GSI Suite Options for Corti Data Management

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- [Laura] Hello there, and welcome to this Webinar which is called GSI Suite Options for Corti Data Management. My name is Laura Prigge and I am an application specialist at Grason-Stadler. So at Grason-Stadler we have a team of three audiologists, I just thought I would overview that for you quickly. We have me, Laura Prigge, we have Tony Lombardo and Karen Morris, and we comprise the team of audiology here. I did receive my doctorate at AT Still University, and I've been doing audiology for about over 15 years now, but I've been at Grason-Stadler for about 10 years, so there is just my background. Today, with our course objectives. After this course, the participant will be able to transfer and assign patient data from the GSI Corti to GSI Suite. After this course, the participant will be able to set up customized report templates to meet the needs of OAE reporting. And, after this course, the participant will be able to create and download patient lists from GSI Suite to the GSI Corti. So, as you could tell from the course objectives and the course title, we are going to talk a great deal about the GSI Corti today. So, the agenda that we have for the next half an hour or so, is as follows. First we're gonna do a quick overview of the GSI Corti. Second, we're gonna talk about the different data management options that you have with the GSI Corti, and then we're gonna really dive into how to integrate your OAE data from GSI Corti with the GSI Suite.

So, we'll talk about transferring, we'll talk about patient lists, and then we'll talk about the template editor. And then at the end we will do a quick summary, and you guys will be able to meet all of your course objectives. So, let's start with the Corti. The Corti is the subject of our webinar today, and the Corti was actually released in about 2013. It is our handheld, screening and diagnostic OAE device. It does have DPOAEs and TEOAEs, and you can actually order or purchase this Corti with both, or with one or the other. Additionally, you can buy this in a screening configuration, so it just has very specific screening pass or fail criteria protocols, or you can get it in a diagnostic version, which does have the screening protocols but then includes other protocols such as for DPOAE, the four frequency pass or fail, the six frequency limited and two

12 frequency protocols, one out to 8000 hertz and one out to 12,000 hertz. Some of the really cool things about the Corti. It does have a patented noise algorithm and so we have found with this, the way that it processes background noise, we're actually able to get OAE results in pretty noise backgrounds. Since we're using this for, lots of times newborn screening and lots of times pediatric testings, sometimes school screening we do find ourselves in some pretty noisy environments and with this algorithm we're able to get some pretty reliable tests in up to 55 to 60 dB of background noise. So we're pretty excited about that. Another really cool feature of the GSI Corti is the probe design. So the probe, if you notice on the top here, it actually has an HDMI here, I'm just grabbing my pointer there, it actually has an HDMI plug so when you plug the probe into the Corti instrument itself there's really no chance that you're gonna bend pins and that's one of the biggest pitfalls of these portable screeners with these probes is when you change them out or you're putting them together sometimes they don't always fit. So you don't have that issue with the GSI Corti. Also if you do have a probe error all of the calibration is held inside of the probe so in order to keep up and running you just simply replace the probe and it's less expensive than many of the other ones on the market.

The other end of the probe, the probe tip itself is also a very unique situation in probe design. Instead of having to unscrew stuff and feed dental floss through the holes to clear out any wax we have a little probe tube in there and it has a whole bunch of little holes that will catch debris from the ear canal and when it gets clogged up all you have to do is remove that, throw it away and replace it. So the probe design really does contribute to some fantastic efficiency in testing. Another thing about the GSI Corti is its flexible data collection and the data management. So again, that is the main focus on today's webinar so we'll talk about that in detail but really I think that the key take home here is the Corti is ideal for screening and diagnostic testing in a number of different situations from newborn screening to audiologic clinical testing. So when we talk about data management with the Corti we have a couple of options. When we first

released the GSI Corti we sent it out with a thing called GSI Data Manager and that is a software database that collects and holds all of the data from Corti. It's really robust because it will allow you to create a patient list and dump it into the software, go and do the testing and then come back and really manage that data while you just pull the data from the instrument into the GSI management software and you're able to really identify and interpret and keep track of a number of different patients. It really is designed for group testing. So this is ideal for things like newborn hearing screening programs if you're using it for school screening because you can dump a whole bunch of patient names into the instrument at the same time and then pull them all out and manage from there. The second kind of data management that we have with the GSI Corti is what we call AutoPrint.

