



# Cochlear Implant Program



Akron  
Children's

# Welcome!



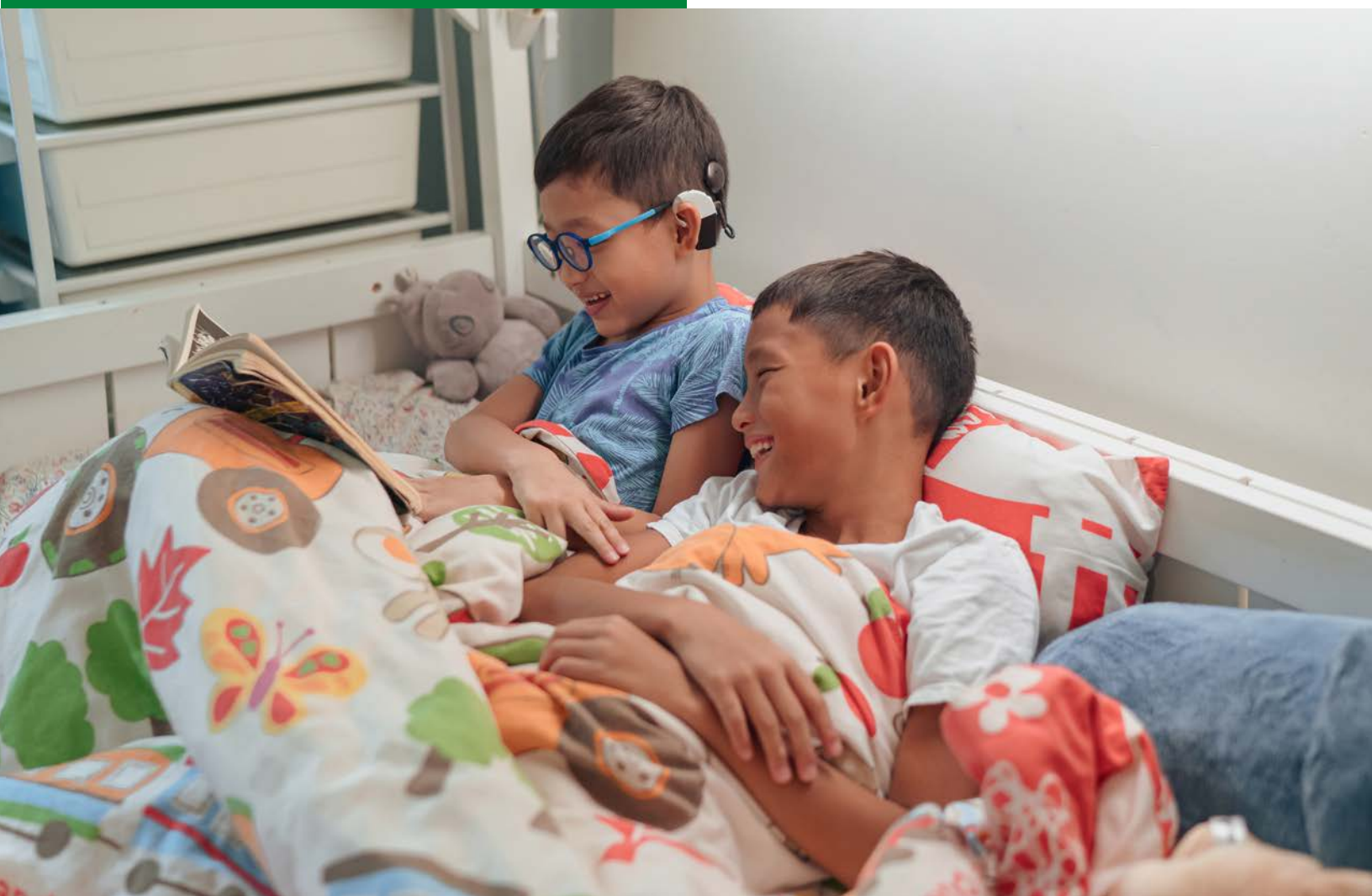
*The goal of the cochlear implant program at Akron Children's is to restore your child's hearing so they can develop the speech and language skills they need to communicate effectively.*

Our cochlear implant team will work with your family to decide if this is the right option for you and your child through a series of evaluations. These evaluations will involve various members from our multi-disciplinary team, including an audiologist, a speech-language pathologist, a social worker, and a surgeon.

