

A CHILD WITH A COCHLEAR IMPLANT IS JOINING MY CLASSROOM –

What in the World Do I Do?

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It's the beginning of a brand-new year; children and teachers alike are filled with excitement and anxiety. Your "To Do" list has already overflowed to the second page, when in comes a new child with a cochlear implant. A what? Where do you even begin? What does this mean for you as a teacher? Where can you find resources to handle this new challenge?

WHAT IS A COCHLEAR IMPLANT?

For starters, a cochlear implant is an electronic device that provides useful sound information to people who are deaf. The device consists of two separate components, one internal and one external. The internal component is surgically implanted completely under the skin. The external equipment consists of either a body-worn or ear-level speech processor. "Listening programs" - also called "maps" - are downloaded and stored in the external speech processor. A map tells the processor how to handle sounds based on each individual's needs and tolerances. Periodically, the individual will need to go back to their cochlear implant audiologist to have these maps fine-tuned or changed. Mapping visits are typically scheduled every few months (assuming the child is not newly implanted, when mapping visits tend to occur more frequently). However, a return to the CI center for an evaluation of the map is a good idea any time a child is not detecting or discriminating speech sounds well.

While the cochlear implant provides very useful sound information to deaf people, the amount of benefit varies greatly between individuals. There will, in all likelihood, need to be accommodations, modifications and/or specialized instruction provided to children using a cochlear implant.



WHAT RESOURCES ARE AVAILABLE?

As soon as you can, you will need to take some time to gather information to help you in your daily interactions with this student. The best place to start is with the parents. You will need to ask questions such as:

- :: What brand of implant does he/she have?
- :: How long has he/she been implanted?
- :: Which cochlear implant center is responsible, and who is his/her programming audiologist?
- :: Do I need permission to communicate with the implant center?
- :: Does he/she have an IEP?
- :: Does he/she have other service providers (i.e. private speech therapist, teacher of the deaf, interpreter, educational audiologist, etc)?

The implant center/mapping audiologist can be one of your best resources. They will be able to provide you with information and resources vital to successfully working with this student

- :: What are realistic expectations for listening in the classroom?
- :: What is a map?
- :: What do I need to know about the map?
- :: On what program, sensitivity, and volume should the CI be set?
- :: How will I know when this information changes?

Private speech, language, or auditory therapists who have worked with this student will be able to provide insight on the child's language level, auditory ability, communication skills, and learning style. Contact the cochlear implant manufacturer to request any educational materials available. They will be able to provide orientation materials, troubleshooting assistance, and guidance for maintenance of the equipment.

It will be important for you to contact your school audiologist and Teacher of the Deaf or Deaf and Hard of Hearing (DHH) specialist in the district. Request a brief and basic lesson in "Deafness 101." Find out what is available in the district in terms of managing equipment with the school audiologist, such as necessary equipment for listening or troubleshooting, and any spare cables or batteries that will be necessary to have on hand. Set up a time to meet with the DHH specialist to review the IEP and discuss accommodations and modifications that will help in your classroom.

QUICK TIPS FOR SUCCESS IN THE CLASSROOM

The DHH specialist can help with logistics in your room and give you tips for working directly and interacting with a student with a cochlear implant. Below are some general tips when working with a cochlear implant student in your classroom;

