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Grand Rounds By ReSound: Directionality Session 1

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All right, guys, it is the top of the hour, and we are going to go ahead and get started because 30 minutes goes by quite quickly. My name is Valerie Kedem, and I am one of the field training audiologists with GM Resound. So we are excited to be bringing back our course called grand rounds by resound. And our first series is going to be about directionality. So, as you can see here by the title, it says directionality session one.

We will have three individual courses that you can take together or alone. That's going to be about everything directionality that resound has to offer. We do have our three learner objectives here that I will quickly read off. Number one is, after this course, participants will be able to describe resound's directionality philosophy. Number two is, after this course, participants will be able to distinguish between all around directionality options.

And the third objective is, after this course, participants will be able to change directional options based on patient feedback. So the purpose of today's course is to give us an idea of how resound got to where we are today with our microphone patterns and our philosophy overall, and then dive into what the directionality options are in the software and based on levels of technology. So when we say levels of technology, for today's sake, we will be referring to level five, sevens and nines, and it will be about program number one or all around.

So let's pause for just a moment before we dive into the PowerPoint and get into that software and take a moment to think about what the word directionality means to you. When you see this word or you hear this word, what pops into your mind now, for me, it just means, what's my microphone doing on these hearing aids at any given time? We know that directionality is quite important, even though we don't speak of it as much as perhaps we should, because a directional system and a hearing aid is really going to help our patients do better. Whenever these are in these noisier environments and are looking to understand speech. Of course, we have different features and functions, such as a noise

reduction function and an impulse noise reduction function and wind reduction function.

Those are all to make the hearing aids more comfortable for the patient. But at the end of the day, directionality really is that feature that helps patients improve their speech understanding. When I'm looking for a directionality system, what I'm looking for is something that is very automatic for my patients, so they're not having to think about making changes or trying to go, oh, I need program one versus two, and so forth. And so on. And I also want my directionality system to allow my patients to choose what they want to focus on or what they want to listen to.

When we think about resound's directional options, it really does feed into this awareness of surrounding sounds. And if you recall, you may or may not, just depending on how familiar you are with resound. Back in 2008 with the reset sound azure, something was introduced to the market called natural directionality. Natural directionality was this idea of having one hearing aid in an omnidirectional pattern and the other hearing aid at the same time in a directional pattern. So we refer to this as the asymmetric directionality.

The idea behind this asymmetrical option was to give the patient the best of both worlds with the two microphone options that we have. So omnidirectional versus directional. When we think about the pros and the cons of both, we can maybe understand a little bit more why the asymmetrical pattern has some appeal. So if we think about the pro to an omnidirectional microphone pattern, again, this is in my mind, I feel the pro is that you get to hear everything that's really good in a quieter environment. Right.

We want to be aware of what's going on around us, whether we're wearing hearing aids or we're not. The con of an omnidirectional microphone pattern, again, in my opinion, is going to be the same. It's the same for the pro and the con. You get to hear everything. So as you get into these more challenging listening environments, hearing everything around us isn't as good as being in a quiet environment when we look at directional microphones.

So think a traditional restaurant program, right? Both hearing aids have their microphone, their front mic on. Then we know that the pro is going to be that we are cutting out quite a bit of background noise, allowing the speech to noise ratio improve, and that we are giving the patient kind of that tunnel hearing. So this beam of hearing, the con of that is the beam of hearing. If you've ever had a patient come in and you've asked them about what do you think about program number two?

Sometimes they will say, you know, I like it because I know that I'm hearing better in this noisy environment, this restaurant program, if you will, a restaurant environment. However, the person sitting to the right or the left of me, I have no idea what they're saying. And you know what, I was just out at dinner last night and the server came up right behind me and was asking for our dessert orders, and I completely missed it because I didn't even know that she was standing behind me. So taking those two pros and cons with Omni and directional, we're joining the best of both worlds together with this asymmetrical option. Now, over time, from 2008 to 2024, we have really developed this idea to the point now that we have something called 360 all around, and the patients are getting four automatic microphone patterns that change in the background.

