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Grand Rounds by ReSound: A Guide on the Directionality Available in Program One

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It is great to be here. My name is Valerie Kedum, and to answer the chat question, here I am located in sunny Florida. It's actually sunny here for a change. It's been raining for, I don't know, maybe three weeks. And today we're going to spend a very quick 30 minutes with our green rounds by Resound.

And today we are going to be talking about directionality, specifically the directionality that is available in program number one. So we do encourage participation. If you can find your chat box, that is wonderful. I'll just be asking some questions from time to time just to kind of get your thoughts or kind of get us thinking in the right direction or just a direction. But we do have a few housekeeping things to attend to really quickly.

The first is this screen here. The risk and benefits. So with everything else in life, there's always inherent risk and benefits for any type of educational seminar or course that you may take. And this is what we have for audiology online right here. And we also have some learner objectives.

So our learner objectives are this. After this course, participants will be able to discuss the directional philosophy of Resound. After this course, participants will be able to do it. I can't even say that word. Differentiate.

Be able to determine the differences. How about I use different verbiage in program one, directionality options for the tech levels of 4, 5, 7, and 9. And then after this course, participants will be able to identify appropriate directionality changes in the Smart Fit. That's our software based on patient complaints. So this will be specific to.

If I hear this and I'm in program one, what might I change my directionality to?

So we do have a full team to help you and your patients be successful with all of your Resound fittings and interactions. So please don't hesitate to reach out to anybody that you see here on this screen. So

with that being said, all of our housekeeping is done for the time being. And I just want to pose two questions to you. And again, if you want to participate in the chat, you're more than welcome to.

And the first question is, when you see this word directionality, what does it mean to you? What does directionality actually mean to you, especially in reference to audiology and hearing aids? The second question to kind of layer on top of the first one is why? Why is directionality important? Like, why do we even care about directionality?

And I'll just give us a moment here to see if anybody is going to type their answers in the chat or what their thoughts are. Around there. So there's really no wrong answers. I just like to see what people come up with. It's always interesting.

It's like. And then while we wait here. Yeah, okay, great. Better performance in noise. Absolutely, absolutely.

So, yeah. What does directionality mean? To me? It means that I'm thinking about what are my microphones doing at any given time while my patient is wearing these hearing aids. And to your point, it is wise directionality important.

It's really like our driving factor for improving the signal to noise ratio. When our patients get into these noisier environments, we have a ton of advanced features. Exactly. Shown to improve the signal to noise ratio. All the features that we have for noise reduction and wind guard, feedback control and volume control, those are all great.

But directionality is really the main driver for improvement in that signal to noise ratio, which is what we're all striving for for our patients, with the maybe the exception of using a multi mic or some sort of companion microphone. So. Absolutely. So we know what it means, we know why it's important and we

know why we're going to talk about it today. So to kind of understand how resound got to our directionality, kind of our philosophy around why do we need this type of directionality or these types of microphone pattern.

So let's also take a moment to think about what's out there. So the first one, of course, is omnidirectional. And omnidirectional microphones are wonderful. They're really, really good in quieter environments or outdoor environments. And the pro of an omnidirectional microphone is that you can hear everything around you.

What about a con? Is there a con to an omnidirectional microphone by chance that anybody can think of?

And it's usually and often and always the same exact pro. So the pro and the con of omnidirectional is that you can hear everything around you. Exactly. So then we think, okay, well, how are we going to get around this? I'm in a noisy environment, but I'm hearing too much, it's too loud.

That is our directional microphones. Right. So again, pros and cons of directional microphones. The pro is that it absolutely helps our patients understand better when they're in the presence of background noise, which is pretty much the reason that our folks are wearing hearing aids. They want to be able to engage with the folks that they're sitting at dinner with.

And it's kind of a bummer when they can't. So we know that directional microphones are really, really good for this, especially in more of a static type of environment. But what would be perhaps the con of a directional microphone? What are your patients come in and tell you whenever. Yes.

