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Program

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AB Advanced Bionics

Using & Troubleshooting the Neptune™ Sound Processor

Name
Title

General Slide

Speaker's Notes: AB is dedicated to helping people with hearing loss hear their best. Partnering with Phonak has allowed AB to offer unique technological advances to help people with hearing loss hear better in the most challenging listening situations.

Tools for Schools

Today's presentation is just one of many valuable <u>FREE</u> resources provided by Advanced Bionics' Tools for Schools™ program (TFS™).

The goal of the TFS program is to:

- Help school aged children with cochlear implants succeed in the classroom.
- Ease your workload and save you time.
- Educate parents and professionals about CI technology.
- Provide support for effective teaming between the School, CI center and Home.

Visit www.advancedbionics./tfs to learn more.

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What You Will Learn Today

- **Features and functions of the Neptune™ sound processor**
- Troubleshooting the Neptune sound processor
- Connectivity with the Neptune sound processor

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Speakers Notes: This presentation reviews using, troubleshooting, and connectivity with the Advanced Bionics Neptune™ sound processor. The goal is to help the viewer gain an understanding of the operation of this sound processor and provide tools to maximize a child's access to sound in school.

Speaker's Notes: A cochlear implant system includes the internal device that is surgically implanted and the external sound processor that is worn on the head or the body. AB's cochlear implant system is called the HiResolution™ Bionic Ear System. It includes the HiRes 90K™ Advantage Internal Implant and the external sound processor. AB offers two sound processors in our lifestyle™ line, our newest ear level processor, the Naída CI or the freestyle™ waterproof processor, Neptune™ which we will be learning about today.

Neptune™ Sound Processor

Neptune Processor

Neptune Connect (user controls)

Cable

Battery Compartment

Universal Headpiece

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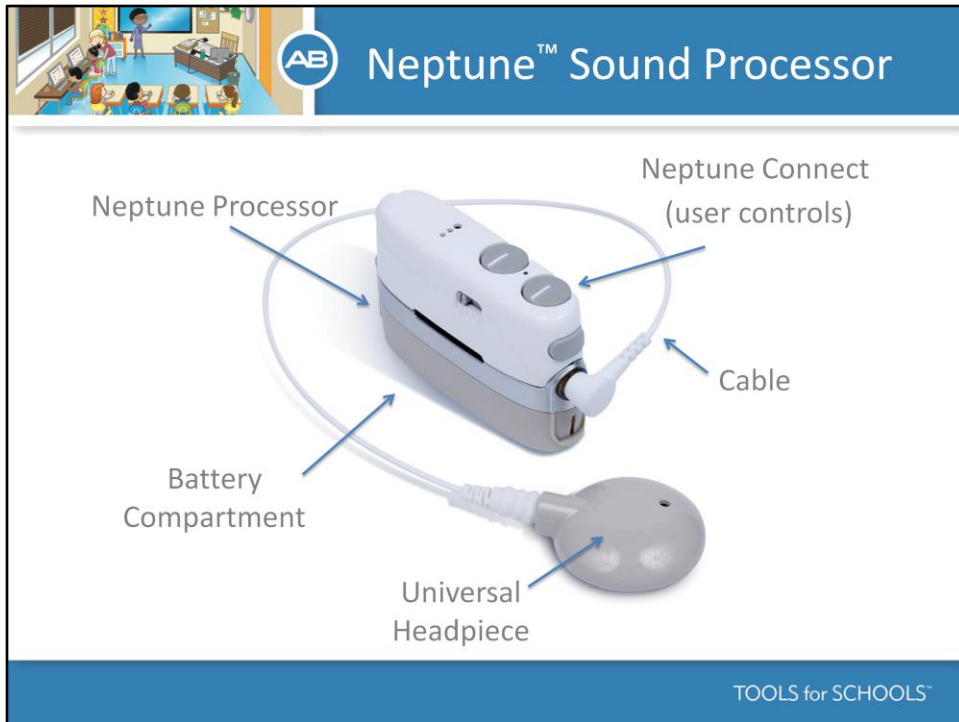
Speaker's Notes: Neptune™, AB's Freestyle™ sound processor is the only swimmable, showerable, bathable, play in the sandbox without worry, sound processor that is available from any Cochlear Implant company. Neptune has three basic parts: the **sound processor**, the **battery cover**, and the removable **Neptune Connect** control module.

