babyhearing.org

About Hearing Loss

Parents who have just received word that their child has a hearing loss can display a wide range of reactions. A common feeling that most parents experience is wondering what caused their child's hearing loss. The first step in understanding hearing loss is to understand how we hear and the types of hearing loss.

How the Ear Works

- **Outer Ear:** Sound waves travel through the ear canal and makes the eardrum move.
- **Middle Ear:** When the eardrum moves, the ossicles (middle ear bones) vibrate. This vibration creates movement of fluid in the inner ear.
- **Inner Ear:** The movement of fluid causes the inner ear to send nerve signals to the brain. Once the brain receives the message, it identifies that message as sound

Types of Hearing Loss

Hearing losses may be located in the external, middle or inner ear or both. These different types of hearing loss are described below.

Conductive Hearing Loss

If there is a problem in the external or middle ear, a conductive hearing loss exists. This means sound is not being conducted properly to the inner ear. Common causes of conductive hearing loss are wax (cerumen) in the external ear, fluid in the middle ear, or a hole or tear (perforation) in the eardrum. Most types of conductive hearing loss can be treated medically or surgically. Below are pictures of a normal ear drum, middle ear with fluid, and an eardrum with a perforation.



Normal Eardrum | Middle Ear Fluid | Eardrum Perforation

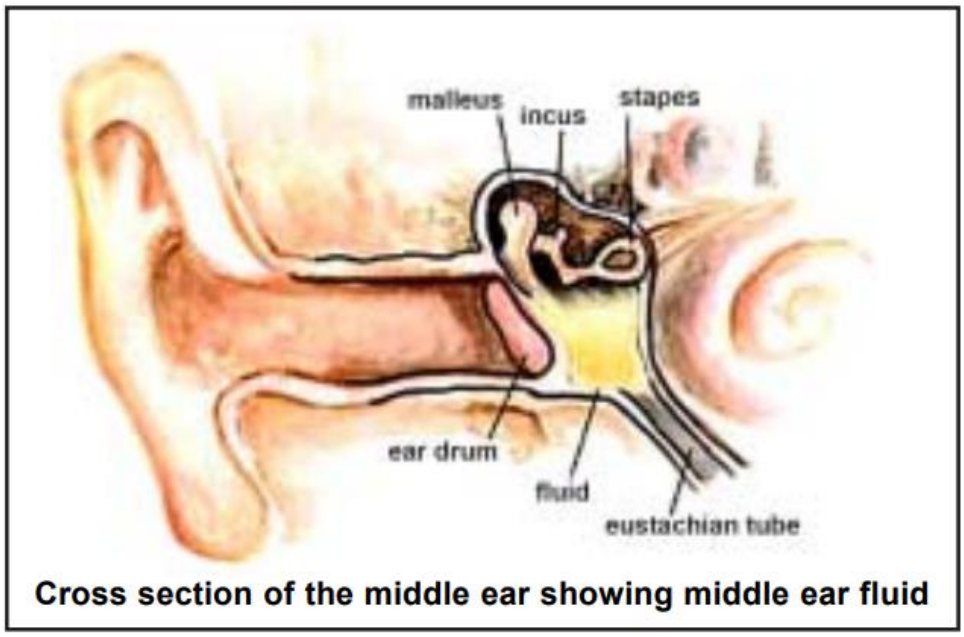
Michael Hawke, M.D., *Diseases of the Ear*, published by Manticore Communications

Sensorineural Hearing Loss

If a problem occurs in the inner ear, the hearing loss is sensorineural. Common causes of sensorineural hearing loss in young children are certain pre-natal infections, lack of oxygen during birth, or genetic factors. Sensorineural hearing loss usually cannot be cured medically or surgically, but the use of hearing aids or other amplifying systems can help children hear and develop speech and language.

Mixed Hearing Loss

Mixed hearing loss is a combination of conductive and sensorineural hearing loss. Children with sensorineural hearing loss also can have middle ear problems (such as fluid in the middle ear). This can make hearing loss worse.



Cross section of the middle ear showing middle ear fluid

Determining the Type of Hearing Loss

Air Conduction Test

During a hearing test, sounds are presented in different ways. Air conduction testing looks at how the whole hearing system responds to sound.

When testing with earphones or loudspeakers, the sounds go into the ear canal, through the middle ear to reach the inner ear. This is known as **air conduction** testing.

Bone Conduction Test

If air conduction testing shows a hearing loss, another device called a bone vibrator is placed behind the ear to send sounds directly to the inner ear. Sounds are sent through the bones of the head and do not pass through the eardrum or the middle ear. This is called **bone conduction** testing.