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ReSound Government Services: ReSound LiNX Quattro Rechargeable

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- - [Kira] Government Services course on ReSound LINX Quattro Rechargeable. My name is Kira Sinner, and I'm an audiologist working in product training and content development at ReSound, and I'm located actually at our headquarters in Bloomington, Minnesota, which is just outside of the Minneapolis and St. Paul area. I would like to thank everybody for taking the time to attend this course today, we really appreciate you spending your time here with us. Hopefully by the end of this course, you will get to know more about our ReSound LINX Quattro Rechargeable solution, and you will be able to understand and explain what kind of benefits it can provide to your patients. And as Melissa indicated a little bit earlier, if you have questions, you can go ahead and type those into that chat box in the lower right corner, and we'll get to answer those. If you don't hear an answer right away, don't worry, we can kind of touch back at the end of the presentation as well, we'll look through there and make sure we get any questions that are answered, that are listed there. So our learning outcomes for this course, we're hoping that after you take this course, you will be able to list the features of ReSound's lithium-ion rechargeable solution. We are going to describe the battery life, charge and display options, and then also identify the benefits of ReSound's lithium-ion rechargeable solution, what those benefits are for your patients. So we're here to talk about rechargeable batteries, but to put that into a broader larger context of just battery power options that are available in the hearing aid industry, we're gonna take a few minutes up front here to highlight options that are currently available, some that you certainly are very familiar with, but we'll just take the time to kind of run through those.

There are three main battery type options in the hearing aids. We have the traditional zinc-air that we're very much familiar with. In recent time, we have the silver-zinc rechargeable that was introduced by ZPower solution. And then more recently, we have the lithium-ion rechargeable solution that's been introduced as rechargeable batteries. So as we all know, zinc-air batteries are the traditional batteries, they've

been used in hearing aids for decades, and basically still are the standard in the market around even though rechargeable is coming on as being more available these days. We are all familiar that zinc-air batteries come with a tab and patch, and when you remove that tab, of course, it exposes it to oxygen and it activates it from there. And we know that they come in different sizes and shapes for the different styles of hearing aids. So the capacity of the zinc-air battery, as that becomes smaller, we know that the capacity of the battery itself decreases as well, but we have to also keep in mind that there's many other factors that influence how long a zinc-air battery may last. So some of those things are the chip technology itself, how much amplification, so depending on how severe the hearing loss is, how much amplification you put in there, that's gonna affect what kind of battery life we would expect, wireless streaming of course is going to be a factor for how much battery life we get, and then the environments that it's being used in. So a hearing aid can be affected by moisture and altitude and temperature, all those things impact that battery life, so we really should be counseling patients accordingly to set those expectations if they're, live into those types of environments where that might make a difference for what they could expect from a battery life perspective.

Once the zinc-air battery has lost its charge, most hearing aids nowadays typically will produce some sort of low battery signal to give an indication for the patient so that they know that they need to replace it, so they are replaceable of course, and that needs to be done by the patient when they get that indicator. As mentioned, those environmental conditions can certainly affect that amount of battery life that you could expect, so in terms of like moisture, they need a certain amount of moisture to function, but if it's too humid or if it's too dry, that will actually shorten the battery life, so you can have either side of that condition, that could be a factor there. Low levels of oxygen, low temperatures will also shorten their lifespan. Another consideration is that they need to remove them, so if they have any kind of dexterity or visual impairments that might be more difficult for them to manage those small batteries to be able to

remove them and re-insert them. Also, they are toxic, so there's always the chance of ingestion by either humans or animals that the patient might have. And then they are, need to be disposed of properly, so we're hoping that people recycle those appropriately, but we know that they probably do end up sometimes just getting thrown away so that has an effect certainly on the environment itself. Next kind of battery is that silver-zinc rechargeable battery. This is what we sometimes refer to as a hybrid rechargeable. This was a solution that was introduced by a company called ZPower. This solution requires a change actually to a special battery door that's provided by ZPower that allows that recharging capability to happen. It's actually recharged through a process called galvanic charging, so it requires contacts, so there's a contact on that battery door that makes contact with another contact that's inside the charger. So this physical contact needs to be certainly placed properly in there in order to be successful. Usually from a completely empty to a full charge charging cycle takes maybe about four hours for this type of battery system, and then it may last about 16 hours, or maybe if you were streaming four hours for the day, you can figure about 12 hours is probably an average there.