This picture shows the different parts of Neptune: Neptune Connect (an easy to remove module with user controls), the head piece cable, the Universal Headpiece, the battery compartment, and the processor.
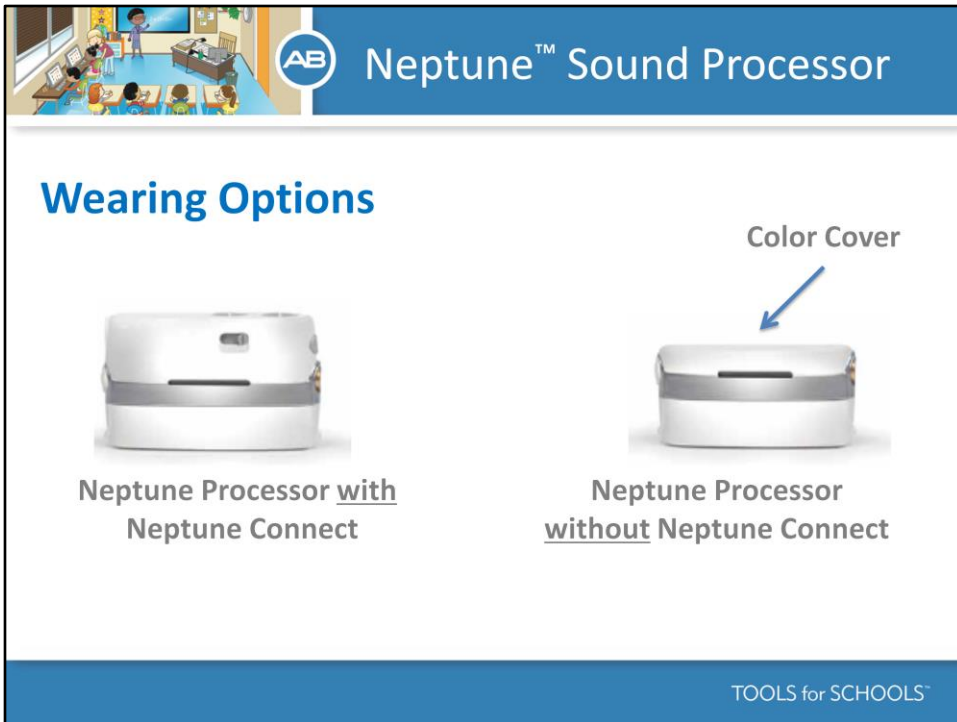
SPEAKER'S NOTES: The Neptune processor can be worn with or without the Neptune Connect. The Neptune Connect has user controls such as a volume and sensitivity dial. Since AutoSound™ optimizes listening for each environment without the need for program or dial changes, Neptune can be worn with or without Neptune Connect in dynamic listening environments. You can see in these photos how the Neptune processor looks with and with out the Neptune Connect attached. When detaching the Neptune connect a color cover is added to maintain processor durability.

SPEAKER'S NOTES: You may be wondering why children use or do not use the Neptune Connect.

In order to make Neptune waterproof, the Neptune Connect control module must be removed from the processor. So for bathing, swimming, or other water activities, the Neptune Connect must be removed. Sometimes Neptune Connect is removed to "child proof" the processor so that a child cannot change the settings on the processor. Finally, removal of the Neptune connect makes the Neptune processor super small and sleek. You can see in this photo the Neptune processor is as small as a ladies standard lipstick!

Speaker's Notes: This photo shows the many fun and bright colors of the Neptune Processor. The options are endless!
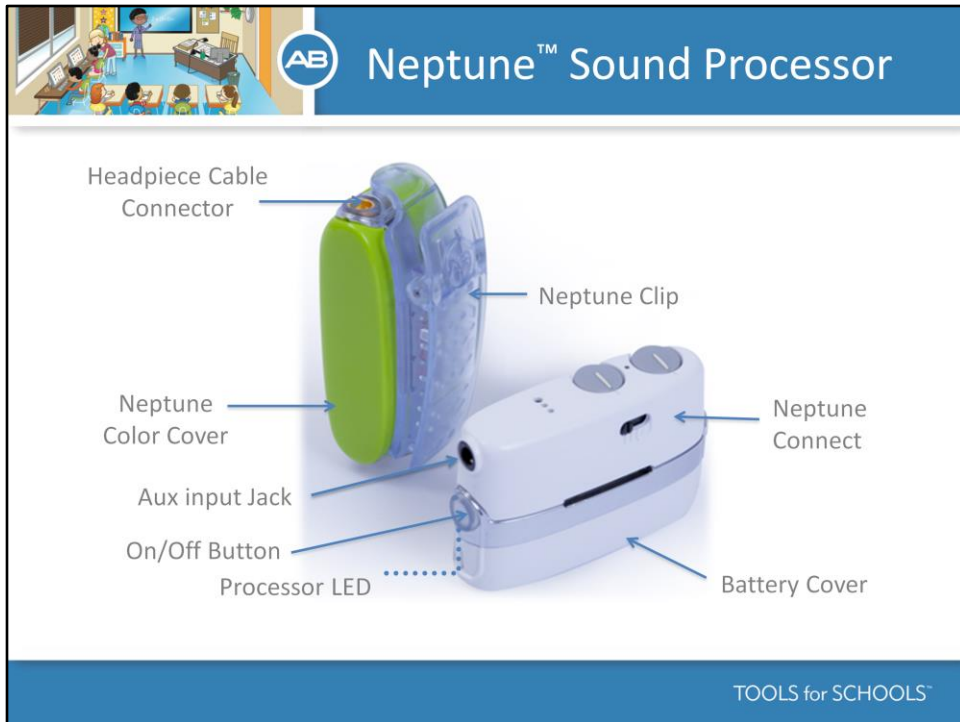
Speaker's Notes: Here you see Neptune™ without the Neptune connect (green) and with the Neptune connect (white). The location of the on/off button, processor LED, battery cover, and headpiece cable connector port are the same regardless of whether the Neptune Connect is attached.