In all the levels of technology, in the software or in the literature, you will see lots of words around directionality 360 all around, all access directionality. Binaural directionality 3360 all around is what you get in a level nine. All access is a level seven and binaural directionality three is in the level five. Just know that no matter what level of tech that you have, and no matter what is called in the software or the marketing material, this is what the patient's getting on this video. Both hearing aids are automatically going to go into the omni directional condition.

If there is a change in the speech or the placement of noise in the environment, the hearing aid will automatically go into this asymmetrical pattern and then change the asymmetrical pattern depending on more speech and noises in the environment. As the environment becomes more challenging,

noisier. You can see here that we're going to go into a more traditional directional, directional pattern. So no matter what's going on with the level of technology, you have those four automatic microphone patterns doing that in the background.

When we go up in levels of technology, clearly it's going to be more sophisticated. So what you get, and the five versus the seven versus the nine is going to become more and more. It kind of builds upon each other. And the biggest takeaway from five to seven or nine is that we are going to give an improvement in the signal to noise ratio as you go up in your levels of technology, and from between a five and a seven and or nine, we are either going to reduce the head shadow effect or eliminate the head shadow effect whenever the hearing aids in this asymmetrical pattern, when we refer to 360 all around, meaning that level nine technology option, these are some of the things that you get in addition to the fives and the sevens. So for that premium hearing aid, we're going to get a wider sound environment mapping, faster detection, selection, and adaptation to environments in a more precise beam former.

And essentially what this means is that that wider environment mapping is going to allow the hearing aid to eliminate the head shadow effect. When the hearing aids in an asymmetrical microphone pattern. I like to say this is done magically, but the reality is it's the magnetic induction radio that has been in these hearing aids for about four years now, and they can process and stream audio information from right ear to left ear or left ear to right ear. So with that capability, we are able to eliminate the head shadow effect in the level nine. Whenever we say faster detection, selection and adaptation to environments, you do happen to get this in the five, seven and nine.

So all levels of technology. But what this is saying is that we are able to change the microphone pattern between one and 7 seconds. Now, this is a pretty big boost in how quickly we were able to do it. We have that time because in previous generations, it was between eight and 14 seconds. So the benefit to

the patient of having this faster detection selection is that as you walk from one environment to the next, so say the parking lot at a restaurant into a pretty noisy scene.

It's like happy hour at this restaurant. We are going to want those hearing aids to make the transition from omnidirectional to either asymmetric or directional very, very quickly. So they are able to pick up on the speech that they need and at the same time block out some of that background noise. We want that change to be really rapid. And it's happening here now, the third here, the more precise beam former, this is what's improving the signal to noise ratio.

So if you look from a level five in an omnidirectional condition to a level nine in a directional condition, that's going to be an improvement in the signal to noise ratio by 8.6 decibels, which is pretty significant. So if your patient is really struggling in background noise, speech is really their big complaint. We know that most patients wearing hearing aids, this is why they're here. The nine is going to give them a much better option for picking up that information that they're looking for in those more difficult environments. And that's any time that you're being social, essentially, as we pop into the software so we can take a look and see what it looks like in the software.

These are screenshots from my computer earlier today in a level seven here, whenever we click on advanced features and we go to speech, because again, we're saying that directionality is all about speech. All access directionality is going to be the default setting for directional, and it's also going to be the recommendation for automatic microphone patterns happening in the background with a pretty nice boost up in the signal. To noise ratio when we go to the level five. Very similar here, but instead of all axis directionality or 360 all around, we have binaural directionality. Three.

Again, we're still getting those four automatic microphone patterns rocking out in the background just with a reduction in the improvement in the signal to noise ratio based on the sophistication between the five, the seven and the nine.

If I go into my software here and I go to my speech and I'm going to go to 360 all around, this is the default setting for my level nine. So this is the recommendation as well as the default. We also note that if I click on my down arrow here under directionality, that there's some different options. So for the most part, you're going to leave it at 360 all around or all access or binaural directionality, depending on what level technology you have. But there are times that you might change it.

They're pretty rare, to be honest with you, but it's nice to know what is that? What does that mean and when would I change it? So if we click on Omni, then this is just a basic omnidirectional microphone pattern. So the hearing aids aren't fixed. Omnidirectional all day, every day, no matter what.

