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ReSound Enzo IA: Audiological Considerations for Super Power Fittings

Presenter: Megan Bishop, AuD

Welcome, everybody. I appreciate you all joining me today. My name is Megan Bishop, and I am a remote training audiologist at Resound. So today's webinar is really designed to be a follow up to our introductory webinar, which introduced our new superpower hearing aid, the Resound Enzo ia. So if you're looking for more of a rundown on specific hardware options, device features, please consider watching that webinar as well.

It will go into much more detail in that regard. So during our time together, we're going to be discussing some of the advanced features as well as audiological considerations available with the Resound Enzo ia. We know this population may be relatively small in number, right? Constituting approximately 11% of all hearing aid users. However, we also know that they are typically experienced users who not only depend greatly on their hearing devices, but oftentimes they're expecting a specific sound quality.

And we want to make sure that we're focusing some on some of those tools and features that will hopefully be able to allow you to meet those expectations.

So after this course, we're hoping that you get out, you know, you get from it a few different things, one of which is you'll be able to decide which compression mode should be applied to a given patient profile. We expect that you'll be able to recall the different aspects of DFS Ultra 3, which is our feedback management system. We also expect that you'll be able to explain or navigate to specific advanced features that should be applied for patient complaints. So with that being said, I'm hoping to have some participation both in the chat option, and we'll have some polling questions near the end of our hour together. So, last bit of housekeeping information.

AO does require us to show this slide. I believe it's available on their website and possibly under the course materials as well.

All right, so we're going to start off by discussing or talking about managing feedback or feedback management system. And we all know that effective feedback management is, of course, important for, you know, all of our hearing aid patients, but especially for patients with severe to profound hearing losses, because they require much more gain than our moderate to severe patients. Right. And the more gain prescribed, the more likely the patient will experience feedback. And I don't think we are.

I don't often talk specifics too much about our feedback management. It's kind of one of those factors that we just expect the manufacturer to be able to provide for our patients. But I do think it's important to discuss how we're able at Resound to eliminate feedback without compromising gain, specifically with this patient population. So I don't need to tell you all you know of that. Feedback happens when the amplified sound from the ear canal leaks out, gets picked up by that microphone, right?

And that creates the endless loop, which is often a very loud, sharp whistle or squeal from the hearing aids. And of course, this can be both embarrassing as well as distracting for the patient. And sometimes a patient with severe to profound hearing loss, they may not even be aware that it's occurring due to the severity and configuration of their hearing loss. So this is precisely what led to the introduction of feedback cancellation technologies over 30 years ago.

So feedback tends to occur right, in a very narrow frequency region. So for example, here the feedback is occurring around 3,000 hertz. And one solution to feedback management might be to prevent acoustic leakage from the ear, right, by either remaking to using a tighter ear mold, decreasing the vent size, just physical modifications that you can make. Another option is to decrease the gain at 3,000, but this again may cause the patient to miss out on important sounds. So some competitors feedback management features, they limit the gain in certain frequency regions based on the fit or even after running their feedback calibration.

And while this is really effective at preventing feedback, it puts a cap on the amount of gain the hearing aid can apply to compensate for the hearing loss. So might not be the best solution for the patient.

So before we go into too much detail about the DFS Ultra 3, I want to kind of point out our auto DFS, our auto DFS in the software. This will automatically be activated in the fitting software if the hearing aids are not calibrated so specifically to the patient's ears. So this feature can be used if you're just unable to calibrate for any reason. Maybe your, you know, maybe your patient isn't physically there, the hearing aid came back from repair, their loved one is picking it up. Or of course, we have some patients who just can't tolerate that feedback sound hyperacoustis, those types of factors.

So again, patient, if you're unable to calibrate for any reason, the auto DFS will automatically activate. And it does have the ability to learn over time the propensity for feedback due to the acoustical characteristics, you know, the gain prescribed, the fit, those types of factors.

So most of you are probably aware that that resound does recommend running the calibration for every first fit or whenever a physical property has changed. Right. So if you've changed the ear mold, venting ear hook, if it's a receiver in the ear device, if you've changed the receiver power, those are all times when we want you to rerun that calibration. And this is due to the fact that we use phase cancellation and so we're never reducing gain below prescription. So there are four main aspects of DFS Ultra 3 with calibration being that initial step.

