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Genie Fitting Focus Series: Oticon CROS Fittings
Presenter: Rob Dowling, AuD, FAAA

- [Rob] Hello everybody. Welcome to our Genie Fitting Focus Series short course on the Oticon CROS fittings. My name is Rob Dowling. I'm one of the education and training specialists with Oticon here in the United States. This particular course, I'm going to review the essential information needed to get started with our CROS transmitters, as well as covering the fitting steps in our Genie 2 software. For more comprehensive review of single-sided deafness which is where CROS solutions come into play and their considerations, as well as more in-depth discussion of these CROS solutions, please refer to our audiology online course titled Oticon CROS, The Revolutionary Sound Experience. So let's get started here. And the objectives for this course is to, for the participants to be able to identify the Oticon product families that will interface or work compatible with our CROS transmitters. In addition to that, participants should be able to list the steps for pairing as well as programming Oticon CROS transmitters with the receiving hearing instrument on the opposite side, on the other ear. And then finally, participants should be able to describe how to adjust the balancing tool and in the Genie two software for a BiCROS fitting. So just to give a little screenshot and overview of the CROS solutions that are available in our our CROS family. On the far left you have an example of the CROS PX which is a miniRITE, and this is the rechargeable version of our CROS transmitter, of the CROS PX. On the right is an example of our regular CROS which is in the shape of the miniRITE T and that uses a disposable 312 battery. And so these are the two options clinicians have available from a CROS transmitter standpoint depending upon the end user's needs.

Now for those of you who are not familiar with CROS it stands for Contralateral Routing and Signal. This is a screenshot showing in simple terms the intent behind it. So on the far left if there is a need for potential CROS solution, the patient would have essentially what is considered to be an unaidable poorer side and then, but they have in the better ear for all intents and purposes, normal hearing from an audiometric standpoint. On the far right you can have also a poor ear that's considered unaidable, but on the other side, the better ear does demonstrate some kind of hearing loss. And that is referred to as, in that situation is BiCROS solution. So both transmitters can be used either as a CROS or BiCROS situation. Now both of our CROS transmitters can be used across an extensive line of our product families. Unparalleled compatibility, by far the most that we've ever had from a CROS solution standpoint. They offer backwards and forwards compatibility and allows the transmitters to work with the new hearing aid families in the future as well as the current hearing aid families.

So for example on the far left, the CROS PX and the CROS transmitters will work with the Zircon one and two, the Xceed one, two, and three, the Oticon Real one, two, and three, Play PX one and two, and the Xceed play one, and two. Just a disclaimer, as for some of the a little bit older products the CROS solutions are not compatible specifically with the Opn S3. The Oticon Opn Play two and any of our custom Oticon Owns, but everything else is compatible with the CROS translators. Now what about children, are they candidates for CROS solutions? Keep in mind that the current research indicates that the limited information about the efficacy of CROS systems for children, while CROS fittings improve the detection of speech from the poor side and quiet. It can also enable presentation of interfering noise to the better ear when it is transmitted from the CROS transmitter. So this could mean adverse effects on a complex listening environment and the need for an end user to be able to control the device. Meaning muting it, turning it off, or adjusting the volume in the different kinds of environment. For that reason, if a end user, really regardless of age, but if they are not able to do those things we don't recommend CROS by CROS for children below the age of five and caution to be exercised with children between five to eight years of age. But also taking into consideration also the ability of the end user to be able to make adjustments on the hearing estimate. Another thing to keep in mind, we have full compatibility with the current line.