One benefit that the silver-zinc rechargeable solution offers is that it can be actually swapped back with a regular zinc-air battery, so if the patient forgets to charge them overnight, they are not, they're not gonna be stuck, they can actually take a regular zinc-air and put it into that ZPower door and it will work just like it would normally work. But again, there are some considerations with silver-zinc is that they do require an external power source for the charging system itself, so it's not a portable system, there's no lid on it, so really just meant to be used to charge up overnight, and then wear their hearing aids, and then when they need to go back in the charger, you need to be back kind of where that's plugged in in order to do it. It does require again that battery door change into the hearing aid itself. And typically, it's not going to necessarily match the color of the hearing aids, so a typically like a clear ZPower door that you put on there. There are those physical contact points, so any time you have

contacts on a hearing aid, there is some, they're going to be susceptible to being, again, able to place them correctly to make contact with the contacts inside the charger, but also moisture can be a factor sometimes which could cause corrosion, down the road, there could be debris, and all of those things would be able to affect essentially how well that recharges for the patient. Also, the battery life, they do need to be replaced, it's probably, figure about a year of battery life before you would maybe need to obtain a new battery if it's that solution. Lithium-ion rechargeable of course is what we're here to talk about today, and these were recently introduced to hearing aids, or more recently anyway than the other solutions, and in general they've been used, lithium-ion has been used in the medical field for a long time and it's just kind of recently expanded into our hearing aid industry. Lithium-ion batteries, they provide several advantages over some of the other, the zinc-air and the silver-zinc. So they're lightweight and energy dense, so what that means is that they have large power capacity, but we can get in a very small package, so we can fit into that hearing aid now, but that battery's gonna last a very long time.

They are contained within the hearing aid, so that's gonna reduce any kind of openings in the housing so you're gonna have more protection against those environmental effects or that accidental ingestion, as the case may be. And they do not have charging memory, so what that means is that no matter how frequently you charge them up, they will maintain a consistent life, so it doesn't have to be completely depleted before you charge it back up, you could just have, it could be partially depleted and you charge it back up, it's not gonna affect the overall battery lifetime of that hearing aid. They also hold their charge well over time, so if you had somebody who maybe for some reason needed to not, or didn't wear them for a few days at a time, it's not going to deplete, it's gonna maintain that battery life the next time you turn them on, they should be really where they were when they shut them off. And then they also have different, or they're very long-lasting, sorry, they provide multiple years of use so you're gonna have many, many, many years, and it's gonna actually probably last the lifetime

of the hearing aid before you would switch to a different type of hearing aid. Induction charging is possible, so different lithium-ion solutions that are on the market right now, they work a little differently between each other, so some of them use those galvanized contacts actually where you have contacts on the hearing aid that make contact within the charger, and then others use what we call induction charging which is as well as a charging system that there doesn't have to be any exposed contacts in order to make that happen. We have some consideration though for lithium-ion rechargeable batteries as well, so they are contained in the hearing aid housing itself, so they're not gonna be field replaceable for you or the patient, they can't be serviced in the field. They are temperature sensitive, and think about this in terms of temperature sensitive while charging. So we want to maintain a temperature between 50 and 104 degrees Fahrenheit while they're charging. They can use the hearing aids at any temperatures, but when they are charging them, you should stay within that temperature range for the best success. And then there also are some regulations for shipping and traveling that we're gonna talk about coming up.

So again, we mentioned that there are various lithium-ion solutions developed by across different manufacturers, some of those using metal contacts, but our ReSound LINX Quattro system actually uses induction charging for our hearing instrument, and it is a highly beneficial solution for lithium-ion charging. So the way induction charging works is there's actually a metal coil inside the hearing aid, and then there's also a metal coil inside the charger, and there's a transfer of energy that occurs between the charger and the hearing aids. So there aren't actually any exposed contacts in either location, it's just the transfer of that energy between the coils. And there are advantages to induction charging over metal contact charging, so you don't have to be so specific on how you place them into the charger as you would maybe if you're trying to make a connection with the contact in there, and then they are very robust with induction charging. So when you don't have any contacts, that means you don't have to worry about moisture or corrosion or wear on the contacts or any debris that might

interfere with that charging capability. Just a quick note on traveling with lithium-ion batteries, so this would be if you have a patient who's traveling, you just want to make sure that they know that they cannot be put into checked baggage, that they need to have those, both the hearing aids and the charging unit should be in their carry-on baggage. Airlines certainly are very good about announcing those kind of things, but it's always a good reminder to them that they want to ensure that they keep them with them. Also, they need their hearing aids, you would hate for their baggage to be misplaced and then they're without their hearing aids, so it's just a good practice anyway to make sure that that they carry them on their person or with their personal belongings they have with them, and again, just that they're not allowed to be put into their checked baggage. So before we get into some of the more focused details on the devices and the chargers themselves, I want to highlight some of the work that went in behind the scenes when we were developing the ReSound LINX Quattro Rechargeable devices in terms of usability.

