Ponto 4 Clinical Data and Fitting Walkthrough

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- - [Barinder] Hello and welcome to today's talk on the Ponto 4. My name's Barinder, I'm the BAHS International Clinical Trainer here at Oticon Medical, and yeah, it's my pleasure to introduce it to you. We'll be talking about a lot of different aspects to do with the Ponto 4 today. Let me just move forward here. The main learning outcomes from today's talk is that the course learners will be able to list the key new features for the Ponto 4, the course learners will be able to explain the key conclusions taken from the latest Ponto 4 research data, and after this course we would like the learners to be able to describe the fitting flow for a Ponto 4 first fit. So yeah, it's my pleasure to introduce the Ponto 4 to you today. I'm going to start with a brief recap of the main features of the Ponto 4, and why we think it is a paradigm shift in bone-anchored hearing. After I've done this recap, I'll introduce you to the clinical data that we have on the Ponto 4, and then I'll talk a bit more in depth on the Genie Medical BAHS software, the new fitting software, and some differences between what you may be used to and some things that are new. Oh, gone forward a bit there, sorry.

Okay, so these are the main features I'm gonna recap about the Ponto 4 today. We want to talk about the Velox S platform and OpenSound Navigator, and why we think it's some of the most advanced audiology technology available in BAHS today, extremely fast and powerful, unique technology for 360-degree access to sound. I also wanna talk not just about what's inside the processor, which is amazing, but also about the design and some of the new design features we have. And of course, I can't forget to tell you that it is the world's smallest bone-anchored sound processor. And I want to talk about the wireless capabilities of the Ponto 4, not only what it is capable of today, but also how it will probably become more and more prominent in the future when it comes to If This Then That technology. So let's first start with an introduction into OpenSound Navigator. It is designed to really help people in those complex environments where there's lots of noise, lots of competing noise sources and competing speakers. We know that this is the most difficult listening situation for hearing-impaired people, in fact, for people in general, it is a difficult situation to hear.

The sounds of interest are acoustically mixed with all other interfering sounds, we have to use some in-depth cognitive processes to focus our attention selectively on the sounds of interest. So it just takes a fair bit of cognitive function to hear within a noisy environment. One of the cognitive solutions we use is called binaural squelch, which is a funny name for something that's quite important. That is when a noise source, the impact of a noise source is reduced compared to a speaker surface, speaker is in front, we can draw our attention naturally to the speaker in front, and reduce the impact of, say, the washing machine to our left using binaural cues. It's crucial to sort of mention that we don't ever naturally, holistically naturally go into a directional mode, we don't have directionality as a natural cognitive process, we don't just focus everything on the front and cut or minimize things from behind or to the side, we use cognitive processes to minimize the impact noise has on speech. Traditionally, with conventional hearing aid technology, we have used directionality, and in many different forms, and I admit that this is a very basic introduction to the conventional directional technology, but it serves a purpose for setting the scene for our talk here.

So, what we tend to do traditionally, is create a focus towards the front of the user and attenuate noise from the sides in the back. We can have different focuses of the directionality, like the beam can be more narrow or wider. Regardless, there is side effects to this conventional directional technology. It can, especially with a very narrow beam, make the user feel isolated, or as if they're boxed in because they can't hear people as well from the sides of them, and they have to really focus, turn their head and really focus on the person they want to listen to, which isn't very natural, so isn't very holistic in that way. Also, because we know of the side effects that we get from directionality, it tends to be in a mode. So we can't have directionality all the time because of these side effects, 'cause people would miss too much, so we have to put into a mode. Essential in this mode paradigm is that we have to have an artificial delay, we have to have a delay where the technology within the processor determines whether this is a transient noise or whether it's a noise that's there to stay. Sorry, just

coughed there. So, in other words, the noise has to be quite stable, it has to be there for a little while, otherwise we'd keep moving in and out of modes all the time, which would be very distracting. Again, this isn't very holistic, it isn't very natural. Saying that, directionality was the best that we had and was very, very good, increasing the signal to noise ratio, especially from a speaker in front. But what we're trying to do with open, it's something completely different. Went backwards there. Sorry, I'm used to pressing the Spacebar to make me go forwards, it made me go backwards. So with OpenSound Navigator, what we're trying to do is open up and balance the sound environment. So this is called Multi-Speaker Access Technology, or MSAT for short. It doesn't use directionality as we know it, and it makes that kind of paradigm a thing of the past. This is all about constantly analyzing your environment and reducing the impact of noise so speech is more readily available to you.

