

# Cochlear Implants



At Sanford Health, our cochlear implant team cares for patients of all ages. Our team is committed to giving the highest quality care and meeting the needs of each patient. We will monitor your progress so you can have the best results possible.

## What is a Cochlear Implant?

A cochlear implant is an electronic device that is put in during surgery. It can improve severe hearing loss caused by damage to the inner ear (cochlea). Hearing aids are often little help. Causes of hearing loss can include:

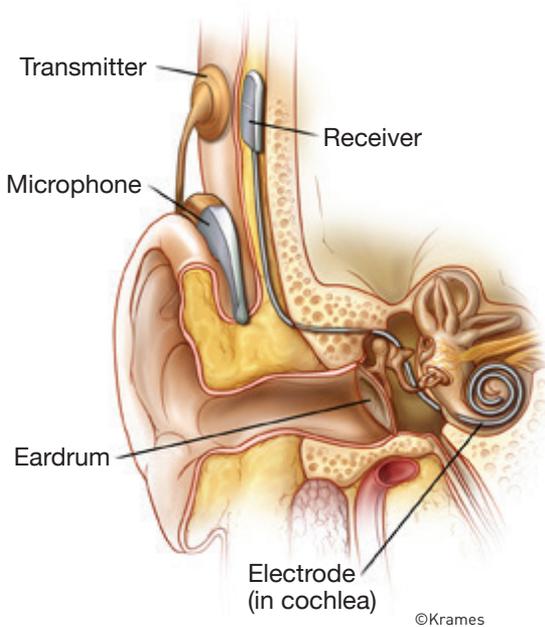
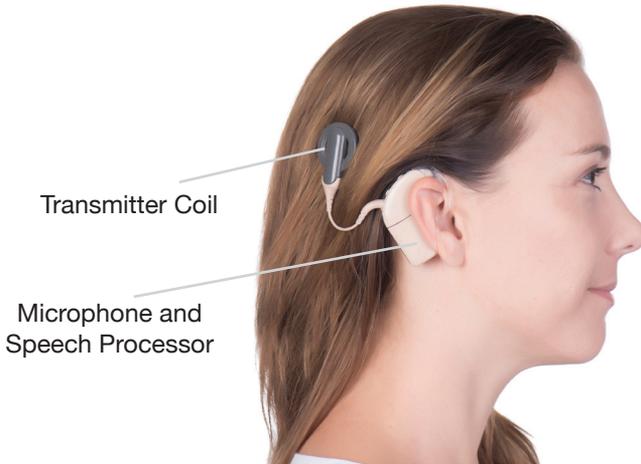
- Noise exposure
- Aging
- Lack of oxygen at birth
- Viral infection
- Inherited

There are two main parts to the cochlear implant:

- A receiver put under the skin during surgery
- A microphone, sound processor and coil worn outside the head

The sound processor sits on top of the ear (like a hearing aid) with the help of an ear hook. At the end of the cable is a coil with a small magnet attached. There is also a small magnet on the receiver. The magnets help hold the sound processor in place. You can also use a hearing aid ear mold to keep the sound processor in place. The receiver will bypass the hair cells in the cochlea and stimulate the nerve.

# Placement of Cochlear Implant





## Who may have a cochlear implant?

### **Children**

- Over 12 months old with profound hearing loss and over 24 months with severe to profound hearing loss in both ears caused by damage to the inner ear
- Use of correctly fit hearing aids for at least 6 months
- Work with early intervention services through NDS Parent Infant Program
- Lack of language development
- No contraindications for surgery
- The parents and child (if able) know what to expect, want to have the surgery and agree to the follow up care

### **Adults**

- 18 years and older – there is no age limit for a cochlear implant
- Severe hearing loss in both ears caused by damage to the inner ear (cochlea)
- Little success from correctly fit hearing aids
- No contraindications for surgery
- The patient knows what to expect, wants to have the surgery and agrees to the follow-up care



## Before Surgery

You will need several visits to the audiologist and the surgeon before having a cochlear implant.

### **Audiology Appointment**

- History of your hearing problem
- Full hearing exam
  - Shows the type of your hearing loss and how bad it is
- Full hearing aid evaluation
  - Ensures your hearing aid settings are the best settings for you
- Aided Speech Perception Assessment
  - Shows how well you hear and understand speech when using your hearing aids
- Talk about the cochlear implant process, equipment, and what to expect

### **Medical Appointment**

- Full health history and exam
- MRI of brain and/ or CT of temporal bone
  - To make sure the nerves and cochlea needed for the implant are present and intact
  - To make sure you have no other issues that would affect the surgery or its result
- Videonystagmography (VNG) balance test if 18 years or older
  - To show how well you are able to keep your balance (The hearing and balance centers are closely linked.)
- Talk about test results and decide if the surgery may be right for you
- Pneumococcal vaccine to prevent meningitis is recommended. (See pneumonia vaccine handout.)