So once calibration is run, that's what initializes a static filter that will account for all of the stable elements of the fitting. Right? How that hearing aid is fitting in that specific patient's ear canal, what is the venting, the shape and size of the ear canal, all of those components that remain consistent, you know, if the patient is wearing their devices correctly. And then if feedback is detected, the hearing aid will elicit a 180 degree out of phase signal in order to cancel the feedback so that actually nothing is heard. Okay.

And that static filter provides the reference point from which our adaptive filter to work off from. So the adaptive filter, this is the filter that can identify feedback in dynamic situations and bring that feedback spike back down to the prescribed gain level. So the adaptive filter is what allows someone to, you know, hug a friend, you know, put a ball cap on or, you know, put up a phone to their ear without initiating feedback.

So, like I mentioned, the first step in using DFS Ultra 3 is performing that in situ feedback calibration. The calibration signal measures the sound leaking out and returning to the microphones. And this, of course, is going to be unique for every individual because it's based on the hearing aid fit in that individual's ear.

So this probably looks very familiar to a lot of you. So during that initial fitting, you're going to automatically be prompted to run calibration. You don't have to go looking for it. It's going to automatically be in that kind of fitting flow right after you connect to the instruments. And this is, of course, where you instruct the patient to remain quiet, during which time they'll hear, you know, a pretty loud sound, sometimes sounds like an electric razor.

It will go ahead and perform the measurement on the right ear and then automatically proceed to the left ear measurement.

So after you've completed that calibration, you'll notice some red and blue curves on your screen. And ideally we like to see the red and blue above the gain curves. However, there are certainly going to be times where they interact or intersect, and that's okay. So if you see the red or the blue dip into the gain curves more than 10 decibels, that's where you may want to consider, you know, closing up any venting, going to a larger dome, just reassessing how that hearing aid is fitting in the patient's ear. Okay.

But if those curves are touching, don't be alarmed. Again, that's just showing you a visual of where that DFS is going to be active.

All right. So the DFS curves, they used to show up on the gain screen. By default, they have changed that. And I think a lot of it had to do with just clinicians maybe misinterpreting what that information was. Was telling you.

I, I know for. At least on my end, I have talked to clinicians who would, you know, just get nervous if those cur. Those blue and red curves kind of dipped into the gain screen. And I get it, it's kind of alarming. It kind of seems like you wouldn't want that to happen.

So they have changed it to an option that you can turn on if it is something that you want to be visual. So if you want to see what those DFS curves look like, you, you'll simply go into the Display options tab in the middle of your screen and you will make sure the check mark is active under the DFS calibration. So, again, it's okay for the gain curves to touch. You do want to just be aware, you know, you don't want that DFS having to work too hard to try to cancel any feedback that can be eliminated, you know, with just changing the physical properties of the. Of the fit.

So calibration estimates that feedback path as a function of frequency. Right. As I said, it's going to create a static filter with the same response. That static filter is then going to be applied to the signal processing path in parallel, just in an opposite phase to where feedback occurred during that calibration. So a lot of us probably can recall back from our psychoacoustics class that when two sine waves 180 degrees out of phase, they'll actually cancel each other out.

So feedback can be canceled without having to decrease any gain. Right. It's that same reason why, if we're testing in a free field environment, we need to make sure we're using warble tones instead of

pure tones.

So a lot of you probably have seen this screen and under our advanced features in Smart Fit and kind of may be curious as to what is this actually doing. Right. What is this DFS ultra3 doing if I'm changing it from mild? Right. So this is the adaptive filter.

All right. And this is again going to be used when Instances feedback, you know, that changes whether it's triggered by, you know, a reflective surface, seat belt, what have you, that feedback might occur in those cases, but will be quickly identified and removed from the environment. So the speed of this adaptive filter, that's what you can adjust in the fitting software again under the Advanced features and under the comfort tab. So as you can see, the setting will default to a mild setting once calibration has been run. It will, once you run calibration, it's always going to default to mild.

So how do you know when you might need to adjust it? If your patient is commenting that they're, you know, experiencing occasional feedback in certain environments, like I said, when they get into a car, you can increase this setting so that the DFS is analyzing the environment for feedback more frequently. So, so it's kind of a quicker acting cancellation if necessary.

All right, so we're going to talk about an extra layer of protection available for our patients against feedback, which is called feedback guard.

And some of you may have noticed this is the gray area that you will see above the gain curves. So this, the feedback guard is going to always be visible. If you want to see those DFS calibration curves, that's where you'll need to go into the display options screen. But the feedback guard is that gray area. And with the feedback guard activated, you're able to see that it's limiting the amount of gain available to you above this area.