So we did have a couple design goals that we wanted to focus on when we developed this product. We wanted to make sure that we were on the right track from a development perspective. And so a couple of those goals were usability and utility. So usability actually refers to how easy and pleasant the product is to use, while utility refers to whether the product does what the user needs it to do. So for patients, in order for them to get the most out of these devices, they needed to be easy to use and easy to interact with. And we did some usability trials, and one of the main questions that we had asked as part of one of our trials was to ensure that the system was easy to use, and not just the hearing aids easy to use, but the hearing aids and the charger and the combination of how they work together, we wanted to make sure that patients were gonna be able to manage this system very easily. So we compared ReSound LINX Quattro to two other rechargeable systems that were on the market, and we asked participants to rate the ease of use of each system on a scale of one to five, with one being difficult and five being very easy. And the selected participants that were in

this trial, they had no previous experience with any kind of rechargeable hearing aid technology, we wanted to make sure that that was the case so that they didn't have practice using a particular system out there and would maybe make it easier for them to complete the tasks or do what we're asking them to do, we wanted to make sure they were coming in fresh with no previous experience in this area. And what we found was that both our system and the two compared systems actually all were rated relatively high in terms of ease of use, so that's good, that's good news for just rechargeable hearing aids in general that they're a pretty easy system to use, and the ReSound LINX Quattro system and System A, as you can see on the chart, were rated the highest actually by an equal number of participants. There was only one, one participant that selected System B as the easiest, and then also something notable is that nobody rated the ReSound LINX Quattro system as the most difficult, where seven participants had rated System B as the most difficult. So we thought, well, okay, this is some good evidence that people think our system is easy to use and we're on the right track here. We also looked at the ease of placing the hearing aids in the charger for charging.

So again, we wanted to make sure that patients could perform this task with relative ease, and we devised a usability trial that looked at scoring these patients based on the amount of time it actually took them to utilize the system to get the hearing aids into a charging mode. So the participants were scored on a zero to two scale, where two was essentially they had no difficulties, so they were able to put the hearing aids in the charger and get them charging within 30 seconds. They were awarded a score of one if they had a little bit of difficulty, so it took them little longer, between 30 seconds and 120 seconds to complete the task. And a fail was awarded zero points, and that was either they couldn't do it at all, or it took them longer than 120 seconds to complete the task. So as you can see from the graph here, the ReSound LINX Quattro system and System A performed better than System B, but what we found interesting here is that System B actually uses induction charging, so kind of like ReSound LINX

Quattro uses induction charging and System A actually used galvanic, metal contact charging for their system. So this gave us some indication that not only the type of charging mechanism, but also actually the design of the system itself does play a part in how successful somebody may be with using the overall system. And then as we kind of discussed earlier some of the advantages really with induction charging is that down the road, there's not gonna be problems with moisture and corrosion and debris and wear on the contacts, whereas System A, these are all new systems, so they didn't have any wear and tear on them, but perhaps down the road, System A, using that metal contact mechanism possibly could experience more problems, or see that is a possibility that they could, a patient could have problems down the road with that, so this is good news as well. So some benefits of the ReSound Rechargeable solution is for patients who have poor dexterity, or patients who have visual difficulties, this system can be used with greater ease than traditional disposable batteries, so it eliminates the need for them to deal with those small batteries, taking them in and out of the battery drawer, dropping them, or even like incorrect placement, you know how many times people put them in backwards, right?

This eliminates all of those factors which is gonna be especially important for these people who do have dexterity and visual impairment issues. It's much easier for them just to drop the hearing aids into the charger, instead of dealing with those small batteries. It also decreases the environmental footprint, so then we talked about how these, it's not something you dispose of like you would a zinc-air battery, so you're gonna save on the recycling of the batteries or them putting them in the trash can if that's what happens sometimes, it's just gonna be better for the environment. And then also with the ReSound system, it actually provides convenience and portability, so our system is able to provide charges that you're gonna talk about coming up here later to be able to be, the patient go on the go and charge while they're away from any kind of power capability. So the new chip platform enables real sound quality improvements just in general for the hearing aid, and some of those technical specifics of the chip, it