And as you can see from the words, that it's called Multi-Speaker Access Technology, part of this is that we don't just want you to be able to hear the person in front of you, but hear people all around you while minimizing the impact of that noise. This is possible because of the power of the Velox S platform. I think we can't understate the importance of having a very powerful chip that's built from the bottom up by Oticon, custom-made for hearing technology. So what do we mean by that? We mean that we make our own chips here in-house, and they're designed by us for hearing-impaired people. And it's what allows us to get this unprecedented processing power, these chips have been years in the making and have been upgraded and upgraded as time goes on, and now we're on the Velox S platform, which is the strongest audiology on the hearing instrument market, from Oticon Opn, Oticon Open S. So something like sound processing has never been this current in bone-anchored technology, it's merely a few months old in the hearing aid world. So we're really taking a landmark step here in bone-anchored technology. And this is why we feel that OpenSound Navigator is a paradigm shift, it's the power of this processing that allows us to do what we do, and it's a totally different way of dealing with speech and noise. Firstly, like I said, there is

no modes or mode shift, OpenSound Navigator is always on, always analyzing. In fact, it analyzes more than 100 times per second, constantly identifying what is noise and what is speech. Once we know what's noise and what's speech, then we can act on it. And this is the balance module. So after we've analyzed the environment, target it, what is noise, what is speech, we then, in the balance module, reduce the impact of those noise sources. So here you can see the fan or the printer, the person tapping on the keyboard, they've all been reduced, they're still there, they haven't been totally cut off, it's still there, but they're reduced, therefore, preserving the speech so the speech is preserved and the noise is reduced. This, again, is happening over 100 times per second. So I really need to get across this idea that we're not ever switching into a mode, we're constantly on, aware, if a speaker came into view, the voice activity detector will detect that, all the speech here, and then, again, we'd preserve that speech, it's always analyzing, always balancing, so rapidly reducing the levels of loud noise coming from specific directions while preserving speech.

And then, what's really crucial with this technology, and really cool, is that there is another layer of noise removal. So we've already balanced the signal, so speech is already dominating that signal. However, what do we know about sound in general and about noise? We know that it's not like a laser beam, so even if it comes from one specific direction and you minimize its impact, noise can fill a room, noise can bounce off walls, it can come and still be sort of, in a way, I guess, contaminating that signal. So therefore, we have a further layer of noise removal on an already balanced signal. And this noise removal is incredibly precise and incredibly fast with the power of that Velox S chip. Therefore, we're able to rapidly attenuate remaining diffuse noise, even between individual words. What I really wanna get across here is that this is all happening all at the same time. Less than a blink of an eye, all this analyzing, all this balancing and this noise removal is occurring all at once. And the key headline here at the top underneath OpenSound Navigator, is fast and seamless. The user never feels like they're moving from one mode to another, in fact, for them, they can't tell a

difference. They can walk from noisy room out into a quiet room and they don't feel like there's been this big shift, there hasn't been this huge change, it has been, to them, it's very holistic, it's just they're hearing, it's constantly analyzing and reducing the impact of the noise through the balance module, and then removing the noise, like I said, all in the blink of an eye. This is a crucial part of OpenSound Navigator, and this is why it's so significantly different. It's a spatially informed, seamlessly adapting speech enhancement algorithm. So it's reducing noise while also maintaining access to those multiple talkers. We're trying to do here, with OpenSound Navigator, is to leave the user with a possibility to hear multiple speech sources and decide themselves where to attend, just like someone without hearing aid would do, you're not ever forced into a narrow beam to hear just the person in front of you, you use the cognitive processes to reduce the impact of noise, and preserve the speech and you decide who you want to hear. And that way, we were trying to develop a more holistic system. But don't just take my word for it, this is the impact it's having on patients' lives, and these are the things that we're hearing back from our patients.

The largest difference is in situations with background noise, or when many people are gathered. I'm gonna go on to talk about the clinical data, and that's exactly what we see, the more complex the environment, the bigger the difference with OpenSound Navigator. Here, in the top right corner, with listening ranges increased, we see actually the benefit of having something that's constantly adapting and changing to the environment. If you actually dig deeper into the quote, it's talking about moving between two adults in the kitchen, and then going in with two children in the living room. "I walk back and forth between the rooms. "I can hear what they say, even when I'm far away." That is that voice activity detector it's the constant seamless adapting to the environment that they never notice that period where they can't hear as well while moving from one mode to another, because it's constantly listening and constantly adapting, the speech is constantly accessible, giving that feeling that the listening range is increased. This is one of the basis why people say, "This is more open, I can

hear more," it's because it's constantly adapting to their environment. All they ever hear is that they can keep hearing the speech and the noise is reduced, saying that, "Background noise has become background sounds. "Background noise is not all noisy. "I hear clearly my family at the table, "as well as the speaker." So this is exactly, exactly the outcomes that we want from OpenSound Navigator, we want background noise to become background sounds. So, that was a brief recap of Ponto 4 and OpenSound Navigator, and we're still in this OpenSound Navigator framework, so I just want to talk to you about the clinical data that's associated with OpenSound Navigator. Sorry, we're still in the recap of Ponto 4, my apologies, and we're still in OpenSound Navigator and I just want to talk to you about the new clinical data. So the objective of this study that I'm about to show you was to evaluate the OpenSound Navigator feature, or, as we sometimes call it, OSN.