## **Speech and Language Therapy Appointment**

Before surgery, you will see a speech and language therapist with experience in hearing disorders. The therapist will answer any questions you may have about their role. They will also tell you how speech therapy can help during the cochlear implant process. At this visit you will:

- Talk about your health, speech, language and use of hearing aid device history
- Look at your ability to understand what is said and your ability to speak and express yourself
- Talk about how you manage your hearing loss at home

### **Working Together**

The cochlear implant team includes the surgeon, audiologists, speech and language therapists and your family. For children, this team may also include:

- A pediatrician
- School employees
- Early intervention
- The school for the deaf

For adults, it may include the primary doctor or other care providers. The team will communicate before a decision is made to have surgery and after the cochlear implant surgery. Common goals will make sure your needs are met and progress is made. After all of the tests and evaluations are done, the results and recommendations will be shared with you.



## **Insurance**

Many health insurance plans cover cochlear implants. But, plans differ and may need prior approval. Please bring all of your insurance cards to your visits. That way the medical facility will have the correct information. You may want to ask your insurance company some questions, such as:

- Do I have a deductible? What is my deductible?
- Do I have a co-pay, co-insurance or out-of-pocket maximum?
- Do I need prior approval for this surgery?
- Am I in-network or out-of-network with Sanford Health?
- Do I have a pre-existing clause, rider, or exclusion on my policy that affects what my insurance will pay?

## **After Surgery**

### **Medical Care**

Avoid heavy lifting or strenuous activity for 2 weeks after surgery. The surgeon will see you one week after surgery, and look at the incision. Write down your questions and concerns so you can talk with your surgeon at this visit. You will also need follow up at:

- 1 month
- 3 months
- 6 months
- Then yearly



## **Audiology Care**

The audiologist will activate the implant 1 month after surgery. After that, you will be seen at:

- 2 weeks
- 1 month
- 2 months
- 3 months
- 6 months
- 9 months
- 12 months

Visits will then be every 6 months or yearly.

Children will be seen every 3–6 months.

## **Speech Therapy**

Children and adults who receive a cochlear implant should see a speech therapist before surgery. About 3–6 months after activation of the cochlear implant, you will need to return to see the speech therapist. You may need more speech therapy after this. Your visits may range from 1–2 times per week to once a month. How often depends on each patient's needs and wishes.

You will have training in:

- Use of lip reading and sound input
- Receiving and understanding sound input
- How the environment can help you to gain full use of the cochlear device
- What will help at home



## **What to Expect**

Ear surgery is often not painful, but:

- Your neck or jaw may be sore
- Your ear may be numb from the nerves not working
- You may feel shooting pain from the nerves re-growing
- You may hear popping or crackling noises due to healing and fluid in the ear from surgery
- You may be dizzy after surgery (It should slowly get better. If it is getting worse, please call or come in to be seen.)
- You may have a funny taste in your mouth. (The nerve for taste is in the ear.)

A person with normal hearing hears through acoustic stimulation. With an implant, you hear through electrical stimulation. Our goal is that you will be able to hear and understand when someone speaks and hear the other sounds around you.

Most people who have a cochlear implant do not understand speech when the implant is first activated. Sounds may be distorted and unnatural because you are hearing in a different way. It is common to dislike the sound quality at first. Wearing the processor during all waking hours will allow your brain to adjust to the sound quality. After a while, the sound will become clearer.



## Equipment Problems

If your equipment is not working or you need help fixing a problem with your equipment, please call your audiologist or the company that made the implant. Companies who make cochlear implants employ people whose job is to try to help you, or your loved one, find out what is wrong. They can also mail equipment to you overnight. Often times, they are able to help you more quickly than your audiologist.

The three companies that make the equipment are:

- Cochlear Americas: (800) 523-5798
- Advanced Bionics Hearing Hotline: (866) 431-4977
- MED-EL: (888) 633-3524

The receiver placed under the skin during surgery has a 10 year warranty. All equipment worn outside the head has a 3 year warranty. At the end of that time, most insurances will cover repair or replacement cost. Extended warranty plans are also available.