Whenever they are in a restaurant and they say they can't hear the person next to them. Absolutely. So when you have traditional microphones in this directional pattern, that restaurant program, for lack of a

better term, they do work as long as we're looking at the person that we want to hear. But anybody else that's not in that cone of hearing, they are kind of sunk. So if you're out on a date or you're at a table of four, you will not be able to hear the person to the right or the left or maybe even right behind you.

So what Resound does is we said, aha. Well, we love omnidirectional because of all the benefits it gives us, and we love directional because of all the benefits it gives us, too. But there's also some drawbacks to both of them. What would happen if. If we gave our patients the best of both worlds, what would happen if we had one hearing aid in Omni and the other hearing aid in Directional?

That is pretty cool. Because what happens when we add this asymmetrical microphone pattern, which is a little bit different than what we've seen in the past, is that really allows our patients to focus on what they want to listen to. That is what we would call the focus ear. So that's that directional ear or hearing aid. And at the same time, it allows for our patients to have a lot of awareness, if not understanding, of speech about what is going on around them, whether that's more to the left or to the side or to the back.

And so we would call that maybe your monitor ear. So one ear is focusing, the other ears monitoring the environment. And the beauty of this, adding this on top of the benefits of Omni and the benefits of directional, it's going to be this scenario. You're at dinner, you're wearing your hearing aids, and you are at your favorite restaurant, and they have a chocolate souffle. And we know that you have to order the souffle at the beginning of your meal, or else it's never coming out, and it's going to be a sad night.

And so if you're in traditional restaurant setting. Right. Directional. Directional, Both ears facing forward when that server comes up, if they happen to come up right onto your side, the. Where you can't really see them, or even behind you, where you're not really aware that they're back there.

You might miss your chance to order your. Your souffle. And that's going to be a bummer. If you have this asymmetrical pattern, then what happens is that even if that server comes up and is right at your

corner or right behind you, you may not understand everything that they're saying, but you absolutely will have some awareness that somebody's talking there. And then you will be able to then acknowledge them by turning towards them or saying, oh, can you come stand a little bit closer so I can see you?

And then you can order your chocolate souffle. So this asymmetrical pattern just gives again, gives the patients the best of both worlds with this directionality that we have. So how did we get here? Right. Well, I remember back a long time ago when the dinosaurs roamed.

I remember my resound rep. I was in an ENT clinic, came out, and he started talking to me about natural directionality. I was like, what? No way, you guys are crazy. And it was this idea of what we're just talking about having one.

One hearing aid in directional and one hearing aid and omnidirectional microphone pattern. And it was fixed and it never changed. And it usually defaulted with right being the focus here and left being the monitor ear. But you could change it in the software dep on the audio and then, of course, the speech understanding. I was like, okay.

But the research showed that patients didn't do any worse and that oftentimes they had more awareness of what was going on around them. So we said, okay, we like this. This is before my time at resound. And so we build upon it. And this has been going on for many years.

This has been going on for well over a decade. And we said, okay, let's do natural directionality, too, to make it sound better. Oh, wait, we need actually something that is more automated because this fixed directionality is pretty good. But actually, in the reality of this, we need four automatic microphone patterns. We need these hearing aids to automatically go in between omni, Omni and directional, directional.

And this asymmetrical pattern. So the patients always have awareness of what's happening around them. And that introduced binaural directionality. So if you've been with resound for any length of time, when binaural directionality came out, it was really good, but it was a little slow. Okay, so those transitions between the microphone patterns, sometimes patients could hear them.

They were like, well, that's not fantastic. So then we did viral directionality 3, which made it a faster transition. Binaural directionality 3 also allowed us to reduce the head shadow effect. And then we kept on going. We brought up all access directionality during COVID with that resound one.

And the beauty of all access directionality is that we decided to really give a bigger benefit of that signal to noise ratio improvement. And the way that we did this was first, anytime those hearing aids go into a directional beam form, whether it's one hearing aid or both, so right and left, or just right or just left, the improvement is the same. With that 4.2 dB SNR improvement, we did something called weighted beam former, which we're still doing, which is mimicking binaural squelch that our brain automatically does when we walk into these noisier environments. We also said, well, instead of just having one microphone facing forward, we're actually going to have all four microphones, or if you're doing a monorail fit, both microphones be in this beam form. And so between those things, it's allowed us to really improve the SNR ratio.

