If you suspect a problem with a child’s cochlear implant equipment, some basic troubleshooting steps can be taken to attempt to solve the problem. Before beginning, make sure you have your troubleshooting equipment available. Always begin troubleshooting with the Basic Steps. Proceed to the recommendations for specific situations after you have completed the Basic Steps.

**Recommended Items for Troubleshooting Equipment**

<table>
<thead>
<tr>
<th>Basic Equipment</th>
<th>Comprehensive Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Compressed Air</td>
<td>• PowerCel™ 170 battery</td>
</tr>
<tr>
<td>• Universal Headpiece (UHP)</td>
<td>• PowerCel charger</td>
</tr>
<tr>
<td>• UHP cable</td>
<td>• Zephyr Dry &amp; Store®</td>
</tr>
<tr>
<td>• Zinc-Air Battery Pak Cartridge</td>
<td>• T-Mic™ 2 Microphone</td>
</tr>
<tr>
<td>• Zinc-Air high power 675 batteries</td>
<td>• AB myPilot remote control</td>
</tr>
<tr>
<td>• Naida CI Listening Check™ accessory</td>
<td></td>
</tr>
<tr>
<td>• Earbuds</td>
<td></td>
</tr>
</tbody>
</table>

If measures do not resolve the problem, contact Advanced Bionics.
In the United States and Canada, Technical Support can be reached toll free at:
866-844-Hear (4327) or visit ToolsforSchools@AdvancedBionics.com
1. Verify the UHP is in place on the child’s head. If the headpiece is not on the child’s head, place it on the child’s head, positioned over the internal implant (you will feel the magnetic attraction).

2. Remove the Naída CI sound processor and UHP from the child. Visually inspect the equipment and systematically replace damaged parts.
   - Check the Naída CI for damage.
   - Inspect the headpiece cable for any damage (twisting, fraying) or breakage and verify it is firmly attached to the Naída CI.
   - Verify the cable clicks or snaps into place when connected to the UHP and to the Naída CI.
   - Verify there is no visible damage to the UHP.
   - Inspect cable ports and jacks for debris. Clean with compressed air if needed.
   - Inspect the T-Mic™ 2 microphone for any damage (twisting, fraying) or breakage.

3. Verify the battery is charged. Remove the battery and then re-attach it to the processor. When the battery is engaged, the LED (located in the middle of the volume control) will flash ORANGE to indicate battery status.
   - Three to four ORANGE blinks indicate the battery is sufficiently charged to power the Naída CI. Replace with a fully charged battery if needed.

   Note: Zinc-Air batteries will not provide LED battery status information upon start up. Only PowerCel™ batteries and the AAA PowerPak power option will provide LED battery status information.

4. Re-set the child’s Naída CI to Program 1. The Naída CI will always default to Program 1 with the volume set at the child’s standard settings when the battery is removed and re-attached. If you have removed and re-attached the battery as instructed in step 3 then the Naída CI has been re-set to Program 1.

   If Program 1 is not the child’s standard program, push the program button down briefly and then release the button until you reach the child’s standard program. The programs will switch in chronological order. The LED will display 1, 2, 3, 4, or 5 GREEN blinks depending on how many programs are stored in the processor. The number of GREEN blinks displayed indicates which program is in use. Once the final program is reached, the Naída CI will return back to the first program.

   Note: The audiologist has the ability to disable the program button. Check with the child’s family or audiologist to determine if the program button has been disabled.

5. Place the Naída CI and UHP back on the child and use the Naída CI LED indications and internal alarms to determine what the problem may be. See the charts on page 3. The LED and internal alarms can be programmed by the audiologist. Check with the child’s family or audiologist to determine if these features are active.

   Note: It is normal for the LED to blink red once per second when the Naída CI is not being worn by the child.

6. Perform a listening check of the Naída CI sound sources as described in the Tools for Schools™ Naída CI System Check guide. Replace any malfunctioning equipment.
# Naída CI Q70 Sound Processor LED Indications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery Status</td>
<td>Orange</td>
</tr>
<tr>
<td>Microphone Status</td>
<td>Green</td>
</tr>
<tr>
<td>Program Position</td>
<td>Green</td>
</tr>
<tr>
<td>CI Status</td>
<td>Red</td>
</tr>
</tbody>
</table>

## Naída CI Q70 Internal Alarms

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Indication</th>
</tr>
</thead>
</table>
| Beeps upon program change             | • 1 beep indicates program one  
• 2 beeps indicate program two  
• 3 beeps indicate program three    |
|                                       | • 4 beeps indicate program four  
• 5 beeps indicate program five     |
| Short beep upon increase/decrease in volume | Beeps once per press, either up or down, of the volume control (a double beep will be heard when the following settings are reached: top of the volume range, baseline volume setting, and bottom of the volume range) |
| Long beep (once every fifteen minutes) | Low battery                                                               |
No Sound/Red LED Indicator is On

No sound is heard or the red LED is flashing once per second on the Naída CI sound processor when the UHP is in place over the implant:

1. Verify the UHP is positioned properly on the head.
2. Remove any materials (hat, scarf, headband, etc.) that may be covering the microphone.
3. Visually inspect the cable for any damage or breakage and verify it is firmly attached to the UHP and Naída CI.
4. Remove and re-attach the battery.
5. Replace the UHP cable.
6. Replace the UHP.
7. Perform a listening check of the Naída CI sound sources as described in the Tools for Schools™ Naída CI System Check guide. Replace any malfunctioning equipment.

No sound is heard or a solid red LED is displayed on the processor:

1. Remove and re-attach the battery.
2. Verify the UHP is positioned properly on the head.
3. Visually inspect the cable is firmly attached to the UHP and Naída CI.
4. Verify the Naída CI is set to the proper program and volume settings.
5. If available, use an AB myPilot remote control to do a Device Status Check to confirm correct program, volume, and sensitivity settings.
6. Try a different program.
7. Visually inspect the microphones for signs of debris or wear.
8. Perform a listening check of the Naída CI sound sources as described in the Tools for Schools™ Naída CI System Check guide. Replace any malfunctioning equipment.
9. Replace the UHP cable.
10. Replace the UHP.
11. Try a different program.