We put together this packet to provide you and your family with the information you'll need about cochlear implants and how they function, the program at Akron Children's, and what the process will look like.

If you have any questions or would like any additional information, please don't hesitate to reach out to us in the Akron Children's Ear, Nose and Throat Center at 330-543-4930.

We look forward to working with you and your child!





# Who You'll Meet Along the Way



Throughout the candidacy process for cochlear implants, your family will meet a few different members of our multi-disciplinary team, including :

**An audiologist** will perform hearing assessments and will also help you and your family navigate device selection. The audiologist will also do follow-up visits with your child after their device is implanted and activated to adjust the implant's levels and monitor progress. Your audiologist will act as your main contact throughout this process.

**A social worker** will meet with your family to offer support and help connect you with any external resources you may need.

**A speech-language pathologist** will evaluate your child's speech, language, and voice fluency. They will also work with you and your family on at-home practices to help your child meet their speech/language goals.

**A surgeon** from our Ear, Nose and Throat Center (also known as an otolaryngologist) will also assess your child to make sure a cochlear implant device is the best option from a medical perspective. They will meet with you and your family ahead of your procedure to walk you through what to expect during and after the surgery, too.

# Frequently Asked Questions

**We know there are a lot of questions that come along with considering cochlear implants for your child. Here are some that we're most frequently asked by parents.**

## What is a cochlear implant, and what is it not?

Cochlear implants are safe and helpful devices made up of two parts, an inside (internal) and outside (external) part. The internal part is placed in the inner ear during surgery and the external part is worn on the head, similar to a hearing aid. The external part picks up sound signals and changes these sounds to an electric signal. The internal part has a wire with electrodes that is placed in the cochlea and stimulates the auditory nerve. The auditory nerve sends these signals to the brain, where sound is processed. The internal and external parts both have magnets that attract each other through the skin.

A cochlear implant gives the child access to sound, but it does not restore normal hearing. Hearing from a cochlear implant is not like normal hearing and it takes time to learn or re-learn.

A cochlear implant is not a hearing aid. A hearing aid makes sound louder, which is called amplification, while a cochlear implant bypasses the middle ear and electrically stimulates the hearing nerve. A cochlear implant is for people with severe to profound hearing loss that cannot be treated with hearing aids.

## What are the benefits of a cochlear implant?

Cochlear implants can help users feel more connected to the world around them. Many people with cochlear implants can learn to talk and understand speech – this depends upon hearing history, age, training, and practice.

Each patient's brain and inner ear are different. With that said, it is hard to predict how well a child will do with a cochlear implant. Children with hearing loss can often expect that they will be able to notice everyday sounds, have improved face-to-face communication, and have better ability to understand speech following cochlear implantation. This often leads to greater confidence when communicating with others.

Many children are able to understand speech through listening alone with no visual cues. There are some children who will still need to use lip reading and/or sign language to help them understand spoken language. Most patients who get cochlear implants use them with success, but there is a wide range of results, which will be discussed with you during your appointments with the cochlear implant team.

## What is the cost of a cochlear implant?

As with most medical devices, cochlear implants are costly. Many insurance carriers give full or part coverage, depending on your insurance plan. Our cochlear implant team will send paperwork to your insurance carrier for approval and work with your insurance provider and other possible third-party payers to get coverage for the procedure.

## Who is a cochlear implant candidate?

Because cochlear implants are meant to be permanent, there are a series of tests that must be performed prior to scheduling surgery to determine who is likely to be a successful candidate for using an implant. This involves hearing tests, imaging of the inner ear, medical tests, and speech testing. The FDA also requires that candidates have participated in a hearing aid trial, and children also need to be in pre-implant speech therapy to make sure that an appropriate speech therapy plan is in place.





## What happens during cochlear implant surgery?

Cochlear implant surgery is most often done as an outpatient procedure – meaning they go home the same day as surgery is done or the day after. Surgery is done under general anesthesia, so your child is asleep for the procedure. An incision (cut) is made behind the ear and a pocket is made under the skin to hold and protect the implant. The internal part of the cochlear implant is designed to last a lifetime; research suggests a 10% chance of problems with the internal part over 10 years. The external parts will need to be upgraded as technology changes – your child’s audiologist will talk to you about this when needed.