gives us 30% more computing power, 100% increased processing speed, 100% increased memory capacity, and what's important for today's talk is that actually the chip itself gives us 20% reduced power consumption. Now, this is not just for our rechargeable, but also we have a 62 model that uses a 13 zinc-air battery in the ReSound LINX Quattro family, and this power consumption, this reduced power consumption is a benefit actually for both of those products, so we're getting more battery life just because of the new chip platform that's inside both of these hearing aids. So we do have the actual lowest battery drain in the industry for both our zinc-air version of this LINX Quattro and of the rechargeable lithium-ion solution as well. But today, we're going to focus on the 61 rechargeable hearing instrument and talk more in detail about the specifics of that. So rechargeable highlights, of course, uses the lithium-ion batteries, they are fully encased as we talked about inside the hearing aid and provide that very long battery life, and they use that induction charging, so no metal contacts. And then they are muted while charging, and then they will activate automatically, so when you pop them in the charger, they're technically kind of in a holding state while they're charging, but they will be muted, so they're not gonna be listening or anything that happens while they're in there.

There are LED status indicators that appear both on the hearing aids and on the charger that's gonna provide information about the battery life status and the charging status, I'm gonna discuss that a little bit more detail later, and again, that on the go charging because the charger itself has its own built-in lithium-ion rechargeable battery, again, we'll talk about that coming up here in more detail. So this is going to be a slide that you want to keep in mind and remember, this is highlighting kind of the overall capabilities of the batteries within the hearing aids themselves. What it's telling you that if you had a completely drained battery, it would take a maximum of three hours to actually charge it all the way up to that full capacity with that full charge. And when you do have a full charge, that's going to provide the patient with 30 hours of battery life in the hearing aid, so they're gonna have way more, obviously a full day of

battery use out of one charge on these hearing aids. And then another very positive thing is that if they were streaming 50% of their time, they would still get 24 hours of battery use. So that's like, so 24 hours, and 12 of those 24 hours they were spent streaming to whatever, whether it was an iPhone or wireless accessory or whatever they happen to be connected to, they're starting to get that full 24 hours of use which is great, again, they're not going to be needing to worry about running out of battery life throughout the day. So actually when they did the user trials, the participants in those trials actually had a very hard time running the hearing aids all the way out, so they would use them, they're typically told to use the hearing aids as they would normally in these trials, but they would use the hearing aids throughout the day, and after a full day's use, they would end up with most typically about three lights of the LED chart still left at the end of the day. So there was never any concern from the participants who were in these internal trials the devices were gonna run out of battery, which was really great to see. They're sometimes they're concerned with, "Oh, am I gonna have to worry about "charging these up in a day?" That's not gonna be a concern with the ReSound LINX Quattro system at all.

But in addition to that great battery life, the charger also has a quick charge function, so that means you can actually get quite a bit of charge after a very short amount of charge time. So if you put them in for an hour, it's gonna provide 16 hours of battery life, 30 minutes of charge time would provide eight hours of battery life, so if they forgot to do a charge overnight, they can pop them in there for a short amount of time and still get really a pretty full day's use out of the hearing instruments. And then even one minute in the charger will give you about 16 minutes, so let's say the patient comes into the office and the hearing aids are depleted and you need to do a fine tuning, if you can just pop them in for even a minute, you're gonna get 16 hours of life, which is gonna be enough for you to do that, that fine tuning adjustment, so it's a really flexible system. The rechargeable 61 has that push button that is a multi-function push button, so on similar products that have just that single push button on them, we have

the ability to configure it within ReSound Smart Fit fitting software so that you could program that button to act as a program change as that right raise, left lower volume control, it could initiate streaming to the accessories if you chose that option. And then this is also the way you would turn the hearing instrument on and off since it doesn't have a battery door to open, so you'd use that function through the push button. And then for some of the veterans out there who may need to maybe they're in secure places where they can't have a wireless functionality in certain areas, you can in the fitting software enable what's called flight mode, which disables wireless connectivity, and then once that's enabled there, the patient themselves can turn it on or off, and again, they would do that through the push button function on the hearing aid. There are also LED indicators when you do these different functions, so you'll see different light patterns associated with each kind of function. So more specifically on that, when you turn them on or off, you're going to do a five-second push on that push button. When you change program, or volume control or streaming, all of those items depends on how you have it set up in the software, so in the fitting software, you have the ability to select either a short or a long push, and you designate which one of these functions would be associated with that short or long push. And when we say long push, in this case, we mean about three seconds, just for your information.