Speaker's notes: The Neptune processor has diagnostic indicators which provide peace of mind for care takers and educators.

Neptune's LED and audible alarms give helpful information about the system status, battery life, what program is being used, and error conditions. The LED is located inside the power button as you can see here.

Speaker's notes: Power is supplied by a single AAA off-the-shelf alkaline, lithium disposable or nickel-metal hydride (NiMH) rechargeable battery. The Neptune™ Battery Cover creates an airtight seal for swimming and water play as well as prevents tampering by young children.

Speaker's Notes: These are the average hours of battery life expected with the different battery options.

Presenter's notes: Let's talk more about the Neptune Connect. It is an easy to use module that can be used to change processor settings including volume, microphone sensitivity, and program selection. It allows for additional audio input through the auxiliary jack and euro port, and also enables the care taker or educator to complete a listening check.

Remember, the Neptune Connect is not needed for daily operation and can be removed from the processor for water play and to prevent tampering by very young children.
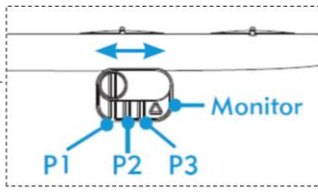
Speaker's notes: Here you can see the volume control, sensitivity control, and the program switch location. The program switch slides right or left to programs 1, 2, 3 and a fourth monitor position to enable a listening check. You can also see the euro port which is located on the top of the Neptune Connect and the Auxiliary Jack which is located on the side of the Neptune Connect.

Speaker's notes: When looking at the Program Switch, Program 1 is in the position that is the farthest from the monitor position (triangle). Moving from left to right, there are three Program positions (P1, P2, P3) and the monitoring position (the triangle) that is used when completing a listening check.

Speaker's Notes: Once Neptune Connect is attached to the processor, the Sync Light acts as a safety feature to confirm the Neptune Connect is communicating with the sound processor. To verify synchronization use the Sync light. The Neptune Connect and processor must be synced prior to initiating changes to settings or connecting External Audio Input, such as FM.

Neptune™ Sound Processor

Sync Light

To sync if Neptune™ is OFF:
- Remove Color Cover and attach Neptune Connect
- Set program & dials
- Turn on Neptune

To sync if Neptune is ON:
- Remove Color Cover and attach Neptune Connect
- Confirm program and sensitivity settings on the Neptune Connect
- Turn the volume wheel fully counter-clockwise - Sync Light will flash green once
- Return the volume to the typical use position
- The controls are now active

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Speaker's notes: Here are instructions for how to Sync the Neptune Connect and the Processor. Read Slide

Neptune™ Sound Processor

	Behavior	Indication
SYNC **LIGHT**	One green flash 🟢	Neptune Connect and processor settings are synced. Any changes made to the volume or sensitivity wheel will take effect.
	Flashes red once per second 🔴	A mismatch exists between Neptune processor settings and Neptune Connect settings. In order to sync settings, turn volume dial all the way down (counter-clockwise); verify green light flashes once; then adjust the controls to desired position(s).
	Solid red light 🔴	Error condition. If this occurs, remove and re-attach Neptune Connect.

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Speaker's Notes: This chart details what information the Sync Light provides. Note, a flashing red light means that Neptune connect and the sound processor are not synced and a solid red light means that an error condition has occurred. If there is an error condition, remove the Neptune Connect, power down the sound processor and reattach the Neptune Connect then power up the sound processor.

Speaker's notes: To remove the Neptune Connect, it is important to fully depress the Release Latch on the side. This Latch acts to securely connect the module as well and prevent small hands from tampering with the hardware.