You can also if you run into a situation, maybe the patient or the end user has an older device, it will work with the CROS transmitters, but be mindful that you have to have the minimum firmware requirements. So for the Oticon Real it's firmware 1.0 or later. Oticon More, Zircon and Play PX, version 1.1 or later. Opn S, Opn play, Xceed and Xceed Play, is 8.0 firmware or later. And Ruby is 1.0 or later. Now most of the time folks when they hook up hook up their instruments, it's strongly suggested that they always upgrade to the most current firmware for optimum performance. But just keep in mind, these are the minimum requirements to be able to interface with the CROS transmitters for the products that I mentioned. Now specifically for the rechargeable CROS PX, that mini right rechargeable style is compatible with both a smart charger on the left and also the desk charger on the right. And, end users can choose which one is more preferable. Some end users get both. The smart charger, its greatest attribute is it portability and the ability to be able to charge the devices when not being plugged in, has a power bank boat into it. The desktop charger is a wonderful option for those folks where it sits very conveniently on their bedside table. Both of these chargers will give the end user a full day's power with a rapid fast three hour charging time. But in addition to that, they'll

also even get even a faster quick charge where if they put the instruments in for 30 minutes, they'll get an additional six hours of power. And both of these chargers are plug and play in how the instruments are put into the slot. They're designed for be hassle free and very intuitive to use for the end user. Now let's talk about how did the Oticon CROS solution work. There are a couple things to be mindful of in terms of its wireless capabilities. The Oticon CROS solution contains and consists of both the transmitter but it also has to have a receiving side. And you mentioned the products that are compatible for the transmitter on the other side. Now there are two, so actually the system has a dual wireless system and it uses both near-field magnetic conduction, induction, which is NFMI. That is used between the CROS transmitter and the receiver. And then in addition to that, I'll just explain a little bit in the next slide. You also have the ability to be able to interface with accessories with Bluetooth. So NFMI is used to transmit the sound from poor ear to that better receiving ear instrument because it's highly efficient and it gives a very, very high quality sound so the end user can get the full and more immersive sound experience. And here's an example where the, where the Bluetooth comes into play. So the dual radio system twin link allows for near-field magnetic induction between the instrument and Bluetooth low energy for binaural communication as well as for the transmitter to be able to interface with external devices.

Now specifically for NFMI, it uses an exchange frequency of 21 times per second and an exchange rate of 320 kilobit per second. The Bluetooth, the 2.4 gigahertz Bluetooth low energy, allows for the streaming of Bluetooth devices and within the range without sacrificing the sound transmission between the transmitter and the receiver. Alright, let's move on to specifically the, how the transmitters work. So remember we have both the CROS PX rechargeable and the non-rechargeable CROS. Now the transmission, the speaker unit and the transmitter on the receiver is a real one, but it does, has no acoustical purpose. So remember the transmitter itself is not delivering any sound in that poorer side. Now the signal processing occurs in both the signal, the transmitter I'm sorry, and the receiver. The incoming sound of the transmitter is cleaned up in a very unique way, in a special way, before being sent to the receiver along the lines of doing a better job of preserving speech and also removing noise. And it is directly correlated to having a better sound quality for the patient. That third criteria that is important is that the CROS transmitters utilize a full 10 kilohertz broadband bandwidth. This is important for speech cues and the transmission to the better side, so it gets higher signal fidelity. But it also means for specifically CROS users with normal hearing in the better

ear, they get the highest possible sound integrity with that wider bandwidth. And that's important because people with normal hearing are often more sensitive to sound quality. In addition to that, the volume control only adjusts the level of the transmission in the CROS transmitters. So the transmitter signal is less of an overall signal. It's in a sense adjusting the volume to the transmitter, is the same as adjusting the balance between the two devices. Now muting or tuning off the transmitter essentially stops the signal from transmitter, transmitter to the receiving hearing instrument. And I'll talk more about in the Genie software some option to consider when given that capability. And just a reminder, the transmitter does not have Bluetooth low energy technology. So it does not connect to any Bluetooth devices. It is the receiving hearing instrument on the other side the better ear that takes over the job of being able to connect external devices, like phone accessories, and also any kind of apps. Now the state of the receiver functions in an Oticon hearing instrument, particularly for the receiver, you really wanna view it as a mono fitting. It receives the near-field magnetic induction signal from the transmitter on the poor ear. In the situation of a BiCROS, fitting the sound is mixed with its own microphone signal.