- :: Get the student's attention prior to speaking. This can be as simple as ensuring that you have eye contact prior to beginning instruction.
- :: Reduce auditory distractions such as background noise. Sound from sources such as a fan, or being close to a hallway door can dramatically reduce the child's ability to attend during class.
- :: Use clearly enunciated speech. However, if you over-exaggerate your speech, or talk too slowly, you can actually make it more difficult for the child to understand.
- :: Enhance the child's ability to speechread for both the teacher and the other students. Avoid putting your hands in front of your face, turning your back when you talk, chewing gum, etc.
- :: Allow for extra time to process auditory information.
- :: Frequently check for understanding by asking open-ended questions.
- :: Use visual supplements (overheads, chalk board, real objects, pictures, charts, vocabulary lists, lecture notes or outlines, videos).
- :: Use captioning or scripts for TV, videos, movies. Your school DHH specialist or audiologist can help you with these resources.
- :: Repeat information that has been expressed by a person out of view or over an intercom.
- :: Consider using a "buddy system" for notes, extra explanations or directions.
- :: During classroom discussion times:
 - Seat the group in a circle or horseshoe so the child will be able to see everyone.
 - Point to the person who is talking, or call on them by name, so the student knows where to focus. Often, a child with a hearing loss takes a longer time to find the source of a sound, and will miss the beginning of the speaker's comments.
 - Repeat or rephrase comments or questions for the whole class before moving on to a new speaker.

Learn to do a quick listening check (see instructions on page 2-6 of this newsletter). Spending a minute or two at the start of the day to ensure equipment function is vital to the child's listening success at school. Catching a problem early may also save you from many headaches throughout the day. A child's behavior may change when the equipment isn't working properly; you may see a lack of auditory response, limited comprehension throughout class, or even behavior issues. A listening check will also allow you to quickly learn to evaluate the child's responsiveness to sound and help train the child to identify and report problems, leading eventually to the child's self-management of the equipment.

Now you know what a cochlear implant is, and where you can find more information. So take a deep breath - you will eventually find your way to the bottom of the "To Do" list. Cochlear implants are an amazing technology that can give deaf children access to most sounds in their environment, but some necessary steps must be taken to achieve high-level success in your classroom. After all, what would teaching be without a few challenges along the way? Embrace this challenge and see it as a unique opportunity to add to the many experiences you have had that have made you the teacher you are today.

Good Luck!

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INTRODUCING THE NEW SCHOOL TROUBLESHOOTING KIT FROM MED-EL

We have had many requests for a troubleshooting kit designed and priced for educational needs and budgets. Coming in January 2006, MED-EL will offer a new spare parts troubleshooting kit designed especially for schools. The kit includes all of the equipment needed to do basic troubleshooting and keep a child on the air for the school day. The Basic School Kit includes:

- :: 2 spare TEMPO+ cables (default sizes are 9.5 cm and 28 cm)
- :: 2 spare TEMPO+ earhooks (default sizes are child's angled and child's straight configuration)
- :: 2 spare TEMPO+ battery door covers
- :: a u-pin and a fixation bar (for the BabyBTE™ configuration)
- :: a screwdriver for attaching the fixation bar
- :: 1 pack of spare batteries
- :: a Speech Processor Test Device
- :: Educator's CD-ROM and laminated TEMPO+ Troubleshooting Guide

The kit can be ordered as the **School Kit Plus, which also includes a Microphone Test Device** to troubleshoot the processor microphone. Cable lengths and earhook sizes can be specified. Prices are \$210 for the Basic kit, and \$425 for the Plus kit, which is a 15% savings over purchasing the items separately.

"Can you hear me, now?"

DAILY LISTENING CHECKS

Do you find yourself asking this question during the day or at the beginning of your therapy session? Now that you are settled into the school year, make "listening" checks a part of your daily routine for your students with cochlear implants and hearing aids. In order to feel confident that the system is working and the student is receiving the best sound possible, it is advisable to formally check the system every day and/or at the beginning of therapy.

A listening check will establish a consistent and replicable method of evaluating the equipment and the child's auditory discrimination. This quick check should take no more than 1-2 minutes. Because we are checking for auditory ability, it is critical that the child have no access to visual cues during the daily listening check.