Debris on Battery Contacts

If the processor battery contacts appear to have rust or debris forming on them:

1. Clean the battery contacts with compressed air.
2. Place PowerCel™ batteries in the Zephyr Dry & Store®. PowerCel batteries should be placed in the Dry & Store when not being charged.

Static, Muffled, or Distorted Sounds

Static, muffled, or distorted sounds are heard:

1. Remove any materials (hat, scarf, headband, etc.) that may be covering the microphone.
2. Verify the UHP is positioned properly on the head.
3. Remove and re-attach the battery.
4. Verify the UHP cable is firmly attached to the UHP and Naída CI.
5. Verify the Naída CI is set to the proper program and volume settings.
6. If available, use an AB myPilot remote control to do a Device Status Check to confirm correct program, volume, and sensitivity settings.
7. Try a different program.
8. Visually inspect the microphones for signs of debris or wear.
9. Perform a listening check of the Naída CI sound sources as described in the Tools for Schools™ Naída CI System Check guide. Replace any malfunctioning equipment.
10. Replace the UHP cable.
11. Replace the UHP.
12. Replace the T-Mic™ 2 Microphone.
13. Clean the battery contacts on the processor with compressed air.
Naída CI Sound Processor Does Not Power Up

If the Naída CI does not power up:

1. Remove and re-attach the battery.
2. Verify the PowerCel™ battery is properly attached or the Zinc-Air batteries are inserted correctly.
3. Verify you are using a fully charged PowerCel battery or two fully charged high power cochlear implant plus 675 Zinc-Air batteries.

Note: Zinc-Air batteries will not provide LED battery status information upon start up. Only PowerCel™ batteries and the AAA PowerPak power option will provide LED battery status information.

Green LED Does Not Flash in Response to Loud Sounds

1. The processor must have LED’s enabled. Check with the child’s family or audiologist to verify that LED’s are active.
2. Remove and re-attach the battery.
3. Verify the PowerCel is properly attached to the Naída CI.
4. Verify you are using a fully charged PowerCel battery.
5. Clean the battery contacts with compressed air.
6. Verify that the processor is set to the proper program and volume settings.
7. If available, use an AB myPilot remote control to do a Device Status Check to confirm correct program, volume and sensitivity settings.
8. Try a different program.
9. Perform a listening check of the Naída CI sound sources as described in the Tools for Schools™ Naída CI System Check guide. Replace any malfunctioning equipment.
10. Replace the UHP.
11. Replace the T-Mic™ 2 Microphone.
12. Clean the battery contacts with compressed air.

No Orange Blinks or Only One Orange Blink is Observed During Battery Status Check

1. Zinc-Air batteries will not provide LED battery status information upon start up. Only PowerCel™ batteries and the AAA PowerPak will provide LED battery status information.
2. Remove and re-attach the battery.
3. Verify the PowerCel is properly attached to the Naída CI.
4. Verify you are using a fully charged PowerCel battery.
5. Clean the battery contacts with compressed air.

Preventative Maintenance Tips

1. Store extra equipment in a Zephyr Dry & Store®. Run through one drying cycle (8hrs) nightly.
2. If a Zephyr Dry & Store® is not available, keep extra equipment in the Naída CI case. If you do not have the case you can use another sealed container or a sealable bag.
3. To keep battery contacts from accumulating debris, attach Naída CI PowerCel battery covers to the PowerCel batteries when they are not in use. The covers can be ordered from Customer Service 877-829-0026 (US and Canada).
OTHER HELPFUL RESOURCES

These recommendations were created specifically for school professionals. Advanced Bionics has several other resources you can consult for additional support.

- To speak with Advanced Bionics directly about a troubleshooting issue or if you have any other questions, please contact an AB representative at 866-844-Hear (4327) or visit ToolsforSchools@AdvancedBionics.com.

- Visit our YouTube home page at youtube.com/advancedbionics and click on the “Naída CI Q70 Instructional Videos”.

- Download the FREE myNaída CI app, available for both iPad® and Android™ devices, from iTunes® or Google Play™ digital distribution platforms.

Visit our website at AdvancedBionics.com
Visit Tools for Schools our website at AdvancedBionics.com/tfs
Troubleshooting your BAHA

First, check the battery function

The first step in troubleshooting your sound processor is to check the battery function, which could be related to a number of problems including: no sound, intermittent sound, weak sound, distorted sound, crackling/buzzing sound and lost streaming. The batteries that were originally included with the sound processor reflect our latest battery recommendation.

If you still experience the problem after checking and/or changing the battery as per the sound processor user manual, proceed to the list and recommendations below.

If your sound processor does not work:
1. Make sure the battery is inserted correctly.
2. Ensure that the sound processor is turned on by completely closing the battery compartment.

If there is no sound:
1. Ensure that the sound processor is turned on by completely closing the battery compartment.
2. If you have a Baha Attract System your magnet could be too weak. Contact your hearing care professional.

If there is faulty sound, including feedback or whistling:
1. Ensure that items such as eyeglasses, helmets, etc do not come into contact with the Baha sound processor housing.
2. Make sure the battery door is completely closed.
3. If none of the above resolves the issue, programming adjustment may be needed. Please see your audiologist.

If the sound is distorted or intermittent:
1. Make sure the battery door is completely closed.
2. Use a Dry Aid Kit overnight to remove any moisture in the sound processor.
3. If none of the above resolves the issue, programming adjustment (such as an individual feedback measurement) may be needed. Please see your audiologist.
Welcome to the Harmony™ Interactive Troubleshooting Guide

Press the button to begin
Harmony™ Interactive Troubleshooting Guide

These guides have been created to systematically lead you through active troubleshooting with the Harmony™ Sound Processor.

To use these guides simply review the choices and make your selection by clicking on the accompanying box.

The menu bar at the bottom of each page will provide you with a way to return to your last selection should you get lost or return you to the main menu.

As a reminder, you can also call Advanced Bionics On-Call Support at 877-829-0026, Monday – Friday, 5 AM – 5 PM Pacific Time

Press the Start button to begin
Harmony™ Sound Processor

We encourage you to review the processor components before proceeding.