I'm kind of getting blocked from introducing any gain above. Okay, now this obviously is not an appropriate setting for this patient, but it was the screen I had. So if you need access to those gain levels and those frequencies, you can certainly remove this extra layer of protection. So what you would need to do is in the very top small black banner, you will go under the fitting and then you will scroll down to enable feedback guard.

The red X is actually indicating that it is on. Now my mind says it should be a green check mark. Someone else thought differently. So the red X does indicate that this is, this feature is on. And like I said, that is going to be the default.

So you'd really just need to go up there and to turn it off. And once I have deactivated that so that there's no red X, you can see that this is now going to allow me to fit within that product previously inaccessible area if I need to. And again, we don't really talk about it very much in our more moderate, severe, you know, fittings. But with this population, because of that extra gain required this may be something to kind of keep in mind. So something important I want to note is that the DFS is still active.

We did not turn that feature off. Okay. However, the likelihood that your patient will experience occasional feedback before that dynamic filter can react may be a little bit higher. Okay. That's why the default setting is on.

We just assume no feedback is, is better. But again, for this population, we may be running into again, that limit where we, we want and need access.

All right, so another critical consideration when fitting Superpower users is of course gain. Right. This kind of goes hand in hand with that feedback guard. Since this population requires more gain to meet their demands due to their severity and configuration of their hearing loss. We're going to take a couple of minutes to discuss how this applies to the Resound Enzo ia.

So this figure, what it's showing you are the fine tuning results for patients with severe to profound hearing loss in the red and mild to moderate hearing losses in the black. And as you can see, there's a greater variability for fine tuning changes for the severe to profound group. This group typically requires more gain adjustments relative to target. Right. We have our, we lovingly call them our power junkies.

You know, they're more. I was in a fitting yesterday where, you know, usually I'm making two to three decibels incremental changes. Where I find oftentimes with this population, they can often hear a 1dB, right. So they're pretty specific about what they're looking for. And again, from my experience in the clinic, I didn't necessarily think about this, but when I did see the data, it completely made sense to me.

So the prescribed gain for these patients hearing losses is again significant. Right. And that prescribed output for their hearing losses could be very close or even equal to the maximum power or MPO available for that fitting. So when the gain nears the limit of the output, there's a possibility for distortion of the, of the signal. Right.

And this can be visualized here on this image with little to no headroom at around 3K. And you can see that by the red line, which represents the MPO. And of course gain 80 being that top line. So we're looking at it through the output view.

So again, I think it's important to know where to see or view the output view, because again, if you're on the gain screen, you of course have your MPO in numbers in db, but you don't get that nice visual. So if you're looking for that, this is a really common thing that we run into if again, patients are commenting that it sounds like a broken speaker or giving you any indication that there's distortion to the signal, One of the first things I do is go into my display options in the center of the screen and I change it from gain view to output view. So patients with reduced dynamic ranges, again, they're going to state that things aren't maybe loud enough, maybe they're muffled, they're not clear. So I encourage you to check this

screen before making large gain increases or even experimenting with different fitting roles. You may just need to change the MPOS.

So gain prescriptions, right, such as resounds, proprietary audiogram plus, you know, NL2, you know, the gain. The aim is to provide gain at a good starting point for balancing audibility, speech understanding and sound quality. So looking again at the results from before, before, both data sets have similar medians, right? That horizontal blue line and that indicates the audiogram plus provides a good starting point for fitting a wide range of hearing losses. And individual fine tunings, of course, can vary from the starting point depending on individual ear fitting acoustics, you know, meeting targets, as well as making sure your patient is satisfied with the volume and sound quality.

So when programming Resound hearing aids, you have the freedom to choose how the MPOs limit the fitting parameters and therefore the amount of headroom available. So you can choose to use the full instrument capability, the instruments mpo, or you can choose to use the calculated MPO just, you know, the settings, the settings that are prescribed by the fitting rule. And that is going to be the default setting whenever we're calculating the NPO setting. That's always based off of NL2.

So most of you already know you can adjust the gain right very easily in the fitting software using the arrows here for up and down, and you can adjust the gain parameters and, you know, from anywhere from one to three db steps. And this becomes even more practical again with this population due just to the variances in preferred gain. Like I mentioned, you know, sometimes I notice that they can hear a difference by one db.

