. Is there just something that we can do about it?" So what I did was I went into program manager, and I added the Speech in Noise program. I then went into program options. And within the Speech in Noise, increased his NoiseBlock. So it was set to a weak setting, and I increased it to a moderate setting. And I explained to him that I had added a program and how to switch to the second program. And so I advised him to give this a try. And if we needed to make further adjustments, we could do that. So I haven't gotten a report back yet, but I'm hoping no news is good news.

For OPN Play, they have Open Sound Navigator. And so within the Open Sound Navigator is the Open Sound Transition, which is the amount of help with auditory focus. Before I get to my next slide here, I just wanted to mention the Open Sound Navigator uses traditional noise removal features. So it's working to reduce enough noise in the environment to significantly reduce listening effort while still maintaining an open sound experience. So I'm gonna jump to my next slide here. And so in the middle is where you'll see that Open Sound Transition that is helping with auditory focus. And you can see in this example is set at medium. There is noise reduction, which is the amount of noise production applied to minimize background noise.

And so you can see at the kind of bottom left is the noise reduction. And then they also have settings for simple situation and then for more complex noisy situations. And when that box is checked, that means that that feature is on and is active, and it's the last step that is working to rapidly reduce any remaining dispersed noise. I did wanna point out that if you're ever wondering about Open Sound Navigator, for example, like what is this doing? What are the features within it? At the top right corner, you'll see a question mark. If you click on that question mark, it's gonna take you to a separate page that will explain Open Sound Navigator, what is it, and the features within it, and

even give you some recommendations on certain adjustments that can be made based on certain complaints that you might hear in the clinic.

For Play PX and more, there are more sound intelligence is neural automatic, which equals open automatic, which is Open Sound Navigator. It's contained neural noise suppression, which suppresses noise. And when that box is checked, that means that that feature is on and active. So I'm gonna jump to my next slide here. So we can see on the left sidebar, more sound intelligence. And then you can see at the bottom left, the neural noise suppression and that box is checked. Next is the Virtual Outer Ear. And the Virtual Outer Ear compensates for loss of pinna effect and essentially provides frontal focus to awareness of surrounding sounds. And so back to this slide here, you can see on the far left the Virtual Outer Ear and where that's located.

Before I continue, I did wanna make one other point about the neural noise suppression. Well, neural noise suppression, it contains a deep known network so it's using an algorithm from 12 million sound scenes to be able to make adjustments. As I mentioned, it contains a deep known network, so using those different algorithms. So the last feature is a Sound Enhancer, which enhances speech sounds primarily 1000 to 4,000 hertz. And so at the far right, you can see that Sound Enhancer. Oticon recommends for pediatrics to not make adjustments to the more sound intelligence unless you absolutely need to. If you do need to make changes, you have more capabilities to make changes in the Play PX 1 versus the Play PX 2.

So what you're seeing is an example of the Play PX 2. But I have seen in the Play PX 1, you can make adjustments to the Sound Enhancer or the Virtual Outer Ear, for example. I wanted to share a patient story where I actually had to make changes to the more sound intelligence. I have a teen, and he wears the More 2 miniRITE R hearing aid. And he was hearing this shh sound in a quiet room, and it would be continuous. So in this case I just wasn't sure what I needed to do to help eliminate that. So I contacted Oticon, and the individual I spoke with advised that I decrease the soft gain by a few

clicks. And then after I did that, I had to go into more sound intelligence and change his default moderate setting, which you're seeing on the screen to simple under environment configuration.

Indicated that doing that was having the hearing aid works sooner to minimize the noise. And this means that whatever is in that dark shaded region will be considered a difficult sound environment, therefore, the Speech in Noise features will kick in sooner than what it was defaulted to. So for my patient, by moving it to simple, even simple noisy environments, we needed that more sound intelligence features to kick in even for those simple features, I mean, those simple noisy settings. So after I made these changes, the patients said he no longer heard that shh sound, and I've seen him many times since and he has no longer reported that issue. So the next topic is gonna be verification.