Entering flight mode, again, you would turn it off with that five second push, and then if you wanted to put it into flight mode for the patient, they'd just have to push and hold for about nine seconds, so it's a much longer push to initiate that. Once it's in, they'll hear like a double ding kind of signal in the hearing aid that tells them that the wireless connectivity is disabled. When they're all done and they want to go back to using wireless again, they just have to turn the hearing aid off and turn it back on, and that will exit them out of that flight mode capability. The LED light patterns, so when you're turning it on, you will see a single solid light that fades, when you turn it off, it will flash green three times. When you put it into the charger or while it's charging, you'll see a blinking green light. And when you are in the fitting software, or sorry, when it's fully

charged in the charger, that blinking green light turns to a constant green light, so those are the indicators that the patient will be looking for to know whether it's charged up or not, so if it's blinking, they know it's still charging, if it's a solid green and it's in the charger, they know that it's ready to go. When you are in the ReSound Smart Fit fitting software, when you click the beep to identify whether you have a right or a left, the hearing aids will still produce kind of that tone in the hearing aid if you're listening to it, but what's also nice is you will get a visual indicator, it will flash six times, that green light will flash six times, so you can identify it that way to know which one's right or left as you're connecting up in the fitting software. And then when you are in flight mode along with that tone they hear, it will flash four times, it'll do a double flash, so that's again another visual indicator that they've entered into that mode. The rechargeable pairing process, so when we're pairing to a smartphone or one of the ReSound wireless accessories, obviously there's no battery door to open and close which is how we normally do it to put it into what we call discovery mode, so in order to get it into discovery mode, we have to use that push button functionality to do it.

So this is gonna apply to whether you're using an Apple or Android platform or any other ReSound accessories. You have a couple options, so your first option would be certainly turning the hearing aid off to power it down and turning it back on, once you do that, it goes into this discovery mode to be able to do the pairing process, you'll see a solid green light on the hearing aid when that happens. Your second option would be if the patient has their charger with them, you can just place it in the charger for a few moments and then remove them, and then that also initiates that discovery mode. So either option, it just kind of depends on do you have the charger with or don't you have the charger with? But you can accomplish that task either way, and then you'll want to do your pairing process with the phones or any of the accessories, that works the same way as it does with all of our other products, so there's no change there. So charging on the go, this is really a very simple, easy to use charger. We found that kind of, again, the usability studies that we did, it gives a lot of really great visual feedback

for the patient so they know what's going on while it's charging, and it was really very positively received during our development trial, so people really were able to easily use this, they didn't have a lot of trouble with it. It charges, again, by the induction with no contact, so easy to insert, no issues with corrosion and debris, and then it actually doubles as a carrying case. So the charger itself has an integrated rechargeable battery and that charges up while you're charging the hearing aids, and it actually provides three full wireless charges. So each, if you think of each wireless charge as being 30 hours, you can get up to 90 hours of additional charge time with this charger without having to be connected to any kind of power outlet. So again, very flexible system for people who are out and on the go, it has a lid that closes down, so the hearing aids will be protected in there if they choose to carry them instead of wearing them for whatever reason, so a nice portable system for them to use. So using kind of those same methods that we used for the hearing aid usability testing, we wanted to look up, or look at the usability for actually setting up the charger and using the charger. So again, these subjects were rated from zero to two, with two being that passing without difficulty, one point if they had a little difficulty, and zero points if they failed, if they couldn't do it at all. So again, the ReSound LINX Quattro Rechargeable devices were compared against these two rechargeable systems, and they did very well.

Actually in this case, when we're looking at the charger itself, the ReSound LINX Quattro and System B performed better than System A, so that was kind of interesting to us as well that in this case, the other charger that also used induction charging was rated higher than the one that used the galvanic metal contacts. So when we looked at all of these usability measures, ReSound LINX Quattro performed as the top runner or the best in each of those categories, there wasn't any measure that we found that it wasn't performing where we would expect it to. So a little bit more on the charger and these trials, so we gave participants the charger and the hearing aids and the wall plug and we just said set it up, we didn't give them any instructions, and 90% of the

subjects were able to set it up without any instruction at all, so it was very intuitive to use the system, and one subject did require some instruction to set it up just a little bit of trouble, but for the most part, the majority of people found it very, very easy and intuitive to use. We had some quotes from some of the different participants that they could go two days on one charge, they could go eight days without being plugged in, that the charger was an excellent travel case for the aids, and that they loved the charging unit. So we got some really good feedback, people were receiving it very well, and later in the presentation, we have a use case where we'll talk about that first quote where he said he could go two days on one charge and he could go eight days without being plugged in and how that was actually accomplished, so we'll talk a little bit more detail on that one. So getting the most out of your ReSound LINX Quattro Rechargeable solution, and we're gonna talk a little more in depth here in terms of the rechargeable system itself, the apps and the fitting software, give you some more information in those areas. So the patient can check the battery level and, or the battery status level in several places. So there's status lights on the charging case and on the hearing aids themselves. Let me get my little pointer ready here. So when we're looking at these charging status lights right here, this will indicate the charge of the hearing aid battery, while we look on the back, that's gonna give you the indication of the charge of the charger battery, so that integrated battery that's within the charger itself, so that's indicating the different battery lights there.