Neptune™ Sound Processor

Headpieces
Universal Headpiece (UHP)
- Compatible with all AB
  sound processors
- Designed for use during everyday activities with
  the exception of swimming and bathing

AquaMic™
- For use with Neptune™ and Naída CI Q70
  processors
- Designed for use during swimming and bathing
- IP68 Rating

AquaMic   UHP

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Speaker's notes: The Neptune Sound processor can be used with two different headpieces. The headpiece contains the microphone which transmits sounds to the implant as well as power. Neptune is compatible with the Universal Headpiece (UHP) and AquaMic, but for *Everyday Listening*, the UHP is most commonly used.

Speaker's Notes: The AquaMic and UHP designs are similar. To help differentiate the two, remember that the UHP is slightly thinner and has a black underside, while the AquaMic is grey. Remember "gray is for water play!" Also, each headpiece has a specific cable. The AquaMic cable cable is designed specifically for water.

Speaker's notes: One of the most exciting aspects of the Neptune is that it is fully waterproof! Did you know the Neptune is the only cochlear implant sound processor available that is fully waterproof and dust tight.

There is a special rating system that is used to standardize how protected a device is from particles and liquids. It is called an IP rating. I = Ingress P= Protection (ability of the device to protect against damage from particles or liquids). It is a 2 digit rating system. The first digit represents ability to resist entry of particles, 1 is no protection and 6 is dust tight. The second digit represents the ability to resist entry of fluids/moisture, 1 is no special protection and 8 is in complete, continuous submersion in water. Neptune and AquaMic™ = IP 68, which means that Neptune is built dust tight and waterproof and can be worn in all environments confidently.

With the AquaMic headpiece attached, Neptune can be used repeatedly and for extended periods of time during water play, splashing, swimming, surfing and bathing. This capability offers exceptional opportunities for language development through sound experiences never before possible. Kids will be kids. Whether playing in the sand, water, or dust at school, Neptune is built kid tough so you don't need to worry about damaging the processor.