Now AutoPrint looks really similar to GSI Data Manager, which is just again a basic database with different results in it, but what the AutoPrint does is instead of having to hook the software up and then push the buttons to collect the data from the instrument and then do some more manipulation to get to the printed report, the AutoPrint, once you plug it in to the computer either via the micro USB or on the cradle, it will automatically detect it and then automatically create a PDF of the patient results that are inside the Corti. So that is great for places who are just doing maybe one at a time, they just really want a PDF to be created without having to click any buttons at all. So that AutoPrint is ideal for that situation. And then of course the third type of data management is with GSI Suite integration and we introduced that just a couple of years ago because again, we're using the GSI Corti in a number of different testing environments and we realize and we know that when you're using this for more diagnostics in the audiology clinic you want to integrate those OAE results into your regular report with your audiometry, with your tympanometry and your other clinical data. So let's talk about, in more detail, the Corti integration with GSI suite. So remember the GSI Corti I mentioned was released in about 2013 and we didn't release the integration with GSI Suite until a little bit later. So how do you know if your GSI

Corti is actually compatible with GSI Suite? First of all, you have to have GSI Suite version 2.4.0 or newer. I think right now we're on GSI Suite 2.5.5 and soon we will have 2.6 so it will continue, the numbers will get higher but as long as you have GSI Suite 2.4 or greater it will accept data from the Corti. Now the Corti itself, the firmware version that you need for integration from the Corti is firmware version 105.05 or higher. Now this was one in January 2016 and we've only had a couple of firmware updates on the Corti. You can certainly find the firmware version by turning off the instrument and turning it on but the easiest way to tell is if you look here in the corner in the upper left corner that will show you a test count. So it'll say one test of 250 or one test of 2 or zero tests but if that test count is in the upper left hand corner then you have the version of firmware that is compatible with the GSI Suite. So in order to get all of your data inside GSI Suite you first have to set up Suite. So when you open GSI Suite and you select the configure icon, that will pull up all of these options that are configurable. The thing that you're gonna wanna look at is under the device tab. Of course this is where you select your audiometer, you tympanometer and your OAE and currently there are just two options, the Corti or zero OAEs.

When you get GSI Suite, when it is installed it comes default with the Corti selected so if you haven't actually messed with this before you shouldn't have to push any real buttons. But the OAE must be selected as Corti when you're getting ready to transfer the data. So it's interesting because when you get GSI Suite that is compatible with OAE data you have a new tab that appears on your GSI Suite and it is, coincidentally, called OAE and it's right next to audiometry, tympanometry reflex and then of course OAE. When you click on the OAE tab you're gonna notice a couple of different icons that appear on GSI Suite. When you transfer data from an audiometer or a tympanometer it is a single patient at a time, it just transfers over and results appear there. Because the Corti is designed to maybe do multiple tests, whether that is four or five tests on the same patient or four or five different patients, we are going to transfer this data in what we call a batch or a different grouping of tests. So the new icons

indicate that. On the actual OAE tab you will see a new icon called batch and you'll also see a new icon called assign tests. So the basic overview of transferring data into GSI Suite is as follows. The first thing that you're gonna do is maybe enter the patient name or locate the patient using your lookup function. So you can see I have a patient already located here. The second thing that you're gonna do is you're going to select that batch transfer icon. Now when you plug the Corti into the actual computer using either the cradle or the micro USB the batch will become illuminated, just like when you transfer other things to GSI Suite when the equipment is connected and is ready to communicate, those icons, the transfer icons will become illuminated and the same thing with batch. If your Corti is not connected those arrows will be grayed out. So when you're ready to transfer the data you plug in your Corti, the Corti will say waiting on PC and then you will select that batch transfer. Once you select the batch transfer and it starts communicating with the Corti you will receive a window that looks like this and it says transfer results, and it will tell you how many results from the GSI Corti will be transferred into GSI Suite. In this particular case I have two tests that are going to be transferred so of course I'm gonna select yes. Once you have actually pushed yes to import that batch of data, because I have a patient that is already assigned I'm going to get the assign test window to populate automatically.