And before I get into that, I do have another poll question for you all. So in verifying your patient's hearing aids, do you verify only using the Verifit, or do you verify using the verification features within the software? Your answer choices are Verifit only, verification features within the software, or I was not aware there were verification features within the software. All right, so it says that 48% of you have said Verifit only, only 29% of you have said you do use the verification features within the software, and then 23% of you have said that you were not aware there were verification features within the software. So this is a pretty good mix, so I'm glad to see that. So we'll go ahead and we'll get into verification.

So Phonak's verification assistant is a step-by-step process/guide for verifying hearing aids if you do not have your own protocol. And so you would use verification assistant to help guide you through that hearing aid verification. I would imagine that most pediatric facilities are gonna have their verification protocols. But maybe if you need to revise it, or you maybe do need to create a new one, Phonak has provided this verification assistant that you can use as a guide So it turns off all extra features and

confirms gain targets within those features. So example, NoiseBlock, WhistleBlock, Sound Recover. Doing that allows for the ability to easily follow the University of Western Ontario's recommended protocol for verifying frequency lowering devices.

So the University of Western Ontario, they have a pediatric protocol for hearing aid verification that Phonak refers to. When verifying hearing aids with the Verifit, you can make gain adjustments to meet targets through the verification assistant. Phonak does not recommend that you always use the verification assistant to verify a hearing aid, but it can provide a quicker navigation. And one of the other perks to the verification assistant is that the fitting of the hearing aid is gonna be more fine-tuned to the patient's hearing loss. So I kind of wanted to show you what you'll be looking at when you get into the verification assistant. So when you're in Fine Tuning on the far right, that's where you're gonna find the verification assistant.

Once you click on that, it'll take you to this page, which is gonna show you your acoustic parameters, the RECD information. So nothing too important on this screen. You'll click continue. And then you're gonna wanna choose if you're doing text box or real ear measure, then you'll click continue. And then you're gonna wanna choose if we're verifying in the startup program, all programs, or if there's a specific program that you wanna verify, you can do that as well. In most cases, you're gonna do startup program and then all programs. But say you have like a music program and you wanted to verify the hearing aid just in that program, you can go ahead and do that.

So once you made your selections and you click Continue, it's gonna take you to the verification assistance screen. And so this is where you can make your gain adjustments if needed based on what you're seeing on the Verifit. I will say, prior to this presentation, I knew that the verification assistant existed. I could see it, but I didn't know what it was or that it was there to help me verify hearing aids. And so when I learned about it for this presentation, I was like, "Wow, like this is very useful. I really

like what its purpose is." And so I have been using it ever since to verify my patient's hearing aids, and I really like it.

It really truly is a quick navigation, it's very easy to click through. And I find that I don't have to try to meet targets too often. or if I do, I just... For example, like two 50 to 500 hertz, I'll increase the gain like once or maybe like three clicks, and then my target is already met, and I don't have to continue to keep making adjustments to meet targets. And I really like that through the verification assistant, the hearing aid is being more fine-tuned for the patient and their hearing loss, and it just means that the patient's gonna get even better sound quality from the hearing aids. If you can also see that you can verify Sound Recover to through the verification assistant, and we'll be talking about that in a little bit.

So Oticon's REM Autofit, it performs hearing aid verification for you. It will verify the hearing aids once through, then we'll automatically adjust the gain to match the prescribed targets. You have the option to manually adjust the gain as well. You do have to manually run for MPO because of loud sound input, and you wanna make sure you can stop it quickly if you need to. You can print the verification report under File, Generate report. If you do measured RECDs, that information will transfer as well. You cannot verify a Speech Rescue through REM Autofit and we'll be talking about that in a little bit as well. I highly recommend the REM Autofit. When I first learned about this and got training on the REM Autofit, I thought this was so cool.

