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Grand Rounds by ReSound: A Guide for Improved Hearing Aid Outcomes in Complex Cases

Presenter: Sabrina Calcara, AuD

Sabrina Hi all, My name is Sabrina Calcara. I am a audiologist at Resound. I'm a clinical account manager for the New Medical Channels team. So that's just a little bit about me. I've been with Resound for some time now, so have a lot of experience with our products over seven and a half years.

And I, prior to that I was working at a busy big hospital center in New York City. So that's where some of this knowledge comes from. And today's course is not just focusing on Resound product. It's kind of a little bit more general of how to handle some complex cases. So we're going to get right into it.

So some of the learning outcomes for today or three learning outcomes are you'll be able to modify hearing aid programming for severe and steeply sloping hearing losses. You will be able to propose alternative programming options for reverse slope hearing loss, and you'll be able to manipulate hearing aid programming for musicians. So feel free as we're going through the course, feel free to ask any questions in the chat. I will see them and then I'll get to them as soon as I can. Okay.

I hope this is helpful for everybody. So let's move along. So these are your risks and benefits. I am not going to be talking about all this today. We are going to dive right into a reverse slope hearing loss.

And we all know that these are really tough hearing losses to manage. As all of you guys are here in the hearing health care world. I'm sure you've come across one of these and don't love it and you are typically counseling your patient that you know this is a tough hearing loss to fit. Well, I've had some really positive experience in tweaking a couple things for this hearing loss. So I hope this helps and what my biggest piece of advice and you can do this a couple ways.

So again, looking at this, we see, we got this is kind of like a really classic looking reverse slope where your highs are normal and your lows are abnormal. When I look at this, if we were to try and fit to target, if you, you know, realistically we would look at this and think, hey, you know, I should maybe put a closed dome, a power dome to kind of hold on to those lows. What happens if we fit to target with this is

we have two things. You have what's called upward spread of masking. That's a potential caveat for fitting to target with this.

So upward spread of masking meaning that if you go and try and amplify those lows as they. As you see and as we would normally want to. What happens is it's going to end up distorting some of those high frequencies. And the sound just does not come in nicely for your patients. Your patients just.

It's not even necessarily easy to pinpoint the exact complaint, but they're just not happy with the sound. The other thing is, if, let's say we went and threw a power dome on this, or through a closed dome, okay, what happens to, again, to retain those low frequencies? What happens is when we put a mold or a dome to retain those low frequencies and we fit to target, we end up actually creating this kind of like artificial hearing loss. So what I mean by an artificial hearing loss is essentially what's going to happen is now you're blocking off those high frequencies. You're not giving any amplification in the highs, but then you created this artificial hearing loss by putting a dome on.

That's not letting you know things come in naturally. So what my recommendation for these types of losses is to flatten out the loss. Now, you can do this two ways. Some people, I personally think the cleanest way to do this is just to tweak your Noah file. Okay, so go into Noah.

If you are using Noah, or let's say you're using the manufacturers, you know, standalone, go in and tweak the audio file and flatten it out. So you're going to see that my low, and there's no exact numbers to this, as these are like kind of guesstimates. You're going to see that. Look at my lows here. So 50, I brought this audio up to about 30.

If you look at 500, I brought it up to about 30 as well. But the other thing that I want to point out is rather than leaving your highs at a normal range, I like to start dropping those highs starting around 10k or 2k by about 10-15db. Give it an artificial loss, or give it an. Give. Give a fake loss in your system so that

the software actually provides gain in that area.

And then I would still put, let's say like a closed dome on this because you want them to get those lows. They need them. If you fit this with an open dome, they're not even getting them. But again, giving them highs, giving them hot gain in the high frequencies where you don't. They don't technically need it, is going to kind of compensate for that artificial loss that you created with that dome.

And then by also not giving them so much in the lows, you're taking away that dilemma, that upward spread. A masking dilemma. Okay, here's the thing with this hearing loss. Again, there's no exact science to do this. Bring it up, down this many db, like I said, in my highs, if they are completely normal, I like to drop it to about 25 to 30, about 10 to 15 decibels more than what it.

What it was. I like to bring those lows up, kind of like flatten out that loss a little bit, and then you got to listen to the patient. These are hard hearing losses. You just have to listen to what is right with the patient. I don't recommend running real ear for these patients because, again, you're kind of just trying to figure out what sounds good to them, and it might not follow your typical protocol, and you just got to bend out of the box for this one.

Okay, so that is my tip on a reverse slope. If you have any questions on that, feel free to throw them in the chat and I can answer them. But again, I find that this has been very, very helpful for a lot of patients that, you know, sometimes you try. You. You try fitting to target first.

If it works, great. You don't need to do this the other way. You can do it if you don't like tweaking it in Noah. Let's say you have a lot of clinicians on your computer. It makes you nervous to tweak it in Noah.