PURPOSE OF THE 'DAILY LISTENING CHECK'

- :: Evaluate the student's hearing acuity
- :: Reinforce listening skills
- :: Teach the child to indicate when the device is not working properly
- :: Provide a good sense of the student's hearing function from day to day
- :: Assist in detection of small changes in hearing
- :: Develop the teacher's comfort level with the child's ability to hear

WHEN TO CONDUCT A 'LISTENING CHECK'

- :: Beginning of the day or rehabilitation session
- :: After PE or recess, especially for younger children
- :: If the device has been removed for special activities
- :: Whenever there is a suspicion that the child is not responding in his or her typical fashion

WHAT YOU WILL NEED

- :: A “listening screen”. A listening screen can be easily fashioned with an embroidery hoop and a double thickness of cloth, preferably speaker cloth. The idea is to remove visual cues without impeding or distorting the sound quality of your speech. Covering your face with a hand isn’t enough to completely remove visual cues; many children can identify a phoneme by cheek or chin movements, especially if the possible stimuli are known. And, using a solid object is undesirable because it may distort the auditory cues.
- :: Blocks with a bucket, puzzle pieces, or similar **stimulus response items** (for younger children)

EASY STEPS FOR DAILY LISTENING CHECK

Many professionals like to use a popular quick test called the “Six Sound Test” developed by the late Daniel Ling. This test uses isolated speech sounds that cover the entire frequency spectrum of speech. The six sounds are:

“mm” as in “mmm, that’s good”
 “ah” as in “father”
 “ee” as in “bee”
 “oo” as in “boot”
 “ss” (not “ess”)
 and “sh”

- :: Present each sound, one at a time, using auditory information only. Use a listening screen to remove visual cues without adversely impacting the sound energy.
- :: Expect the child to indicate that it was heard
- :: Use the same intonation and duration for each sound
- :: Vary the presentation order
- :: Add additional (unexpected) stimuli from time to time, such as the child’s name, or other familiar but not predictable words

Responses will vary depending on the age, maturity and listening level of the child. The listener is expected to indicate that he or she heard the stimulus by giving a simple response. The response can be anything you choose to teach: pointing to the ear, dropping a toy into a container, turning to look at you, vocalizing, etc. Eventually the goal is for the child to repeat back the phoneme heard; this will help distinguish the child’s ability to detect from the ability to discriminate.

For more specific information about conducting daily listening checks and response behavior, see page 18 of the MED-EL publication ‘Handling and Troubleshooting the TEMPO+’.

This guide is available as a free download through the MED-EL Web Download Center at http://www.medel.com/ENG/US/50_Resources/40_Educational_Resources/000_ed_resources.asp.



VERIFYING NORMAL EQUIPMENT FUNCTION

Along with the importance of assessing the child's detection and discrimination, it is important to check the equipment for proper settings and function. One child's settings may be very different than another child's settings, so exact settings should be obtained from the implant center (and should be updated after each mapping visit) for each child.

A normally functioning system has the following characteristics:

- :: The red LED illuminates for 4-5 seconds when the system is first turned on and when the program and volume switches are changed. Otherwise, it should not light or blink.
- :: The ON/OFF switch is set to "ON" or "—" (depending on the battery pack used). If in doubt, switch it off and then back on again. The red light should illuminate briefly to indicate it is on.
- :: The sensitivity control is set at approximately the halfway point (for most users). When looking directly at the sensitivity control, with the switches facing upward, the red dot will be at approximately 2 or 3 o'clock. If in doubt, simply turn the sensitivity control all the way off (counter-clockwise) and all the way back (clockwise) to find the endpoints of the dial, and then set the dial mid-way between the two endpoints. Now check to see if the red dot is at approximately 2 or 3 o'clock.
- :: Keep in mind that the sensitivity control can be turned all the way to the 'off' position (you will feel a click). In this position, sound input is significantly dampened and the child will most likely have no sound awareness.



See next page for a detailed diagram of the TEMPO+ speech processor.