Sometimes we see folks with bigger hearing losses that severe to profound who really don't like a lot of automatic changes. This might be where they lean towards. We also have something called soft switching. So if I click on soft switching, you'll notice that it says synchronize soft switching. And then we also have this thing called autoscope or this function or feature called autoscope.

Soft switching used to be our most sophisticated directionality option. And essentially what's going on with soft switching is that these hearing aids will be going through omnidirectional in both errors and directional. It looks like this. I'm going to go up here to my help button. I'm going to go down to four options here, and we are going to find spatial sense, and we will come here, and this is going to show us what that particular microphone pattern is.

So this is actually spatial sense. Spatial sense is going to be an omnidirectional microphone pattern, but it's going to have some average pentacles in it. So essentially, we know that when we put hearing aids behind the ear, we bypass the pinna and do not collect the patient's own pentacles. People wearing hearing aids like to know where things are coming from. So what spatial synths will do is have a fixed omnidirectional microphone pattern with average pentacles in there.

If I come back here to my synchronized soft switching, soft switching is again going from omnidirectional microphone pattern to directional. There is no asymmetrical pattern. We get the addition of autoscope here, and autoscope is automatically going between a narrow or a medium or a wide beam form when the hearing is in this directional mode. This is also the default setting for monorail fits as well as the cross by cross system. Whenever you have 360 all around or all access directionality or binaural directionality three, you need to have ear to ear communication for that function to happen.

So anything that's a singular one ear only will default to that self switching.

And we did talk about spatial sense, again, omnidirectional microphone pattern, but with some average pentacles. Now, we do have a fourth option here. I guess this would be our fifth option. It is something called Marie. Marie is actually just a fifth receiver option that you have.

It stands for microphone and receiver in the ear. And the software, it will be abbreviated MM for Marie.

And we're just going to come back into the software here real quick so you can see what that looks like in real time. And so the difference between spatial sense and Marie is this. Both will be an affixed omnidirectional microphone pattern. However, spatial sense is going to have average pentacles, and your Marie receiver is going to have the pentacles of the patient. So this is what you look like whenever you have that Marie receiver attached.

It'll look like this no matter what, no matter which level technology that you have. The only difference is going to be here with the 360 all around or the all access or the binaural directionality. Three, with spatial sensing. Don't forget about this. Help.

Button up here. Help.

It's also where we find the video that we saw earlier with what the microphones are doing behind the scenes. And I just encourage you in all your free time to take a look here, because it does. The videos tend to help just really get what the features are doing.

And we'll go back here to 360 all around. And I'm also going to change my instrument back to the low power receiver. So we get everything in the software that we're looking for. When you do, Marie, we tend to take a few things away, and that's just the way it operates.

Also, as we go back into the software with the standard receiver, I just want to remind everybody that the materials that are associated with these courses are really, they're actually, they're very good. There's a new directionality white paper that just came out. It gives a very in depth and broad overview of everything directionality, everything that you could ever want to read about resounds directionality. And even better, it has live links in that particular document to take you to additional resources, whether it's white papers or additional research, all within that one document. So if you have an opportunity, I highly recommend that you take a look at it, and I think it'll really kind of set everything up in your brain even more if you want more details about what's actually going on behind the scenes.

So let's go back here to our PowerPoint and go into some case studies. So we have, I believe, four. The first one here is, this is our patient. She has a big hearing loss. It's severe to profound, and she's worn hearing aids for quite some time.

She knows what she likes. And as you are meeting her and you're talking about what technology to get, what style of hearing aid to get, she mentions that she just doesn't really like automatic features. She doesn't like them changing. She wants to hear everything all day, every day. She doesn't want to miss anything.

So for me, I would go ahead and just start off with the recommended default directionality. But if she's complaining that it's just too much, then I might go into the software and change the directionality to Omni. And this is what that looks like here.

So I would do this. And so hopefully that's going to help the patient just feel more comfortable and not feel like her hearing aids are bouncing all over the place.