And anytime the hearing aid goes into a directional microphone pattern. And then we said, okay, cool, that's great, but let's go ahead and add to this. And we now have what's called 360 all around. It's doing the same thing for automated microphone patterns. It's still doing that for my beam former.

It's still doing the weighted beam former, that binaural squelch mimicking that the brain does naturally for us. And whenever we take a look at that research, when you compare the omnidirectional condition to the directional condition, you can see an even more significant improvement in the signatory ratio

benefit. So that's 8.6 versus 4.2. So that's kind of where we are, right, and kind of why we went this route. We wanted to make sure that we were giving our patients what they needed, not only in quiet environments or super noisy environments, but in all the other environments in between.

So we also decided to name it a bunch of different things. And what I mean by that is, in program number one for directionality, we have our Vivias. Now, Vivia is the latest and the greatest at the Ricks that launched in February of this year, we also now have a Enzo ia. So the newest edition of the Enzo Superpower product line. And what you'll see is that we now have level nine sevens, fives and fours.

And no matter what you see in program number one or that all around program, whether it says 360 all around or all access directionality or binaural directionality three. You know that this is what's happening in the background. These hearing aids are automatically going into omni. Omni, these quieter environments. We can see that now.

I've got somebody talking over here on my left side. So I've gone to this asymmetrical pattern. And then the talkers are also changing again. And now I'm in the opposite asymmetrical pattern. Right ears in omni, left ears in directional.

And then when we get into these really challenging, super noisy environments, then these hearing aids are automatically going to go and just more traditional beam form. So both hearing aids being this directional beam form. And so all day long, the environmental classifying system that's very, very accurate is saying, where is my patient standing right now? What is going to be the best automated features to be turned on or off or change? And that includes the directional beamforms.

But at the end of the day, final directionality three, all access directionality 360 all around or those four automated microphone patterns. Of course, as you go up in technology, as we saw on the previous slide, we know that that SNR improvement gets better and better and better. So that's great. Those are

the defaults for program one. Directionality between the levels of technology.

But what about if that's not the best option for a patient? And I have some screenshots here in a few minutes of the levels of technology, 9, 7, 5 and 4. So we'll be able to see what the directionality options are between the different levels of tech. And you know, it's not a one size fits all situation. 360 all around, all access vinyl directionality.

Whatever your choice is, that is the default. And it works pretty darn good for most of our patients. But we know that there's always these patients that come in and they need something more. So the software does accommodate and allow for that. One of the options that you're going to see in program number one is omni.

Okay, so fixed omni. Nothing too fancy with this, but it is a choice and it is an option. Sometimes I see this being utilized with our patients that have more of these severe to profound hearing losses. They're not really super excited about automated microphone patterns or anything automated at all. They really want to feel like they're hearing everything around them.

And so this might be the best option for them, especially those patients out there, that they could get their hands on an analog hearing aid with heart peak and they would be in it to want it all Day long. Another option that we have is called soft switching. And so this used to be really fancy microphone pattern situation. And essentially what's going on is based on where speech and noises in the environment, the hearing aids will go through either both right and left hearing aids being an omni omni, or both right and left hearing aids being in directional, directional. And so just depending, again, speech and noise, where things are happening from, these hearing aids will automatically, if you have it set up for soft switching, bounce back and forth between these two directionality options.

And sometimes patients feel like maybe they can hear the changes. That is not a complaint I hear very often. Very, very rarely do I ever hear that. Oftentimes I have providers who have been fitting resound for a very long time and they remember the natural directionality and they just tend to by default go into the soft switching also. Ok.

So, you know, that might be a reason that you might see soft switching put in there for the patient.

Also, soft switching is the default setting for any type of monoral fit. So whether it's one of our cross device fits, we do have cross devices at this point. We have a BTE and we also have a RIC option. Or if you're doing a standard monorail fit, soft switching will be the default for program number one for directionality.

Another option that you might see is something called spatial sense. So spatial sense looks like this. It is a omnidirectional microphone pattern. It is fixed. But what it does do, it gives the patient some averaged penna cues.