Speaker's notes: Finally let's discuss the T-Comm, an important accessory that can be used with the Neptune. You may not be aware that Advanced Bionics is the only cochlear implant company that offers a natural microphone placement with the patented T-Mic™ earhook. The T-Mic places the microphone at the opening of the ear canal taking advantage of listening benefits provided by the pinna, such as enhanced listening in noise and directionality. The microphone location is ideal in using high tech consumer electronics, headphones and cell phones. The T-Comm is an accessory that connects to the UHP cable and allows children using the Neptune processor to use the T-Mic. It also provides and external Telecoil.
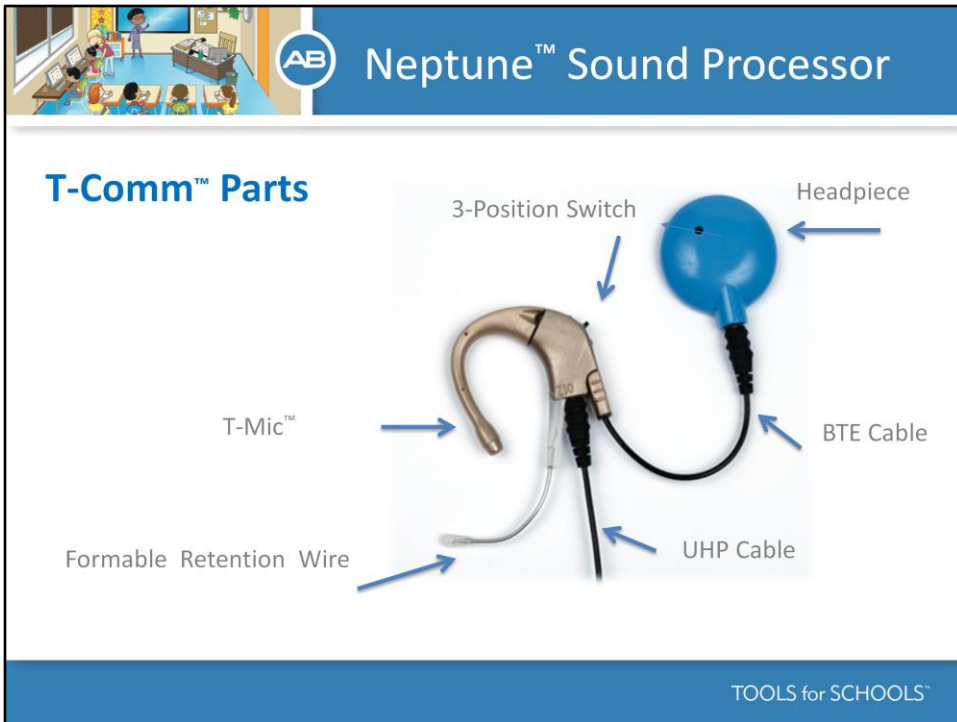
Speaker's notes: Let's take a more in depth look at the T-Comm. Here you can see the T-Comm with the T-mic and Headpiece attached. Connecting T-Comm to a Neptune™ is simple! First, ensure that the processor is turned off prior to assembly. Connect the T-Mic to T-Comm and attach the Formable Retention Wire or Insert. Connect a BTE Cable to T-Comm (The other end connects to the Headpiece). Connect the UHP Cable to T-Comm. (The other end connects to the Neptune) Set T-Comm switch to preferred position (to be covered in next slide). Place T-Comm, headpiece and processor in desired wearing location. To finish, verify processor control and program switch settings before turning on processor.
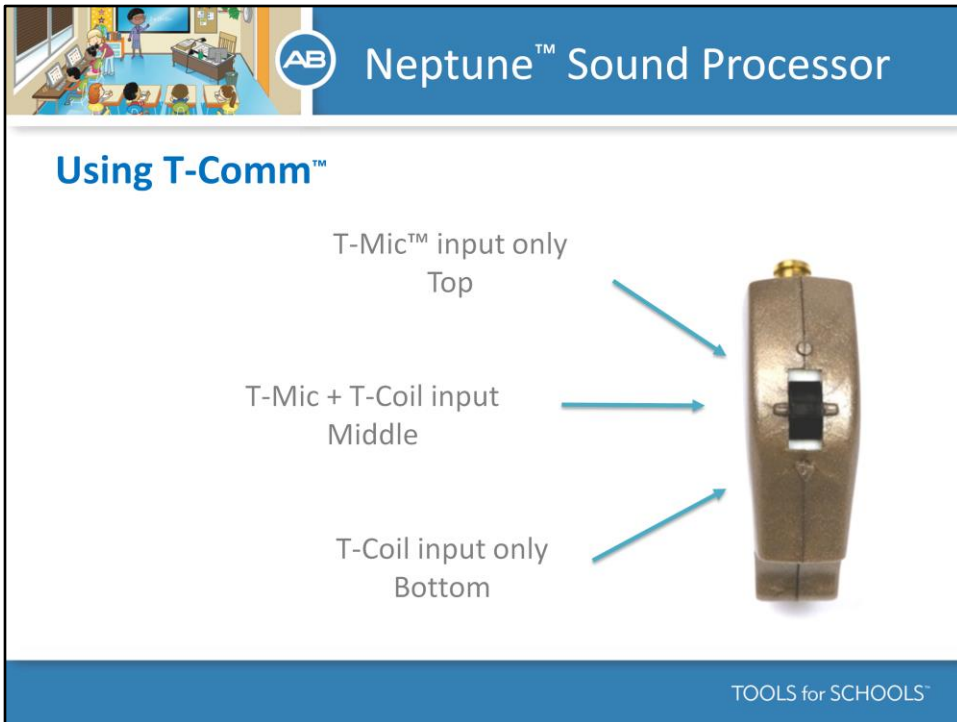
Speaker's notes: There are three different settings. A simple flip of the switch on the T-Comm module accesses a T-Mic only input, T-Mic + T-Coil input, or T-Coil only input: Ask the parent or audiologist to verify what setting/s the child should be wearing in the classroom.

Speakers Notes: Let's move on and discuss basic troubleshooting of the Neptune processor.

Troubleshooting

Basic Steps

When a child is not responding as expected:

1. Verify the UHP is in place and on the child's head
2. Remove the Neptune and UHP from the child. Visually inspect the equipment and replace damaged parts
3. Verify the battery is charged
4. Verify Neptune settings or reset the Neptune to Program 1
5. Place the Neptune and UHP back on the child and use the LED's and/or audible alarms to determine what the problem may be
6. Perform a listening check

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Speaker's Notes: Here are the basic steps to take when completing troubleshooting. *Read slide*. Let's discuss each step in more detail.

Speaker's Notes: *Read slide*

Troubleshooting

2. Visually inspect the child's equipment and systematically replace damaged parts

- Check the Neptune for damage
- Inspect the cable for any twisting, fraying, or breakage. Remember the cable is the weakest link.
- Verify the cable clicks or snaps into place when connected to the UHP and processor
- Verify there is no visible damage to the UHP
- Inspect cable ports and jacks for debris. Clean with compressed air if needed
- Replace damaged equipment if necessary

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Speaker's Notes: A great way to troubleshoot the equipment is to visually inspect all parts for any type of damage. Begin by removing the Neptune and headpiece from the child. Here are some specific suggestions for visually inspecting the equipment. *Read Slide.*

Speaker's notes: Visually inspecting the processor's jacks and ports is quick and easy. This slide shows where they are located on the Neptune processor. Remove the cables and inspect the jacks. Next, inspect the ports. If there is any debris, clean as necessary and reattach cables or other equipment.