Like wow, here's this feature that's gonna verify the hearing aids for me. And I have been using it ever since. It really is a time saver. And it's actually pretty cool to see like where the targets were not met initially and then what the software did to make adjustments to meet the targets. It's pretty spot on. I rarely have to manually make adjustments myself to meet certain targets. I also like that I can print the verification report. We like to print the reports to scan into medical records. And so for Oticon, it

has everything. It has your RECD information, the Verifit information. It has the hearing aid information, which is helpful, and then of course the patient's name.

So I really do like the REM Autofit. So I wanted to walk you through what you would be seeing. So on the left sidebar, that's where you'll see REM Autofit. And the first thing you're gonna do is click the VerifitLINK. So in this situation, you wanna make sure that the software is connected to the Verifit. So two ways you can do that is under preferences measurement modules and you'll see a section to input the IP address of the Verifit. Otherwise, when you're clicking the Verifit and it's trying to connect to the Verifit, an error will populate and it'll say, "Could not find the Verifit. Please ensure that the IP address is correct," and then that's where you can input the correct IP address.

And you can find the IP address on your setup on Verifit, and it'll be right there. So once the software is able to connect to Verifit, this will populate. And you're gonna wanna choose rear ear, or if it's on, ear or text box, your fitting rationale, your signal type. And then if you're doing Verifit measured or Verifit average. And reminder, if you do measure RECD, they will transfer to the REM Autofit. So in order to move on to your next screen, the number's at the top, that's what you're gonna click on. So then you'll click on number two, and this is where the hearing aid is gonna be verified. So this is an example of a unilateral.

So you'll click start 'cause you can see you're on automatic. And then you're just gonna watch that Verifit just automatically verify the hearing aids for you. If you have a bilateral user, it will verify both hearing aids at the same time. There'll be a button that says both and you'll just click that. So once it's done, you'll want then go into manual. And this is where you're gonna run your MPO. And this is also where you can make adjustments to gain if you need to. You're gonna have to uncheck the 50, 65, 75. And you're gonna check M P O and you're gonna run it. When you feel good about everything, you're gonna click number three. And this is where you'll apply the settings and then you're good to go.

So next, we'll be talking about Sound Recover 2 and Speech Rescue. So Sound Recover 2 is a frequency lowering signal processing. Its purpose is to lower high frequency sound into an audible range if these high frequency sounds cannot be made audible via conventional hearing aid processing. So it's simply the process of shifting sound from one pitch to another to make these sounds more audible. So it's like frequency compression, but for Phonak, it is through frequency lowering algorithm. This can all be determined through verification when high frequency targets are not met. So the Sound Recover 2 has the features of the first Sound Recover where it protects the structure of low frequency sounds, such as vowels and compresses high frequency sound, such as fricatives, so the b, the f, the s, the sh.

But what is different about the Sound Recover 2 is that it is adaptive, it's not fixed. So that means that it is carefully applying frequency compression to vowels versus consonants and running speech. So it's keeping those low frequency vowels sound clear, not muddy. It's, of course, at your discretion if you feel that Sound Recovery too should be enabled based on the severity of the hearing loss and how the patient reports the sound quality of it. And then another way will be through verification if you're noticing the high frequency targets are not being met. Phonak does recommend to use Sound Recover for patient at any age including a three-month-old, for example, based on the severity of the hearing loss.

So when enabled, adjustments to Sound Recover 2 automatically set as a software sees fit. There are a couple different ways that you can make adjustments if needed. First is the Audibility-Distinction Slider. And it adjusts the frequency location and strength of the compression ratio. So more frequency lowering is applied as a slider is moved to the left and less is applied as a slider is moved to the right. So it's working more in one direction and less than another. Towards audibility, you're shifting more to the low frequency range. And then towards distinction, you're distinguishing more between high frequency, such as the s and the sh. If you have a patient that is

reporting like they are having a hard time hearing between the s and the sh, the distinction portion of the slider is where you wanna make adjustments to to fix that.