Ponto 4, in terms of benefit in intelligibility during speech and noise tests, and in crucially here, users self-rated performance. What I actually want to get across here as well is that all they were testing was just the sound processing of the device, no extra wireless features, or anything like that was enabled, it's purely assessing the sound quality. Sorry, I've just got a little tickly cough here, but I mean, hopefully the odd cough here and there keeps you awake, instead of my dulcet tones. So there were 12 subjects, and they were all experienced Ponto 3 users, mean age of 59 years old. So you can see here a mix of conductive, mixed hearing loss, and single-sided deafness. And there on the right, you can see the BC in situ results, there was an average bone conduction pure tone threshold of lower than 45 Db HL. And this was all done on an abutment. And here's how the study design was laid out. So we had visit one. They turned up and they did an SSQ questionnaire regarding the outcomes from their Ponto 3, to just speech-in-noise test, assess it. So we then put them on a Ponto 4, and did a speech-in-noise test assessing the effects of OpenSound Navigator, they then had a field trial period, which lasted, on average, nine days, some people went a bit longer, some people a little bit less, but average nine days. And I think this is a very important

and really useful data because we had a direct comparison questionnaire, they were told to put on the Ponto 3 and put on the Ponto 4 and directly compare them in the situations they found themselves in, so we're getting, in a way, I guess live data, and also, to write down their user experiences as well, with the Ponto 4. The nine came back for visit two, where they did the SSQ questionnaire for the Ponto 4 then, they also did a separate preference questionnaire, and then a speech-in-noise test. What's crucial here with this subjective data, the direct comparison questionnaire, the SSQ, the preference questionnaire, is that there's multiple sources of data from different periods of time, which gives it a lot of strength. So even during and after, when their chance to think back as well, we get to compare all this different parts of data. And if they agree, I guess we can be fairly confident in the outcomes. So let's firstly just look at the speech-in-noise test.

This is just a base test, so I guess, in a way, you can almost think of it as a proof of concept, does OpenSound Navigator improve things? So this was the setup here with noise from behind, minus 110, 110 degrees, and 180, and the participant was two meters away from the speech target. And as you can probably guess, there was an improvement with OpenSound Navigator on, we expected that, quite a significant improvement 2.37 Db versus OpenSound Navigator on and OpenSound Navigator off. So we've got that basis, the basic test there, the proof of concept, does OpenSound Navigator improve things? Yes it does. Secondly, I wanna talk about the direct comparison questionnaire, Ponto 4 vs Ponto 3. We asked them about lots of different scenarios, conversation in quiet, conversation in small group, and quite remember they were switching between the Ponto 4 and Ponto 3 while they were in these situations. And one thing that really stands out, more than anything else here, is that the more complex the situation, the more people prefer OpenSound Navigator. So when we start getting those multiple speakers like conversation in a big group, conversation in a small group in noise, conversation in traffic, or the most complex sound source in a way, listening to music, you can see the more complex it gets, the more people are

preferring OpenSound Navigator. And it's really not a shock here, I guess, that in a conversation in traffic, lots of noise, a speaker there, that they're really preferring the OpenSound Navigator sound processing. But in general, the more complex the situation gets, the more they're preferring Ponto 4, so these multiple speaker, dynamic listening environments. And remember I said there was also a preference questionnaire which is done at a totally different time, so at the end of the trial when they come in again, and again, so a totally different type of questionnaire a different time, and we're seeing the same things come out, a higher preference for Ponto 4 speech in noise, and for listening comfort, as well actually. So there you can see that conversation in big groups, conversation in small groups in noise, it's really coming out that they preferred the Ponto 4 so this is, yeah, a big thing that's coming out of the data here. And then we've got the standardized speech, spatial and qualities of hearing scale, and when we compare Ponto 3 with a Ponto 4 there, we consistently get higher scores with the Ponto 4 across the board.