So the devices will show that battery charge on the instrument itself while it's in there, so again, it will be blinking during charging, and once it's all fully charged up, it will turn to that solid green. And then in the ReSound Smart 3D app, they will also get the battery charge indicator for the hearing aid batteries, so if they use our app, they can find that information there. And certainly as a provider, an audiologist, clinician, you have the ability if these devices are in front of you to do that same stuff, but you have one additional place when you're connected to ReSound Smart Fit fitting software in the sidebar, you will also see the battery life indicator in that sidebar area, so you have

one addition place that you can check that as well. When you are looking at those LEDs, so the ones for the hearing aids, there's always five green dots that are gonna be listed there, and they each represent a different charge level. So the amount actually equals 100% totally, so you have to divide that by the number of dots, so there's five dots, so each dot would represent a 20% range. If you see one green LED, that means there's gonna be zero to 20% charge, if you see two, that's going to be a 20 to 40% charge, and then it's gonna go up in increments from there of 20 until you get to the five LEDs, which means it has 80 to 100% charge in hearing aids. And this works consistently like where you see them here or in the app or in the fitting software, that's all the same ranges that you're gonna see there. And we'll discuss this or we'll see this a little bit later in the presentation, but in like the ReSound Smart 3D app and ReSound Smart Fit fitting software, when the hearing aid battery gets less than 10% charge, it will actually show a red dot.

Now, we won't see a red dot here on the charger itself, so these will always only be green, so just keep that in mind, but you can get, when it's less than 10%, it will show you a red dot, which we'll see coming up, and I'll show you what that looks like. And then on the back, or sorry, as previously discussed, the hearing aids, when they're charging, they will blink, when they're fully charged, they will have that solid green, so the patient can always take a look at that and know what status, if they're ready to be removed from the charger or if they need still some charging time. If they remove them and they're not fully charged, they still have whatever amount of charge is on there, so if they had to go and they're not fully charged, it's not that they can't remove them, they can always do that certainly. And then once they remove them again from the charger, they will automatically boot up, so you'll hear those activation tones or those startup tones that they're used to hearing in the hearing instruments while they're placing them on their ears, so they'll have that to reference. And then when you first place them into the charging unit, the LEDs that are located here, my little pointer, it will first display the charge of the device that has the lowest charge, or sorry, the

charge of the device that's placed first, and then it will switch actually, if one device has a lower charge than the other, that's what will appear going forward until it's fully charged up. So the one that's placed first will appear, and then the one of the two that has either of the lowest of the two charges, that's how many dots you will see there, so hopefully that makes sense. All right, the integrated rechargeable battery that's in the charger itself, this has the three LED dots on the back. So again, it has to equal 100%, so each dot would represent 33% charge. So if you had three dots, it's 66 to 100% full, two dots, it's 33 to 66% full, one dot would be 10% to 33% full, and those are the green dots, but on the back, you will also get that red dot when there's less than 10% charge remaining in the charger itself, so that one will change to the red, just so you know that. All right, and when you first insert or remove the hearing aids or the charger cable, actually the battery status lights will illuminate for about 10 seconds, and then they turn off, so you can see that initial light, where is it currently charged at. And again, it provides that three full hearing aid charges for 90 hours of additional capacity, which is very generous. In the app, they can see the battery status, it's a little bit bigger view of it. It's gonna be under that status screen which is located at the bottom here, and you again have those five dots that represent how much of a charge with each being 20% of charge, so in this case, my left aid has 20 to 40%, and my right aid has 10 to 20% when they look in the app and see that.