Then in the software, you just kind of want to bring down your lows and bring up your highs and kind of flatten it out that way. As I mentioned, I just find it's not as clean, and that's why I like to do it in Noah.

Okay, so moving on to the next hearing loss that we're going to look at is a steeply sloping loss. So again, steeply sloping, this can be another tough hearing loss. And in my experience, what.

What happens is if we start chasing those highs, they start getting sensitive. Okay? So I'm sure you guys can look at these hearing losses and recognize that around 3,000 to 8,000 Hertz, those are likely cochlear dead regions. Okay? So if we start trying to chase those frequencies and that gain, they're gonna.

It becomes distorted, it becomes painful. And then what happens is when it becomes painful, we end up decreasing overall gain and taking away gain elsewhere that they could actually use. Okay, so we have a couple options for the. The steeply sloping. And again, this is trial and error.

You need to figure out what works for your patient. And it's going to be different for every patient. That's why is complex cases, because they are complex and there's no right answer for each, each one of these losses. So let's take a look. So this is a steeply sloping loss.

If we were again, this is just a clip of the Resound software. If we were chasing those high frequency targets, they're probably, in my experience, they're likely saying it hurts, it's tinny. They're hearing random sounds, all of those sounds, or tinny or I mean, tinny is not necessarily a bad word, as we know. But like that, like sensitivity, those are kind of like ding, ding, ding. Those are likely cochlear dead regions.

And they have all. They have a very small dynamic range that you're working with. And they're just sensitive. So the first thing that you could do is turn on some frequency compression. Okay.

So in the Resound software, it's called Sound Shaper. Sound Shaper is in all levels of our current technology. So our most current portfolio is the Viviva. And you have the 9, 7, 5 or 4 in the viviva. And

then you have Savvy.

Savvy is our more essential product line. And that's your level three and two. And Sound Shaper is available in all of those levels. So Resound does linear frequency compression. Okay.

And again, this is a trial and error thing. So you're going to see right here the word moderate is bolded. Okay, Resound will never turn on frequency compression. By default, we will bold the word moderate if we suggest that you turn it on. And then you need to make your own clinical judgment as to whether you want to turn it on or not.

So if you really think about what frequency compression is, frequency compression presents distortion into the hearing aid. If your patient does not have cochlear dead regions, why would we be turning on frequency compression? So again, use your clinical judgment. Resound is not aggressive with when we suggest that you turn it on, but we will always bold it. And then you can go in here and turn it on if you feel fit.

So here's my tip with how to turn it on. So I think again, kind of use your own judgment of whether you need it to all the way to strong or to moderate based off of the hearing loss. But I typically do like an AB comparison. So I say to my patient, hey, I'm going to make a change in the software. I'm talking to you at this level.

It's not going to be a change in volume. It's going to be changed in quality of sound. And I'm going to say this is A. And then I say, okay, I'm going to make that change and this is going to be B. And then I have them compare what sounds better.

If they like B, they like the frequency compression. Great, leave that on. Okay, so again, this is under Advanced Features Resound. We have two tabs in our software. The tab for speech, those are all your

advanced features that are going to enhance the quality of speech, which is your frequency compression under the comfort tab.

That's all your advanced features that's going to make the hearing aid more comfortable. So those are kind of like your noise reduction settings. Some other options. So I've again, this is a trial and error, one that you play around with. So sometimes I say, stop trying to chase those highs.

If they're so distorted, they're not pleasant to the patient and they're not getting anything out of it. So what I will do at times is I will actually go and drop those high frequencies where we know that they're not going to get them, that they're hurting them, that they're sensitive, they're bothering them. I drop those. But then what I do is I provide more gain in the mid frequencies. Okay.

So more than what they realistically know. So if we go back to look at this audiogram, I typically kind of go back and forth. I figure, well, look, if you looked at this audiogram, would you normally go like, is the software giving them any gain at 1000 and 1500 hertz? No, but you know what, that's where they hear really well. And then 2k we can see that these are not cochlear dead regions.

So I'm going to go and attack that area and try and give some good information in that area. Because we know that those speech sounds are really coming in around one to about 3,000 hertz. So go after them. I mean, maybe not 3,000 hertz in this case because we know it's a cochlear dead region. But you can see.

So in Resound software, the dotted line is the target gain. So right around 1k and 1500 and even 2k, I'm over that target because I'm kind of really trying to give them where they hear well and they hear normal, but then take down those highs where it's just distorted and hurting them. By doing this, rather than your patient saying, oh, it's too loud, oh, it hurts and you're dropping overall gain. You're basically not. And then you're not Giving them much, at least you're still giving them some information in the mids

and it ends up rounding out that sound quality also.