The Clarity and Comfort Slider, it fine tunes the adaptive Sound Recover 2 settings. So as the slider is moved to the right, the overall strength of Sound Recover 2 is made weaker. It is recommended to not make adjustments to the Clarity-Comfort Slider unless the patient can provide feedback. I wanted to provide a few different examples of when Sound Recover is enabled and when you may need to make adjustments. So first, Sound Recover, when you're in Fine Tuning, you can find it at the bottom, Sound Recover 2. And this is just showing you an example of it being enabled. The software has their set settings. And in this case, patient reports good sound quality, they can hear the /s/ stimulus, you're good to go.

So my next couple examples are gonna show where the Sound Recover 2 had to be adjusted based on the patient's report. And these are examples that were provided to me by colleague who was willing to allow me to share it with with you, guys. So this first example you can see is a unilateral user. She has a normal precipitously sloping to profound hearing loss in that right ear. The audiologist had chosen to fit her with Sky M70 PR hearing aid, and the patient is seven years old. So when the Sound Recover 2 was enabled, you can see where the software has set the feature and by that like target symbol there. And then you can see where the audiologist had moved the slider to the point where the patient could report, "Yes, I hear that /s/ stimulus.

" And the patient was... I'm sorry, the audiologist was the one that was making that /s/ stimulus. And she informed me that she verified it or confirmed it in the sound booth when she presented at 20 dB HL. So this next example is a bilateral, normal, precipitously sloping to severe hearing loss. And this is an 18-year-old patient who's in the Audéo M70-R hearing aid. And so here, you can see again, when it was enabled, where the default setting is and then where the audiologist had to move the slider until the patient could hear the /s/ stimulus. I find it pretty interesting that between the right

and the left ear is different. And that's probably most likely because her hearing loss is not exactly symmetrical.

And again, the audiologist confirmed it in the sound booth when she presented the /s/ stimulus at 20 dB HL. The audiologist also told me that she did verify the Sound Recover after the adjustments were made, but she didn't before. And so she said in hindsight, she should have verified before and after to see those changes. So Oticon's Speech Rescue, it helps to increase speech understanding by rescuing speech cues that might otherwise be lost. So it's giving access to inaudible high frequency sounds. So the Speech Rescue utilizes frequency transposition where it takes the frequency range that is inaudible and moves it to an audible range. So that kind of leads into the next couple points here. It's a copy and keep method and is copying the inaudible high frequency sound, placing them on the edge of that MAOF range while preserving low frequency so that vowel information and sound quality are maintained.

And I will be touching on the MAOF in just a minute. So when enabled, adjustments to Speech Rescue automatically set as a software sees fit. There are three different ways that you can make adjustments to the Speech Rescue if needed. So first is the Configuration Slider. It adjusts the audibility of the /s/ stimulus, and at default is where the understanding of the s is going to kick in and they call that the knee point. So I wanna jump to my next screen here. So here we're on the Speech Rescue screen. And first, I wanna point out that the shaded region is what's being copied and pasted to the audible region. And you can see within that box, you see configuration.

And that's where the software has set the default for that configuration. So next is the Stream Slider, and it applies increased gain to where the /s/ stimulus is located within the frequency transposition range while maintaining a frequency location within the MAOF range. So simply, it's increasing the volume of the /s/ stimulus. So going back to our Speech Rescue slide here. You can see the on the bottom left, that's where your Strength Slider is. So that's where you can make adjustments. I wanted to point out

that the point of the speech, the Strength Slider, is how aggressive the frequency lowering is going to be. So the more you increase that Strength Slider, the more mechanical the s is going to sound.

So you wanna kind of be cautious about that. And I kind of wanna go back really quick to configuration. The higher the configuration, the more natural the sound quality of the /s/ stimulus is, too. So I wanted to make that point. So the last adjustment feature is the High Frequency Bands. So it's leaving gain on for high frequencies past the shaded region. It gives some clues to help differentiate certain high frequency sounds. So turning it off removes the gain for those frequencies. If you are having feedback issues and if you have exhausted all other options, Oticon recommends to turn this off as a way to help. So back to our Speech Rescue slide here. You can see on the bottom right High Frequency Bands, and that feature is on.