Cochlear implant surgery has been performed for over 30 years and is believed to be safe and effective. The risks of cochlear implant surgery are those of general anesthesia as well as risks of any ear operation – such as infection, bleeding, facial nerve injury (the nerve which moves your face is found very close to the inner ear), leakage of fluid from around your brain (called a CSF leak), dizziness after surgery, rupture (burst) of the ear drum, and not being able to place the cochlear implant. While these all can happen, they are very rare, occurring in less than 1 out of 100 people.

## When will my child start hearing with the cochlear implant?

Approximately two to three weeks after surgery, your child will return to our office for a medical assessment and activation (“turning on”) of the cochlear implant(s). This is the first time your child will be able to hear with the cochlear implant. The cochlear implant audiologist will use a computer to set the levels that allow comfortable hearing for each electrode. These levels are not the same for each child, so you and your child will return often during the first six months to adjust the levels of the implant. These frequent visits are needed since it takes time for the brain to get used to the new sounds. Once your child shows progress, the rate of appointments may decrease to every six months. Your child will also have yearly visits with the cochlear implant surgeon to make sure the ear is healthy.

## Does my child have to be enrolled in speech therapy to get a cochlear implant?

For children who have been with or without hearing, speech/language therapy is needed for successful use of the cochlear implant. Older children who had speech before they lost their hearing most often have many years of sound memories to draw upon and often learn to notice sound as speech in a short period of time. Therapy is made up of listening to sounds, words, phrases, sentences, and conversations and using many auditory techniques to get better at speaking and listening.

For children with little or no listening experiences, there are no sound memories on which to draw. Without intensive therapy and proper school placement, children will show little to no progress with the cochlear implant.

The cochlear implant team requires families to commit to ongoing therapy for their child, with an expert who is trained in auditory-verbal therapy. This must happen before surgery is done. The rehab can take many years, just as it takes typically hearing children many years to learn how to listen and to speak.

## What will be my child’s mode of communication?

As cochlear implant candidacy criterion has changed over time, the populations able to get cochlear implantation have also changed. Children with abnormal inner ear anatomy or developmental delays as well as hearing loss are being considered for cochlear implantation. The communication goals of these children may differ from their peers. This is vital for realistic expectations/results with a cochlear implant.

Based on your child’s needs and goals, other modes of communication may be considered to enhance language learning/growth; these may involve cued speech, sign language, alternative and augmentative communication, etc. Our goal is to help your child reach his or her communication potential.



# Frequently Asked Questions (continued)



## What things are considered when choosing a cochlear implant manufacturer?

While there are certain criteria that determine if your child is a cochlear implant candidate, there are also factors to consider when choosing a cochlear implant manufacturer. These things include the anatomy and cause of your child's hearing loss and possible need for future serial MRIs. These considerations, as well as many cochlear implant features, will be discussed in length during the device selection appointment with your audiologist.

There are three FDA-approved cochlear implant companies in the USA: Advanced Bionics Corporation, Cochlear Americas, and Med El Corporation. The cochlear implant team at Akron Children's works with all three.

## Can my child have an MRI with a cochlear implant?

Yes, with proper precautions. An MRI scanner uses a strong magnetic field to take pictures of parts of the body; no matter what part of the body is being viewed, the whole body is exposed to the magnetic field. The internal part of a cochlear implant has a magnet, so the magnetic parts of an MRI may harm the cochlear implant device. This will be discussed further with the cochlear implant team as the precautions for MRI are different for each cochlear implant manufacturer.

## How do cochlear implants affect vaccinations?

Children with cochlear implants are at a greater risk for pneumococcal meningitis (bacterial meningitis). Due to this risk, the Centers for Disease Control and Prevention (CDC) advises that these children receive pneumococcal vaccination.

