

How We Hear and Hearing Loss

This section may help answer questions about your child's hearing and what your child's hearing loss means.

Parts of the Ear

There are three parts to the ear—the outer ear, the middle ear and the inner ear. Each of the three main parts has several smaller parts:

Outer ear

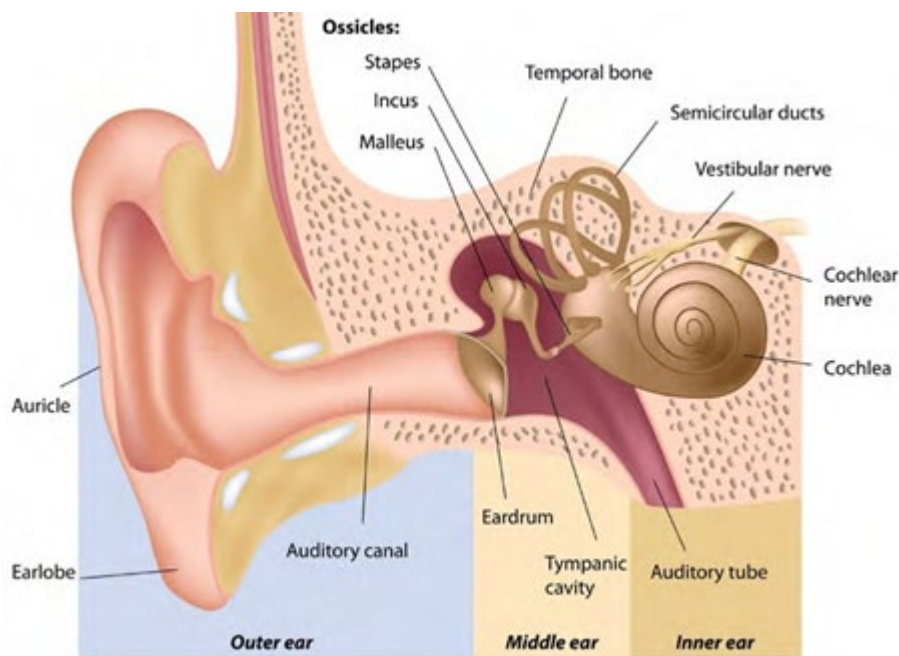
- The part we see (pinna or auricle)
- Ear canal

Middle ear

- Eardrum
- Three tiny bones (ossicles):
 - Hammer (malleus)
 - Anvil (incus)
 - Stirrup (stapes)
- Auditory tube (Eustachian tube)

Inner ear

- Parts that help with balance (vestibular system including semicircular ducts)
- Balance nerve (vestibular nerve)
- Hearing organ (cochlea)
- Hearing nerve (cochlear nerve)



How Does My Child Hear Sound?

- Sound comes into the ear and travels down the ear canal to the eardrum (tympanic membrane). This is where it reaches the middle ear.
- The sound causes the eardrum to vibrate, which causes the three middle ear bones (ossicles) to move.
- The movement of the middle ear bones causes pressure changes in the fluid of the inner ear or cochlea.
- These pressure changes cause a structure in the inner ear (basilar membrane) to stimulate hair cells in the cochlea.
- The movement of the cochlear hair cells sends the signal through the hearing (auditory) nerve to the brain.

[MED-EL](#) and [Siemens](#) have helpful videos on YouTube that shows how hearing works.

About Hearing Loss

Hearing loss is more common than many people think. Approximately 33 babies are born with hearing loss in the United States every day. The American Academy of Pediatrics (AAP) recommends that:

- By 1 month of age – baby's hearing screened for hearing loss, preferably before hospital discharge
- By 3 months of age – baby should have a diagnosis
- By 6 months of age – baby should be enrolled in early intervention services and wearing hearing aids (if appropriate)

What is hearing loss?

Hearing loss is a reduced ability to detect sounds. A hearing loss can be described in various ways, including by its type and degree.

You may hear different terms used for people who are deaf or hard of hearing. The appropriate term to use depends on how the person identifies himself, rather than a specific degree of hearing loss.