Next
Choose from the item below that best describes your situation:

- I want to learn how to perform a task
- I need help with troubleshooting a problem
How do I........

- Check the device each day?

- Connect to an FM system?
How to Verify the Child’s Device is Working

1. Is the PowerCel in place and fully charged?
   • Sliding the PowerCel on the Processor module will turn the device on
   • You should see 3-4 quick Orange blinks verifying the PowerCel is fully charged

2. Is the Headpiece cable plugged into the processor module?
   • Check to see the cable is not twisted or frayed

3. Is the Earhook properly positioned?
   • To Attach: Align the Earhook flush with the Harmony and push to snap in place. Gently pull back to confirm that the Earhook is secure.
   • To Remove: Turn the Earhook slightly more than ¼ turn in either direction until it comes off.
How to Verify the Child’s Device is Working

4. **Is the Program Selector in the desired position?**
   - The Harmony can store up to 3 programs (P1, P2, P3). The Program Switch has three positions to represent each program. P1 is at the bottom, P2 is in the middle and P3 is at the top.

5. **Is the Volume Control in the 12 o’ Clock position?**

6. **Is the Processor in a comfortable position behind the ear?**
   - An Earmold, Huggie or Toupee Tape can be used to help secure the processor on the child’s ear.
How to Verify the Child’s Device is Working

7. **Is the Headpiece positioned over the Implant (internal device)?**
   - You should feel the magnetic attraction
   - You should also see the LED flash **GREEN** in response to loud sounds

8. **Perform a Behavioral Listening Check**
   - Use the Ling Six Sound Check to verify that the child is able to detect all aspects of speech.
   - I am unsure how to perform this task, tell me more...
Performing a Behavioral Listening Check

- **Using the Ling Six Sounds (ah, ee, oo, sh, s and mm)** you can determine a cochlear implant’s effectiveness by verifying that the child is able to detect all aspects of speech as the six sounds encompass the frequency range of all phonemes.

**Six-Sound Speech Test Instructions**

<table>
<thead>
<tr>
<th>For Schoolchildren</th>
<th>For a Very Young Child</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Position the listener one to two yards from you, and ask him/her to “listen.”</td>
<td>1. For a very young child you will need to teach detection through a behavioral response.</td>
</tr>
<tr>
<td>2. If this is the first time the person has completed the task, demonstrate what is expected.</td>
<td>2. Use of real objects to represent each of the Ling Sounds is recommended, using the pictures on the cards as recommendations (e.g., ghost, airplane).</td>
</tr>
<tr>
<td>3. Using a normal conversational level, present each of the sounds through listening alone.</td>
<td>3. While giving the child a quiet distraction, provide a long baseline of silence and then make one of the Ling sounds through audition alone and without any toys.</td>
</tr>
<tr>
<td>4. Occasionally say nothing while doing the test. This way, a listener learns that it is okay to say that he/she does not hear anything. Remember to present the Ling Sounds in a random order so the child doesn’t learn the pattern of presentation.</td>
<td>4. If the child looks, repeat the sound without showing the object. When you have the child’s attention, first through listening, reinforce his attention by showing the corresponding toy and then repeating the sound again; provide waiting time so the child can process the sound.</td>
</tr>
<tr>
<td>5. If the child is able to detect the sounds, progress to a discrimination task and then an identification task by asking the child to point to the correct picture. The goal is to have the child naturally repeat the Ling Sound.</td>
<td>5. After a few minutes, say another sound and present the corresponding toy in the same way. Present all the Ling Sounds as long as you can maintain the child’s attention. If attention is poor, change tasks and try again.</td>
</tr>
</tbody>
</table>
Connecting to an FM System

1. Ensure that you have the appropriate equipment.
   - iConnect Earhook
   - MLxS
   - Transmitter

2. Ensure that the FM system is functioning appropriately by listening to the FM system through an amplified speaker or walkman-style earphones.

3. Make sure all components are turned off

4. Attach the iConnect Adapter Earhook and MLxS module to the Harmony

Back  Main Menu  Next
Connecting to an FM System

5. Insert a size 10 zinc air battery into the iConnect

6. Turn down the volume on the Harmony Processor

7. Turn on the FM transmitter, MLxS, and slide the PowerCel onto the Harmony

8. Make sure the following settings are in place:
   - 1 dot setting on the MLxS
   - 50/50 mixing ratio on the Harmony Program
   - Transmitter microphone in omni-directional mode
Connecting to an FM System

9. Gradually turn up the volume on the Harmony Processor

10. Assess performance:
   • In quiet using an auditory only task
   • Verify FM benefit by determining performance in noise – CI+FM
   • Perform daily functional checks and monitor performance
I need help troubleshooting the following:

- Child is NOT responding to Sound
- The Light (LED) on the Processor is Flashing
- Sound appears to be Intermittent
- Headpiece will not stay on
- Child’s voice sounds muffled or different
Child is NOT responding to sound—

*Note you have verified no response with a behavioral listening check.

1. Verify the Sound Processor is ON
   - Remember that sliding on the PowerCel turns the processor on

2. Check your connections including PowerCel, Earhook and Headpiece-Cable
   - Make sure they are secure

3. Verify that the Volume Dial is in the 12 o’ clock position
Child is NOT responding to sound—
*Note you have verified no response with a behavioral listening check.

4. Is the Headpiece positioned over the implant site?  
   • Busy children can knock it off and may not be able to put it back in place.

5. Is your PowerCel charged and inserted properly?  
   • The LED will flash 3-4 quick Orange flashes letting you know it is fully charged.

6. Are you using the appropriate program?  
   • You may need to check with the parent or audiologist for this information.
Child is NOT responding to sound—
*Note you have verified no response with a behavioral listening check.