So I push yes, I wanna import the tests, it does a little blue circle of waiting and thinking and then it will open at this assign test window. Now in the assign test window there are actually three different very specific areas which I will show you now. The first area is up here and it's called the unassigned test and these are the raw tests that I just brought in from the GSI Corti because in the GSI Corti in most situations I am maybe doing just an unnamed patient, I didn't actually put in patient names. So I have the two tests that I just imported in this unassigned test window and what I can do is I can simply select it, drag it to the patient that has been selected, the patient that is open and then what that will do is that will move those unassigned tests into the assign test window. So again, when I pull in tests from the GSI Corti they will appear in the assign

test window as unassigned and when I drag them to the open patient they will move down to that assign test window. Because my patient is open and I've just assigned the test when I press okay, it's going to actually go to that patient and show me and display the results of their OAEs that I've just dragged in or I've just dragged to that patient. So this is kinda how it looks on the screen. Now remember in the GSI Corti there are a number of different protocols and so when you assign the test and you display the test information in the OAE screen or the OAE tab it's gonna give you a lot of information that you can look at to know what tests you have brought in and other stuff. So here you can see that I have the protocol. I used the 1.6 to 8000 kilohertz, I have the serial number, this is test number one, I have the date and time and then I have a little selection over here that's called for report. Now when I use the for report that is the one that I've indicated I want to be on my printout that we will talk about later on in this actual webinar, but when I check for report that one will be displayed. I also have here all of the DP, the value graph is what I'm looking at currently and so you can see the red and blue symbols are my DP levels and then the black upside down triangles are my noise flow.

You can also see on this value graph I do have the normative section, it's Boys Town Norms and I can select to turn those on or off on the view or I can turn them on and off on the report. I also have the data table. So the data table down here is another feature that will show me my levels. It will also show me the amplitude of the distortion product response, the noise flow and the signal to noise ratio so I have all the data that I need from the Corti and from this evaluation to do my interpretation. So here I'm just gonna show you a couple of different views that we have and a couple of different tests that have been transferred in. So you see here I have my 12 frequency test and this is one that goes all the way from 1.5 or 1500 hertz all the way to 12,000 hertz. Couple of things to notice here. The Boys Town Norms end at 8000 and so those do get cut off there but you can still see the remainder of that value graph and the DP and the noise flow results on that value graph. Here's just another example of some data that I've

pulled into GSI Suite and this one is an interesting one because now you can see I'm doing the screener. So on the screening test you actually can see at the top that it says pass very quickly. It also says refer very quickly. You can minimize these, you can minimize the graphs so that you can see more tests and you can also see that for this particular patient I did three tests on each ear. You can see the results, the pass and the refer and you can also see that I can indicate which ones of the evaluations I want to be on the report. It used to be, in the past versions of GSI Suite that only one report or one OAE result would show up on a report but now however many you check will show up on that report. So you just have to figure out what the protocol is and account for that in your template. Here's another view, so this is my screening view and we call this the signal to noise ratio view or the bar chart and so this will indicate a couple of different things as well. This tells me what the signal to noise ratio value is for each one of the frequencies that I've tested and then this green line is what we call the minimum amplitude. So we can see that if the DP is above that minimum amplitude it is another criteria for passing.

So green is pass, yellow is refer and again, I can display that on my view here in GSI Suite or I can display that on the actual report. So now what I really wanted to do is show you kind of how the process works and I think the easiest way to do that is with some what I'm gonna call live demonstrations. And what they really are is our little screen recordings that I've done and then I'll just narrate them as we go through. So what we're gonna see is we're gonna see how to transfer the Corti results to an open patient, so like the example I showed. We're gonna see how to transfer the Corti results if you have multiple tests from multiple patients on the instrument. We're gonna talk a little bit about the assign window and show you how to search for a patient and maybe delete some tests. We're gonna talk about creating a patient list so if you are going somewhere and you know that you're gonna test a specific group of people you can create a patient list and put that onto the Corti from GSI Suite and then we'll show you how to manage that data by transferring that patient list or that patient data back

to the Corti. So let's just go ahead and dive in here for the first video. This one again is, transferring the data. So you'll see I have a patient selected and I will go to the OAE tab. Then the batch is illuminated so I press that. See now it's gonna think and then it's gonna ask me do you want to import these three tests? Well yes I do. So as soon as it imports those tests it pulls up that assign window and in that patient area is the patient that is already open. So I can select all three of those tests and just drag them over and they move instantly down to that area which is the assign test. Then, when I click okay, it will actually pull the patient data up and I can review those tests immediately and I can select which ones I want for the report and which ones I don't want for the report. So that is the process of actually loading data to an open patient in GSI Suite. So I know a lot of times we don't have the patient data that's completely open. Or we have multiple tests and we want to be able to assign it to multiple people so this one is, I am in GSI Suite with no patient that is open. I'm gonna go to my OAE tab and press batch and then it'll ask me if I wanna import a number of tests. And in this particular example I have six tests so I'm gonna say yes, I do want to import all six of those and the assign window table comes up.