Low Sensitivity
Red dot at 12:00 o'clock



Normal Sensitivity
Red dot at 3:00 o'clock



High Sensitivity
Red dot at 7:00 o'clock

Doing a daily listening check to assess the child's detection and discrimination skills, as well as to verify the function of the speech processor, will ensure that a child with a cochlear implant is able to participate fully in the school day, and will boost your confidence as well. It provides an opportunity to spend a few minutes each day focusing on listening skills, which will in turn help to develop consistent listening behavior, as well as potentially identify when a child should return to the implant center for fine-tuning of the speech processor program.

TEMPO+ SPEECH PROCESSOR

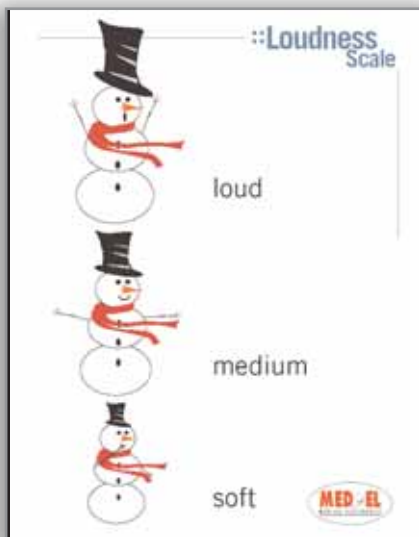


TEMPO+ is enlarged to show detail

HOT OFF THE PRESS

SEASONAL, TOO!

Loudness Scales for Kids



HOW TO USE A LOUDNESS SCALE IN THE CLASSROOM AND THERAPY

MED-EL has recently released loudness scales specifically designed for children. These tools are available to you from the MED-EL website (www.medel.com, choose US Version, then Contact & Support, then Download Center). Seasonal scales will be added throughout the year, so keep checking the website for updates. Just go to the Download Center, and they are yours! You can laminate them for longer use or print onto photograph paper for a finished look. You can also print a copy for each child you will see, and then send it home for additional practice.

Loudness scales are typically used during programming sessions, as the children become more sophisticated listeners. Before receiving an implant, most children don't hear very much loudness variation in the signal they receive from their hearing aids. So, the concepts of sound being very soft, medium (or OK), loud, or even too loud are often new concepts that need to be taught when the implant is activated. This is particularly true for young children.

There are many reasons why learning these concepts and learning to identify sounds differing in intensity is important. When the child is able to identify differences in loudness using this type of scale, it assists the implant audiologist in the programming session. Most young children, whether implant users or not, tend to use a voice that is too loud. All children need to learn to modulate their voices for different situations. Many parents and teachers constantly need to remind children that their voices are too loud or to use a "quiet" or "inside" voice. We want children to use a "quiet" or "soft" voice in the hallway, library and in the classroom. Parents want their child to be able to use a "quiet" voice in the car, in the house, in church and many other settings. Using the "loudness scale" as a tool in the classroom or therapy to teach children differences in loud and quiet and variations in between establishes the knowledge of sound intensity differences. It also gives the child the vocabulary needed to teach him or her how to use appropriate loudness in different situations.

INTENSITY TRAINING ACTIVITY FOR CLASSROOM OR THERAPY

Can be used in small groups or individually

Materials: Simple loudness scale cards (rabbit, pumpkins, etc)
Musical toys, drum, cymbals, maracas, etc.

Vocabulary: soft and/or quiet, medium, loud, too loud

Game for small groups or individual:

- :: Place loudness scale on the table.
- :: Point to the picture that indicates "loud."
- :: Each child and the teacher has a musical toy or drum.
- :: Instruct the child to "make it loud."
- :: Bang drum or toys as loud as possible. Indicate by covering ears and facial expressions. Use language, "oh, that is too loud."
- :: Let's do it again. "Make the drum sound loud!"
- :: After several tries, just point to the picture and instruct child to make the sound "loud". This time, don't model. This step can be repeated for the different intensities. Can the child produce a loud, medium and soft sound on request?
- :: Next, repeat the activity making "quiet/soft". Give the children several trials.
- :: Alternate between instructing the child or children to make either soft or loud sounds.
- :: Then, tell the child that you are going to make a sound and have them point to the appropriate picture. Alternate randomly to insure that they are not guessing when asked to identify whether they heard a "loud" or "soft" sound.
- :: You can then add in a medium sound. Give the children the language, "I like that, it is just right". This would be a normal degree of loudness, such as that used for conversational speech.
- :: After mastery, move the activity to voice. Demonstrate yelling for "loud," normal tone of voice for "medium" and whisper for "soft" or "quiet."
- :: After playing with differing voice intensity, have the child identify which they hear.
- :: Then try role reversal. If you are working in a group, have children take turns making various intensity sounds and identifying different intensities.



To obtain loudness scales, as well as seasonal versions, go to the MED-EL Download Center at:
http://www.medel.com/ENG/US/60_Contact_and_support/O20_download_center.asp.

MED-EL News

NEW PULSARci¹⁰⁰ "P" COIL

The PULSARci¹⁰⁰ Cochlear Implant requires the use of a "P" transmitter coil. A "P" coil can be identified by the letter "P" in the serial number, which is found on the flat side of the coil. All new patient kits have been shipped with "P" coils since introduction of the PULSAR device this year.

The "P" coil is also optimized to work properly with COMBI 40+ Cochlear Implants. As standard transmitter coils are returned to MED-EL for replacement in the future, they will be replaced with "P" coils. There is no need to replace a COMBI 40+ user's coil with a "P" coil unless the transmitter is faulty.

However, there is one exception. Some COMBI 40+ users require a low power coil. The letter "L" in the serial number identifies a low power coil. COMBI 40+ users who require a low power coil will not be switched to a "P" coil.

NEW GUIDE TO FM SYSTEMS

MED-EL is proud to introduce a new Guide to FM Systems. This comprehensive 46-page guidebook provides complete information on FM system settings, FM use, connections to the TEMPO+, and detailed illustrations of a variety of common FM systems and their controls.

The NEW FM Guide is a must for all school personnel who will be coupling TEMPO+ processors to an FM system. It is available as a free download from www.medel.com. Choose the US website version, then Contact & Support, and then Download Center.

Remember – use only battery-operated devices!

MED-EL has recently received several support phone calls from teachers trying to connect a TEMPO+ processor to electronic equipment that is plugged directly into a wall jack. The TEMPO+ accessory cables are only approved for connection to battery-operated devices. A computer or tape player, for example, can only be connected if it is running on batteries. Any battery-operated devices, such as DVD players, MP3 players, etc., can be connected to the processor.



NEW VOUCHER/EXCHANGE PLAN FOR THE FUTURE SPEECH PROCESSOR

With the launch of the PULSARci¹⁰⁰ Cochlear Implant, MED-EL is hard at work on the design of a Future Speech Processor*. We wanted to plan conscientiously so that children who receive the PULSAR today will be able to take advantage of the Future Speech Processor as easily as possible.



With that in mind, MED-EL has developed a Voucher/Exchange plan. Here's how it works:

NOW

- :: Family receives a TEMPO+ Speech Processor
- :: Family has a choice of battery options:
 1. All four battery packs, providing five wearing configurations, OR
 2. Two battery packs, plus a years' supply of free size 675 batteries
- :: Family receives a voucher for a free Future Speech Processor

LATER

- :: Family can turn in the voucher for a free Future Speech Processor and additional battery pack
- :: Family gets a free One-Time Exchange for the Control Unit of the TEMPO+, upgrading it to a Future Speech Processor, as well
- :: What this means for you: Children who receive a PULSARci¹⁰⁰ implant will still have all the choices of speech processor wearing configurations that have always been available from MED-EL. They won't receive their backup processor until the Future Speech Processor is available. They will also be able to exchange the existing processor, so that both of the child's systems will be the absolute latest design.