So again, kind of going back to prescribed MPO versus instrument mpo in the display options of the fitting screen, you can click on the use instrument MPO to allow for extra headroom. So this is going to be the default on the left. This is the prescribed mpo. And we can see there's this gray area between our MPO and this dark gray. All of this light gray is gain available for that specific hearing instrument.

So if I were to, you know, need that extra access, get an increase in my headroom here, I can just very quickly click on use instrument mpo and you'll see that MPO line go all the way up to the top of that light gray area. So the dark gray area is just saying that is not available for that specific hearing aid that you're fitting. It's out of the range. Right. So you'd have to go to a higher powered instrument.

Obviously, you're not going to get a higher power instrument than our Enzo ia, but if you ever see this, maybe on a RIC and you need access to that dark gray area, that's a good indication. You just need to go to a higher power receiver. Okay.

So with the resound Enzo IA hearing aids providing those extra high gain levels, appropriate fitting to target, and of course, the maximum headroom, patients with severe to profound hearing losses can really achieve audibility without distortion. And another thing to consider is, is going to be your ear hook. So the metal ear hook, which is the default, if you order an Enzo ia, you're going to be sent an instrument with the metal ear hook, and that provides up to 84 DBSPL of gain. There is also an optional plastic ear hook for those who may not need the extra mid to high frequency gain that has a max gain of 79 DBSPL.

Another thing to note is the metal comes in one size. The plastic is available in three different sizes. So to be honest, the only reason I would probably order a plastic ear hook would be if I needed a smaller one to fit a patient more appropriately.

All right. So an intact and healthy auditory system. Right. We all know, is capable of perceiving a wide range of sounds from very soft to very loud. The softest sounds are going to be at threshold, and the loudest sounds are that loudness, discomfort level representing, you know, the most intense sounds tolerated without causing them discomfort.

And the area between those two extremes is going to be the dynamic range of fitting or hearing. Sorry. And individuals with normal hearing, they can hear and correctly perceive all intensity intensities of sound within that dynamic range. Right. They perceive soft sounds as soft and loud sounds as loud.

People with sensorineural hearing loss, of course, have a reduced dynamic range when compared to normal hearing individuals. And because of the hearing losses, comfortable sounds like conversational speech are often perceived as soft or even barely audible. Soft and very soft sounds are going to most likely be below their threshold of hearing and are therefore inaudible. And intense sounds are going to still be perceived as loud or very loud. Right.

So this limited range, of course, creates challenges for hearing Aid fittings to provide sufficient gain to make soft sounds audible without increasing them to an uncomfortable level. And I think we all know that we use compression in order to address that challenge.

So many patients with severe to profound hearing losses, they've been wearing hearing aids for quite some time. And since they are heavily reliant on their hearing aids for day to day activities, they become very comfortable with how they sound. Right. They are really used to that a specific sound quality. And since a very specific sound quality is important to those with severe to profound hearing loss, we need to have a variety of available compression parameters to help them during transitioning to updated technology.

Right. Some of these include the compression mode, compression limiting in a linear fitting and compression time constants. So we're going to talk about all three and we're going to look at compression modes first.

All right, so we're going to do just a real quick recap of the various types of compression modes available to you in the resound. Enzo I believe we of course have wdrc, right? Wide dynamic range

compression that's going to provide different amounts of gain for soft, moderate and loud inputs. Most gain is going to be obviously for soft inputs to ensure audibility.

Semilinear is going to provide higher compression thresholds and lower compression ratios with less gain for soft sounds and more gain for loud sounds when compared to wdrc. And then linear, we know, provides the same amount for all inputs until that maximum output has been reached. Right. It's going to apply the most gain for loud inputs compared to WDRC or semilinear.

So when is each compression mode recommended? I think we all know that WDRC is going to be the standard for all new hearing aid users, and rightly so. Right. It's more designed to mimic the natural auditory process and we've, you know, been using that for a number of years now actually. Fun fact, GN Resound was the first manufacturer to implement WDRC in hearing aids and that was back in 1988.

So we've been using it for quite some time. Manuf, you know, industry industry wide, semi linear can be used by previous patients of linear amplification, again to help them transition into wdrc. And of course linear, which can be used by patients who have only ever worn this type of processing and are reliant on it for things to sound normal to them. So even though digital and processing WDRC has been around for quite some time now, if you've ever tried to transition someone from old analog technology into WDRC or digital, it can be extremely challenging because they sound very, very different. So we want to make sure that we provide you access to some of these tools again so you can better meet your patient where they are.