And I think this is something that we can actually think about as clinicians when we're doing our fittings and trying to assess outcomes here, is that it's very, very difficult in the lab to recreate the kind of dynamic shifting sound sources that we get in real life, out in the real world. And it's very, very difficult to assess the quality of the outcome just in the patient room, just in your clinic room where it's quiet. We need to let them go out and use this in the real world and get into those complex environments and then assess the outcome and assess if we need to do any fine-tuning. So one of the reasons why, as we'll get onto later when I talk to you about Genie Medical BAHS that we kind of recommend that you don't do any fine-tuning in the first fitting, and let them go out into the environment and see it in different complex environments that we couldn't possibly recreate in a lab. And then when they are back, listen to their feedback and then see if we need to do any fine-tuning. So yeah, this was the study design and I'm gonna go back to the user experiences with the Ponto 4, so, this is where we got these user experiences from, and these are the kind of things that they

were saying. We're really getting some really good feedback from the users, especially for complex environments. So some of the conclusions we can take from this is that OpenSound Navigator technology in Ponto 4 significantly improved speech intelligibility, improves perceived speech-in-noise performance and listening comfort in the real-life listening environments, when they're out there, directly comparing in the real world. The full potential of the OSN technology comes into play when we're in the dynamics of real-life environments. This is where we can really tease out the benefit of OpenSound Navigator is out there in the real world which we couldn't possibly hope to replicate in a lab, we try, but that's why I think these results that we've got from this experiment is so powerful. So still in the recap of Ponto 4, we've got a very thorough recap of OpenSound Navigator and an introduction to the clinical data, and I just want to quickly touch upon the design features of Ponto 4. So firstly, straight out of the gate, gonna say it's now non-site-specific.

So that means you actually choose in the software which side it will be on, whether it's left or right. So you can use one Ponto 4 on either side, you just choose, in the software, which side you want it to be, no more left Ponto or right Ponto, it can be used on both sides. There's still upholding our legacy on reliability and durability, it's gone through all the same tests, it's very reliable, very durable, we really hang our hat on these kind of things, on our sound quality and our reliability. And saying that, it's still got the exact same metal spring coupling, as before, so just as durable as before, exactly the same metal spring coupling, obviously attaches onto the same, onto our abutment. One really cool feature that's really important for pediatrics, is there is now an LED option. So, this is unique for sound processor of this size, so no other device in this category of size has an LED, so absolutely perfect for the children. And staying on that line, we also have the tamper-resistant drawer option so you can easily and quickly take out that battery drawer and put in a tamper-resistant option, again, for the little people among us. So, like I said, really quick recap on the design there and just got to mention it one more time, it's the world's smallest bone-anchored processor,

27% smaller than Ponto 3, combining discretion, performance and still has that reliability that we're renowned for in the Ponto DNA. And now, I just want to talk about the wireless features again, just briefly touch upon them. The Ponto 4 is made for iPhone, so straight out of the box, as soon as the patient has the Ponto, they can connect directly to the iPhone for direct streaming of phone calls, music, changing programs, volume, they can even use the iPhone as a little microphone as well, straight out of the box, connects directly. So any other device, which has Bluetooth, mainly, Android phones, or, other devices with Bluetooth, you need the ConnectClip. So via the ConnectClip, you can access any other device with Bluetooth that has doesn't have the made-for-iPhone branding, so isn't made by Apple basically, you can use that to access user controls, volume control, program change, and you can, yeah, use that with any modern smartphone. Crucial to mention here is that the Oticon ON App works on both Android and iPhone out of the gate.

So while you have much more functionality with an iPhone in terms of streaming and things like that, as soon as you get fitted, you can also, still as soon as you get fitted, while you can't use an Android phone to, say, stream music straight away, without having a ConnectClip, through the app, you can still use it as a remote control, you can still change programs, et cetera, you can download the app on both Android and Apple Store, or Google Play Store and App Store. And in terms of for today and future proofing, you have the world's first truly connected bone-anchored sound processor, so it's the only bone-anchored sound processor that connects onto the IFTTT protocol, which is, If This Then That, which is a cloud-based system which allows different technologies from different manufacturers to talk to each other. So it enables connection and control to an endless range of devices. Some of you who have experience with open hearing aids, for example, may be used to this or it may have been a while since you tried it. Things have changed quite a lot on the if-t, as it can also be called. So if you hear IFTTT, If This Then That, or if-t, we're all talking about the same thing. Things have changed quite a lot on that front, it used to be a web-based

protocol, you had to go into a Internet site, it wasn't very intuitive, they've changed things an awful lot. Now it's an app, and it's very, very easy and intuitive to use, it's quite a lot of investment. Things have really changed on that front, and it's very simple to use, you just download the app on your phone, and there's lots of what they call recipes, pre-program recipes in there, and you can create your own as well. And it literally just boils down to if this happens then do that. So one of the things you can use is getting a warning if your battery's running low. So for example, if your child's battery is running low and you're worried that maybe they're too young to tell you themselves, the Oticon ON App can send a message out into the cloud, into the IFTTT cloud, saying, "Battery low," then there's a pre-program recipe that says, "If battery low, then send a text message." And then you as the parent can get a text message on your phone saying, for example, "Sarah's battery is low," and then you can go and change the battery. That's just one of the things you can do.