When it is a low battery, you will see that single red dot in the app which means that there's less than 10% charge remaining in the hearing aids themselves. And when it's less than 10% charge that remains in there, that means that you actually have three hours of charge time remaining, and that's without streaming. If you were streaming, it's gonna be less than three hours because that always requires a little bit more from the battery than just normal wear. So this is a really good thing to point out to indicate like hey, you probably should think about getting those charged up, 'cause you don't have much time remaining on the batteries themselves. And then as I mentioned earlier, the hearing aids, when they're in the charger, they're muted, but you have to

think of them as being sort of that semi-active state because when they are in the charger, they can still communicate with both the Smart 3D app and the phone and the fitting software actually. So when you look at this app, it will give you the indication that they are in the charger because the green hearing aid will be present with the charging symbol. You'll also see in that status bar icon, there's gonna be a green dot with a little charging symbol in it, so that's when they're residing in the charger, they can see that in the app as well, it communicates that information while they are in that state. Once they are removed, that boot sequence, the startup beeps will occur, and then the ReSound Smart 3D app will return to that normal non-charging display once that happens. When you're connecting to ReSound Smart Fit, some things to know about this is the ReSound LINX Quattro Rechargeable can only be connected via the NOAHLink wireless, that's the only way to connect it. And from a fitting perspective, the discovery procedure doesn't really change in Smart Fit, you're still gonna get it into discovery mode and hit connect and that's what's gonna trigger that, but one thing to keep in mind is that you cannot connect the devices while they are sitting in the charger, and you will get this message in Smart Fit that tells you that, that you need to remove them before you can hit connect.

So it recognizes that they are in the charger, so it will find them, but you can't actually physically connect to them unless they're removed from the charger. And then this is just another reminder of those quick charges, so if you don't have enough charge, you can also quickly pop them in there a little bit before the appointment and charge them up, and then still have plenty of battery life there to do your fine tuning. All right, because they can't connect when they're in the charger, we do have a best practice recommendation, so if the patient has the charger with them, what's the best practice would be actually take them out of the charger first, you're gonna hear those startup beeps, those delayed activation or those little startup beeps, or perhaps if you disabled that in the fitting software where they don't have any of those startup beeps active, just wait a couple seconds, get it going, and then once they're out of the charger, then you

can hit the connect in the fitting software because that will just make the process go very seamless, you won't have to wear, you won't even get that error message then that tells you hey, they're in the charger. So if you just use this as the best way to do it each time, you're gonna have very seamless connectivity. If the patient doesn't have the charger, then again, you gotta use that push button, so push and hold for five seconds, again, you listen for those startup beeps or wait several seconds if you disabled them, and then hit the connect again in the fitting software, and that will just streamline the whole connectivity process and you'll have no problems. Here's a look at that rechargeable battery display information as it appears looking at a bigger screenshot of the actual ReSound Smart Fit fitting software. You have those same five circle icons that are present there and this could be good to use as a counseling tool for during the fitting. If you see that they only have like one dot or something while you're fitting, then give them a reminder that hey, you probably need to charge them up, or you're not gonna get as much battery life for today 'til you get them in the charger. Also just a reminder, really best practice again is if you have capability of connecting to a wall outlet, charge them up each night, you should charge each night, so you can just counsel them that way on that.

The sidebar display, again, same amounts, and then this is again where you'll see that single red dot, just wanted to show you when there's less than 10% in the fitting software, that's how that will appear. And some of you, if you like to look at the fitting software with that collapsible sidebar, when you have that collapsed, it's not gonna show you that battery life indicator off the bat, but if you click and hover over those hearing aid icons, they'll pop out, and you'll get to see that information there. So it's kind of hidden until you just hover over that, over these battery indicators here, and then it pops out for you, so just another tip for you if you're looking for that information, if you choose to collapse the sidebar in the fitting software. Rechargeable low battery status, so when you're connected to the fitting software, low battery information will appear when you're in the saving process if the batteries are less than 50% charged.

So again, this gives you an opportunity to remind the patient that hey, you got 50% left or less on your battery, so you'll need to charge them up, so that's a nice indicator that's provided in the software. And then there's also what we call low battery warning, so this is when hey, there's really not much battery life in these hearing aids, they are about to turn off due to low power. This is kind of a reminder for you guys as clinicians because you're gonna want to actually exit out, save your fitting, and then pop them in the charger, even that minute, like I said, you get 16 minutes, then go back in and finish your fitting because what will happen is it will just shut off and then you'll, you don't want to lose what you've done in your session, right? So take the opportunity to save what you have, pop them in the charger, get a little bit of charge on them, and then continue on with the fitting if they're at that low battery situation. So our use case we're gonna talk about real quick here, this was the patient profile, he was one of the trial participants, he was a 64 year old male, worked as a consultant, he traveled routinely for work, he spent a lot of time on his cell phone, he listened to audiobooks and podcasts on a regular basis, so he was a really heavy, heavy streamer, actively streaming patient. He was bilateral, sloping mild to moderately severe sensorineural hearing loss. He was fit previously with bilateral ReSound LINX Squared devices, actually the 62 that used the 13 zinc-air battery, and he used that device in particular, he wanted the 13 battery 'cause he knew that he did a lot of streaming and he wanted to have as much battery life as possible. So we enrolled him in this trial, and he was fit with the ReSound LINX Quattro 61 Rechargeables for two months, and he paired, he had an iPhone, so it was paired to that for his call streaming and his audiobooks and his podcasts and those kinds of things. And when we looked at his data logging, his daily use was about 13 hours, and he actually spent about 16% of the time streaming, so he was a pretty active streamer.