So you have the ability to change the compression modes for all of our power fittings. So that includes ultra power receivers, if it's a receiver in the ear, as well as our power bte and of course, our superpower Enzo ia. You can do this in the software under the gain grid. And it's important to note that this is program dependent. So you want to make sure if you want to change it out of wdrc and if your

patient has more than just the all around program, make sure you're going in or auto relating that and using that information.

All right, so I have a quick little case study here. This is Marcus. He is 58 years old. He's worn hearing aids since childhood. He is scheduled for fitting his resound Enzo IA998 binaurally next week.

He's currently wearing our original Enzo that was fit back in 2015. And he's programmed at linear compression. So he's looking forward to his new hearing aids and has asked if his new hearing aids can be programmed to be more comfortable as he's noticed some discomfort with loud sounds. So this is where I'm going to ask you to find that chat option and let me know what you think Marcus would be best fit at. Where would you start Marcus off?

Would you start him off at with wdrc? Would you try him at semi linear or would you start with linear?

Oh, and it gives. I give you the answer. Yeah, I think I would start with semi linear too.

Right. Because he's already given us information as to, you know, he's. He's getting a little bit more distortion than he liked previously. So. Absolutely.

I would start with semilinear as well and then see if we can't work him up to wdrc. And then you also have the option of linear if he can't adjust. All right, excellent. Okay, so the linear compression mode is designed to support superpower hearing patients who prefer more loudness. Right.

And in order to do that, it uses peak clipping as the output limiting method to provide more output to achieve that desired loudness that they're used to. Right. From their previous linear technology. So P clipping, that's what causes that distortion of a signal when they're using linear compression mode. And it's a very simple method of limiting the NPO of the hearing aid used in linear technology.

Right. It Occurs when that amplified signal exceeds the hearing aids output limit. And when that happens, the sound signal is reduced or clipped. Okay. And there are two options available.

You have hard and soft peak clipping when you select linear compression mode in the software.

So hard peak clipping again occurs on that input signal combined with the hearing aids amplification pushes the output signal beyond the hearing aid hearing aids mpo. And again, that's just going to cut off the top of that peak. It's going to provide the highest output, but of course it changes the shape of the original waveform. And that's again what results in the. In the most distortion.

Okay. And distortion, that just refers to the presence of any frequency components in the output of a hearing aid that's not present in the input signal. Right. And oftentimes it's described as a scratchy or kind of crackly sound quality. I've heard, again, patients refer to it like a broken speaker radio that's not accurately tuned into a station.

We have all. They have all kinds of ways to kind of describe it. So you want to choose hard peak clipping for patients with severe to profound hearing loss who have already had previous linear amplification. Right. And who desire the most output and loudness for high intensity signals and are already used to P clipping in their previous devices.

You're not going to start someone out with this soft peak. Soft peak clipping is slightly different. So when the input signal combined with the hearing aids amplification pushes the output signal beyond the hearing aids mpo, the peaks of the sound wave are reduced. Right. And that reduction of the peaks is more rounded instead of just cut off.

So it maintains a more similar shape to the original waveform. So it's going to result in less distortion of high output sounds compared to hard peak clipping. So it really just tames the peaks more gradually as

they approach that limit, resulting in a smoother sound. So it's recommended that you select soft P clipping for patients with severe to profound or mixed hearing losses and have had previous linear amplification experience.

So compression limiting options can be found in, in Smart Fit under the advanced feature tab in that main ribbon. And again, this is going to be located under the comfort in the subsequent gray ribbon beneath will default to soft peak clipping as long as you have selected linear compression in the gain screen. So just. Someone brought up a really good point. This is not.

When you select patient experience linear. Okay, that'll give you lower compression ratios, but it's not a true linear fit. If you want a True linear fit. You need to do that in the gain screen and then you will have access to soft and hard P clipping.

All right, I have another one for you. This is Annabelle. She is full 45 years old. Annabelle has worn hearing aids for 35 years. She has only ever had three pairs of hearing aids in that time.

She's anxious about her new hearing aids and has asked if they will be as loud as her current and previous devices. She's tried new technology in the past, but it but is disappointed when the volume isn't loud enough. So again, I'm going to ask you to use your chat here. Where do you think you might start, Annabelle? If we're going to select linear.

Yep, exactly linear. And then I would go with hard based off of her comments and her fear that it's not going to be loud enough. And then again, you have options from there. Excellent.