There's many companies that have invested in this, as you can see here, Instagram, Facebook, Twitter, Netflix are on there as well, BMW, it's basically an automation, and the companies pay for access, so your patient doesn't have to pay for access to this, it's free to the end user. That's it, so this was the recap of Ponto 4, so Velox S platform, OpenSound Navigator, unique technology for 360-degree access to sound, world's smallest bone-anchored sound processor and truly wireless now and into the future. Now we've talked about that recap. Sorry, this was meant to be quite a beautiful-looking animation but it doesn't quite translate to web-based presentations, but now I've done that recap, I'd like to move forward and talk to you guys about Genie Medical BAHS and the fitting flow. Genie Medical BAHS, the Genies out of the bottle. I didn't write that, but someone did and they thought it was cool, so I felt like I had to say, so, the Genies out of the bottle. This is just gonna be a little flow here, we're going to do a brief introduction, talk to you about the fitting flow, some of the new tools and what's new in terms of software and wireless programming, spoiler, we can now do wireless programming, oh, yeah, we'll get into that. So if you've ever used a Oticon

hearing aid, if you've ever used any Genie Medical BAHS software, this is gonna look very, very familiar to you. And that is obviously on purpose, it has the same DNA, so you'll be able to navigate yourself quite intuitively if you've had experience, and if you haven't, I'll show you now as well. And again, it's a very intuitive experience. Obviously, it's had a refresh, looks bit more modern and a bit more in line with the rest of the products that come out from Oticon in terms of fitting software, and there's some new changes and additions. Before we go into the software itself, I guess it's important to talk about the fitting range for the Ponto 4. So the fitting range for the Ponto 4 is bone conduction threshold up to 45 Db HL, this is for conductive and mixed hearing losses. In terms of a single-sided deafness, you really need the normal hearing aid to have like normal thresholds basically, so AC thresholds, up to and including 20 Db HL in the working in. So when we're deciding what to fit our patients, there's a wide range of parameters that we need to look at. We know the Ponto 4 has the most advanced signal processing, which is getting remarkable results from our patients and those of you that have used open hearing aids know the big step and leap that the signal processing is.

However, it doesn't have the MFO that, say, the Ponto 3 SuperPower does. They have the same bandwidth, and obviously, Ponto 4 has better wireless capabilities, a wonderful design and reliability. So basically, what's come out of this is that if someone is within the fitting range of the Ponto 4, we really feel that OpenSound technology is a massive boost to them, and a massive difference to their lives. And then we also have the other parameters in terms of the wireless and it being very small for those people that are really concerned about aesthetics. However, it's very important to mention there's only so much signal processing can do, and if a person needs that extra power and he's out of the fitting range, then really it can't be the real power of having that superpower and having the MFO. So within the fitting range, Ponto 4 is definitely the best solution. And if it gets to that point where you need that extra power, that extra gain, we would recommend going for the, again, really, really

good device, the smallest all-in-one bone-anchored superpower device. And with that in mind, so with sort of fittings on a soft band, Ponto 4 can be used on soft band for patients with purely conductive losses, e.g. patients with aural atresia, microtia, chronic otitis media. However, if the hearing loss is larger, neither mixed or SSD, then as I said, you look at the list of parameters and then MFO is the most important parameter to achieve an optimal fitting then Ponto 3 SuperPower should be used. So the take-home point is, if they're within the fitting range of the Ponto and of the Ponto 4, then absolutely go for the Ponto 4, if there's any sort of situation where they need that extra power where MFO becomes more important, then Ponto 3 SuperPower is your device of choice there. So we've decided we're gonna fit the Ponto 4, it's a great device, we want to fit that, when you go into the Ponto fitting flow. So you open up Genie Medical, put in any client details, or it comes through automatically through NOAH, and you have this new family screen.

So when I say the Ponto fitting flow, for those who aren't aware, this is the fitting flow up here, you take each step as it comes and then in each step you have different options here. Here's a family and this is where you would connect, here. You just click that Connect button and it'll connect to the processor, or if you're just simulating, then simulate here. There's a little circle over the Connect, just to make doubly sure, and then when you move forward to the selection screen, then you'll be greeted by this option here. Like I said, Ponto 4 can be fitted on either the left or the right, and here is where you would choose which side you want to be fitted on, either left or right. You can also, if you so choose, run a beep test as well just to make sure it's connected. Let me bring up this arrow again. As you can see here, and the patient will just hear a beep and you can make sure everything's fine and connected. If they can't hear it, you can just up the beep level here. Once you've done that, and chosen which side, that'll go away and you will have this screen here which will tell you what's connected. And what's different on this screen is here in the bottom left corner, before it was kind of default baked in that the processor was on an abutment and for a conductive loss, and