## Common Questions

### **Will my head be shaved for cochlear implant surgery?**

A little bit of hair behind the ear will need to be shaved, but not your whole head.

### **When should I be able to hear?**

You will rely on your other ear until activation at 1 month. Your hearing with the implanted ear will get better as you retrain your brain to understand speech.

### **What is the difference between hearing with a hearing aid or with a cochlear implant?**

A hearing aid will make the sound louder while the implant will make the sound more clear.

### **How does hearing with a cochlear implant work if you have a hearing aid in the other ear?**

You will get used to hearing 2 types of sound. Your brain will receive the information from both devices and you will learn to hear the information as one sound.

### **With a cochlear implant, will I hear a lot of background noise like I do with the hearing aid?**

You will hear background noise with a cochlear implant. But, hearing speech more clearly will help you understand what is said even when there is background noise.



## **Can I wear my hearing aid during the month between surgery and activation?**

No, it is important that the ear have time to heal after the surgery. During this time, you should not use your hearing aid in the implanted ear. However, you may continue wearing a hearing aid in your non-surgical ear.

## **Will I be able to talk on the phone?**

Most people who have an cochlear implant are able to hear on the phone after a period of adjustment. Some use:

- Speaker phone
- Regular phone or cell phone
- Wireless accessories to stream the phone call to the implant and/or hearing aid

There are phone training programs to help you learn phone listening skills.

## **Can I have a MRI after the cochlear implant?**

Before you have an MRI, the magnet will need to be removed. Even then the test may be distorted and not able to be read because of the implant. You will be able to have a CT scan with the cochlear implant in place.

## **Can I go swimming, or wear the speech processor in the shower?**

The speech processor can get wet as long as the correct water accessory is used. You can order it when you meet with the audiologist to finish your cochlear implant order.



## Other Resources

**Family Voices** is a national, nonprofit, family-led organization that promotes quality health care for all children and youth, particularly those with special health care needs. [www.familyvoices.org](http://www.familyvoices.org)

**Hands & Voices** is a national, non-profit, parent-led organization that offers unbiased support to families with children who are deaf or hard of hearing. [www.handsandvoices.org](http://www.handsandvoices.org)

**ND School for the Deaf** offers many resources for children and adults. [www.nd.gov/ndsd/](http://www.nd.gov/ndsd/)

**Hearing Journey** is a blog that brings together people and their loved ones who have had a cochlear implant. You can chat and share stories or search by topics. There is also a live chat. This blog is monitored by a professional so you can trust the information posted. [www.hearingjourney.com](http://www.hearingjourney.com)

**The Communication Corner** helps you build confidence in your ability to communicate over the phone. <http://www.cochlear.com/wps/wcm/connect/us/communication-corner/program/adult-telephone.htm>

The device websites tell you about their products, as well as support and other resources:

- Cochlear Americas [www.Cochlear.com/US](http://www.Cochlear.com/US)
- Advanced Bionics [www.AdvancedBionics.com/BeyondHearingAids](http://www.AdvancedBionics.com/BeyondHearingAids)
- MED-EL [www.medel.com/us/user-support-us](http://www.medel.com/us/user-support-us)

## Cochlear Implant Checklist

### Appointment Dates

- Cochlear Implant evaluation with audiologist\* \_\_\_\_\_
- Cochlear Implant evaluation with surgeon\* \_\_\_\_\_
- MRI IAC and/or CT of the temporal bone\* \_\_\_\_\_
- Videonystagmography (VNG) balance testing if 18 years old or older \_\_\_\_\_
- Speech and language evaluation before surgery \_\_\_\_\_
- Follow up evaluation with surgeon\* \_\_\_\_\_
- Finish Cochlear Implant order form with audiologist\*\* \_\_\_\_\_
- Pneumovax vaccine \*\* \_\_\_\_\_

- Pre-operative history and physical by primary care doctor\*\* \_\_\_\_\_
- Surgery \_\_\_\_\_
- 1 week postoperative visit with surgeon \_\_\_\_\_
- Cochlear Implant activation with audiologist (same day as 1 month visit with surgeon) \_\_\_\_\_
- 1, 3, and 6 months, then yearly postoperative visits with surgeon \_\_\_\_\_
- MAPping evaluations with audiologist at 2 weeks; 1, 2, 3, 6, 9 & 12 months \_\_\_\_\_
- Speech and language evaluations at 3-6 months after surgery \_\_\_\_\_
- MAPping evaluations with audiologist every 6 months after first year \_\_\_\_\_

\*These must be done to be sure the patient is a surgical candidate.

\*\*These must be done before surgery.