So even if maybe you want to give more, some, some more access to those highs by giving some more mids, it's not as tinny to them. It rounds everything out. It kind of gives them that boost and that can be really helpful. Okay, let's see. So again, if you look at this, you'll see that I brought down the highs and then the yellow, I brought up the mids.

What about just doing both? So sometimes I'll go in here and I'll decrease my highs and then I'll turn the frequency compression on the sound shaper. Okay. Again, I think you really got to play around with these to figure out what's going to work best for those patients. Okay.

All right. So the third type of patient I wanted to talk today about is musicians. Again, musicians are tough, right? And let's talk about why musicians are tough. So musicians, they're, you know, a lot of times musicians kind of have that engineer type brain.

We know engineers can be tough to work with as well. So programming is different for musicians. Why? Well, speech understanding is main goal for hearing aids. Speech understanding is the main goal.

Okay. For musicians, maybe that's not their main goal. All right, so it's a, it's a much different focus. So. And wide dynamic range compression, noise processing.

So like all these algorithms, digital DFS is a digital feedback suppression directional microphones, These actually all distort music, which ultimately leads to poor pitch discrimination, poor melodic intonation, and poor instrument identification, which is the timbre. So music also has a much greater dynamic range. It can easily get up to 100dB SPL. And not all manufacturers can really give you that dynamic range. Resound has a large input dynamic range, so you can get over 100.

I am not going to give you the number off the top of my head because I can't recall it right now. And I don't want to give you the wrong number, but it is over 100. I believe it's 113. So that that input dynamic range of the hearing aid really is important because music varies very much in the DBSPL that it's, you know, giving out. There's no standard protocol for optimizing music appreciation in hearing aids either.

Okay. And few patients ask for help and often the ones that ask are told nothing can be done for their music appreciation. So hopefully the next couple slides gives you a couple tips on how to maybe manage some of These patients. But I want you to remember, and this is my tip that I provide at the end, that yes, we have degrees and experience in hearing aids, but if you are not a musician, you don't necessarily know what's best for that musician. So sometimes I say stop and listen to what your patient wants.

They know frequencies, at least for me, better than I know frequencies and how sound comes off. So take a stop for a second, listen to what your patient is saying, because if you listen, that can go a long way in being able to better get them hearing through their hearing aids and being able to appreciate their music. So let's take a look at some tips here. So, instrument considerations. So did you guys have any idea that the instrument that the patient plays can actually play a part in what you want to do with your fitting?

So this is not something that I was aware of when I was fitting. I learned this after the fact. So ask your patient, hey, what instrument do you play? And then maybe you can start tweaking things accordingly. So if they are play rhythm, instruments like the drums provide more low frequency gain.

Okay. They like that bass. They're going to do better with a bassier sound. Okay, Guitar, Guitar players like an edgier sound quality. So consider giving them more high frequency gain.

Brass, woodwinds, keys, like your piano, things like that. They're also looking for a more edgy sound. Consider also giving them a little bit more high frequencies. Again, consider giving them more or less than what the default preferences are for the manufacturer. Listen to your patient, know what they play, and then kind of tweak your gain accordingly.

Some testing considerations. So I find these very unique. Some things to consider is test your ultra high frequencies to check for harmonics. So you might be like, what are you talking about, Sabrina? Well, let's say the patient has a notch at 4,000 hertz, right?

Which we, we know is very common for music induced hearing loss. Well, you don't know what's going on at that harmonic until you go and test. Like let's say you go and test 16k and maybe you learn that they also have a notch at 16k the harmonic of the 4,000 hertz. Okay, well, that could mean that maybe the patient's actually more sensitive at 4000 Hz than trying to give target gain 4000 that the manufacturer, the prescription, wants to give. That might not be the case.

Or maybe the patient actually needs more gain at 4,000 hertz because they also have a hearing loss in their ultra highs at that harmonic. Okay, so that's one of the reasons why it's good to test out those ultra high frequencies. What's going on at those, those harmonics. Maybe it's totally normal, so maybe they aren't so sensitive. Okay.

Just some things to consider.

Something else. Test their mcls and ucls at each frequency. Okay. Not just the general MCL or the ucl for speech. I highly recommend you do it for each frequency because what you might notice is that maybe it's a notch or maybe, you know, they're sensitive here, but they're not sensitive there.

And then you can kind of tweak the gain accordingly. Those MCLs and UCLs are going to be really, really imperative for being able to better fit that patient and figure out what works for their hearing loss. Okay. So in terms of music programs, I do highly recommend you give a music program in our software for resound. You can give them the all around program, they can certainly try it and see what they think.

But the reason the music program is advantageous as well. The music program, if you go under advanced features, under comfort, it will turn off all the advanced features that actually distort music sound quality. Okay. It takes your digital feedback suppression so DFS to music mode. That means that the feedback manager is less reactive.