Our next patient here, she reports feeling uneven from one side to the other. So as she goes from one environment to the next to the next, she just feels like it's a little bit off balance. So this does not happen very often anymore, but every once in a while, it might. Remembering that we have those four automatic microphone patterns, the background omnidirectional, asymmetrical, maybe that asymmetrical pattern is not for her. So if that's the case, again, you'll go back into that smart fit software, and you're going to change your directionality from 360 all around or all access or binaural directionality, three to soft switching.

And that's what this looks like.

And so we'll just be going through omnidirectional versus directional all day long. No asymmetrical pattern.

What about this patient? She's back. Okay, so this is our original patient. This is patient number one. That's severe to profound hearing loss.

And she told you at first bit that she doesn't like a lot of automatic functions. You try 360 all around and then you went to Omni. Now she's back for a follow up and she's saying she likes omni better, but she's really challenged to know where sounds are happening in her environment. So for this, you could do

one of two things. You could either put a Marie receiver on or change the directionality to spatial sense.

The change from omnidirectional to spatial sense because her hearing loss is so significant, the Marie receiver probably isn't going to be appropriate. Marie receivers are going to be for moderate, moderately severe hearing losses, mild down, but not severe or profound. So I would go ahead and go into that software again and change directionality to spatial sense. And this is what that looks like in the smart fit 1.8 software.

Remembering that spatial sense is going to be a fixed omnidirectional pattern, but it's going to have average pentacles in there.

And how about this gentleman here? He's reporting to us that he's not able to hear his children when they are in the backseat of his car. Sometimes this could be good or bad, depending on how that day is going. But for the most part, he wants to hear what's going on with them and listen to what happened through their day. And so he's just not super excited that this is happening.

So he's back in the clinic and he wants to know what can we do so I can hear my kids? So you could do a couple different things. One would be to go, of course, go into that smart fit software, add another all around program, and then you could change the directionality to omnidirectional. At the same time, you might want to increase noise tracker two to moderate or considerable, to just allow for the patient to hear everything that's going on around him and at the same time reduce some of that background noise, or that may be road noise, car noise that's happening. The second option is to add an outdoor program.

This is already an omnidirectional, so the outdoor program automatically puts us into omnidirectional. And then if you need to, you could increase the noise tracker two even more so. Also with the addition of automatic omnidirectional microphone patterns in the outdoor program, the noise tracker two system,

that noise reduction system that we have becomes more aggressive. If you need a little more, you can do that as well. So in the software, that's what this looks like.

So option one is to add a second program and maybe do omnidirectional as a fixed pattern. And you might want to come into the comfort and go to noise tracker two and maybe boost up how much noise reduction is being applied.

The other thing that you could try is to add an outdoor program back to my speech here, and you can see I didn't have to change anything. It automatically defaults to omni. And we're going to check out what my noise tracker is doing. We have a hard cut of considerable, so maybe you want to go up to strong, or maybe if you're moderate, you might go to considerable. So it just kind of depends on what you think is going to be best for the patients.

All roads lead to Rome. For some reason, this isn't working for them. We can try again. Also, don't forget that we have the smart 3d app and the patient can in real time go in and tweak, fine tune noise reduction and some sound quality and make a favorite. So they can also do that and see what works better for them and then bring that to you so you can better fine tune for these hearing aids.

So that brings us to the end of our time today. Really want to say thank you so much for joining us for our reintroduction of grand rounds by resound. Directionality is a really important component of any hearing aid. We just want to make sure that we have these intuitive microphone systems that allow our patients to focus in on what they want to hear versus what the hearing aid thinks they want to hear. And that's the whole goal behind that resound philosophy, organic hearing and that asymmetrical beam form.

So where you have one hearing aid and Omni and the other directional, if you feel like you want more information, we have a lot of resources for you, whether that's the material associated with this course

or here. We have outside reps and inside reps and folks like me who cruise around our territories in the field, as well as remote training audiologists. So please don't hesitate to reach out to any of us. We're more than happy to answer any questions and help out as needed. So please don't forget to take your five question course test so you can get your 30 minutes or 0.5 CEU.

And thank you again for joining us and have a wonderful day.