Oticon recommends that you do leave this on for pediatrics. So before we get into the next slide, I have my final poll question for you, guys. So I've been talking about Speech Rescue and Sound Recover verification. And so I wanted to ask, do you verify Sound Recover and Speech Rescue when you enable it? And so your answer choices are yes; no, I do not; or I was not aware we had to verify it. So let's look at our answer choices. So 52% of you said yes; 19% of you said no, I do not; and then 29% of you said you were not aware that you had to verify it. So that's another good pretty good mix. And I'm happy to see that there's a majority saying that yes, you do verify it.

And so that's what we're gonna be talking about next, Sound Recover 2 and Speech Rescue verification. It is recommended to verify Sound Recover 2 and Speech Rescue to check and confirm that targets are being met and that the patient has access to all the important speech frequency. So there's kind of three steps in how you're gonna do that. So the first is to verify the hearing aids for Sound Recover 2 and Speech Rescue turned off. So this is an example of a hearing aid that's been verified. All the targets have been met except between 4,000 to 8,000 hertz. So second, you're gonna wanna

run and measure the /s/ stimulus using the 65 dB SPL with Sound Recover 2 and Speech Rescue off. So here, you can see that green line is a 65 dB SPL and that pink line is the /s/ stimulus.

And you can see at that that hump, that shoulder, that peak of the /s/ stimulus is under that 4,000 to 8,000 hertz range. So let's finally talk about that MAOF range. So it's the maximum audible output frequency. So it's the range for span from the point which long-term average speech spectrum crosses threshold to the point where the peaks of speech cross threshold. So we want the /s/ stimulus to cross the threshold of the high frequencies so that that stimulus is meeting the high frequency targets and is audible to the patient. So initially, here, we're gonna try to increase the gain as much as we can to get that /s/ stimulus to meet that high frequency target before we try to enable the Sound Recover 2 or the Speech Rescue.

I wanted to clarify on the long-term average speech spectrum, that offers acoustic representation of a language. So in this example, it's that green solid line that is taking the average of the current passage that is being played through the hearing aids. So the final step is you're gonna wanna run and measure the /s/ stimulus using 65 dB SPL with Sound Recover 2 and Speech Rescue arm. So here, we're back to the same example that I've been previously showing. This is an example from Phonak. And so here, you can see when the Sound Recover 2 was enabled, that peak or that shoulder of that pink /s/ stimulus line has now reached that 4,000, 8,000 hertz target. So now, the patient can hear that /s/ stimulus to be able to hear those more high frequency sounds.

So here are Oticon examples. And this top image that you see is also an example of running that /s/ stimulus. So the blue line that you're seeing is the /s/ stimulus without the Speech Rescue on, and I'm sorry, without the Speech Rescue on. And then the orange line is what you see with the Speech Rescue on. So you can see definitely when the Speech Rescue was off, that blue line is like nowhere near meeting the

target. And then when they enable the Speech Rescue, which is the yellow line, that peak went up. If you still cannot get the S stimulus to fall within that MAOF range, particularly that upper shoulder, for Phonak, you can use the audibility distinction slider to make adjustments to fit within that range using the weakest setting possible.

So you're moving the slider to the right. And then for Oticon, you would use the configuration slider and you would make adjustments using the weakest setting possible by moving the slider to the left. For Phonak, they recommend to have the /s/ stimulus running as you're making adjustments for even more precise accuracy, having that NoiseBlock feature turn off. And if you remember, you can verify Sound Recover 2 through the verification assistant, and those additional features are automatically turned off for you. For Oticon, they do recommend to leave the default settings if the /s/ stimulus is close enough to the target but not quite. If you do need to make changes to the configuration slider by adjusting it lower, you're making that s sound more audible sooner.

Oticon does advise and they feel it's important to ensure that the patient is able to differentiate the difference between the s and the sh. And so if the patient is having trouble doing that, you would then increase your strength slider to make the s sound more audible to them. And then remember the strength slider, the purpose of it is to increase the volume of the /s/ stimulus. And that's actually what they're showing at the bottom image for Oticon. It's maybe a little hard to see, but when they had increased the strength slider, the yellow peak of that a/s/ stimulus is now actually at target for that 4,000, 8,000 hertz range because at the top image, it's just a little bit below so it's not quite there.