So you have the sound coming from the transmitter and also you have the amplified sound in the receiving hearing instrument. And that can be controlled via the push buttons on the receiving side device or with the Oticon companion app, our connect clip, or remote control. And all of those use Bluetooth low energy technology which is compatible with the receiving device in the better ear. The volume control in the receiving side adjusts the overall volume and the combined input from both the transmitter and the receiver. Let's talk a little bit about the fitting and specifically in the software. So before you actually connect to the Genie software in preparation for the fitting, you wanna make sure that the, if you're using the rechargeable CROS PX and the receiving hearing aid which is also usually, is recommended to be rechargeable, are charged up and ready to go. Now to put the devices in pairing mode with each other and to pair the receiving hearing aid to Genie two, you remove the devices from the charger or you can also turn them off using the push button and then turn them back on. In the case of our non-rechargeable CROS transmitter being paired with a receiving hearing instrument, you also want to make sure those disposable 312 batteries have a fresh new battery in both the receiving instrument and the transmitter. Now in order to work together, the transmitter and receiver must be in close proximity and paired before the fitting. So you place the CROS transmitter and the receiver within seven inches of each other. They'll automatically

pair as long as they're compatible and with the most minimum updated firmware, and within the specified range that I mentioned. There was a screenshot when you are actually in our Genie two software. So if the hearing aid on the receiving side supports a CROS by CROS fitting, you will see in that bottom right hand corner the ability to select CROS transmitter. Okay, in that poor ear. Just keep in mind in Genie two you can't choose to style of the transmitter. So in other words, CROS PX rechargeable, or regular CROS, this CROS transmitter applies for both of them. Next, you would proceed to the fitting step with the fitting bubble at the top. And then at this point in time the end user is wearing the instrument, they're going to be able to hear the stream sound from the CROS transmitter. So that could be checked by running their finger along the microphone of the transmitter and they'll be able to hear it on the opposite side. You can also see in the Genie software that little mannequin, little head in there. On that poor left side you will see that little wave.

That indicates that the microphone is gonna be able to pick up sounds on that poorer side. Here's a little example video. Patient, the end user rubs that transmitter, they will be able to hear it in the opposite better ear. Now in the fitting bubble on the far left there is a CROS by CROS tab. And you can set up in the center of the screen about three quarters of the way down, three different settings with the CROS solution. Could be a CROS by CROS, or a third option could be no CROS or BiCROS. So you can create additional programs, each with its own mode. This could be useful for example if you're fitting an end user with borderline normal hearing and it's not certain whether a CROS or a BiCROS would be the best solution. So the clinician could set up the option of being able to select the program to listen to the CROS set up or the BiCROS, and they could use that in new different environmental situations after they leave the clinic. The third option, creating a no CROS, BiCROS program, would be useful for mainly a BiCROS user of the CROS PX. Just keep in mind a rechargeable CROS transmitter cannot be muted. But if you hold the button down or turn it off, it essentially will boot down and then it's going to take several seconds to boot back up. So to make it more efficient, a clinician could create a program with a no CROS, BiCROS. And when the patient or the end user goes into that program it effectively mutes the microphone, the transmitter, instead of having to turn the instrument off. And then when they wanna to unmute it they just simply go back to the program with the regular BiCROS program. And it's just a more efficient way of being able to effectively a creative way of being able to mute or unmute the CROS transmitter on the rechargeable CROS PX. And in addition to that, in the far left you'll see a CROS quick fitting

guide. And you just click on that icon and then you'll be able to get a PDF of the step-by-step fitting guide. And essentially talking about what we are discussing here in this particular webinar. This is going to be available, it's one of the materials. So you'll be able to see this in the materials list for this particular course. Now when a CROS is selected, there are no setting to adjust in this situation. Remember the hearing aid microphone in the better ears are off by default. And setting the appropriate overall gain of the transmitted signal is done in the fine tuning tab. You could see there, and you can see you can make the adjustments. And this is doing this for the gain for soft moderate valve and NPR. Now for BiCROS fitting, if you select this and the fitting, this is where the balance of the sound coming from the CROS transmitter in addition to the receiving hearing instrument amplification, you can make adjustment to that. So if you look at the bottom of the screen you'll see the CROS input level. And by default it will go to the zero level.