So whenever we put hearing aids behind the ear, we basically have said to the penna, we don't know why you're here, why what you don't have your purpose and just kind of actually get rid of that penna cues or those pinna effect that the, the pinna gives us. So in order to try to accommodate and overcome localization issues, spatial sense is going to be in that fixed omnidirectional pattern, but it's going to be doing those average pinnacles. And we could see here from the video, it just kind of teases them out, breaks them out from each other. So the patients have a better opportunity to really know where the sound is coming from. Is it from my right, from my left, from behind, which tree does it happen to be in?

And that is what spatial sense is doing. Now, sometimes when you might change into spatial sense here, sometimes I hear the patient that really likes an omnidirectional microphone pattern, but feels like

they don't know where things are coming from. You could try spatial sense and see if that doesn't and help with the localization issues that they're reporting. They also tend to feel like they're more immersed in their environment instead of kind of standing outside of it looking at it. And then the last option that you get in program number one is called Marie.

And so Marie is actually a receiver option. So with Resound products, you have not four, but five different receivers. You have your standard low power, your medium power, your high power, your ultra power. And then about the same time that we came out with Resound 1 and the new directionality option with the weighted beam former, et cetera, et cetera, we also introduced this Marie receiver. So what's really cool about the Marie receiver is that it actually uses the patient's own pen cues for localization.

And when we take a look at this, why is it in program number one, anytime the hearing aid is going into Omni Omni, as it is right now, that means that my Marie microphone is active, it's turned on. And therefore I'm using my own pen cues for better sound quality, better teasing out background noise from speech, and better directionality and localization skills. If the microphone pattern goes to anything else beyond bilateral omni omni. So you can kind of see here in this video, then the two microphones that we're used to using, these back microphones, they will be the ones that are active and providing amplification. So just to show you that one more time here, when we have Omni Omni with the Marie receiver, we will be using the pen cues of the patient.

That is where the volume is coming into the hearing aid. The back mics are active, but they're responsible for determining which type of environment we're in and kind of determining what changes need to happen. Anytime the hearing aids in anything but Omni Omni, this microphone turns off. So the beauty of Marie receiver is that usually it's going to be patients who have worn hearing aids in the past. So they're, they're, they're.

They know what they're listening for. They're experienced. They tend to feel like they really can follow where sounds are from. So like one of our patients, they fit with Marie. And they told me that they have.

They always take a walk at night, and they walk by a bunch of privacy fences. And she knows if there's a dog back there, but she never was exactly sure which fence they were coming from. She just didn't quite have that localization capability. But she put the marine on, and she knew exactly where that dog was and could hear kind of localizing the dog chasing her back and forth as she walked by. Maybe that's a terrifying thing, I don't know.

But she just had more awareness of it. We've also had patients tell us that they could tell which tree the birds happened to be singing in. And they had more of a general localized idea, but it wasn't super specific. But the Marie allowed them to kind of have better access to that. Something else that the Marie is really good for, if you decide to ever try it out with your patients, is for folks who are outside in the wind.

So people who garden a lot, people who sail, people who golf, people who walk, anybody who's outside and they have a constant complaint of wind noise being too much for them. Marie is going to be a really great option for those patients because that microphone that's active most of the time, which is in the Omni Omni condition, is going to be protected because it sits right down there at the opening of the ear canal. If anybody's familiar with our old Mike and Helix custom product where we put that microphone up in the Helix, it kind of did the same thing. It was mostly a matter of protection anatomy. We just didn't have the wind whooshing over the microphone.

So if you've got a patient like that or they're chronically complaining that the hair, their hair noise is driving the nuts, Marie can also be an option for that. So what does this look like in the software? This is what we've got in level nine. Everything's under advanced features and under the speech category. So anything that's located under speech here, we know it's for the purpose of enhancing speech that is

improving the signal to noise ratio or making the overall sound quality better for the patient.

So directionality is our first option. And in our level nine, you can see that we've got an Omni soft switching option. 360 all around is going to be the. The default. It's also going to be bolded.