So it's not going to be reactive to music so much as the default miles. And then everything else gets shut off. Your microphones go into an omnidirectional mode and then your gain gets changed out. So some things to consider doing is if it's not already done in your music program is flatten out that frequent frequency response. Okay.

So the software you're going to see, it didn't necessarily do it, but I do advise that you do provide more low frequency gain, more so than they usually want or a normal patient wants. Again, I mentioned if they are a drummer, they typically like more lows. But we have noticed that typically musicians do like more bass in general. I do also recommend plugging these patients up a little bit more. And if you're not going to provide more bass, maybe just give them a closed dome and that's going to retain those lows and then that's going to give them that it's the, the music doesn't sound as tinny.

It rounds out again that sound quality, what is what they're looking for. So you can kind of get that flatter frequency response by just throwing on maybe a more occluding dome when they don't technically need it, or sometimes maybe dropping the highs a little bit and increasing the lows. To flatten out that loss. I also highly recommend you increase those MPOs because again, we know that the gain for music is typically going to hit that G80 line. It's louder.

You want to make sure that you don't have any of that sound encroaching on those MPO lines. So you do want to compensate by increasing your MPOs. I also, in our music program, we do provide less compression. That is a default from Resound, but that is something to pay attention to. If your patient does not want to change into a music program.

Consider in the all around program. So if we're looking right now, I am in the all around program, you're going to see my compression ratios are around 1.4. If I go into the music program, it dropped them to about 1.2 across the board here. So our music program does default less compression. Patients typically like less compression in their music program or if they are a musician.

Okay, as I mentioned before, listen to your patients. We don't always know better. Even if we are 30 years of experience in the industry. That doesn't mean we know better than the musician. Just a reminder, do not use frequency compression for musicians.

Again, it's distorting the sound quality more than they want it. So try and avoid frequency compression. And also, if you are not someone that has experience with musicians, don't be afraid to refer them to someone that does. So this really can go a long way. I think in our field, sometimes we try to do it all.

We try to think we are the expert in everything. And then now the musician has a poor experience and now they're like, I'm not wearing these hearing aids. And then they never go back to wearing hearing aids. And then we've just lost almost a patient for life for anybody. And we know we don't want that.

So don't be scared if you are not the right person for this. And you know, if you can find a clinician in the area who does have experience fitting musicians, get their information. It's important to refer out when you think you're out of your element. You don't know what's best for that patient necessarily. So please refer those patients.

Okay, here's one last tip. When you're using the app for those musicians, I personally like this for kind of anything, but I really, really encourage them to go into the music program. If they're. When they're streaming or even when they're playing, go into the app. Consider the There's a streaming bass boost.

So that's actually I Apologize. In the software, you can go under. Let me. If you go under device controls under here, and then there's a tab called accessories. If you go under mobile devices, you can give them a streaming bass boost.

And it will only give them more bass when they're streaming. Streaming. So that can be helpful. If they like to listen to a lot of music. That's also helpful.

Little tip, if they ever need the streaming sound quality to be louder, that's your way to do that. But the streaming bass boost, again, if they like to stream music and they're not happy with the sound quality, but if they do have a music program or just again, any program, I really encourage your patient to go into the sound enhancer and give them the control. Tell them, hey, you know what, when you're playing your instrument next time I want you to play around with the bass mids and trebles, figure out what you like best. Because I'm we've all had that one patient that's walked in your door with their guitar. But some instruments, you can't do that.

So give them the control, tell them to play around in the app, figure out what works for them and then you can go and mimic those settings. Tell them to take a snapshot of that. So if you're curious on what those cutoffs look like. So for instance, bass is 125 to 1000 Hz. That's in our software.

The MIDs are 1000 to 3000 Hz. So again, if you see that they went up a couple, then you're going to want to tweak those frequencies and treble. That's about 3,000 to 9,500 hertz. Okay, so hopefully all of this provides you some information. Again, I love sometimes telling the patient, go play around in that

app, figure out what you like.

Come back to me. I will make those changes to be permanent so that you're not always tweaking it. I love doing that. Also for Tinnitus. I know we're not talking about tinnitus today, but we have some awesome things that you can do in the app for Tinnitus.

So letting them play around, figure out what works best and then tweaking it for them. There, that is all I have for you guys today. Thank you so much for your time and thank you for joining. I hope there was a couple takeaways from today. Whether that was that reverse slope and flattening out that loss where it's that steeply sloping loss.

Stop chasing those highs and kind of listen to what's bothering your patient and that musician, really thinking about what instrument they play, testing those ultra highs, testing those MCL UCLs. And if you don't know what to do for these patients, don't be afraid to refer them out. You're doing, you know, good stuff for your patients when you just say you're out of your element and you want to refer them elsewhere. That is all I have for you today, so thank you so much.