So this balanced tremor so to speak adjusts the CROS transmitter signal input level in two DB steps. So as a default as I mentioned earlier the balance is set to zero. So that means the end user getting equal sound and the transmitter and receiver respectably entering into the ear canal of that better ear. You also may notice the little headshot of the mannequin at the top. There are now two ways. And with a BiCROS situation, both microphones are active receiving sound for the end user. Now, although the balancing tool is only available for BiCROS fittings, it's important that the transferred sound is not louder than the sound naturally entering the better ear. It's also important that the person wearing the CROS solution feel the balance in terms of their perceptual sound coming in through each ear. To adjust the overall gain and fine tuning fitting through the receiving hearing instrument, you would return to the fine tuning tab and make those adjustments accordingly. Now keep in mind when you go to buttons and indicators in the end fitting bubble, and you see the operate push button screen that you see in front of you, you see the different configurations for volume control. Keep in mind with the transmitter it is not possible to configure buttons and indicators. But you can see under the push button tab and the transmitter how the buttons are configured. So it gets a little guide so to speak so you have a little reminder of how the system is set up. Another component to this is when you move the tab over from operate push button at the top to audible indicators that you see on this screen, the beeps are configured to be high frequency with the transmitter alerts. Whereas the receiving hearing estimate are going to be a lower frequency. And in this case it would be a medium frequency by default. The reason why this is done is the two

different frequency levels helps the end user more easily distinguish beeps from the transmitter or versus is the receiver. Now if you give the end user the ability to sample and hear the difference between the two beeps, you can change in the Genie software the receiver beep signal, change to high, so you can play that through the receiving hearing instrument so the user knows what it sounds like. Just remember to turn it back to medium on that receiver's side before the end of the fitting. So here's some tips to consider from a standpoint of programming, the no link wireless programmer is the best option for an optimal fitting. A wired connection can only be used if the receiving hearing instrument is built on Oticon V access platform, which include the Oticon Opn S, Opn Play, Ruby, Xceed, and Xceed Play. For Polaris and Polaris R platform products, keep in mind, no link wireless is the only supported programming device to be able to do the fitting. In addition to that, the CROS transmitter is not detected or connected to Oticon Genie two. So this means that it is not visible in the software. So this therefore is not possible to adjust or add programs specifically to the transmitter.

As I mentioned before, you treat it as a mono of fitting and you make a new adjustments with the receiving side. The transmitter is actively streaming throughout the fitting so your end user will be able to listen and hear the differences. In addition to that, one nice byproduct of how the CROS transmitter is designed, is it cannot be firmware updated since it can't be detected or connected to Genie two. So, but you do need to be mindful of compatibility of the receiving hearing instrument and make sure that you have the appropriate version like I mentioned early on in this talk. So in conclusion, the Oticon CROS family, the benefits of having exceptional sound, this has been demonstrated globally. A lot of end users really liked the sound quality of how the CROS solutions work. There's far more choice and far more compatibility than we've ever had before in terms of the families that will interfaced and be compatible with the CROS transmitters. And then finally, an important component is with a dual wireless twin link system with near-field magnetic induction between the instruments and then the ability at the same time to be able to connect to outside devices using Bluetooth is feasible with our CROS solutions. All right, this is it for the Genie Fitting Focus Series, specifically for Oticon CROS fittings. I hope you enjoyed this overview and also the fitting steps in the Genie two software. Hope they were helpful. And as I mentioned in the very beginning, a more in-depth course on the CROS solutions, you can refer to our audiology online course Oticon CROS Revolutionary Sound Experience. And again, thank you so much for your time and have a wonderful day.