then you just ticked if it was single-sided deafness, or if it was soft band. Now, they're all an option, the options are all there in front of you, it will select what it thinks is best fit, default-wise, but here all the options are there. So you have the option to pick conductive mixed abutment, or single-sided deafness, or soft band. Obviously, it's very, very important who the patient is, single-sided deafness patient or is on the soft band to make sure you tick the right hearing loss and the right connection as this affects the prescription. So after you've done all that selection, you then move forward into the fitting part of the fitting flow. And then we have these options, the left here, fine-tuning, feedback analyzer, BC in situ, OpenSound Navigator, program manager and a few other tools here. The first thing you're gonna want to do is run the feedback analyzer, so we go into fitting and click Feedback Analyzer. This takes around 10 seconds, you just click start there, obviously, you wanna make sure you're in a fairly quiet environment, and if the background noise level is more than it should be, it'll tell you here with this red line, and the orange bar will go over the red line.

Then the feedback measurement will run, like I said, it's incredibly quick now, takes around 10 seconds. The eagle-eyed of you may notice that in our 2016 version of this software, there is an option to turn off feedback manager and put it onto medium or onto maximum here. This is no longer an option in Genie Medical BAHS, mainly 'cause we found that we don't need it. So previously, when you moved from medium to max, all that would do is enable something called frequency shift. And it was the first time we'd use frequency shift in bone-anchored devices, so we just wanted to make sure it was tolerable and it wasn't distracting at all. It's only a 10-hertz shift in the output to try and reduce that feedback by breaking that feedback loop there. And what we realized was that nobody can notice it, it's not as noticeable, it's very small shift. So now it's just on, I guess you can almost think of it as it's on maximum as default. So you don't need to change that, so that's why that's not an option, but obviously, you can untick the box and have feedback shield off all together, if you'd like, but it's not recommended. Okay, so as you can see there, we run the feedback measurement and

then there was a change there in terms of the gain, as it molds itself around the shaded area where it's more likely to have feedback. And we'll talk about this later on and how our interaction with the feedback limit is different now. It's really important to remember if the programming cable is used, so remember, we can do wireless or wired fittings, if you are doing a wired fitting and using a program cable, please make sure that the cable is not pulling on the sound processor or touching the sound processor. So just make sure it's not pulling on it, and also that the cable is not touching the processor in any way, 'cause it can affect the feedback measurement. After you have run the feedback analyzer, you can then move forward and do the BC in situ, same as before really, same kind of layout, the big difference being that now you can't use the mouse, you can't click the mouse to do BC in situ, you have the same as digital geometry, you need to use the arrow keys and the Spacebar to present.

And what's different now is that, before, in simulation mode in the Genie Medical 2016, even in simulation mode, you can kind of practice BC in situ. Now, if you're in simulation mode, it's grayed out. So, you can't do anything in BC in situ if you're in simulation mode, you have to be connected to a processor. Okay, so this is the main fitting flow, as you can see, not much has changed, a few tweaks here and there, and, as always, it's instant connectivity, so straight out of the box, the patient can connect directly to an iPhone, if they do, say, get a ConnectClip, they can connect directly to the ConnectClip, you don't have to do anything in clinic with wireless accessories, patients can do that all at home, they can download the app and connect to their Ponto all themselves, you don't need to do anything within the fitting software to enable this. So we see, so no need to do anything at the fitting visit, just as the case with fitting open hearing aids. Can pair ConnectClip microphone or directly connect to iPhone at home. But what's really cool is that if a patient has connected to an iPhone, or connected to a different device while they're away from the clinic, when they come back for their follow up, and you connect to the Ponto 4, you can see exactly what accessories the sound processor has being paired with. So the clinician can keep an

eye on the different devices that their patient has, and, reflect that in their needs. Now, I just wanna talk about some of the new tools and functions, and in here I'll talk about some fine-tuning aspects as well. Obviously, absolutely brand new thing here with our bone-anchored devices is OpenSound Navigator. And quite a lot of people have used open hearing aids, but for those that haven't, this can be quite a daunting screen, so I'm gonna take it step by step. We're just gonna blur out the bits that we're not talking about. So here you can see the bits that aren't blurred. So, this is a picture, this will change with how you change the different options, it's just a diagrammatic representation. Again, same here, it's a representation of how much attenuation is occurring in different environments. And this is the option that you get to change. So this is help with auditory focus, and it's all about the OpenSound transition, and I'll explain that now. So the move on here. So here's another way of looking at it, a more complex way of looking at it, hopefully you can see this clearly, I need to get this arrow back.

