

Device Options for Children with Hearing Loss

What are my child's options for hearing devices?

Your child's audiologist will talk with you about the best hearing device options based on your child's age, anatomy, degree of hearing loss and listening needs. Sometimes these devices are called "amplification." The audiologist may also talk with your child's otolaryngologist about their recommendation for a hearing device. Most devices require medical clearance from an otolaryngologist prior to fitting. Your audiologist will go through the options with you and mark the best choice(s) on this document.

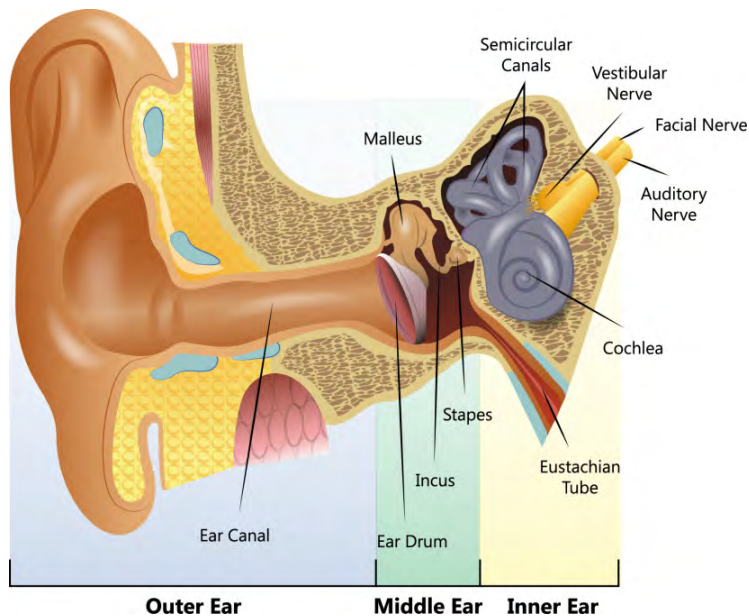
Does my insurance cover hearing devices?

- Insurance coverage for hearing devices varies. Call your insurance to check for benefits.
- Coverage may be different for FM systems than for other hearing devices.
- Your audiologist can give you information about other financial resources for getting hearing devices.

Types of hearing loss

Hearing loss can be in one ear (unilateral) or in both ears (bilateral). The three most common types of hearing loss are (see photo of ear):

- **Conductive hearing loss** is hearing loss in the outer ear, middle ear or both.
- **Sensorineural hearing loss** refers to hearing loss in the inner ear, or hearing nerve or both.
- **Mixed hearing loss** refers to a combination of conductive and sensorineural hearing loss.



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- There can be different types of hearing loss in each ear. The type of hearing loss your child has will help us determine which device options are best for them.

Your child has:

_____ in the left ear.

_____ in the right ear.

Types of hearing devices

Ear level hearing aids

Behind the ear (BTE)

- Option for my child
- Does not apply for my child

This is a traditional hearing aid that goes behind the ear (BTE). The style used will depend on your child's age, listening needs and size of their ear canal. This style is chosen for children who have a pinna and an ear canal.



In the ear (ITE)

- Option for my child
- Does not apply for my child

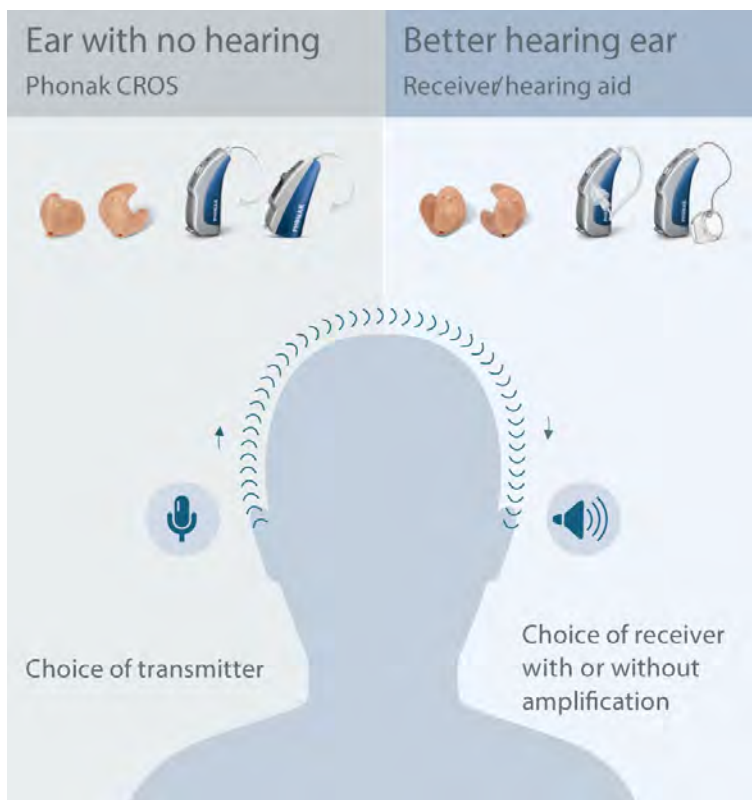
This hearing aid goes in the ear (ITE). This style may be considered for older children who have an ear canal and whose ears are no longer growing.



