

**Cochlear Implant Program**  
Medical Center East, South Tower  
1215 21<sup>st</sup> Avenue South, Room 9302  
Nashville, TN 37232-8025  
(615) 936-8623 (Voice or Relay)  
(615) 875-1410 (fax)

Thank you for your interest in the Vanderbilt Bill Wilkerson Center Cochlear Implant Program. A cochlear implant is designed for individuals with severe to profound hearing loss in both ears that receive little or no benefit from hearing aids. Cochlear implantation requires surgery followed by multiple visits for programming the cochlear implant system and aural (re)habilitation therapy.

An individual must undergo a series of evaluations to determine if a cochlear implant is an appropriate treatment for your child's hearing loss. The evaluation process is extensive and involves assessments by the ear, nose, throat (ENT) doctor, audiologist, speech-language pathologist, social worker, and/or psychologist. We will also need to consult with your child's school or early interventionist during the evaluation process.

The first step in the evaluation process is to complete the intake packet that is enclosed. **The following four items must be completed prior to scheduling the appointment:**

1. **Case History form,**
2. **Release of Information form,**
3. **Copy of your child's most recent hearing test results (audiogram), and**
4. **Referral from your child's pediatrician for "medical, radiological, speech-language, social work and audiological evaluations for cochlear implant work-up".**

Your child's pediatrician and audiologist can fax their materials to us at 615-936-5088. Upon receipt of all four items, you will be contacted regarding your child's appointment time for the cochlear implant evaluation. The evaluation is conducted over a two day period. It is very important that you bring your child's hearing aids and earmolds to the evaluation. Once all the testing is complete, a decision regarding your child's candidacy for cochlear implantation will be decided by the team members.

As we are a premier cochlear implant center, multiple research projects are always ongoing. At some point during the evaluation, you may be asked to consider participation in a research project. Please note that your participation is voluntary and has no impact upon your candidacy evaluation.

Enclosed you will find some general information about our program. If you would like additional information about the cochlear implant or our team, please call Kelly Newhouse, Program Assistant @ (615) 936-8623.

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### Child Case History

Date \_\_\_\_\_ Referred by \_\_\_\_\_

#### I. General Information

First Name \_\_\_\_\_ Middle Initial \_\_\_\_\_ Last Name \_\_\_\_\_

Street Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_

Birth Date \_\_\_\_\_ Age \_\_\_\_\_ Gender \_\_\_\_\_ Home Phone \_\_\_\_\_

Child's Primary Insurance \_\_\_\_\_ Policy Number \_\_\_\_\_

Mother's First Name \_\_\_\_\_ Mother's Last Name \_\_\_\_\_

Address (if different from above) \_\_\_\_\_

Mother's Date of Birth \_\_\_\_\_ Education Level \_\_\_\_\_ Occupation \_\_\_\_\_

Work Phone \_\_\_\_\_ Cell Phone \_\_\_\_\_ Email \_\_\_\_\_

Father's First Name \_\_\_\_\_ Father's Last Name \_\_\_\_\_

Address (if different from above) \_\_\_\_\_

Father's Date of Birth \_\_\_\_\_ Education Level \_\_\_\_\_ Occupation \_\_\_\_\_

Work Phone \_\_\_\_\_ Cell Phone \_\_\_\_\_ Email: \_\_\_\_\_

What name does your child like to be called? \_\_\_\_\_

Who is responsible for the care of this child? \_\_\_\_\_

Does this child have any brothers or sisters? If so, what are their names and ages? \_\_\_\_\_