Okay, so this is a tool or a feature that's unique to Resound that we give you the flexibility of changing your time constants. And time constants refers to the attack and release times of the hearing aid compression system. So the speed of the attack and release times in hearing aids, of course, impacts

both sound quality as well as audibility. And this is primarily due to how the attack and release times impact the temporal information of speech. So when we process sound, we process information regarding the fine structures of speech.

All of those fast fluctuating details, the different nuances as well as the temporal envelope, the slow changes in that signal, and the speed at which our compression system acts impacts both of these, the attack and the release time. So a fast compression system is able to preserve the fine structures of speech, the little nuances, while a slower compression system will do a better job at preserving the temporal envelope. So studies promote the use of slow acting over fast acting compression for those with severe or greater hearing losses. So again, having the ability to adjust this for a patient's individual preferences as well as their performance is a really great feature. And you can adjust time constants in our Vivia line or in our Enzo I a line in the level 9 and 7 technologies.

So resound will always default all fittings to syllabic. And Syllabic has a fast attack and a fast release time. So when you're looking at the time constants in the advanced feature, and then these are going to be located under the speech tab, this is where you can slow down anything other than fast. I'm sorry, anything other than syllabic is going to be slower. Okay.

Even fast, your attack times are going to be about the same and fast. Your release times are slightly slower.

Just as an FYI like Phonak, Oticon Signia, they tend to tend to live around moderate. So this is another great feature. If you're transitioning a patient out of those, and they're used to that, that's what their brain is used to. Listening to that can also be a great feature. And then, of course, white X is going to be slow.

All right. So moving on, we're going to kind of transition out of the compression features and into directionality. So when one of. So when our hearing aid go into a directional mode, only the high frequencies are going to be treated as indirectional. Okay.

So the low frequencies, those are simultaneously processed in an omnidirectional pattern. And this allows for, again, more audibility in a fuller sound quality. So the nice thing about this directional mix feature is that it's not a one size fits all approach. It's based on the patient's audiogram and also the style of device the patient is in.

So whether it be a BTE or a custom product, so better low frequency hearing will default to a lower mix of directionality because they don't need directionality as much where their hearing is normal most of the time, the default setting is where it needs to be. It's not one of the features, you know that you're in a lot. You're certainly not adjusting it for the majority of your patients because, again, it's based off of their audiogram and their device. But it can be beneficial to increase the directional mix if a user needs more frontward, more directional listening benefit, or decrease it if they feel like there's a lack of awareness, or sometimes if it's sounding a little too tinny. Right.

When adjusted, you're going to see a bar appear very briefly on the gain screen. It's a really light blue or a really light red, depending on what side you're adjusting, of course. And what that indicates is the crossover frequency. So again, how many frequencies are going to be processed in the omni setting versus the directional setting.

Okay. Another feature that comes up quite frequently with this population is, of course, sound shaper. Right. So this is our frequency compression. We know that amplification to high frequencies for specifically these patients may not actually improve speech understanding due to the damage present in these regions.

So the resound sound shaper provides a high level of customization by recoding high frequency sounds within inaudible regions and then compressing them down into audible regions. Right. So A piano is often frequently used as a little analogy here. If high frequency sounds are represented on the right side of the keyboard and low frequency sounds are represented on the left side of the keyboard, the high frequencies that are inaudible would be compressed for audibility into the lower region. So this provides an opportunity for greater high frequency audibility without interfering with speech understanding.

So this feature is available in all resound hearing instruments, but is defaulted off for every fitting because the benefit from Sound Shaper is very individualized. I've used it for some patients who love it and who really benefit from it. I can have the same identical audiogram and have a completely different experience. So that's the reason for keeping it off. However, if there is a recommended setting, it's going to be based off of the audiogram, of course, and that will be in bold type in the software.

And so it would be, you know, up to your discretion as to when you might want to activate or utilize that feature.

All right, the final feature that I want to cover is Low Frequency Boost. This is another feature that is available in all of our power fittings. So again, if you're fitting an ultra power receiver, you know, a power BTE and of course the Enzo ia. This is what optimizes loudness for users with severe and profound hearing losses, and it boosts that listening experience with a louder, fuller sound quality when needed. Oftentimes I feel like I can be.