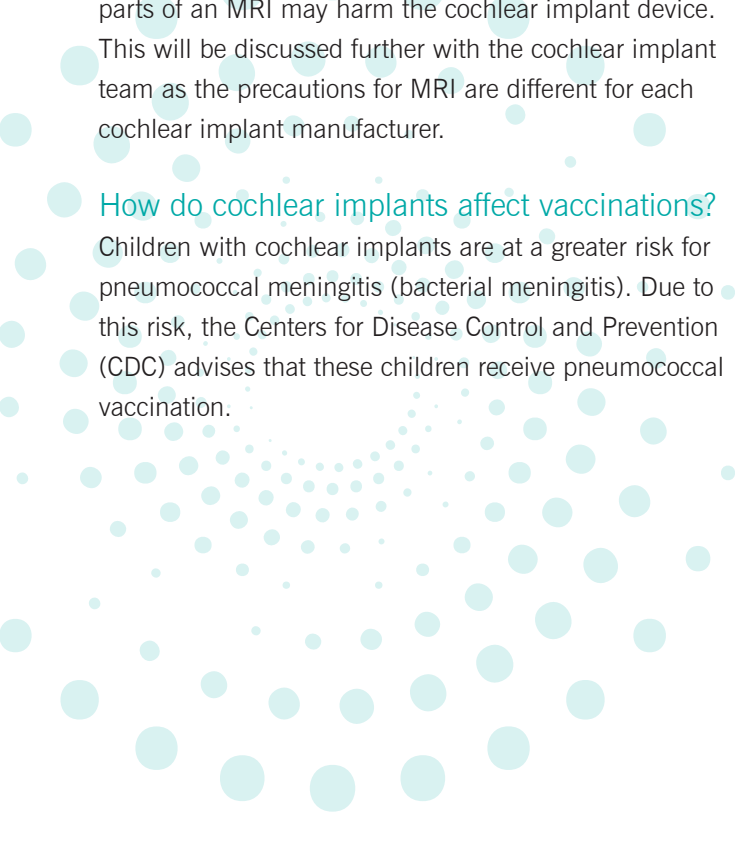
## What is bacterial meningitis?

Meningitis is an infection of the fluid that surrounds the brain and the spinal cord. There are two main types of meningitis, viral and bacterial. Bacterial meningitis is one of the leading causes of deafness in children. Other significant side effects that can result from the infection are brain damage and learning disabilities. While the odds of a cochlear implant user getting bacterial meningitis is very low, less than 1%, this risk may be largely reduced through vaccination.

The CDC has issued specific vaccination recommendations for people with cochlear implants, which can be found online at [www.cdc.gov/meningitis/bacterial.html](http://www.cdc.gov/meningitis/bacterial.html)

At this time, there are three vaccines given - Prevnar 13 (PCV13), Pneumovax (PPSV23), and Haemophilus Influenza Type B (Hib). Recommendations for the timing and type of pneumococcal vaccination differ with age and vaccination history. This should be discussed with your child's doctor.

The Akron Children's cochlear implant team follows the CDC guidelines for vaccination.



## How will my child learn listening and spoken language?

### Eyes Open, Ears On

If your child is to build spoken language through listening, we must do all that we can to make sure that your child has access to sound throughout their day. The devices should be worn from the time the child wakes up to the time the child goes to bed. Children with hearing loss need to hear new words and concepts even more than children with normal hearing. If your child only wears their devices for four hours per day, it will take six years to have as much listening experience as a hearing child has in one year.

### Learning by Doing

You and your child will need to go to speech therapy sessions that focus on auditory-verbal development. Children do better with these therapy sessions and support from their parents/family.

### Playtime is Learning Time

Your child's speech pathologist will teach you how to practice speech/language goals during daily activities at home. Daily one-on-one play sessions with your child in a quiet setting will help model language to your child. Talking with your child during activities, such as making the bed, cooking dinner, cleaning the house, playing games, raking leaves, and so on, is needed to make the most of every language-learning opportunity. These play sessions should last at least 3-4 hours a day in a room with no background noise (e.g., loud air conditioner, other children, TV, radio, etc.). This can be broken up throughout the day to make it easier for your child.



# Evaluations

To give you an idea of the next steps, we've included a list of evaluations and steps necessary to determine your child's cochlear implant candidacy. Keep in mind that not all evaluations on this list may be needed for each patient. And we will do our best to reduce the number of trips to Akron Children's for testing when we can. Transportation assistance is also sometimes available through your insurance or our social workers.

## **Audiological Testing**

A full hearing assessment will be done with and without the hearing aids. This may require more than one visit. It is important that the child's hearing aids are worn for their test.

## **Auditory Brainstem Response**

This test is an objective measure of neural function of the auditory system.