So, here we have amount of help. You can think of that as the amount of attenuation given to the environment around them, is there a lot of attenuation to the noise sources or less? And then here we have the environment split into simple environments, and like maybe the TV, just a TV or one talker, and as we get over to this end of the scale and into more complex environments, so this might be a few talkers, bit of noise, here we're going into kind of like a restaurant scenario. And what you see here are the different options that you have available to you in OpenSound Navigator in terms of what kind of auditory focus mode do you want them to be in. So here you see very low. There's medium which is on by default, high, and very high. As I said, OpenSound Navigator is always on, always analyzing, and constantly adapting to this environment, but how it transitions from one to the other, and how much attenuation or amount of help it gives is based on what you pick here. So as you can see, if we look at, let's take for example here the low setting and the medium setting, you can see for the exact same environment, let's say a few talkers, here a lot more of that background noise is

getting in because you keeping it fairly, I guess in a way, in the omni setting, only a little bit of attenuation. And there you can see medium, we're giving them much more help, so we're really trying to reduce that noise much more, preserving the speech. So it's giving them much more help for the exact same environment, and as you can see, with high gains, much more help again, and the transition from one to the other is much quicker on medium. So this is just like a flow, it's, like I said, no set modes, it's just flowing constantly from one to the other, but how much it attenuates and how quickly it does it is based on the transition option chosen here. So, yeah, just reiterating what I've told you there, going from a simple environment, low or medium level, low reverberation, to low or fluctuating SNR high sound level. And you'll get a visual representation as you move through the settings of that help it's giving, how quickly and how much, which you go through here.

We now have two separate noise-reduction settings, one for simple environments and one for complex environments, and this is what these diagrams are showing here. So this is just basically, you'll see as I'm going through the settings, it's just an illustration of what we're changing here. Then we move over to complex, over to the right here. So this is the noise reduction that's going to occur in complex environments. You can see that diagram changing there as you turn up the noise reduction. Now, this is incredibly useful, actually. So if you had a patient that came in and said, "I'm very, very happy with my listening, "when I'm listening to the TV, "or when I'm just talking to my wife, "but I feel like I need a little bit more help "just when I go into a bit more of a noisy environment." This means you can selectively target the amount of noise reduction in a complex environment, in a more noisy environment, without affecting anything that happens in simple environments. So it's really useful tool. Another useful tool is that we can go between, so we can choose Open Automatic, and that comes as default, or you could create a separate program with omni and/or separate program with full directional. If you've had a patient that has been using traditional directionality for 20, 25 years, maybe they would like a second program with full directional, just so they

know it's there. They might never use it, but it can be a good canceling tool to say, "Look, this is completely new way of processing sound, "but if you want something that you're more familiar with, "you can use the full directional option." The other thing I just wanna highlight, I'm just going back a second, just to highlight here that anything with this symbol on here above it is the default setting, that's how it comes as default. So you have a lot of tools at your disposal, but like I said, right at the beginning, if you can follow me for that long ago, seems like yesterday, but we really recommend using the tool a follow-up visit if the patient has a specific concern like wanting to understand speech better, or is bothered by background noise, we don't really think you need to be using this at the first fitting visit, the patient needs to get some experience with the sound processor in different listening environments.

And as we saw from that clinical data, they really need to go out there and get into those complex environments to really get an idea of where you might need to tweak it for them, if you need to tweak it at all. So 95% of your patients are gonna be very, very happy and comfortable with the default settings, so you don't have to worry yourself too much about having to adjust the settings, unless you really need to in follow-up, or using your clinical judgment. Just as of couple of examples of what you might do if you hear certain things that are in noisy environments, I find it too hard to understand people talking to me. So this is in the follow-up, they come back and tell you, "Really liked it, but in noisy environments, "I'm still finding it hard." Oh, you could turn the OpenSound transition to high, or very high, you could also reduce the noise, well, it says reduce here, I think increase the amount of noise reduction for complex environments, as we said before, and also, you could remind the patient that they have the OpenSound booster functionality in their ON App for when they need that extra boost. Crucial to remember here is that while the OpenSound booster does primarily a few other things, but mainly is it changes that open transition, OpenSound transition, to very high. So if you already have your patient set to very high, it won't do an awful lot. So we don't usually recommend putting the patient on very high for that reason, just so

they've got that extra boost if they need it from the app. You could get, especially say, a younger patient who doesn't need as much help in these noisy environments that may say, "Ugh, I sometimes feel "like I am missing out on what goes on." Again, this is gonna be very rare. Generally, the OpenSound Navigator is very, very good at detecting voices and reducing the noise, but you might just get someone who wants a bit more of that noise around them, especially if they're younger, and then you would just put the OpenSound transition to low. Question you might have is, "Well, why don't I just change it "in the directional settings to completely omni?" We don't recommend that, because then it's omni all the time, right, and while you get that good noise removal, you're not getting the full benefit of OpenSound Navigator when they do go into those complex environments, and they do need that bit more help. Some things about fine-tuning.