** The Future Speech Processor is not currently available. The date of availability will depend upon system implementation and regulatory clearance.*

MED-EL INTRODUCES JUDI BARNES, COORDINATOR OF EDUCATIONAL SERVICES

We are very excited to announce that Judi Barnes has joined the MED-EL Team. Judi is a Speech-Language Pathologist who has worked with children who use cochlear implants since CIs came to the USA in the mid-1980's. Most recently, Judi was the Coordinator of the Cochlear Implant Program at Nemours Children's Clinic in Jacksonville, FL. Prior to that, she was the Programs Director at Presbyterian Ear Institute in Albuquerque, NM, where she co-founded and directed a private, non-profit school for children with hearing aids and cochlear implants. She is well-versed in using the MED-EL system and has been involved with several cochlear implant clinical trials. Throughout the years, she has worked closely with audiologists, teachers, therapists and schools. You can reach Judi at jbarnes@medelus.com, through our toll-free number at 1-888-MEDELICI (633-3524), or reach her directly at (304) 553-2343. She is available to assist with your educational needs, from help with IEP planning to brainstorming new therapy ideas. WELCOME JUDI!



THE NEW PULSARci¹⁰⁰ COCHLEAR IMPLANT SYSTEM IS RELEASED IN THE USA

In September, MED-EL Corporation introduced a new FDA-approved cochlear implant, the PULSARci¹⁰⁰ System. The PULSARci¹⁰⁰ is already available worldwide, including Canada. PULSARci¹⁰⁰ is the first to incorporate new I¹⁰⁰ technology, a highly durable and power-efficient electronics platform with wafer-thin layers of sophisticated electronics arranged on a single miniaturized chip.

MED-EL is currently conducting research with PULSAR patients around the globe to explore a number of key concepts, including*:

- :: **SmartSystem™** Research examines how technology patented by MED-EL could be used to reduce channel interaction with simultaneous stimulation. Channel interaction is an overlap in the electrical current produced by each cochlear implant electrode, which can smear the sound signal and present a major challenge for cochlear implant users. Electrical current naturally flows in all directions and must be controlled in some way to reduce the potential for channel interaction, particularly during simultaneous stimulation. SmartSystem™* research is exploring the potential to offer simultaneous digital stimulation without the disadvantages of channel interaction.
- :: **Fine Structure™** Research explores various approaches to providing fine frequency detail to cochlear implant users. The term 'fine structure' refers to rapidly changing details regarding the frequency information found to be most important to listeners with normal hearing for pitch and music perception. MED-EL has begun investigating the potential for similar results among cochlear implant users.

"For over two decades, MED-EL has searched for ways to improve the understanding of speech in difficult listening environments and heighten the appreciation of music for cochlear implant users," explains Kim Jackson, CEO of MED-EL Corporation. "We are confident that current and future research with the PULSARci¹⁰⁰ will bring us closer to realizing our mission."

At this time, children who receive the PULSARci¹⁰⁰ will continue to use the TEMPO+ speech processor. The only minor difference is the transmitter coil, which will contain a "P" in the serial number. See page 2-11 for more information on the new "P" coil. All FM connecting cables and troubleshooting routines are exactly the same.

MED-EL is currently developing a Future Speech Processor for PULSARci¹⁰⁰ users, that will eventually be backward compatible to existing COMBI 40+ users. Children who get the PULSAR implant will have the opportunity to upgrade their TEMPO+ speech processor to a Future Speech Processor, at no charge, when that processor becomes available. See page 2-12 for an update on this exchange program.

Be sure to request a copy of *MED-EL's Handbook for Educators*, and *Guide to Troubleshooting the TEMPO+ Speech Processor*, or download them from our website at www.medel.com. More detailed technical information on the PULSARci¹⁰⁰ is available there as well.

We are very excited at the possibilities for the future of those who listen with a cochlear implant. **Stay tuned to www.medel.com** for information and updates!

* Research results have not been submitted to or reviewed by the U.S. Food and Drug Administration.