\_\_\_\_\_

#### II. Associated Professionals

Pediatrician's Name \_\_\_\_\_ Phone Number \_\_\_\_\_

Address \_\_\_\_\_

Otologist/ENT's Name \_\_\_\_\_ Phone Number \_\_\_\_\_

Address \_\_\_\_\_

Audiologist's Name \_\_\_\_\_ Phone Number \_\_\_\_\_

Address \_\_\_\_\_

Speech Therapist's Name \_\_\_\_\_ Phone Number \_\_\_\_\_

Address \_\_\_\_\_

Developmental Pediatrician/Psychologist \_\_\_\_\_ Phone Number \_\_\_\_\_

Address \_\_\_\_\_

Teacher's Name \_\_\_\_\_ Phone Number \_\_\_\_\_

Address \_\_\_\_\_

Early Interventionist \_\_\_\_\_ Phone Number \_\_\_\_\_

Address \_\_\_\_\_

Other Professional \_\_\_\_\_ Phone Number \_\_\_\_\_

Address \_\_\_\_\_

### III. Statement of Problem

At what age was the hearing loss first diagnosed? \_\_\_\_\_

Do you know what caused the hearing loss? Yes No If so, what? \_\_\_\_\_

What diagnosis have you received regarding the degree of hearing loss? \_\_\_\_\_

Which is the better ear? Right Left Same

Is there a family history of hearing loss? Yes No If so, please describe \_\_\_\_\_

### IV. Health History

Was the pregnancy full term with normal delivery? Yes No If not, please explain \_\_\_\_\_

Birth Weight \_\_\_\_\_ Length \_\_\_\_\_ Apgar Score \_\_\_\_\_

Have you noticed any problems other than hearing? If so, please describe the nature of the problem, diagnosis, and treatment, if any. \_\_\_\_\_

Does your child have a history of ear infections? Yes No If so, how many per year? \_\_\_\_\_

Has your child's vision been evaluated? Yes No If so, when and what were the results? \_\_\_\_\_

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Has your child ever had a developmental or psychological evaluation? Yes No  
(If so, please attach a copy of the evaluation results.)

At what age did your child: Babble \_\_\_\_\_ Sit alone \_\_\_\_\_  
Walk alone \_\_\_\_\_ First word \_\_\_\_\_ Put words together \_\_\_\_\_  
Self feed \_\_\_\_\_ Toilet independently \_\_\_\_\_

### V. Amplification History

Does your child wear hearing aids? Yes No If so, which ear? Right Left Both

What is the make and model of the hearing aids? \_\_\_\_\_

On average, how many hours does your child wear the hearing aids each day? \_\_\_\_\_

How old are the current hearing aids? \_\_\_\_\_

Do you feel that your child benefits from the hearing aids? \_\_\_\_\_

Is there a change in your child's behavior and amount of speech production when he/she is wearing the hearing aids? Yes No If yes, please describe \_\_\_\_\_

### VII. Communication Information

Did your child babble or coo as an infant? No Yes

Does the child use his/her voice consistently? No Yes

Does the child vocalize more with the hearing aids on? No Yes

Does the child attempt to imitate speech? No Yes

Do your family members understand your child? No Yes

Can others understand your child? No Yes: Most can Some can Few can

Please circle any of the following ways your child communicates with others:

Speaks Gestures ASL Sign Language Cued Speech Other \_\_\_\_\_

What are your communication goals for your child? \_\_\_\_\_

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**VIII. Educational Information**

Have you or your child ever received special training and/or special classes for the hearing loss? Yes No

What do you expect from the cochlear implant? \_\_\_\_\_

\_\_\_\_\_

**IX. Cochlear Implant History** (Complete the following information if you did NOT receive your cochlear implant at the VBWC NCCD Cochlear Implant Program.)

Hospital \_\_\_\_\_ Surgeon \_\_\_\_\_

Audiologist \_\_\_\_\_ Phone \_\_\_\_\_

Address \_\_\_\_\_

Date of surgery \_\_\_\_\_ Activation date \_\_\_\_\_

# of electrodes inserted \_\_\_\_\_ Description of activation experience \_\_\_\_\_

\_\_\_\_\_

Rehabilitation services provided by cochlear implant program \_\_\_\_\_

\_\_\_\_\_

**X. Release of Information**

I authorize the above named professionals to release information regarding my child to the Vanderbilt Bill Wilkerson Center for the purpose of conducting a cochlear implant work-up.