CROS hearing system

- Option for my child
- Does not apply for my child

CROS stands for “Contralateral Routing of Signal.” The CROS uses a microphone on the ear with the hearing loss and sound is sent wirelessly to a receiver worn on the hearing ear. This system may be considered for a child with hearing loss in one ear who may not use or benefit from a behind or in the ear hearing aid.



BICROS

- Option for my child
- Does not apply for my child

BiCROS stands for “Bilateral Contralateral Routing of Signal.” This system includes a microphone worn on the poorer hearing ear and a behind-the-ear hearing aid worn on the better hearing ear. The hearing aid provides amplification and receives the signal from the poorer hearing ear.

Bone conduction hearing devices

Bone conduction hearing devices transfer sound waves through the bones in the skull (called bone conduction) to the inner ear. The sound is sent through a device called a bone oscillator. These devices are designed for people with

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certain types of hearing loss who cannot benefit from a behind-the-ear hearing aid. Your child may benefit from this device if they have:

- Conductive or mixed hearing loss from congenital ear malformations
- Chronic middle ear disease
- Chronic external ear canal infections
- Deafness in one ear

Traditional bone conduction hearing device

- Option for my child
- Does not apply for my child

This hearing device includes a microphone and a bone oscillator connected by a wire either on a hard headband or softband. The microphone is on the opposite side of the oscillator.



Bone conduction sound processor (BCSP)

This device includes a microphone, digital processor and bone oscillator in the same casing. The BCSP can be mounted non-surgically (band retained) or surgically (implant retained).

Band Retained BCSP

- Option for my child
- Does not apply for my child

The sound processor is retained on either a softband or a hard headband.



Osseointegrated implant retained BCSP

- Option for my child
- Does not apply for my child

Bone conducting sound processors (BCSPs) can be used with an osseointegrated implant that is placed surgically in the skull behind the ear. The osseointegrated implant is part of the BCSP hearing system. The BCSP attaches to the outside of the head either to an abutment that comes through the scalp or to a magnet that is under the scalp. The audiologist will talk with your child's otolaryngologist to see if this is an option.



FM/DM System

- Option as a primary device for my child
- Option for my child to use with another device
- Does not apply for my child

FM/DM stands for “Frequency Modulated Digitally/Modulated System.” The purpose of an FM/DM system is to improve the signal to noise ratio. These systems do not amplify the sound.

This system can be used alone or with other hearing devices. If it connects to a hearing device, then the hearing device will amplify the sound. The system includes a microphone, transmitter and receiver. The talker (such as your child's teacher) wears a small microphone that delivers sounds directly to your child. Your child wears a receiver that picks up sound from the talker.



To Learn More

- Audiology
206-987-5173
- Ask your child's healthcare provider
- www.seattlechildrens.org

Free Interpreter Services

- In the hospital, ask your child's nurse.
- From outside the hospital, call the toll-free Family Interpreting Line 1-866-583-1527. Tell the interpreter the name or extension you need.

Cochlear Implant

- Referral for cochlear implant candidacy determination
- Does not apply for my child

Cochlear implants are small, surgically implanted electronic devices that can help provide deaf or hard-of-hearing children with a sense of sound. They work by directly stimulating the hearing nerves with electrical signals. A cochlear implant consists of two parts. The first part goes inside the skull and is called the internal receiver or stimulator. This part is placed during surgery. The second part is a speech processor worn on the outside of the head.

In order to be considered for a cochlear implant, your child must:

- Have a bilateral severe to profound sensorineural hearing loss
- Be at least 12 months old at the time of surgery
- Have completed a trial using a hearing aid
- Children from 2 to 18 years old must show a lack of hearing progress with well-fit hearing aids
- Children with progressive hearing loss must show that they are not getting adequate benefit from well-fit hearing aids

A surgeon, speech-language pathologist, psychologist, and audiologist will evaluate your child to see if a cochlear implant is an option for them.

How a cochlear implant works

1. The external sound processor is worn behind the ear. It captures sound, then filters and processes the sounds, turning it into digital code.
2. The sound processor transmits the digitally-coded sound through the coil on the outside of the head to the implant.
3. The internal implant converts the digitally-coded sound into electrical impulses and sends them along the electrode array that sits gently in the cochlea (the inner ear).
4. The implant's electrodes stimulate the cochlea's hearing nerve, bypassing the damaged cells that cause hearing loss, sending impulses to the brain where they are interpreted as sound.



Cochlear implant image used with permission from www.cochlear.com.

Seattle Children's offers interpreter services for Deaf, hard of hearing or non-English speaking patients, family members and legal representatives free of charge. Seattle Children's will make this information available in alternate formats upon request. Call the Family Resource Center at 206-987-2201.

This handout has been reviewed by clinical staff at Seattle Children's. However, your child's needs are unique. Before you act or rely upon this information, please talk with your child's healthcare provider.

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