

What's Hearing Loss?

You know what hearing is, but what is hearing *loss*? **Hearing loss**, or **hearing impairment** (say: im-**pare**-ment), happens when there is a problem with one or more parts of the ear or ears, the nerves coming from the ears, or the part of the brain that controls hearing. "Impairment" means something is not working correctly or as well as it should.

Someone who has hearing loss might be able to hear some sounds or nothing at all. People also may use the words deaf, deafness, or hard of hearing when they're talking about hearing loss.

About 3 in 1,000 babies are born with hearing loss, making it the most common birth defect. A hearing problem can also develop later in life.

How Hearing Works

To understand how and why hearing loss happens, it helps to know how the ear works. The ear is made up of three different sections: the outer ear, the middle ear, and the inner ear. These parts work together so you can hear and process sounds. The outer ear, or **pinna** (the part you can see), picks up sound waves and the waves then travel through the outer ear canal.

When the sound waves hit the eardrum in the middle ear, the eardrum starts to vibrate. When the eardrum vibrates, it moves three tiny bones in your ear. These bones are called the **hammer** (or malleus), **anvil** (or incus), and **stirrup** (or stapes). They help sound move along on its journey into the inner ear.

The vibrations then travel to the **cochlea**, which is filled with liquid and lined with cells that have thousands of tiny hairs on their surfaces. There are two types of hair cells: the outer and inner cells. The sound vibrations make the tiny hairs move. The outer hair cells take the sound information, amplify it (make it louder), and tune it. The inner hair cells send the sound information to your hearing nerve, which then sends it to your brain, allowing you to hear.

Types of Hearing Loss

There are a few different types of hearing loss: **conductive**, **sensorineural**, **mixed** (conductive and sensory combined), **neural**, and **central**.

- **Conductive** (say: kun-**duk**-tiv) **hearing loss**. This happens when there is a problem with a part of the outer or middle ear that is blocking sound from going to the inner ear. This type of hearing loss and it is usually mild and temporary because in most cases medical treatment can help.
- **Sensorineural** (say: **sen**-suh-ree-**nur**-ul) **hearing loss**. This happens when there is a problem in the inner ear or with the connection from the inner ear to the brain. This can happen when the tiny hair cells in the cochlea are damaged or destroyed. Depending on the loss, a kid might: hear most sounds (although they would be muffled); hear in quiet but not in noise; hear only some sounds; or hear no sounds at all. Sensorineural hearing impairment is almost always permanent and a kid's ability to talk normally may be affected.
- **Central hearing loss**. This happens when the cochlea is working properly, but parts of the brain are not. This rare type of hearing loss is difficult to treat.

What Causes Hearing Loss?

Hearing loss can happen because a person was born with parts of the ear that didn't form correctly and don't work well. Other problems can happen later because of an injury or illness, including:

- middle ear fluid
- serious infections, such as meningitis
- head injury

- listening to very loud music, especially through headphones or ear buds
- repeated exposure to loud sounds, such as machinery

Lots of kids have had ear infections, which also can cause hearing loss. Permanent hearing loss from an ear infection is rare, though.

How Does a Doctor Test for Hearing Loss?

If a doctor thinks that a baby or child may have hearing loss, the doctor will recommend that the parents take the kid to an audiologist. An **audiologist** (say: awd-ee-**ah**-luh-jist) is someone who is specially trained to test and help with the problems related to hearing loss.

A pediatric audiologist tests a child's hearing by doing different types of tests. They even have hearing tests for babies! Maybe you've had a hearing test, when you wore headphones and had to raise your left or right hand to show that you could hear in each ear.

If an audiologist finds that a child has hearing loss, he or she will recommend treatment and suggest the family work with a special team. This team can help figure out the best way for the kid to learn and communicate.

How Is Hearing Loss Treated?

The kind of treatment depends on the type of hearing loss, how severe it is, and the child's other needs. Common treatments include medicine, operations, hearing aids, or other assistive listening devices, which emphasize voices and help kids hear better in noisy settings. With early treatment, most kids will be able to hear normally again, and most importantly, will be able to develop speech and language.

Hearing aids are kind of like tiny amplifiers. They help make sounds louder and can even pick up the sounds so that what kids hear is clearer. Hearing aids deliver amplified sounds (via sound vibrations) from the eardrum and middle ear to the inner ear or cochlea. Hearing aid technology is available that can adjust the volume of sounds automatically.

For some kids who can't hear or understand words even with the help of hearing aids, there is a device called a **cochlear implant** (say: **ko**-klee-ur **im**-plant). This is a very tiny piece of electronic equipment that is put into the cochlea during an operation. It takes over the job of the damaged or destroyed hair cells in the cochlea by turning sounds into electrical signals that stimulate the hearing nerve directly.

Learning and Communicating

A kid with hearing loss may attend a special school, special classes within a regular school, or be part of a regular classroom. Depending on how severe their hearing loss is, some kids may work with audiologists or speech-language pathologists to help them develop their hearing and speaking skills.

Some people with hearing loss may need to use special techniques like these to communicate:

- **speechreading** (also called lip-reading), which involves looking closely at a person's lips, facial expressions, and gestures to help figure out spoken words
- **Sign Language**, which is a language of hand movements that allows deaf people to communicate without speaking. Remember: American Sign Language (ASL) is different from sign language used in other countries, even different from British Sign Language!
- **Cued Speech** and **Signed Exact English**, which use handshapes to translate what's being said. They're meant to be used with spoken language to help people understand anything they can't comprehend through lip reading.

What about talking on the phone? Thanks to a telecommunication device (also called a TDD), a conversation can be typed out instead of spoken. The messages appear on a special screen or on a printout.

You might wonder how a hearing-impaired person could see a movie or watch TV. Closed-captioned TV shows and movies provide text at the bottom of the screen, so people with hearing loss can read along to follow the action. Technology is changing all the time, and you will probably see newer and better tools to help hearing-impaired kids and their families and friends.

So hearing-impaired kids can go to school, talk on the phone, and watch a movie. If that sounds a lot like a typical kid's life, you're right!

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