And when increasing the strength slider, it's now at that target. So we're nearing the end of the presentation. I have just a couple more additional advanced features that I wanted to discuss to be able to help you support your patient. So Phonak acoustic code, when you order earmolds with venting from Phonak, the invoice has acoustic

codes that you can input into the acoustic parameters within the software. The purpose of this is that it ensures that the earmolds are specifically tailored to the patient and that the parameters are appropriately set/accurate. So what you requested is in that code. This is fairly new, especially since Phonak had come out with their pediatric earmolds. And I know there is the custom earmolds as well for your recs, but I have noticed it most for the pediatric earmolds.

And before I touch on that just a little more, I wanted to point out to this image, and this is where you're gonna find your acoustic code. So when you're in acoustic parameters, most likely for new fittings, it's gonna take you to the instrument screen first so that you can choose your acoustic parameters, your colors, all those little details. And this is where you're gonna input the acoustic code. In this example, you can see that the patient has two different acoustic codes for both ears, but in most cases, it's gonna be the same code for both ears. Another purpose or another benefit to the acoustic code is that the software is gonna have their venting recommendations based on the hearing loss.

So, for example, the software may recommend a closed vent, but you want an open vent. So if you do not add the acoustic code, or you forget to manually change your vent to open, the fitting of the hearing aid is gonna be based on the closed venting, not open venting. And so that's why they just recommend to just simply always include the acoustic code if you're getting earmolds through Phonak. I've also noticed that when I've started doing the acoustic code, that it also helps with feedback. It's like another way to help with feedback management. And so found that to be very useful. I wanted to share a patient's story that involves the acoustic code. I have a patient that is an experienced user.

He was being fit with new hearing aids, and he was in full shell earmolds, and we were transitioning him to skeleton earmolds And I did purchase the earmolds through Phonak. So I do the fitting, I do run my feedback test. Everything sounds great, looks

great, patient has no concerns, we're good to go. Then a few days later, mom calls me and tells me that she's suddenly hearing a lot of feedback from the hearing aids. And she was concerned that maybe it was the skeleton mold. Should we go back to full shells? It then occurred to me that I did not input his acoustic code into the software. So I brought the family back in. I inputted his acoustic code.

And before I had connected the hearing aids to the software, I could hear the feedback. There was definitely a lot of feedback. So when I connected to the software, I went ahead and I inputted the acoustic code, and already it had helped with the feedback. It was still there, you could tell it helped. And then I reran the feedback test and then we no longer heard the feedback, and then there hasn't been an issue since. So the acoustic code is definitely very useful and helpful. So I wanna talk about the rechargeable hearing aids for Oticon, specifically the batteries tab that you will find in the end fitting screen. So it tells you the health of the lithium ion batteries.

When you see that it's at 85% or lower, you want to replace the battery. I was told that if you do see it at 85%, you have some wiggle room, there's like no urgency to immediately replace the battery. But when you see a 80% or lower, then you definitely want to replace the battery. Going behind the hearing aids, it has to be sent in to be replaced. And the battery's gonna last five years, so essentially the duration of the warranty. For receiver in the year hearing aids, you can request a new battery and replace it in the clinic. It's important to note that you do need to input the new serial number of the battery in the batteries tab for the software to recognize it.

So I wanted to show you where you would find your batteries tab. So you'll be in the end fitting screen, and then at the left sidebar, you'll see batteries. And so I wanted to show these couple different examples. I found this very interesting. So this is an example of twins. So I have identical twins, and they each have hearing loss. So one has hearing loss in the right ear and one has hearing loss in the right ear. And in this example, they were fit with OPN Play, receive them the ear with chargeable hearing

aids, and they were also fit at the same time. So the top twin, her battery health was great, no concerns. But then the second bottom twin, her battery health was low and her battery health was actually at 77%.