Like I said, the vast majority of the time, we're not gonna need to do any fine-tuning, most people are very, very happy with the default settings, but one thing to remember now with this new software is that the game can now, as you can see, if you just look at that red line, I'll get the arrow actually to show you, here, that's the gain there. If you so choose, using your clinical judgment, you can increase the gain and put it into that shaded area. So it's much more like you would get with hearing aids now, it's very much the same. Before, we used to have this hard feedback limit for those that, well, not before, in our other software in 2016, you have this hard feedback limit, it's a black line which you can't go over, here, you can go into the feedback areas, so it's now a shaded area. You can easily move the gain into there, of course, with the increased risk of having feedback. But it's much more up to you now, if you feel like you wanna risk it and go in a little bit, you can absolutely do that, if there's no hard line blocking you from going into that shaded area. Just to show you one more time, so in our other software, in Genie Medical BAHS 2016.1, this area here, the outer edges of this would be a black line, and it would be a hard line that you wouldn't be able to go past. Now, if you so choose, you can move into that area and you can still see the rest of the

measured limit, so you can know how far into the shaded area you've gone and how much more risk there is of feedback. Fine-tuning is not often needed, as I've said. For example, you can get some issues with maybe you may have someone say, "Oh, my own voice sounds muffled, "or as if I have food in my mouth, or something." And then this is just an example really, of some of the adjustments you could do. You can increase the high frequency gain by about three Db, from 1.5 to four kilohertz. If that doesn't solve the problem, you could turn the DFC off for small hearing losses, alternatively, for some patients, it works to just decrease the low frequency amplification by three dB. So just an example of a solution to solve own-voice reproduction. And what's brand new in this software is the pediatric default settings.

Now when you're inputting a client selection, you have to put the age in, and what happens is, if the patient is below 18 years old then the pediatric default settings are applied, recently they come with a default here, as you can see here, for patients from zero to under one, it's on omni, obviously because patients at that age tend to wear the Ponto on their forehead, and then you don't want OpenSound Navigator activated, you just want them on an entirely omni profile there so it can pick up sounds from all directions exactly the same. Noise reduction is still on. And then we have some introduction of OpenSound as they get to one to under four, where it's on low, and then medium when they get into around a school age or nursery age. Now, these defaults are entirely modifiable, as you can see, you can modify them by age here, you can modify each single one in every section. So, we know that there is different opinions on how much technology to introduce and when for children, so, absolutely okay, you can go in there and change it to however you feel is best. So then it will apply whatever default settings you have suggested. What's important to remember is it only ever does this at the initial fitting. So, for example, you fit a two-year-old boy for the first time, those pediatric settings are applied, he comes in again, hopefully after a few visits in between, but when he's five years old, the settings are not automatically changed, the audiologist will not be reminded of that either. So it only applies these

pediatric default settings at the initial fitting, after that, it's up to the clinician to decide when to change the settings and if to change the settings, nothing will be done automatically, and there won't be any reminders. Like I said, one of the new things now, because Ponto 4 now has an LED, is in the end fitting screen in buttons and indicators, you can go in there and modify the indicators for a program change, volume control change, battery low, startup, whatever you'd like for your patient, and for children, that LED is defaulted as on, you can go in there and turn it off if you would like. And just lastly, so I've kept you long enough, over an hour now, so thank you for those that have stuck in there, it's important to remember that GM BAHS 2019.1 is a completely separate program to GM 2016.1, to the extent that it's seen as a completely separate module in NOAH.

So there's no exchange of information between the GM platforms, they're two completely separate programs for different devices. I hope that's clear, there is no exchange of information between the two. As you can see there, two totally different modules. So Genie Medical BAHS works with the Ponto 4 family, currently an only child, but there is more family members to come, and it works with the Ponto 4 and any of our future sound processors. Genie Medical BAHS 2016.1 works with a Ponto Pro family, Ponto Plus family, and Ponto 3 family. So, you're likely going to need both Genie Medical BAHS and Genie Medical 2016.1 installed on your computers. And, as spoiled right at the beginning, yes, we can now do Wireless or wired fittings. So you can continue to use your Hi-Pro 2, your Hi-Pro, if you would like. If you have the capability to do wired fittings, either through Noahlink Wireless, or the fitting link, then you can also do a wireless fitting through those devices. We have different product guides that you can get from your local reps, like the Quick Fitting Guide, the Audiological Manual, the Product Guide, and you can also, within Genie Medical BAHS, access to Genie Medical BAHS health files. This is much more intuitive now and much better display. So it opens up a web page but you don't need to be connected to the Internet, it's just an HTML format. So it looks really nice, it's all organized very well,

and you can just put in your search terms for what you want help with. I can say this is pretty good because I helped make it, so I hope it is anyway. Thanks so much, thanks for sticking by. Yep, hope you've learned a lot today.

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