Troubleshooting

3. Verify the battery is charged

- Remove the battery and then reattach it to the processor
- The LED (located on the side of the processor) will flash ORANGE to indicate battery status
- 3-4 ORANGE blinks indicates the battery is sufficiently charged to power the processor
- Replace with a fully charged battery if needed

LED

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Speaker's Notes: You can use the Neptune's LED to verify that the battery is sufficiently charged to power the processor. Remove and reattach the battery. The LED will flash orange to indicate how much charge it contains. 3-4 orange blinks indicates the battery is sufficiently charged to power the processor. If necessary replace the battery with a fully charged one.

Troubleshooting

4. **Verify settings or Re-set the child's processor to Program 1**

- **If the child is using the Neptune connect**
  - Ensure the processor is set on the correct program with standard volume and sensitivity setting
  - Power off and then re-start the Neptune

- **If the child is not using the Neptune connect**
  - Power off and then re-start the Neptune processor
  - Hold the power button for 3-5 seconds when powering on to re-set the processor to P1 at default volume and sensitivity settings

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Speaker's Notes: Read Slide

Troubleshooting

5. **Use the Neptune's LED indications and audible alarms to determine what the problem may be**

LED Indicators

FEATURE	COLOR
Battery Status	Orange
Microphone Status	Green
Program Position	Green
CI Status	Red

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Speaker's Notes: The Neptune has diagnostic indicators, such as LEDs and audible alarms. The Neptune's LEDs provide important information about CI status, battery life, program position, and error conditions. The LED indications are grouped by color: orange for battery status, green for microphone and program position, and red for CI status.

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Troubleshooting Neptune™

LED Indications

Orange Battery Status	• Blinks at start-up: 1-4 quick blinks indicates level of charge with 4 meaning a fully charged battery • Solid: Battery is almost depleted • Blinks twice every two seconds: Battery depleted and cannot support stimulation • Fades Out: Powering down
Red System Status	• Blinks once per second: Loss of lock • Blinks rapidly: Wrong implant • Solid: Error Condition
Green Microphone & Program Status	• Flickers in response to loud inputs: Mic and • sound processor are responding to sound • Blinks at start-up: Program position • Solid Green: Empty program slot or monitor position

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Speaker's notes: What can you do to troubleshoot the speech processor? While the child is wearing the processor, observe the LED. Use the LED sequence to determine what the problem may be. This slide provides a reference for the LED functions with the Neptune™ processor. The information the LED provides may help you determine what the problem is related to i.e. battery issue, wrong implant, etc.

Troubleshooting Neptune™

Audible Alarms

Beeps once per second	Yes	Loss of lock with the implant
Beeps rapidly (more than once per second)	Yes	Wrong implant connected
Beeps slowly (once every five seconds)	Yes	Low battery
Two beeps every three seconds	Yes	Battery is depleted and cannot support stimulation
Continuous beep	No	Sound processor error condition. Fully remove and re-insert battery to reset processor.

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Speaker's notes: Audible Alarms, if activated, also provide information on system status and battery life. Use the audible alarms to determine what the problem may be. This slide provides a reference to understand the Neptune™ processor's audible alarms.

Troubleshooting Neptune™

6. Perform a Listening Check

- Listen to the headpiece microphone/T-Mic/FM/T-Coil
- Say the Ling 6 sounds as you complete the check as these sounds encompass the frequency range of all phonemes
- After completing the Listening Check replace any malfunctioning equipment