And so I will admit I was not very familiar with the batteries tab until this presentation. And so that's why I thought it was important to put it in this presentation. And so then I started now looking at the batteries tab and checking on my patient's batteries. And so that's how I came across this for the twins. Sh they were getting fit with new hearing aids so I didn't immediately replace the battery, but if they weren't, I, of course, would've replaced that bottom twin's battery. And then you can also see at the bottom, it says fill in the new battery serial number. That is where you're gonna input your serial number when you replace the battery.

So that concludes my presentation. I just wanted to quickly show you my references here. And then, of course, I have my contact information. And so what questions do we have?

- [Christy] Hi, Dr. Cuevas.

- Hi.

- Can I open up the floor for questions here? And I don't see any in the queue just yet, but we can leave the classroom open just for a couple more minutes. For those of you who do need to log off and continue on with your clinic day, that concludes the content portion of this presentation. So you can just wait for the exam to populate if you're needing your CEUs. And for those of you who have any questions to clarify on programming... Oh here, we we have one. Okay. Dr. Cuevas, Alison asked, how does the Verifit compare to the Phonak verification in your opinion?

- [Dr. Cuevas] I'm sorry, can you please repeat the question? You said how does Verifit compare to?

- [Christy] Phonak verification.

- [Dr. Cuevas] Oh, good question. I found that if I'm just verifying through the Verifit, I tend to have to make a little bit more adjustments to meet targets. But I think what's even more different about it, when you're doing it through the verification assistant is that, the hearing aid is being verified just as the hearing aid. So we're eliminating all these extra features, and we're just making sure that the sound quality of the hearing aid itself is what's truly being verified and fine-tuned for the patient's hearing loss. So when you're just verifying through the Verifit only, you're gonna have those extra features. And it's not to say that you're still not gonna be able to meet targets and get those that's still good sound quality, but you just have the comfort of knowing that like, wow, okay, the hearing aid is truly being fine-tuned specifically to that patient's hearing loss, providing them with maybe even better quality.

And I've also just found that, again, I don't have to make as many adjustments to gain targets when it's through the verification assistant. And I have noticed that the patients, since I've used verification assistant, are just right away reporting really good sound quality, and that I'm not having to make adjustments whether it's increasing or decreasing gain based on their report.

- [Christy] Stacy asked, what battery percentage should you replace the battery?

- [Dr. Cuevas] At 80% for sure, so between 85 and 80%.

- [Christy] Thank you, Stacy, for your question. And Allison wanted to piggyback on her previous question. Do the Verifit targets seem to match the Phonak ones?

- [Dr. Cuevas] That is a very good question. I will be honest, I have not done like a comparison. That is actually a very good question. I would like to assume yes. And I think really, like I said, I think the only really true difference is just knowing that the hearing aid is being verified without those extra features through the verification assistant. But I do believe, and I'm just not definitive on this, but I do believe that the targets are essentially the same if you're doing just through the barefoot or through the verification assistant because Phonak doesn't recommend that you always use it. It's just there as a tool if should you want to use it.

- [Christy] And lastly, to piggyback off of that question, does it include the really or coupler difference if you input that into the patient information to me?

- [Dr. Cuevas] So for a Phonak, no, it does not. Actually, I'm sorry, it does because all you are doing through the verification assistant, it is just to increase or decrease gain to meet target, similar to if you were in the Fine Tuning screen and just adjusting the gain. So yes. When you're on the Verifit and you've done the measured RECDs, that's being applied when you're making adjustments in that verification assistant screen, yes.

- [Christy] Wonderful. And we don't have any more questions in the queue for you, Dr. Cuevas. For those of you who are still logged on, if you think of anything else, Dr. Cuevas has provided her contact email address, as well as her phone number. Very gracious of you. And we would like to thank Dr. Cuevas for her time, for sharing her expertise on how to better program pediatric hearing aids. And this concludes today's presentation. We hope you all enjoyed this. We hope you have a great day. Thank you.

- [Dr. Cuevas] Thank you.