\_\_\_\_\_  
Parent/Guardian Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Date

***Please return this form and a copy of your child's most recent audiogram to the address on the front of this form. Thank you.***

Vanderbilt Bill Wilkerson Center  
**Cochlear Implant Program**  
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1215 21<sup>st</sup> Avenue South  
Nashville, TN 37232-8025  
Adult Program: 615-936-8623  
Children's Program: 615-936-8623  
Fax: 615-875-1410

## **Team Members**

### **Director and Coordinators**

Rene H. Gifford, Ph.D., Director, Cochlear Implant Program,  
Associate Director, Pediatric Audiology  
David Haynes, MD, Medical Director  
Susan Amberg, Au.D., Adult Coordinator  
Kelly Newhouse, Program Assistant

### **Neuro-Otologists/Otologists**

Marc Bennett, MD  
David Haynes, MD  
Robert Labadie, MD, Ph.D.  
Alejandro Rivas, MD  
Georges Wanna, MD

### **Pediatric Otolaryngologists**

Dale Tylor, MD  
Christopher Wootten, MD

### **Audiologists**

Susan Amberg, Au.D., CCC-A  
Andrea Hedley-Williams, Au.D., CCC-A  
Cathrine Hayes, Au.D., CCC-A  
Linsey Watkins, Au.D., CCC-A

### **Speech-Language Pathologists**

Elizabeth Boschini, MS, CCC-SLP  
Geneine Snell, M.Ed., CCC-SLP  
Sara Wilhite, MS, CCC-SLP

### **Teachers of the Deaf**

Kelli Blankenship, MA, CED  
Debra Wilkerson Conn, MDE  
Katie Kiske, MA, CED  
Meredith Nichols, MDE  
Robert Shaffer, MA  
Uma Soman, M.Ed., CED, LSLS Cert. AVEd  
Leena Varma, M.Ed., CED

### **Social Worker**

Dolores Smith, MSSW, LCSW

Vanderbilt Bill Wilkerson Center  
**Cochlear Implant Program**  
Overview

## **Introduction**

Since the early 1980's, the Vanderbilt Bill Wilkerson Center (VBWC) has been actively involved in providing cochlear implant services for children and adults as well as being involved in research efforts to improve technology and intervention services. This exciting technology has improved the quality of life for countless adults and children with hearing loss. The experienced team of surgeons, audiologists, speech-language pathologists, and educators of the deaf at the VBWC are well prepared to provide the much needed services for successful usage of the cochlear implant system. We have two programs – one for adults and one for children - to better meet the needs of the families. The children program is located within the Service Division of the National Center for Childhood Deafness and Family Communication. The adult program is located within the Division of Audiology.

Cochlear implants are safe and effective in helping deaf individuals hear sounds – with proper training this can lead to speech understanding. In 1985, the United States Food and Drug Administration (FDA) approved their use for people with hearing loss. Currently, there are three FDA approved cochlear implant systems available in the United States: (1) Harmony by Advanced Bionics Corporation ([www.advancedbionics.com](http://www.advancedbionics.com)), (2) Nucleus by Cochlear Americas ([www.cochlear.com](http://www.cochlear.com)), and (3) PULSARci<sup>100</sup> by Med El Corporation ([www.medel.us.com](http://www.medel.us.com)). The Vanderbilt Bill Wilkerson Center (VBWC) implants all three systems.

## **What is a cochlear implant?**

Hearing loss is usually the result of damage to special cells in the inner ear (called “hair cells”) which sense changes in sound pressure and trigger nerves to send signals to the brain resulting in the perception of sounds. Even though deaf individuals have damage to these hair cells, there are many usable nerve fibers that can be stimulated by the cochlear implant's electrical signals.