If we don't have it drop down like this and then spatial sense. So Omni Omni but with some average pena cue. So this is the 9 and the 7 looks real similar to what we have with the 9. And the difference is going to be that we have all access directionality in the level 5. You also see that we have all access directionality here.

Just know that whenever the hearing aids go into a directional beam form, something's a little bit different between the level seven and the level five. And with the Level four, binaural directionality. Three is what you're now getting. And that's a nice step up because it used to be natural directionality. So really, with the new products, with the Vivia and the Enzo IA and even to the Savvy, which is our new budget product, we did do a nice boost up or step up for your directionality options across all the levels of technology.

And I keep saying program number one all around, but if you happen to make a second all around program, of course these are going to be your options, same as if it was in the first program. It's program number one tends to be all around for the most part. And that's why we're saying it in that manner. If you happen to have a Marie receiver attached to these hearing aids, directionality will also allow you to have it always active as Marie, which means that the hearing aids and fixed omnidirectional, but it's utilizing the Marie microphone at all times. If you have this Marie receiver attached to the hearing aid and you leave it in the default directionality option, it just means that anytime the hearing aid goes into Omni, it will be using that Marie microphone for those Pennacue collections.

I hope that that makes sense there.

So that's just kind of a real quick rundown of why we do the things that we do, why we have this asymmetry or this asymmetrical pattern. It's really just to allow the patient to choose what they want to listen to instead of the hearing aid forcing them to listen to only what's in front of them or listen to everything all the time. So it's just kind of a more organic or natural way for these microphone patterns to operate in the background. Again, it's all automated. And then just to kind of put it all together here, because it is kind of a lot of information at a very rapid pace in 30 minutes.

Let's just kind of cruise through these case studies. So, number one, this is our gentleman here. He has a severe to profound hearing loss. And again, if you want to type in your answers or your thoughts, you're more than welcome to do that over here in this chat. And Philip, I don't know which tech level gives us free souffle, but it'd be nice to know which one because it's a pretty yummy dessert there.

During his consultation, he mentioned that he doesn't like automatic features and he's been told that he needs them and he's tried them, but he really just feels like when they're active that he's missing stuff around him. So if you have that patient that comes in, what do we think we can do to take it off of that automated microphone pattern? Hopefully the severe to profound patient isn't maybe a level 7 or 9 to have better noise reduction, but even a 5 or 4, we have the capability to take him out of that four automated microphone pattern option and do something a little bit different. So for me, I would start with Omni. I would just give him flat Omni, see how he likes it on his follow up visit.

How about number two here? So this patient is saying, yeah, I really feel like it just feels like one size louder than the other all of the time and sometimes it switches and I don't really know what's up. What do you, can you make that go away? Because I would imagine that would be pretty disconcerting. I think I would feel like super off balance if that's how I was hearing.

So for me, what I again, what I would do, baby vestibular rehab, maybe so. But for today we're going to change directionality to soft switching. Absolutely. Number two and number three, our patients returning. He's like, okay, well, Omni was okay, but I really am struggling to.

I'm really struggling. I don't know where anything is at. I just need a little bit more. I don't want those automated changes, but I feel like I just. If somebody walks by me or there's an airplane going by, I don't know.

I don't know. So what about here?

Okay, spatial sense. Absolutely.

Just two more to go. Not able to hear his children when they're in the backseat of his car. And we're right up at time here. So these are the two things I would do. Add another all around program, maybe change to Omni and increase that noise reduction or add an outdoor program which automatically makes the microphone pattern into Omni.

So it's kind of the same thing. Same but different. And then last but not least with number five, this patient is an avid boater and she mentions that wind noise is really bothering her. She's been sailing all around but man, it's killing her. So two things in the software.

You can increase the wind guard or don't forget about that. Marie receiver. All right, so that brings us to the end of our quick 30 minutes here today about directionality and that all around program or program number one. Traditionally, please don't hesitate to reach out to anybody that is listed here or anybody else that you care to contact. Over at resound.

We thank you so much for joining us. Please don't forget to take your five question quiz and have a wonderful rest of your day. Thank you.