7. Check the Microphone/System Status using the LED
   • I would like to learn more about LED functionality

8. Replace the Headpiece/Cable
   • You should keep spare equipment on hand
   • To order equipment contact us now

9. Clean the contact on both your PowerCel and Harmony Processor
   • Learn how
<table>
<thead>
<tr>
<th>Color</th>
<th>Feature</th>
<th>Harmony LED Functional Description</th>
<th>Programmable</th>
</tr>
</thead>
</table>
| Orange| PowerCel Status             | When a PowerCel is inserted onto the processor module, the ORANGE LED will blink as follows:  
* 3 to 4 quick flashes indicates that the PowerCel is fully charged,  
* 2 quick flashes indicates that the PowerCel is sufficiently charged to power the system,  
* 1 quick flashes indicates that the PowerCel charge is nearly depleted.  
* 0 flashes - change battery immediately.                                                                 | No           |
|       | Low Battery Indicator       | When the PowerCel is near depletion, a steady ORANGE light will illuminate indicating that it is time to change the PowerCel. Once the battery is fully depleted, no light will emit from the processor and no sound will be transmitted to the implant. Replace PowerCel as soon as possible. | Yes          |
|       | Change Battery Indicator    | When the PowerCel is depleted to the point that it is unable to support stimulation but not completely depleted, the ORANGE light will blink twice every 3 seconds and no sound will be transmitted to the implant. | Yes          |
| Green | Mic/System Status           | Flashes in response to loud sounds when connected to the CPI or standalone. The Status LED is automatically disabled when the built-in telecoil is enabled. The GREEN light will NOT flicker in response to loud sounds if the built-in telecoil is enabled and/or when AGC is disabled. | Yes          |
|       | Mic Test Mode               | Steady green light indicates an empty program slot available for mic testing.                                                                                                                                                     | No           |
| Red   | Lock Status                 | Blinks at 1 second interval indicating no lock with implant.                                                                                                                                                                     | No           |
|       | IntelliLink™               | Rapid blinks (indicates wrong implant is connected).                                                                                                                                                                               | No           |
|       | Error Conditions            | Steady - fully remove and reinsert PowerCel to reset processor.                                                                                                                                                                   | No           |
Child is NOT responding to sound—
*Note you have verified no response with a behavioral listening check.

10. Remove any materials that may be covering the microphone (i.e. Scarf, Hat, Headband)

11. Perform a test of the built in microphone using an empty program slot
   • Learn how

12. Try another audio input source
   • Such as an Auxiliary Microphone or your Direct Connect Earhook interfaced with an audio device (i.e., CD/MP3 player).
   • Learn how
Child is NOT responding to sound—
*Note you have verified no response with a behavioral listening check.

13. Check for visible damage on the processor

14. Contact the audiologist for further troubleshooting
   - Contact us now!
The Light (LED) on the Processor is Flashing….

1. What is the color of the flashing light?

- **Orange** (Battery)
- **Green** (Microphone)
- **Red** (Communication Error)

*Back*  
*Main Menu*
Orange LED can mean the following:

1. **PowerCel Status**
   - 3 to 4 quick flashes indicates the PowerCel is fully charged.
   - 2 quick flashes indicates the PowerCel is sufficiently charged to power the system.
   - 1 quick flash indicates the PowerCel is nearly depleted
   - 0 change the PowerCel immediately

2. **Low Battery Indicator**
   - Steady Orange Light will emit when the PowerCel is near depletion

3. **Change Battery Indicator**
   - When the PowerCel is depleted to the point that it is unable to support stimulation but not completely depleted, the orange light will blink twice every 3 seconds and no sound will be transmitted
Green LED can mean the following…

1. Microphone System Status
   • A green light will flash in response to loud sounds

2. Microphone Test Mode
   • A steady green light indicates an empty program slot is available for microphone testing
Red LED can mean the following…

1. **Lock Status**
   - Blinks at 1 second intervals indicating no lock with the implant

2. **Intellink™**
   - Rapid blinks indicating wrong implant is connected

3. **Error Conditions**
   - Steady light indicates a processor error
   - Remove the PowerCel and re-insert it to reset the processor
Sound is intermittent:

1. Verify the Sound Processor is ON
   - Remember that sliding on the PowerCel turns the processor on

2. Check your connections including PowerCel, Earhook and Headpiece-Cable
   - Make sure they are secure

3. Verify that the Volume Dial is in the 12 o’clock position
4. Is the Headpiece positioned over the implant site?
   • Busy children can knock it off and may not be able to put it back in place.

5. Is your PowerCel charged and inserted properly?
   • The LED will flash 3-4 quick Orange flashes letting you know it is fully charged.

6. Are you using the appropriate program?
   • You may need to check with the parent or audiologist for this information.
Sound is intermittent—

7. Check the Microphone/System Status using the LED
   • I would like to learn more about LED functionality

8. Replace the Headpiece/Cable
   • You should keep spare equipment on hand
   • To order equipment contact us now

9. Clean the contact on both your PowerCel and Harmony Processor
   • Learn how
# Harmony LED Functionality Chart

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<th>Harmony LED Functional Description</th>
<th>Programmable</th>
</tr>
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</table>
| Orange| PowerCell Status         | When a PowerCell is inserted onto the processor module, the ORANGE LED will blink as follows:  
* 3 to 4 quick flashes indicates that the PowerCell is fully charged,  
* 2 quick flashes indicates that the PowerCell is sufficiently charged to power the system,  
* 1 quick flashes indicates that the PowerCell charge is nearly depleted,  
* 0 flashes - change battery immediately.                                                                                                               | No           |
|       | Low Battery Indicator    | When the PowerCell is near depletion, a steady ORANGE light will illuminate indicating that it is time to change the PowerCell. Once the battery is fully depleted, no light will emit from the processor and no sound will be transmitted to the implant. Replace PowerCell as soon as possible. | Yes          |
|       | Change Battery Indicator | When the PowerCell is depleted to the point that it is unable to support stimulation but not completely depleted, the ORANGE light will blink twice every 3 seconds and no sound will be transmitted to the implant.                                                     | Yes          |
| Green | Mic/System Status        | Flashes in response to loud sounds when connected to the CPI or standalone. The Status LED is automatically disabled when the built-in telecoil is enabled. The GREEN light will NOT flicker in response to loud sounds if the built-in telecoil is enabled and/or when AGC is disabled. | Yes          |
|       | Mic Test Mode            | Steady green light indicates an empty program slot available for mic testing.                                                                                                                                                                            | No           |
| Red   | Lock Status              | Blinks at 1 second interval indicating no lock with implant.                                                                                                                                                                                             | No           |
|       | IntelliLink™             | Rapid blinks (indicates wrong implant is connected).                                                                                                                                                                                                   | No           |
|       | Error Conditions         | Steady - fully remove and reinsert PowerCell to reset processor.                                                                                                                                                                                          | No           |
Sound is intermittent—