Thus, a cochlear implant is a device that uses advanced technologies to enable a person with hearing loss to hear sounds. Cochlear implants have two parts - the internal part which is placed in the inner ear during surgery and the external portion which can be worn in several ways (like a hearing aid or on the body with a portion going to the head). The internal part has a wire with multiple electrodes on it which is placed in the cochlea, the part of the inner ear responsible for hearing. The external part senses sound signals and sends these across the skin to the internal part.

A cochlear implant is much different from a hearing aid. A hearing aid makes sound louder – called amplification. A cochlear implant bypasses the normal middle ear and electrically stimulates the nerve responsible for hearing. Thus, it is for people with more severe forms of hearing loss than those who can use hearing aids.

## **What are the benefits of the cochlear implant?**

People who have cochlear implants tell us that they feel more connected to the world around them. They can hear sounds like birds singing, telephones ringing, and cars approaching - to name but a few. People with the cochlear implant can learn to talk and understand speech – although this depends upon training and practice. There are two big groups who benefit from cochlear implants – young children born deaf and adults who lose their hearing later in life.

Children who benefit the most from cochlear implants are those who have been deaf for short period of time. That is why we try to identify deaf children at a young age. We have also found that children benefit most when they are in good auditory-oral educational programs and have the support of their family. Family support

is **essential** in helping children get the most out of their cochlear implants. Children get better and better results as they use their cochlear implant – those who have used their device for more than three years still show improvement.

As for adults who have gone deaf after hearing and developing speech, cochlear implants often allow them to hear again. Benefits are many and include the ability to improve their jobs, the opportunity to do more social events, increased sense of security, and freedom to enjoy hearing events like musical concerts.

### **What is the cost of the cochlear implant?**

As with most medical devices, cochlear implants are expensive. Many insurance carriers provide full or partial coverage. As a courtesy to the families, VBWC cochlear Implant Program will submit paper-work to your insurance carrier for approval. The amount of coverage, however, depends on your specific insurance carrier. Your implant coordinators will work with you to see how much your insurance will cover.

### **Who is a cochlear implant candidate?**

Before a person is considered to be a candidate for a cochlear implant, there are a series of tests that will need to be performed. These include hearing tests, x-rays of the inner ear, medical tests, psychological evaluation/developmental evaluation and speech testing. Because cochlear implants are intended to be permanent, these tests are important to determine who is likely to benefit. As directed by the FDA, all candidates must have recently tried hearing aids. Children also need to be enrolled in pre-implant training to demonstrate that they will take part in therapy after cochlear implantation.

### **What about the cochlear implant surgery?**

Cochlear implant surgery is done as an outpatient – meaning you go home the same day as surgery is done. Surgery is done under general anesthesia and you are completely asleep for the procedure. The whole process takes a couple of hours. Typically, a small amount of hair is shaved above and behind the ear. .

Cochlear implant surgery has been performed for over 30 years and is considered safe and effective. The risks of cochlear implant surgery include those of general anesthesia as well as risks unique to ear operation – including infection, bleeding, facial nerve injury (the nerve which moves your face is located very close to the inner ear), leakage of fluid from around your brain (called a CSF leak), dizziness after surgery, rupture of the ear drum, and failure to be able to put the cochlear implant in place. While these all can occur, they are very rare, occurring in less than 1 out of 100 people.

The internal part of the cochlear implant is designed to last a lifetime. The external devices will need to be upgraded periodically – cochlear implant recipients are responsible for upgrade costs. Furthermore, cochlear implant recipients are responsible for the cost of maintenance, repairs, batteries, and non-warranty items

### **What happens after the cochlear implant surgery? When do I first start hearing with the cochlear implant?**

Approximately two to three weeks following surgery, the person returns to the VBWC for fitting and activation of the cochlear implant. This is the *first* time the person will be able to hear with the cochlear implant. The cochlear implant audiologist at VBWC will use a computer to set the levels that allow comfortable hearing for each electrode.. These levels are unique for each person. The person returns often during their first six months to adjust the programs which run the implant.. These frequent visits are necessary since it takes time for the ear to adjust to the new sounds. Usually, after the first six months, the person needs to only return once every six months for fine tuning, updating, and monitoring; however, this varies, particularly with children



## **Do I have to be enrolled in therapy in order for me to receive a cochlear implant?**

For both children and adults who have been without hearing, therapy is needed for successful understanding of speech. Adults typically have many years of sound memories to draw upon and usually learn to recognize sound as speech in a short period of time. Therapy consists of listening to sounds, words, phrases, sentences, and conversations, and practicing using different techniques to communicate better.