## **CT Scan**

A specialized X-ray to evaluate the anatomy of the hearing organ.

## **MRI Scan**

A specialized X-ray to evaluate the anatomy of the hearing organ.

## **Medical Evaluation**

An otolaryngologist will take a medical history, review the imaging, and decide if there are any medical concerns that would prevent surgery.

## **Speech and Language Evaluation**

The speech and language pathologist will meet with you and your child and do a full evaluation.

Extra evaluations may be needed based on the information from the candidacy assessment. After all the assessments are done, the Akron Children's cochlear implant team will meet to determine if your child meets the criteria for a cochlear implant(s). If your child is a candidate, a surgery date will be scheduled and then insurance authorization will be completed. About two weeks after the surgery, you and your child will need to return to Akron Children's for cochlear implant activation ("turning on") and programming. If your child is not a candidate, our team will discuss other hearing loss management options with you and your family.





Here's a tracker that can be used to help with evaluation and appointment dates.

ACTION	DATE and/or LOCATION
First visit with surgeon	Date:
Cochlear implant evaluation with audiologist <i>*Hearing aids are required</i>	Date:
MRI/CT	Date:
Speech therapy evaluation <i>*Hearing aids are required</i>	Date: Plan/Location:
Consultation with social work	Date:
Vaccines: Prevnar 13 and/or Pneumovax	Date(s):
Genetic testing	Date:
EKG (if applicable)	Date:
Ophthalmology (if applicable)	Date:

All of the above actions are required. Consistent use of hearing aids and a plan for language development must also be in place for the following to be scheduled:

APPOINTMENTS	DATE and/or LOCATION
Device selection with audiologist	Date:
Pre-surgery visit	Date: Location:
Cochlear Implant Surgery	Date:
Post-op visit with surgeon	Date:
Cochlear Implant Activation	Date:
Two Week Visit with audiologist	Date:

*\*Please arrive 10 minutes before your scheduled visit to check in.*

# Contact Information and Additional Resources

If you have any questions at all along your cochlear implant process, please don't hesitate to reach out to our office. You can contact us during business hours at (330) 543-4930.

In addition to the resources at Akron Children's, here are some more resources that may be helpful throughout this process:

## Hearing First

[www.hearingfirst.org](http://www.hearingfirst.org)

## Help Me Grow

<https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/help-me-grow/help-me-grow>

## Ohio Hands & Voices

[www.ohiohandsandvoices.org](http://www.ohiohandsandvoices.org)

## Success for Kids with Hearing Loss

[www.successforkidswithhearingloss.com](http://www.successforkidswithhearingloss.com)

## Cochlear Implant Manufacturers

### Advanced Bionics Corporation

[www.advancedbionics.com](http://www.advancedbionics.com)

Email: [hear@advancedbionics.com](mailto:hear@advancedbionics.com)

Phone: (866) 844-4327

TTY: \*Call through relay service

Consumer Specialist: Rachel Potvin

E-Mail: [rachel.potvin@advancedbionics.com](mailto:rachel.potvin@advancedbionics.com)

Resources: The Listening Room | [www.thelistenin-groom.com](http://www.thelistenin-groom.com)

### Cochlear Americas

[www.cochlear.com/us](http://www.cochlear.com/us)

Email: [candidatesupport@cochlear.com](mailto:candidatesupport@cochlear.com)

Phone: (800) 523-5798 | TTY: (800) 523-5798

Consumer Specialist: Chelsea Bates

E-Mail: [cbates@cochlear.com](mailto:cbates@cochlear.com)

Resources: Communication Corner

[www.cochlear.com/us/communication-corner](http://www.cochlear.com/us/communication-corner)

### MED-EL

[www.medel.com](http://www.medel.com) | Email: [customerservice.us@medel.com](mailto:customerservice.us@medel.com)

Phone: (888) 633-3524 | TTY: \*Call through relay service

Consumer Specialist: Landon Lacey

E-Mail: [landon.lacey@medel.com](mailto:landon.lacey@medel.com)

Resources: SoundScape | [www.medel.com/us/soundscape](http://www.medel.com/us/soundscape)

*\* All manufacturers offer a 5-year external device warranty and a 10-year internal device warranty.*





Scan the QR code for a complete list of our providers and locations.