10. Remove any materials that may be covering the microphone (i.e. Scarf, Hat, Headband)

11. Perform a test of the built in microphone using an empty program slot
   • Learn how

12. Try another audio input source
   • Such as an Auxiliary Microphone or your Direct Connect Earhook interfaced with an audio device (i.e., CD/MP3 player).
   • Learn how
Sound is intermittent—

13. Check for visible damage on the processor

14. Contact the audiologist for further troubleshooting
Headpiece will not stay on…..

1. **CAUTION**: adding too many magnets to the headpiece may cause physical discomfort and can potentially damage the skin around the implant site.

2. How long has it been since surgery? Swelling is common for 1-2 months following surgery.

3. If significant time had elapsed, you may try the following:
   - Use of an earmold, huggie or toupee tape will help keep the headpiece on as it will assist with the weight of the processor so it does not pull the headpiece off.
   - Other suggestions:
     - Temporarily shave hair around the implant site
     - Apply pressure to the headpiece with a headband, baseball cap, etc.
     - Refer to audiologist for further troubleshooting
Child’s voice sounds muffled or distorted

1. Is the processor turned on?
2. Are the connections secure?
3. Is the Volume Control in the 12 o’Clock position?
4. Verify the LED status
   • Learn how
5. Perform a behavioral listening check
   • Learn how
6. Perform test of the built-in Microphone
   • Learn how
7. Refer back to “Sound is Intermittent” section for additional steps
   • Go now
# Harmony LED Functionality Chart

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| Orange| PowerCel Status          | When a PowerCel is inserted onto the processor module, the ORANGE LED will blink as follows:  
- 3 to 4 quick flashes indicates that the PowerCel is fully charged.  
- 2 quick flashes indicates that the PowerCel is sufficiently charged to power the system.  
- 1 quick flashes indicates that the PowerCel charge is nearly depleted.  
- 0 flashes - change battery immediately.                                                                 | No           |
|       | Low Battery Indicator    | When the PowerCel is near depletion, a steady ORANGE light will illuminate indicating that it is time to change the PowerCel. Once the battery is fully depleted, no light will emit from the processor and no sound will be transmitted to the implant. Replace PowerCel as soon as possible. | Yes          |
|       | Change Battery Indicator | When the PowerCel is depleted to the point that it is unable to support stimulation but not completely depleted, the ORANGE light will blink twice every 3 seconds and no sound will be transmitted to the implant. | Yes          |
| Green | Mic/System Status        | Flashes in response to loud sounds when connected to the CPI or standalone. The Status LED is automatically disabled when the built-in telecoil is enabled. The GREEN light will NOT flicker in response to loud sounds if the built-in telecoil is enabled and/or when AGC is disabled. | Yes          |
|       | Mic Test Mode            | Steady green light indicates an empty program slot available for mic testing.                                                                                                                                                       | No           |
| Red   | Lock Status              | Blinks at 1 second interval indicating no lock with implant.                                                                                                                                                                       | No           |
|       | IntelliLink™             | Rapid blinks (indicates wrong implant is connected).                                                                                                                                                                               | No           |
|       | Error Conditions         | Steady - fully remove and reinsert PowerCel to reset processor.                                                                                                                                                                      | No           |
Performing a test of the built-in Microphone

1. Note: To assess the microphone, you will need to have an empty program slot on the processor. You will also need a Direct Connect system and an Audio Interface Cable
2. Using the Mic Tester Headphones supplied by Advanced Bionics attach to the Direct Connect
3. Set the program switch to an empty program slot (solid green light/LED should emit)
4. Connect a charged PowerCel
5. Speak in a normal voice and monitor output
Performing a Behavioral Listening Check

- **Using the Ling Six Sounds (ah, ee, oo, sh, s and mm)** you can determine a cochlear implant’s effectiveness by verifying that the child is able to detect all aspects of speech as the six sounds encompass the frequency range of all phonemes.

### Six-Sound Speech Test Instructions

<table>
<thead>
<tr>
<th>For Schoolchildren</th>
<th>For a Very Young Child</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Position the listener one to two yards from you, and ask him/her to “listen.”</td>
<td>1. For a very young child you will need to teach detection through a behavioral response.</td>
</tr>
<tr>
<td>2. If this is the first time the person has completed the task, demonstrate what is expected.</td>
<td>2. Use of real objects to represent each of the Ling Sounds is recommended, using the pictures on the cards as recommendations (e.g., ghost, airplane).</td>
</tr>
<tr>
<td>3. Using a normal conversational level, present each of the sounds through listening alone.</td>
<td>3. While giving the child a quiet distraction, provide a long baseline of silence and then make one of the Ling sounds through audition alone and without any toys.</td>
</tr>
<tr>
<td>4. Occasionally say nothing while doing the test. This way, a listener learns that it is okay to say that he/she does not hear anything. Remember to present the Ling Sounds in a random order so the child doesn’t learn the pattern of presentation.</td>
<td>4. If the child looks, repeat the sound without showing the object. When you have the child’s attention, first through listening, reinforce his attention by showing the corresponding toy and then repeating the sound again; provide waiting time so the child can process the sound.</td>
</tr>
<tr>
<td>5. If the child is able to detect the sounds, progress to a discrimination task and then an identification task by asking the child to point to the correct picture. The goal is to have the child naturally repeat the Ling Sound.</td>
<td>5. After a few minutes, say another sound and present the corresponding toy in the same way. Present all the Ling Sounds as long as you can maintain the child’s attention. If attention is poor, change tasks and try again.</td>
</tr>
</tbody>
</table>
Performing a test of the built-in Microphone

1. Note: To assess the microphone, you will need to have an empty program slot on the processor. You will also need a Direct Connect system and an Audio Interface Cable.
2. Using the Mic Tester Headphones supplied by Advanced Bionics attach to the Direct Connect.
3. Set the program switch to an empty program slot (solid green light/LED should emit).
4. Connect a charged PowerCel.
5. Speak in a normal voice and monitor output.
Performing a test of the built-in Microphone

1. Note: To assess the microphone, you will need to have an empty program slot on the processor. You will also need a Direct Connect system and an Audio Interface Cable.