But now I have new patients because I haven't seen these ones before so I'm gonna select new patient and then I'm just gonna type in some of the patient demographic information remembering GSI Suite the most important thing or the required thing is the actual patient ID. So when I type in that patient ID, hit save, it shows up in the patient window and I can just drag those tests over there and then I can get a new patient. I just type in the patient demographic information including the patient ID, which is the most important, hit okay, it populates in the patient area, I select the tests and then I drag them over. If you can see they're starting to show up down there in those assigned tests. If I messed up I can push unassign and it will put it back into the top, oh and then I realized that wasn't really a mistake at all so I just went ahead and dragged it back to that active patient. Then when you're finished all those assigned tests are just saved to the patients that you've selected. Now in this case, because I

didn't have an active patient open it doesn't automatically open the OAE screen. So if you want to review what you've just saved for that patient you do need to look them up or search for them and then open that session that you just assigned the tests. All right, so the next scenario here, let's take a look. So the next scenario here is just the assigned test window. So when you push assign test those tests are gonna live there. So even if I don't assign all the tests at the immediate time when I transfer them, those tests are gonna live inside that assign test box until you do something with them. So sometimes I'll open up my GSI Suite and I'll open up my OAE tab and go into assign test and realize that I have five unsaved tests and those might be tests that someone was crying or someone was talking or just an extra test that I didn't want so I didn't assign it. You can delete those immediately and then they go away or if you're super busy you can just leave them in that assign test window and they'll be there the next time that you open it. It's important to note that when you actually transfer the data from the GSI Corti into GSI Suite and it says that you have these, it says I'm gonna transfer these tests in, those tests are still inside the GSI Corti but they are marked for deletion.

So when tests are inside assign tests, that's where they live, and the next time you start a test on the Corti the tests that are inside the Corti will be deleted forever. So just note that when you start that test it does still live in Suite but it will be deleted from the GSI Corti. So anyway, we opened up the assign test window, I'm just gonna back this video up a tiny bit, and there were tests that we already there. So now I can delete that test, it will say are you sure you wanna delete this test, it's unassigned, it's gone forever. And then I have this other test that I remembered. It goes with this guy named Cory, so I just looked him up, I'm gonna drag it over there, oh shoot it wasn't that Cory so I'm gonna unassign it and drag it to the proper Cory. So you do have some flexibility in assigning, unassigning and deleting from that assign test window. All right the next scenario is where I'm going to actually create a patient list. Now this is one, again, this is one where I have, let's say I'm going offsite, I know that I'm gonna test six or seven

people and I already know their names and they're already my patients so I actually have them in GSI Suite. So what I can do is I can actually create a patient list. So what I'm gonna do is I'm gonna go up to lookup and use the dropdown and go to where it says create patient list. I can search for patients, so I just typed in my patient's last name, first name or their ID number and I'm gonna move it over to that patient list. Then the next thing I can do is just search my entire database, select one and just move it over using that little arrow there. So you can see I've created the patient list, I'm going to push transfer patients and when my Corti is plugged in, it's thinking right now, it will transfer that list to my GSI Corti and then I'll be able to take the Corti and do the testing for the specific patients. So I've transferred the list in, I go out on the road with my Corti, doing tests all day long, I come back and now I need to manage that data but I want it to be managed with GSI Suite.

So what I can do then is, when I get home I will plug in the Corti and I will press batch. It's gonna think about it for just a second while it's looking for the tests and it's gonna say, do you want to import the number of tests that you have? This one is import eight tests. The answer is yes I want to. So what you'll notice here is because I've used a patient list from GSI Suite, the tests that are associated with that patient are already assigned. Now I can unassign them, I can delete them but those tests have already been assigned to the patient that is in my database because we created that patient list and then retransferred with the data back to GSI Suite. So to review mainly just the process here. We wanna make sure that you go out when you're doing your testing and you're managing your data through GSI Suite, you go out, you complete your OAE test. Take the Corti, you have patient lists, you don't have a patient list, you have unnamed patient, you keep track of all of the tests that are available. So you complete your OAE tests and then you connect the Corti to the PC. Now you can connect the Corti two ways. You can connect it via the micro USB port with just a regular cable, a micro USB on the bottom of the instrument or you can connect it via the cradle and the cradle is just a charging and transferring holding place for the Corti, it's pretty easy to