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Speaker's notes: Performing a listening check is easy. Monitor the sound output from the sound processor as you speak clearly into the microphone. Sounds and speech should be amplified but clear.
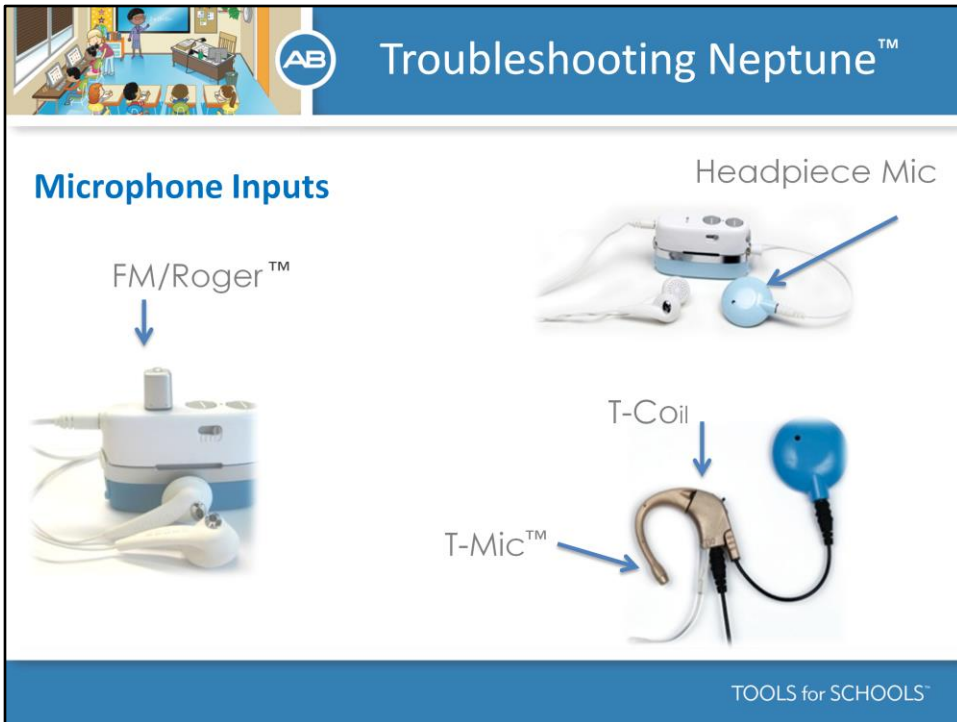
Speaker's notes: When completing a listening check you can listen to the following sound sources: Headpiece Mic, T-Mic, T-Coil, and FM/Roger. The sound source you are listening to when completing the listening check depends on how the Neptune is configured for use.

Additional Notes if necessary:
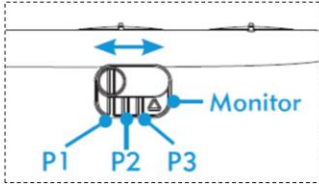
-If the Neptune is in its normal configuration (processor with headpiece mic), you will be listening to the headpiece mic when completing the listening check.

-If an FM receiver is attached to the Europort you will be listening to FM when completing the listening check.

-If the T-Comm in attached to the Neptune you will be listening to the T-Comm input when completing the listening check. You can switch between T-Mic, T-Coil, and mix by changing the setting at the top of the T-Comm.

Troubleshooting Neptune™

Completing a Listening Check

1. Turn on the Neptune™ processor
2. Attach the Neptune connect
3. Ensure the Neptune Connect and Neptune are synced
4. Connect earbuds to the Auxiliary Jack
5. Set the program switch to the fourth (triangle) position.
6. Speak in a normal voice and monitor output with earbuds/headphones

Monitor

P1   P2   P3

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Speaker's notes: Performing a listening check is easy. Follow these steps.

Speaker's Notes: read slide

Speaker's notes: Read Slide

Speakers Notes: Finally, lets discuss connectivity with the Neptune

Speaker's notes: There are 4 different methods for connecting to the Neptune. Read Slide.

Speaker's notes: As we discussed, Advanced Bionics is the only CI company that allows for natural connectivity. Use of the T-Mic™ allows natural placement for consumer electronics like headphones, earbuds, telephones, cell phones and other audio devices.

To use the T-Mic with the Neptune you must use the T-Comm as we will discussed in previous slides.

Speaker's notes: Wireless connectivity can be achieved with the Neptune using a Roger or FM (Frequency Modulated) system. These systems are commonly used in the classroom to overcome the adverse effects of distance and competing noise.

Speaker's notes: There are 4 receiver options for use with the Neptune:

The Mlxi and Roger which plug into the Neptune Connect's Europort

The MyLink+ which is a universal, multi-frequency neckloop FM receiver, which can be used with the Neptune through the T-Comm accessory.

The Roger MyLink which can be used with the Neptune through the T-Comm accessory.

Connectivity

Wireless FM with the Roger™ and MLxi

- Remove the Neptune and headpiece from the child
- Ensure that the Neptune is on and synced to Neptune Connect
- Align the three connector pins with the Euro connector as shown
- Adjust the program dial to the proper Roger/FM Program
- Turn down the volume on the Neptune
- Position the headpiece and Neptune in the child's preferred wearing style
- Turn up the volume on the Neptune and Roger/FM system to user settings
- Complete a functional listening check using the Ling 6 Sound Check or simple sentence materials.

Simply Sync and Connect

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Speaker's notes: Connecting Neptune™ to the Roger or MLxi wireless receiver is done in a few quick steps. Steps to Connect: Read Slide.