2. Using the Mic Tester Headphones supplied by Advanced Bionics attach to the Direct Connect.

3. Set the program switch to an empty program slot (solid green light/LED should emit).

4. Connect a charged PowerCel.

5. Speak in a normal voice and monitor output.
How to Try another Audio Input Source

1. By connecting the direct connect system, audio interface cable and either an auxiliary microphone or portable listening device you can verify if the child can receive sound through another sound source.

2. Should the child receive sound with another audio source this verifies that the processor microphone is not functioning.

3. Contact the family and/or managing audiologist for further assistance.
How to Try another Audio Input Source

1. By connecting the direct connect system, audio interface cable and either an auxiliary microphone or portable listening device you can verify if the child can receive sound through another sound source.

2. Should the child receive sound with another audio source this verifies that the processor microphone is not functioning.

3. Contact the family and/or managing audiologist for further assistance.
Cleaning the Processor and PowerCel Contacts

1. To prevent intermittent operation of the Processor, contacts on both the PowerCel and Processor should be kept free from dirt, dust, perspiration or moisture.

2. Clean the contacts with a soft bristle brush (a hearing aid brush is best) at least once a month.
Cleaning the Processor and PowerCel Contacts

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I need more information......

1. Speak to an Audiologist to ask further questions

2. Learn more on-line about the Harmony Processor
Speak to an Audiologist

Please call us for further assistance:

- Hours of Operation: 5 AM to 5 PM PST
  (877) 829-0026 US and Canada
  (800) 678-3575 TTY
  (661) 362-1400 ext. 2101
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Hearing Aid Listening Check

INSTRUCTIONS

1. **HEARING AIDS ARE CHECKED DAILY** or more often if the child has been in moist conditions or does not appear to be responding to sound as expected. Child should learn to use the hearing aids during all waking hours.

2. **TEST BATTERY**: Batteries only last 1-2 weeks when used daily. Because the child cannot tell you when the battery has died you need to check the batteries in the tester provided. Place the battery in the correct size hole, press the red bar and the needle should move into the green or “good” area. If not, replace the battery. Battery life begins when the tape is removed from the top of the battery surface. BATTERIES ARE **POISONOUS**! KEEP ALL BATTERIES OUT OF REACH OF CHILDREN.

3. **LISTEN TO HEARING AID**: You will soon become skilled at knowing what your child’s hearing aid should sound like. Report changes you perceive to your audiologist who can test the aid further. Make sure the aid is “off” and the volume is turned down, if possible. Place the tip of the earmold in the tan colored cup at the end of the stethoset and put the eartips in or near your ears. Turn on the aid and turn up the volume until comfortable. Listen for any loud background hiss or scratchy sounds as you move the volume wheel. Jiggle the hearing aid and listen for any cutting in and out of sound. Say the sounds oo, aw, ee, sh, s, m and listen to how clear the sounds are. Each sound represents a different pitch range in hearing so clarity of the sounds is critical!

4. **PUT THE HEARING AID ON THE CHILD**: Turn it on and to the correct volume setting. Say the sounds oo, aw, ee, sh, s, m and watch your child for a response from 6-12 inches and again from 6 feet or at your child’s maximum listening distance. Encourage your child to repeat these sounds and participate in hearing aid checks. You can use this quick hearing aid check method for years! If you know the earmold is in the correct position and you hear any feedback (whistling) when the child chews, vocalizes, or moves around, **immediately** make an appointment with the audiologist for a new earmold impression to be made. Babies grow fast and so do their ears! A hearing aid that is whistling is not providing your child with the amount of amplification he or she needs to perceive and attend as well as needed to speech and sounds in the environment.

5. **CARE AND CLEANING**: Hearing aids should NOT get wet or be in moist places. If you see drops of water in the earmold tubing, remove the earmold and use the blower to dry out the tube. If the earmold looks dirty, clean it with the wax loop tool or remove it and let it soak in warm dishwater. Earwax will eventually discolor the earmold. Do not boil or use harsh cleaners on earmolds. Let dry overnight before attaching to hearing aids. In a moist climate the hearing aids should be kept in the DriAid kit nightly. Remove the battery, open the battery door, seal tightly in the DriAid jar. One drop of moisture in the earmold tube or hearing aid can prevent a child from receiving amplified sound.

6. **ASK QUESTIONS**: Tell your audiologist or early intervention services provider if your child does not seem to be hearing as well as usual or the hearing aid(s) do not produce the same quality of sound as usual.
HEARING AIDS
What, Why, When, How?

What are hearing aids?
Hearing aids are like mini-computers that are worn on the ears that make sounds louder and shape the sounds so that they fit each individual’s hearing loss. The goal of hearing aids is to make all of the sounds of speech audible, at least when the talker is close to the listener and it is quiet. This can usually be accomplished as most children who have his loss have useable hearing. Some children have so much hearing loss that no hearing aid will allow them to hear all of the sounds of speech. Hearing aids don’t restore normal hearing like glasses can restore normal vision. Almost all children who wear hearing aids will still have more problems than people without hearing loss understanding speech clearly from a distance, in noise or when spoken quickly.

Why does my child need to wear hearing aids?
Children learn as they experience the world. Children start acquiring the building blocks of speech and language as soon as they are born. Hearing loss limits how much spoken language a child will experience or be exposed to. This is likely to cause delays in speech, language, listening, learning and behavior if help is not provided right away. The single most important thing we can do to help young children with hearing loss develop spoken language like other children is to help them to hear their best with hearing aids.