For children with little or no listening experiences, there are no sound memories on which to draw. Without intensive therapy and appropriate educational placement, children will show little to no benefit from the cochlear implant. In May 1995, the National Institute of Health (NIH) held a conference on cochlear implants. A statement issued by the panel at the end of this conference was "Access to optimal educational and (re)habilitation services is important to adults and is critical to children to maximize the benefits available from cochlear implantation."

As part of the cochlear implant process, the VBWC Cochlear Implant Program requires families to commit to intensive and consistent therapy with a professional who is specifically trained. This must occur before surgery is recommended. The rehabilitation process can take many years, much as it takes normal children many years to learn how to hear and to speak.

## **What should I expect from the cochlear implant?**

Since each person's brain and inner ear is different, it is difficult to predict how well an individual will perform with a cochlear implant. While each person's experience with cochlear implants are different, adults can expect that they will be able to detect everyday sounds in their environment, improve face-to-face communication, and have an increased ability to understand speech through hearing alone. This often leads to greater confidence to interact and socialize. Children can often achieve the same benefits as adults, although the progress is often slower. Many children are able to understand speech by listening alone with no visual cues. There are some children, however, that still require the use of lip reading and/or sign language to help them to understand spoken language. Research does show that the longer the person has had their hearing loss, the more difficult it is for them to benefit from a cochlear implant. The VBWC Cochlear Implant Program team members will discuss reasonable expectations with you at the time of the evaluations.

For more information about the VBWC Cochlear Implant Program, please contact:

Kelly Newhouse  
Program Assistant  
Vanderbilt Bill Wilkerson Center  
Medical Center East, South Tower  
1215 21<sup>st</sup> Avenue South, Room 9302  
Nashville, TN 37232-8025  
615-936-8623 (Voice)  
615-875-1410 (fax)  
[kelly.newhouse@vanderbilt.edu](mailto:kelly.newhouse@vanderbilt.edu)

Vanderbilt Bill Wilkerson Center Cochlear Implant Program (VBWCIP)  
**Description of Cochlear Implant Evaluations**

The following is a list of evaluations and procedures necessary to determine an individual's cochlear implant candidacy. A team member will serve as case manager and will assist the family during the candidacy evaluations. Several trips to Vanderbilt for testing may be required to complete all the evaluations that are necessary before a decision can be made regarding candidacy. Not all evaluations listed below will be necessary for every patient. Every effort will be made to minimize the number of trips required. For children, it is recommended that both parents attend all appointments, if possible.

**Candidacy Evaluations**

**Audiological Evaluation:** A comprehensive hearing assessment will be completed with and without the hearing aids. This may require more than one visit. ***It is essential that the individual brings his/her hearing aids and earmolds to the evaluation.***

**Location**

VBWC  
Medical Center East, South Tower, 9<sup>th</sup> Floor

**Sedated Auditory Brainstem Response and Otoacoustic Emissions Tests:** These tests are objective measures of hearing sensitivity. Some children require sedation to obtain these test results.

VBWC  
Medical Center East, South Tower, 7<sup>th</sup> Floor

**CT Scan:** A specialized x-ray to evaluate the anatomy of the hearing organ. Some children are sedated for this procedure.

Vanderbilt Children's Hospital, 1<sup>st</sup> Floor

**Medical Examination:** The otologist/otolaryngologist will take a medical history, review the CT scan, and determine if there are any medical contraindications that would prohibit the surgery.