Connectivity

Wireless Roger™ /FM with MyLink+ or Roger MyLink

- Remove the Neptune and headpiece from the child
- Attach the T-comm if it is not already attached for use
- Ensure that the Neptune is on and synced to Neptune Connect
- Ensure the MyLink+ or Roger MyLink is synced to the transmitter/microphone
- Adjust the program switch on the Neptune to the proper FM Program
- Adjust the T-comm to the desired setting- T-Coil or T-coil +T-Mic
- Turn down the volume on the Neptune
- Position the headpiece and Neptune in the child's preferred wearing style
- Hang the Roger MyLink or MyLink+ around the neck of the child
- Turn up the volume on the sound processor and Roger/FM system to user settings
- Complete a functional listening check using the Ling 6 Sound Check or simple sentence materials.

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Speaker's notes: Follow these steps to use the Neptune with MyLink+ or Roger MyLInk. Read Slide.

Compatible Phonak Transmitters/Microphones

- The specific Transmitter or Microphone you are using must be compatible with the receiver being used

- Contact Phonak at www.phonak.com for detailed information on compatibility

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Connectivity

T-COIL

- For looped areas, compatible phones, or Roger ™ /FM use

- Neptune users must attach the T-Comm to use the T-Coil

T-COMM

Three Position Switch:

Top = T-Mic

Middle = T-Mic + T-Coil

Bottom = T-Coil

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Speaker's notes: T-Coils provide wireless access to looped areas (often found in public venues and some classrooms), hearing-aid compatible telephones, and as we already discussed Roger/FM systems. A T-coil can be used with the Neptune through the use of the T-Comm.

Connectivity

Direct

- Requires plugging an interface cable into the Auxiliary Jack on the side of the Neptune Connect

- Items such as MP3 players, tablets, and telephones can be directly connected

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Speaker's notes: Connecting Neptune to a battery powered consumer electronics device, such as an MP3 player or tablet, is straightforward! You will need the AB Audio Interface Cable (CI-5815) available to order through Customer Service.
Note: Do not connect to mains powered sound sources (e.g. TV, computer) unless using a mains isolation cable.

Connectivity

Direct

- Use the AB Audio Interface Cable.
- The Interface cable has two 3.5 mm connectors and is compatible with a 3.5 mm jack
- Jack size converters for a 2.5mm port can be found at most electronics stores

Audio Interface Cable

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Speaker's Notes: Here is what the audio interface cable looks like. It has two 3.5mm connectors.

Connectivity

Steps to connect to a portable electronics device:

- Ensure the Neptune is on and synced to the Neptune Connect
- Ensure that the proper program for auxiliary input is selected
- Connect one end of the Audio Interface Cable to the 3.5 mm Auxiliary Jack on the side of the Neptune Connect (this cable is not sided)
- Connect the opposite end of the cable to the headphone jack of the audio device.

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Speaker's Notes: Here are some additional interface cables available from AB.

Speaker's notes: You must make sure to Sync Neptune Connect with the sound processor before connecting an auxiliary device.

Best Practices in Connectivity

- Verify you are using the correct program and settings for Roger/FM or auxiliary input

- Only connect to battery-powered audio devices

- Only connect to AB tested and approved devices

- Complete a listening check and monitor input and connections

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Speaker's notes: Best Practices in Connectivity ensure optimal success with connectivity and providing optimal sound to the child. To summarize, always:
- Verify you are using the correct program and setting for auxiliary devices
- Connect to battery powered devices
- Connect to AB tested and approved devices
- Always complete a quick listening check to monitor the audio input sound after connecting

Speaker's Notes: AB Makes it Simple for Schools! Take advantage of all the free resources offered by the Advanced Bionics Tools for Schools Program. Visit www. Advancedbioincs.com/tfs
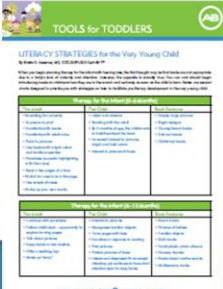
Tools for Toddlers ™ Program

Do you know about Advanced Bionics' Tools for Toddlers program (TFT ™)?

TFT provides free resources created specifically to help support early intervention and pre-school aged children.

Visit the Tools for Toddlers Program at **www.advancedbionics.com/tfs**

TFT resources can be found on the lower section of the TFS page

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Speakers Notes: Advanced Bionics has several other resources and programs to assist you.

HearingJourney.com is an online forum for people to chat, laugh, and share stories about cochlear implants and hearing loss.

The Listening Room is a rehabilitation site where you will find a host of free, fun activities and resources to support the development of speech, language, and listening skills in people of all ages with a hearing loss.

The BEA is a community of recipients, candidates and professionals who connect to promote the benefits and optimal use of cochlear implants and Advanced Bionics technology.

And you can always visit www.advancedbionics.com for materials, resources, and information.

Speakers Notes: Finally support is always available. Discover resources and support services online or by phone.