When does my child with permanent hearing loss need to start wearing hearing aids?
If your child has a permanent hearing loss in one or both ears, he needs to start to wear hearing aids as soon as the loss is identified. The brain develops pathways to understand the meaning of sounds as it receives input. Hearing loss limits input. Unless the hearing loss is addressed fewer pathways will form limiting future ability to understand spoken language. By getting hearing aids for your child as early as possible you are taking a very important step to preventing lifelong learning delays.

How much does my child need to use hearing aids every day?
Babies listen and experience their world for about a year before they say their first words. If your goal is to have your child have the best listening and verbal language skills possible by the time he starts school, then hearing aids must be worn all waking hours from the time he is very young. If your baby or child wears hearing aids only four hours each day, it will take six years to give him as much listening experience as a young child with normal hearing accumulates in one year. The number of hours per day your child is able to listen and catch language effectively will strongly affect his verbal language and learning readiness by school age.

Although children with normal hearing seem to learn speech and language effortlessly, it is really a very complex process. Every child is ‘wired’ to learn the language that is used around them. It may help to think about a young child with a talent for ice skating. How can he get to the Olympics? First, he must
wear ice skates. But just having the skates will not develop skating skills; he must wear the skates and practice many hours each week. He also needs to have a coach who can skate to show him the skills and shape his learning. Ultimately may get to the Olympics because of many little successes that make him feel like he can compete with other skaters. A skater without much practice on skates or coaching will be unlikely to succeed in competition. A skater and a child with hearing loss are different – a skater is only on skates a number of hours each week to practice and learn new skills. A child with hearing loss needs to wear hearing aids all waking hours to learn the complexities of spoken language. While wearing hearing aids the child with hearing loss needs to interact and have conversations with people to practice his listening and develop his language skills. He will benefit from coaching by professionals who work with him and your family so that he can get the most out of language learning experiences. Success in the early school years (before reading) is based largely on the ability to listen and understand what the teacher is saying. If your child is to compete with other children his age in school, he needs to have years of listening and language practice! For a child who is learning spoken language the hearing aids need to become a part of who he is as they are the main contributor to why he is successful, even though he has a hearing loss and how he learns all day, every day.

**How do I get my child to wear hearing aids?**

First, it usually takes time for your child to get used to the hearing aids. Your child’s audiologist will probably talk to you about how to introduce your child to listening with hearing aids and slowly increase the amount of time they are worn. The goal is to have him wear the aids all of his waking hours within three weeks after you first get the aids. During the first 2-4 days you should put the hearing aids on the child several times a day for 15-30 minutes. It is best to choose times when you are busy eating, reading a book together or doing a favorite activity. This will help distract him from the feel of the hearing aids in his ears. If what he is hearing is meaningful and enjoyable he will be likely to wear the hearing aids longer. This wear schedule is increased until he wears hearing aids all of the time. It is much easier to attain full time wear with a young infant than with a busy toddler. The exception to full time wear would be when the child is bathing, as water is often harmful to the hearing aids. Very young babies can sleep with hearing aids but they are a choking hazard to children who have the motor skills to pull them out of their ears. It is very important to make it clear to your child that you are the one who takes off and puts on the hearing aids. Just as babies go through stages of resisting wearing shoes, hats or clothes, it is not unusual for a toddler to go through a period when he resists wearing his hearing aids. Firm and loving patience for a few weeks usually works to help a child through this stage. Support and information from other parents who have been through establishing hearing aid wear with their own children is often very helpful. By the time the child is about 4 he can be expected to develop independence with putting on the hearing aids with a parent’s guidance. You will need to check the hearing aids daily to make sure they are working. Your audiologist will need to evaluate your child often during the first year to make sure that his or her hearing is not changing and that the hearing aids are amplifying appropriately as the child grows.

**Resources and Information**

- What should I expect? Setting Reasonable Expectations about Hearing Aid wear
- Website by parents of children with hearing loss; section on hearing aid use
  - [http://www.listen-up.org/haid/aids-out.htm](http://www.listen-up.org/haid/aids-out.htm)
- Hearing aid choices – general information
  - [http://www.babyhearing.org/HearingAmplification/AidChoices/index.asp](http://www.babyhearing.org/HearingAmplification/AidChoices/index.asp)
- Hearing Aids for Children – American Speech-Language-Hearing Association
- Hearing Aids – American Academy of Audiology
  - [http://www.howsyourhearing.org/hearingaids.html](http://www.howsyourhearing.org/hearingaids.html)
- Your Guide to Your Child’s Hearing - Better Hearing Institute
- What Parents Should Know About Hearing Loss: Pointers for Parents - League for the Hard of Hearing

Developed by Karen L. Anderson, PhD for the Minnesota Department of Education Parents Know website, 2011 ([http://parentsknow.state.mn.us](http://parentsknow.state.mn.us)).
COCHLEAR IMPLANTS
What, Why, When, How?

What is a cochlear implant?
Cochlear implants have been available since the early 1980s. Cochlear implants are different than hearing aids. Hearing aids tune sound, make it louder and then deliver it into the damaged or different inner ear of someone with a permanent hearing loss. The person’s inner ear, or cochlea, recognizes the sounds before sending them up to the brain for interpretation of what the sounds mean for understanding. A cochlear implant bypasses a person’s different or damaged inner ear. It has two main parts, an internal part that is implanted and an external “processor.” The internal part is an “electrode array” implanted into the cochlea. Outpatient surgery is needed to implant the electrode array in the cochlea. Sounds are picked up at the ear by a microphone, in an external “speech processor”, which looks like a hearing aid, sorts and arranges the sounds digitally. The picked-up sounds go directly to a “receiver” under the skin of the head. The receiver changes the sounds into electric impulses and then delivers the impulses to the “electrode array”. The array recognizes the electric impulses and then sends this representation of sound through the auditory nerve to the brain so it can be interpreted and understood. A cochlear implant does not restore normal hearing. It provides representation of sounds in the environment and makes them available for the brain to interpret.

Would my child benefit from cochlear implant(s)?
Cochlear implants are only for people who do not have enough hearing to understand all of speech when they are using the best hearing aids for their amount of hearing loss. Hearing aids do a good job of amplifying speech, but some people have too much hearing loss to be able to hear all of speech even with the most powerful hearing aids. If your child has worn hearing aids at least 3-6 months and they do not allow your child to hear all of the speech sounds at a conversational loudness in either ear then your child may be a candidate for a cochlear implant. Most cochlear implant users have severe to profound hearing loss (70 dB HL – 120+ dB) throughout most of the frequencies tested (500 Hz – 8000 Hz).