It looks as if I'm overfitting in the lows. Again, with this population, it's not uncommon to to feel that way. So end users with severe and profound hearing losses, again, they oftentimes prefer more low frequency gain than is typically prescribed. And this kind of helps keep it simple and it helps meet those sound quality preferences without having to introduce any risk of feedback.

So Low Frequency Boost gives you, like I said, a really quick and easy way to adjust the low frequency gains from 250 to 1000Hz. With three available settings, you have your mild, moderate and strong options with the values that you can see on the screen.

All right, so we have some polling here, and I have a couple of common complaints. Right. I don't think these will be out of the realm of maybe things that you've heard. Your patient has a steeply sloping hearing loss and reports a distorted sound quality. For some speech sounds, go ahead and tell me what feature you might try first.

As always, there's some gray areas. Right.

Okay, we'll see what that pull. All right, so a little bit of everything, with the majority being Activating that sound shaper. And again, this is something that we see a lot. Right. There's not necessarily one feature that's going to solve their complaint, but I would have to agree.

I think with that one, I would probably start off with sound shaper, and then if that didn't work, maybe trying some other options as well. All right, so I have a couple of these here.

The next one is your patient is asking for more sound, more volume, and you have maxed out the NPO and gain. He is willing to deal with a little bit of feedback periodically for more volume. What do we think we would try for this specific patient?

All right, excellent. I would definitely turn off that feedback guard for this patient. Right. We'll go into that display screen in the, in the gain, in the middle of the gain screen, turn off that feedback guard so that we have more access to that needed gain beyond that. And again, the DFS is still active.

Right. Just because we removed that guard. That's just the extra layer of protection that's going to, you know, ensure that he's not going to get occasional feedback. And all that is doing is, again, if something reflective came up against him that had, you know, mandibular jaw movement and the hearing aids moving around, he may hear a squeal before the DFS kicks in. So he's not going to be sitting around just, just squealing.

Okay, good job.

So your patient is the last holdout still in analog devices. You've tried to update him to new technology, but he returns the devices complaining of clarity and a mushy sound quality. Now, I've definitely had this patient. This is challenging.

So again, might not be just a right or wrong, but maybe the first one that you would try.

Oh, a hundred percent exactly. Change to linear compression. They sometimes just, if their hearing aid doesn't sound what we would think as distorted, it's not working for them. Right. So just giving them what their brain is already used to and making sure that they're, they're getting what they're looking for.

Excellent.

All right, I think I, I think this is the last one. So your patient is looking for more perception of volume and a stronger sound quality. They have reported sounds are thin.

Let's see what you all think on that. Yep. So I think I agree with the majority here. The first thing I would probably try is increasing that low frequency bass bo. Again, increasing the MPO would not be the wrong thing to do.

And possibly time constants and also possibly sound shaper. But I think I'd first try the frequency base boost, that seems to kind of get to the heart of their issue. But certainly if that didn't work, you have other options available to you as well. So very nice job. All right, so we do have a couple of minutes here, and I wanted to see if I couldn't just jump into the software really quickly because I know slides don't always interpret the features this out of the way.

Okay. So I just want. Kind of wanted to show you again. One of the things that I had mentioned when I didn't have a visual is the experience level. So you can select experience linear here.

However, when I go to fit patient, you'll notice that's not a linear fitting. Right. Linear should just be one one curve. So what that actually does is it gives you a lower compression ratio. But if you want a truly linear fit down here at the bottom of your gain curves or gain gain grid, this is where you can select linear or semilinear.

So if I change this to linear, now we've got a true linear fitting. And if I go into my advanced features here and then I come to my comfort tab and scroll down, this is where I have access to change it to from soft P clipping to hard P clipping if I needed to. Okay.

The other thing I wanted to show you. So let me go back to my gain screen. So here is our feedback guard. Right. And this is not an appropriate hearing loss for an Enzo I a. I know, but let's just kind of force it up.

So this is what it can look like if you're kind of battling that area. If your patient's telling you they need more gain, it's too soft, not clear, mushy. Right. It's because I'm getting. I'm stopped from fitting within that.

That area. So if I come into my fitting in the black banner again, you will see enable feedback guard again, red X means it's activated if I deactivate it. It doesn't look any different, but now I have that full area to fit. Okay. So I just kind of wanted to show you a couple of that in the software if you had any questions on where to find that.

Okay.

All right. So with that, I appreciate you all joining. Please don't hesitate to reach out with any questions. Happy to help in any way to make sure your superpower patients and you are happy going forward. So thanks, everyone.

Appreciate it.