- **deaf**, when spelled with a little or lower case d, means “audiologically deaf.” This term is used to describe a severe to profound degree of hearing loss. This term is often used when a child cannot hear speech sounds.
- **Deaf**, spelled with a capital or upper case D, is used to identify a member of the Deaf Community who is “culturally Deaf.” The Deaf Community is a diverse group of people who are part of a cultural group that shares a common language and similar experiences. Hearing people who know sign and/or work with individuals who are deaf or hard of hearing can take part in the Deaf Community.
- **hard of hearing** is used if a child has a mild to severe degree of hearing loss.
- **hearing impaired** is a term that is not culturally sensitive to the Deaf community. Deaf or hard of hearing are the preferred words to describe an individual with a hearing loss.

Types of Hearing Loss

Conductive Hearing Loss

- Hearing loss caused by something that stops sounds from getting through the outer or middle ear
- May be medically correctable, but sometimes a hearing aid is used to help the person hear

Sensory Hearing Loss

- Hearing loss that occurs when there is a problem in the inner ear (cochlea)
- This type of hearing loss is generally not medically correctable and requires amplification to access speech

Neural Hearing Loss

- Sound enters the inner ear normally but the transmission of signals from the inner ear to the brain is impaired
- Permanent type of hearing loss and cannot be treated with medications or surgery
 - Example of neural hearing loss is Auditory Neuropathy Spectrum Disorder (ANSD)
 - People with ANSD may have normal hearing, or hearing loss ranging from mild to severe; they always have trouble understanding speech clearly.
 - Often, speech perception is worse than would be predicted by the degree of hearing loss.

Mixed Hearing Loss

- Combination of the types of hearing impairments and occurs when more than one type of hearing impairment contributes to the hearing loss.

Your child's decreased hearing levels may affect one ear or both ears.

- **Unilateral** means hearing loss in one ear.
- **Bilateral** means hearing loss in both ears.

Degrees of Hearing

Your child's hearing level is measured in degrees. There are six degrees of hearing loss. Degrees of hearing loss are measured in decibels (dB). Decibels refer to the intensity or loudness of the sound. The larger the number is, the louder the sound.

- **Slight** hearing level: Sounds softer than 16–25 dB are not heard
- **Mild** hearing level: Sounds softer than 26–40 dB are not heard
- **Moderate** hearing level: Sounds softer than 41–55 dB are not heard
- **Moderately-severe** hearing level: Sounds softer than 56–70 dB are not heard
- **Severe** hearing level: Sounds softer than 71–90 dB are not heard
- **Profound** hearing level: Sounds softer than 91 dB are not heard

Your child's hearing may not fall into just one of these categories. For instance, his hearing level could be called mild to moderate or severe to profound. [Here](#) is how different degrees of hearing levels can affect your child's spoken language. Keep in mind that the same hearing level can affect children in different ways.

Starkey Hearing Technologies has a [hearing level simulator](#) you can use to understand how things might sound to someone who is deaf or hard of hearing.

Questions You May Have About Your Child's Hearing

What percentage of hearing does my child have?

- Hearing is difficult to describe in terms of percentage. Instead, you will hear it defined in terms of the type, degree and shape of hearing loss. If someone refers to your child's hearing as a percentage, talk to your audiologist for a better description.

Will my child's hearing get better or worse?

- This is difficult to determine. If your child has a conductive loss, it can sometimes get better. If your child has a sensorineural hearing loss, it will probably not get better. Some hearing losses can get worse over time. These are called "progressive hearing losses." Checking your child's hearing on a regular basis helps to make sure that any change in hearing is known and that he is getting appropriate amplification. Your audiologist or Ear, Nose, and Throat (ENT) doctor may be able to give you more information about the chances of your child's hearing getting worse over time.

What caused my child to be deaf or hard of hearing?

- There are multiple causes of hearing loss, talk to your Ear Nose and Throat provider regarding potential causes. Further testing (MRI, CT scan, genetic testing, and vision testing) may be needed to explore the potential cause of hearing loss.