My child is deaf. Does he have to get cochlear implant(s)?
No. Deciding about a cochlear implant for your child is a family choice, based on several different factors. Every child needs access to a rich, full foundation of language learning to be ready for school. A child who is severely or profoundly deaf cannot hear spoken language clearly or loudly enough with hearing aids. Some families decide to get a cochlear implant for their child in order to help them learn to hear and use spoken language. Other families may decide to use Cued speech or signs to communicate as the way in which their child will access a rich language foundation. Either path will take extra effort on the part of all caregivers to facilitate the child’s language development at the same rate as age-peers without hearing loss. It is up to the family to decide which path they want for their child and family. There is no right decision for all families.

**When would be the best time for my child with permanent hearing loss need to receive a cochlear implant?**

The brain develops neural pathways to understanding the meaning of sounds as it receives input. Hearing loss limits sound input. Unless the hearing loss is addressed fewer pathways will form limiting future ability to understand spoken language. If you want your child to eventually use spoken language, the first step is for him to wear hearing aids all waking hours. Intensive work with the child must occur to help him develop an awareness of sound and understand that sound has meaning. If it appears as though a child is not developing sound awareness then it would be appropriate for your family to explore cochlear implantation by going to a Cochlear Implant Center. The Food and Drug Administration regulates how early children can be implanted. In general, children under the age of 12 months are not implanted. There have been exceptions though, that resulted in children being implanted a few months earlier.

Some people believe it would be fairer to the child to make his or her own decision about receiving a cochlear implant later. However, because of how the brain develops, the best speech and spoken language outcomes happen if a child is implanted before the age of three years, preferably by one year. There are increasing numbers of people from the Deaf community who are also receiving cochlear implants so that they can be more aware of sound in the environment. A child who learns and communicates with American Sign Language or Cued Speech may be implanted after the age of three, but current studies tell us that learning to listen to understand and use spoken language is much slower and more difficult for the child who receives an implant after the age of 3.

**Will my child be able to talk if he has cochlear implant(s)?**

The answer to this important question is maybe, but not always. We know that some children do remarkably well with their cochlear implants, speaking and learning as well as or very similar to their age peers. Other children do not gain much more than sound awareness from their cochlear implant. There is no guarantee for how well any individual child will do. We are aware of some of the important ingredients of success: (1) Consistent hearing aid use followed by consistent cochlear implant use – the child always ‘has his ears on’ when he is awake. (2) Intensive therapy or intervention by someone who is experienced in helping families help their young children to develop listening and spoken language skills, starting as early as possible and especially after implantation. (3) Families who talk, read, and
surround their child with meaningful listening experiences every day – helping the child learn to listen and use spoken language is a priority for the whole family, at least for the first few years of the child’s life. Taking a child to therapy or having an early intervention provider in the home is important, but children learn by listening and practicing language and speech all day long. A child with cochlear implant(s) cannot be expected to learn to listen and talk just by wearing the device every day or by seeing a therapist or teacher weekly. The child must actively learn how to interpret sound, and that takes daily effort and patience by all caregivers if the outcome of spoken language and school readiness is to be achieved.

One implant or two implants?
We use two ears together to tell where sound is coming from (localize) or to understand speech as well as possible in background noise. If your child is deaf in both ears, two cochlear implants may provide him with the same advantages of two ears. If your child has some useable hearing in one ear and none in the other, he may do very well with a hearing aid and a cochlear implant. This is something to discuss with the team of professionals at the Cochlear Implant Center.

Are there risks?
Implanting the electrode array in the cochlea takes surgery. This surgery is relatively uncomplicated and almost always safe but complications can happen, as with any surgery. This is something to discuss with the team of professionals at the Cochlear Implant Center.

How would I pay for cochlear implant(s)?
Because of the surgery and therapy needed, receiving a cochlear implant is most often covered by health insurance. This is something to discuss with the team of professionals at the Cochlear Implant Center.

Will my deaf child learn normally if he has cochlear implant(s)?
Learning at the same rate as age peers can happen whether a child learns auditorily using a cochlear implant or visually using American Sign Language or Cued Speech. The key to learning success is starting school with a rich, full language base. Even children with cochlear implants who have average speech and language (or better) will encounter more learning challenges than students with typical hearing. This is because learning in a classroom can be noisy, the teacher can be distant and peer communication can occur very quickly and at a soft loudness. Classroom accommodations will still be needed to overcome some of these barriers and assistive technology will address others. Finally, the child will need to learn communication repair and self advocacy skills which will be of lifelong benefit.

Resources and Information
- What should I expect? Setting Reasonable Expectations about Hearing Aid wear
Setting Reasonable Expectations About Hearing Aids

- National Institute for Deafness and other Communication Disorders (NIDCD)

- American Speech and Hearing Association
  http://www.asha.org/public/hearing/Cochlear-Implant/

- American Academy of Audiology
  http://www.howsyourhearing.org/cochlearimplants.html

- Baby Hearing – cochlear implant information
  http://www.babyhearing.org/HearingAmplification/Cochlear/index.asp

- Kid’s Health
  http://kidshealth.org/parent/general/eyes/cochlear.html

- US Department of Food and Drug Administration (regulate cochlear implants)
  http://www.fda.gov/MedicalDevices/ProductsandMedicalProcedures/ImplantsandProsthetics/CochlearImplants/default.htm

- Website by parents of children with hearing loss; cochlear implant information
  http://listen-up.org/ci/ci-information.htm

- Your Guide to Your Child’s Hearing - Better Hearing Institute


- What Parents Should Know About Hearing Loss: Pointers for Parents - League for the Hard of Hearing
  http://www.audiologyonline.com/articles/article_detail.asp?article_id=361

Developed by Karen L. Anderson, PhD for the Minnesota Department of Education Parents Know website, 2011 (http://parentsknow.state.mn.us).