use. When the Corti is connected to the PC it will indicate on the screen that we are waiting for the PC and that indicates that it is ready to interact with the computer. The next thing that you will do is you will actually press the batch button, here. You select the OAE tab first and then you click the batch transfer icon and that will bring the data over. Again in the GSI Corti you can have it setup to do, and remember we talked about this earlier, you can have it setup to do just one test per ear so left or right, or you can have it setup to do 250 tests. So when you're ready to transfer the batch into GSI Suite you can do one test at a time, you can do two, you can do five, you can do 10, you can do a hundred. So you can do as many tests that are on the GSI Corti at a time. Remember it all goes into that assign test so sometimes it gets a little hairy to manage when you have more than several patients and we talk about that with all of the different management forms for the data management with the Corti. But you can certainly transfer more than just one or two at a time, transfer as many as you'd like. So you click on the batch transfer icon, that will bring the test over and then you go into the assign test data window and then you can review and complete the reporting and the interpretation.

And again remember, the tests that have been transferred into GSI Suite will be overwritten when the next test is started and what we say is they are marked for deletion. So they're still there, if you have a printer you can still print them, but once they are transferred they are marked for deletion. The next test will overwrite all of the ones that are in there. So now let's talk about reporting because reporting is the key and one of the main features of using GSI Suite with your GSI Corti so that you actually have some flexibility and you can integrate all of your audiometric data into one report. So in the GSI Suite we have a very robust template editor that allows you to customize your reports very, very specifically. So when you go into Suite and click on configuration you go into template manager and on the left side of template manager are all the components that can go on your report. So when you start using the GSI Corti we do have an OAE section now that includes the test information, and the test

graph. We have included three template reports that are locked so that you can select from those if you would like to. So when you open up GSI Suite and the template manager you have three options. So we have an audiogram speech data and OAE. We have a comprehensive combined plus OAE, that would be audiometry, tympanometry and otoacoustic emissions and of course things like comments. And then we have a screening one. We have a screening report that has a screening 1000 hertz tymp and just an OAE component in there as well. So those are the three that we have given you but from there you can absolutely customize your reports however you'd like. I would like to just show you an example of the three reports so that you can see. On this report, this is the basic one where we have an audiogram and then we have our speech information and then we have the otoacoustic emission information. These things, when you're in the template editor and you have this particular, or either any of the three locked reports, you are not able to really modify those. But, with the template editor you can make a copy of these and then adjust them and add things and move them around and rename them for your purposes.

So you have, again, a lot of flexibility. With each one of these components, so you see we have the OAE component here, we have the audiogram, we have speech, we have comments, with any of these components you have the ability to again customize that. So if you right click on your OAE graph and you select properties it will pull up a window that looks like this. And with this window this is how you determine what is gonna be pulled over and displayed on your report. So you can select the different ear, you can select your graph layout so if your protocol is to do two per ear so you can have your graph be two rows and one column or two columns and one row and you'd really have up to a four by four space that you can display OAE data and OAE graphs. From the OAE graph options, just like in GSI Suite you have the opportunity to look and display the value graph, the normative data, the bar chart so that signal to noise ratio chart, the legend and the data table. So you can determine which ones are visible, which visual representations of the OAEs are visible and then you also have options for

your labels. Remember it has the ear, it has the test result, it has the protocol, average time, serial number, so you can choose which things you want to be selected and displayed on the report and if you don't want them you select it here and move it back into this available fields area. So that's how you would just organize your display. The second report that we have here is the comprehensive combined and you can see again audiometry, tympanometry , reflexes, OAEs, speech, comments. So this is a more busy page or a more busy report but again you have the opportunity to really integrate all of the audiometric testing that you're doing. Here's our screening one, you can see here we have screening 1000 hertz. You can tell because the normative area is for the infant norms and then we just have some OAE data down here as well. So in summary, I think that it is a really nice option that you're able to use GSI Suite to manage your otoacoustic machine data. I think that it's important to remember that the transfer is a little bit different that your audiometry and tympanometry but the beauty of combining all of those components into one single report and also the ability to create patient lists and really transfer those back and forth into your clinical data management software is ideal. If you have any questions you can certainly contact me directly, my email address is right there and otherwise thank you very much for attending this GSI Corti Data Management webinar and I look forward to seeing you again, thanks.