VBWC  
Medical Center East, South Tower, 7<sup>th</sup> Floor

**Speech-Language Evaluation:** A formal and informal assessment of the person's communication abilities ***with his/her hearing aids*** will be evaluated. Communication goals will be discussed at this appointment.

VBWC-NCCDFC  
Medical Center East, South Tower, 6<sup>th</sup> Floor

**Developmental/Cognitive/Psychological Evaluation/Family Consultation:** For children, formal and informal evaluations of the child's developmental milestones and capacity to learn will be assessed. Family expectations will also be discussed. ***If your child has had a psychoeducational/developmental assessment, please forward the report to Kelly Newhouse, Program Assistant.***

VBWC –NCCDFC  
Medical Center East, South Tower, 6<sup>th</sup> Floor

**Educational Assessment:** The child's school will be contacted regarding educational placement, support, and the need, if any, for inservicing on cochlear implants.

To be arranged by the case manager, if needed

Additional evaluations may be recommended based on the information obtained during the candidacy assessment.

To be arranged by the case manager

After all the assessments are complete, the VBWCIP team members will meet and determine if the individual is a cochlear implant candidate. If the individual is determined to be a candidate, a surgery date will be scheduled. (In case of a child, he or she will need to be enrolled and attending appropriate therapy before a surgery date is scheduled.) Approximately two to four weeks after the surgery and medically cleared, the individual will need to return to VBWC for cochlear implant programming. If the individual is not a candidate, then the individual will be contacted and alternative options will be discussed.

Vanderbilt Bill Wilkerson Center (VBWC)  
**COCHLEAR IMPLANT RESOURCES**

Advanced Bionics Corporation  
12740 San Fernando Road  
Sylmar, California 91342  
800-678-2575 (V)  
800-678-3575 (TTY)  
[info@advancedbionics.com](mailto:info@advancedbionics.com)  
[www.bionicear.com](http://www.bionicear.com)

Cochlear Americas  
61 Inverness Drive East, Suite 200  
Englewood, Colorado 80112  
800-523-5798 (V, TTY)  
[customer@cochlear.com](mailto:customer@cochlear.com)  
[www.cochlear.com](http://www.cochlear.com)

MED-EL Cochlear Implant  
2222 East NC HWY 54,  
Beta Building Suite 180  
Durham, NC 27713  
888-633-3524  
[implants@medelus.com](mailto:implants@medelus.com)  
[www.medel.com](http://www.medel.com)

OPTION Schools, Inc.  
P.O. Box 191351  
St. Louis, MO 63119  
314-352-8882  
[info@auditoryoralschools.org](mailto:info@auditoryoralschools.org)  
[www.auditoryoralschools.org](http://www.auditoryoralschools.org)

Alexander Graham Bell Association of the Deaf and  
Hard of Hearing (AG Bell)  
3417 Volta Place, NW  
Washington, DC 20007  
202-337-5220 (V)  
202-337-5221 (TTY)  
303-337-5221 (TTY)  
[info@agbell.org](mailto:info@agbell.org)  
[www.agbell.org](http://www.agbell.org)

Cochlear Implant Association  
5335 Wisconsin Ave, NW, Suite 440  
Washington, DC 20015-2052  
202-895-2781  
[info@cici.org](mailto:info@cici.org)  
[www.cici.org](http://www.cici.org)

Hearing Loss Association of America (HLAA)  
7910 Woodmont Ave, Suite 1200  
Bethesda, Maryland 20814  
301-657-2248 (V)  
301-657-2249 (TTY)  
[info@hearingloss.org](mailto:info@hearingloss.org) or  
[cochlearinfo@hearingloss.org](mailto:cochlearinfo@hearingloss.org)  
[www.hearingloss.org](http://www.hearingloss.org)

This partial list of resources is provided by the Vanderbilt Bill Wilkerson Center Cochlear Implant Program team members. For more information regarding cochlear implants and/or our program, please call Kelly Newhouse, Program Assistant, at (615) 936-8623.