And he reported that the batteries never dropped below the three to four indicators, LED indicators for daily use. So he was, he never really got below 40% of battery life and that was even with streaming a considerable amount of time. And so in our trials,

we typically ask patients to use the devices how they would normally through their normal routine, but sometimes in these trials, you get patients who like to push the envelope and they're very curious and they like to figure out really, what can I get out of this system? And I guess that's good learning for all of us, so he decided that he wanted to take his charger and unplug it from the wall and just see how long he could go without recharging it. And as you may recall from those previous, on that comment page, this was the guy who said he could go two full days on one charge, and got eight additional charges out of the charger. And so what happened here is that, like I said, if the hearing aids aren't completely depleted, it's not going to use that full charge, to charge them back up again, so you really would have more than three charges per se, so it's not that it just charges up three times, it just, it has that 90 hours capability, so depending on how much it needed, it could charge it up. So he did this, he was able to actually do that, was actually able to get a full eight days without, until he had to plug the charger back in because he was never empty at the end of the day, so he was really very, very pleased with that performance. He actually said he wasn't sold on rechargeable devices, but based on his playing with this and figuring out how much he could really get out on, it actually won him over at the end of the day because he was saying, "Oh, you know, "yeah, everybody talks about rechargeable "and that these things are gonna be great "and I'm never gonna have to worry about it," but truly, he never had to worry about it, he was able to get so much extra use time, so it was a really great thing.

Some quick tips, and these are not something, some of these things not that you might run into very often, just good to be aware of. If you have somebody who lets the hearing aids sit in an unplugged charger for more than 24 hours straight, so this is like it's not plugged into the wall socket, just be aware that actually, the charger will turn the hearing aids off. So normally they're just in that muted state, if they sit there for over 24 hours and the charger is not plugged into the wall, it will shut the hearing aids off, so it's a power saving measure, and then at that point, removing them is not gonna

turn them on, you have to use the push buttons, so this is just something to be aware of. Probably not a typical use case, but if it happens, there's nothing wrong with the hearing aids, use the push buttons to turn them back on. And then the hearing aids can actually, there are little right and left designators on the charger, so you can see the right one here, left would be the other side. You can actually put them though in either side, the key is is that the receivers have to be pointing in towards this open cavity area in order to charge up. So if they've switched them around and the receivers are pointing out and you can't close the lid down, they have to put them in so that the receivers point in, but in reality, you could put the right in left and the left in the right, just as long as they're pointing in, they charge on either side. And then the hearing aid LEDs are only active when they are in the charger or when you're detecting in the fitting software, or if you're pushing the push button, so when they're walking around, they're not gonna be blinking and on and stuff like that, which makes normal sense. And then the internal batteries, they have a four year life span, which means four years for that full capacity. It doesn't mean at four years, oh, they're not gonna work anymore, it just means you get that full 30 hour capacity. after four years, it's gonna reduce by about 20%, but you still get 24 hours after four years. So this is gonna give you really, really long battery life for the lifetime of the hearing aids, it's not something the patient's gonna have to worry about.

So just a quick review and summary on those rechargeable advantages, quick charge available, so again, they can maximize their usability of it, long battery life, it's portable, a charger they can carry with them, it has that integrated rechargeable battery that gives them three additional wireless charges, induction charging which is really robust, completely sealed so that you don't have to worry about environmental issues, really intuitive LED indicators that appear on the hearing aids and the charger, that's gonna help the patient know what's going on, and in hoping that the whole system as a whole, they're very confident that they can manage using this, it's a very easy to use system. So with that, we're at the end of our time. I don't see any questions in the chat

box, but on this last slide here, certainly there's our ReSound Government Services phone number, our web address, there's lots of great information available on our website, and we have a really awesome team that is so, loves talking to guys. So whenever you have questions, please, please call, they're so knowledgeable and they love helping all of you out with any kind of questions that you might have to assist you with this product or any other product or software question that you might have. With that, I would like to thank you for attending. Again, additional questions, please contact our team.

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