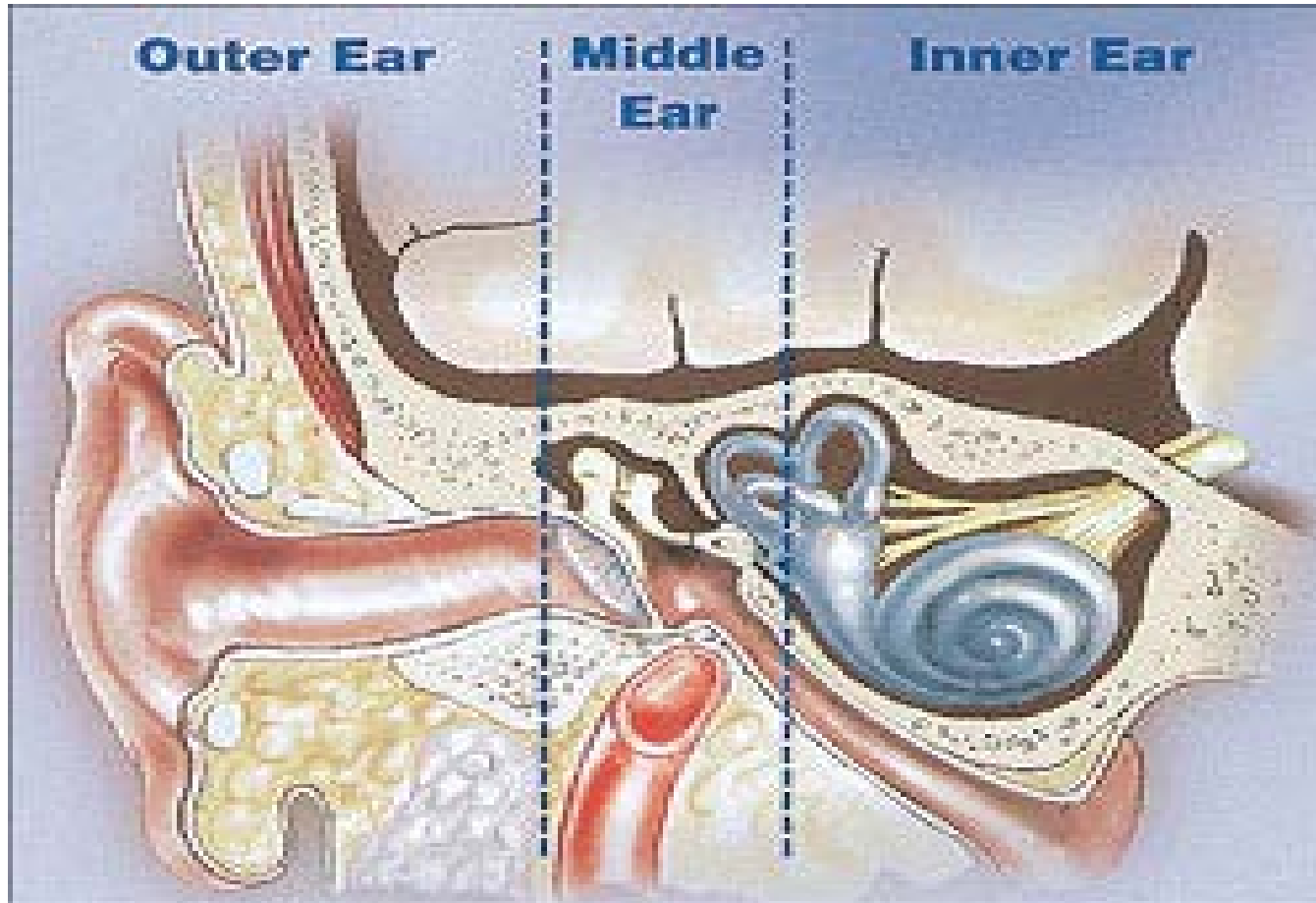


Understanding Hearing Loss

How We Hear



Types of Hearing Loss

■ **Conductive**

- Blockage in outer or middle ear
- Middle ear infections, wax in ear canal, malformations of the canal or middle ear bones
- Medically or surgically treatable

■ **Sensorineural**

- Inner ear or hearing nerve
- Damage/dysfunction of hair cells (genetics, complications or infections at or after birth)
- Not medically treatable

Degree of Hearing Loss

- **Mild**—will have trouble hearing soft or distant speech
- **Moderate**—will have trouble hearing speech at normal conversation level
- **Severe**—will have trouble hearing loud speech
- **Profound**—will have trouble hearing environmental sounds
- ***Important: Even mild hearing loss can impact speech and language skills.***

Hearing Tests That Audiologists Use

- Auditory Brainstem Response (ABR)
- Otoacoustic Emissions (OAEs)
- Tympanometry
- Acoustic reflex testing
- Behavioral testing
 - Behavioral observation audiometry (BOA)
 - Visual Reinforcement audiometry (VRA)
 - Conditioned play audiometry (CPA)
 - Conventional audiometry

Understanding the Audiogram

Understanding Your Audiogram

Name _____ Date _____

Audiologist _____

Frequency (Pitch) in Hertz (Hz)

Low pitch → High pitch

250 500 1000 2000 4000 8000

Hearing level in decibels (dB)

Category

10 soft

0

10 Normal

20 Slight

30 Mild

40 Moderate

50 Moderately severe

60 Severe

70

80

90

100 Profound

110

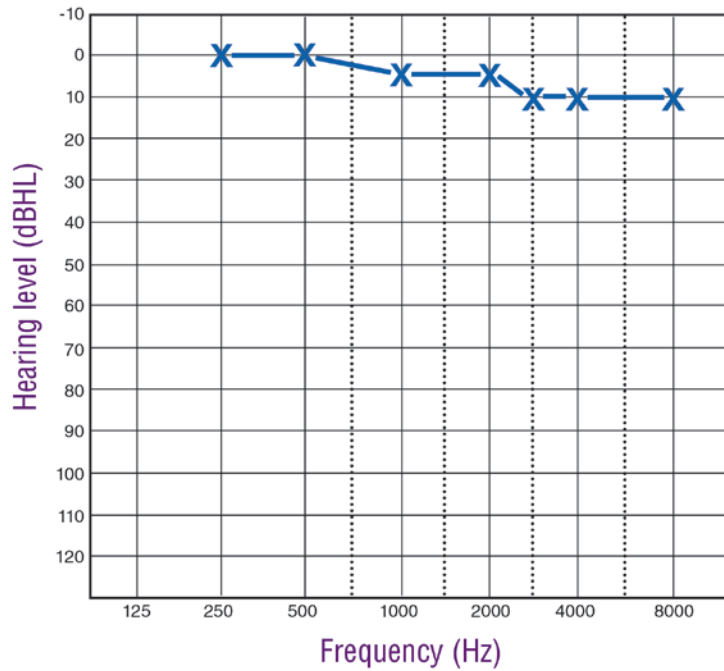
120 loud

Notes

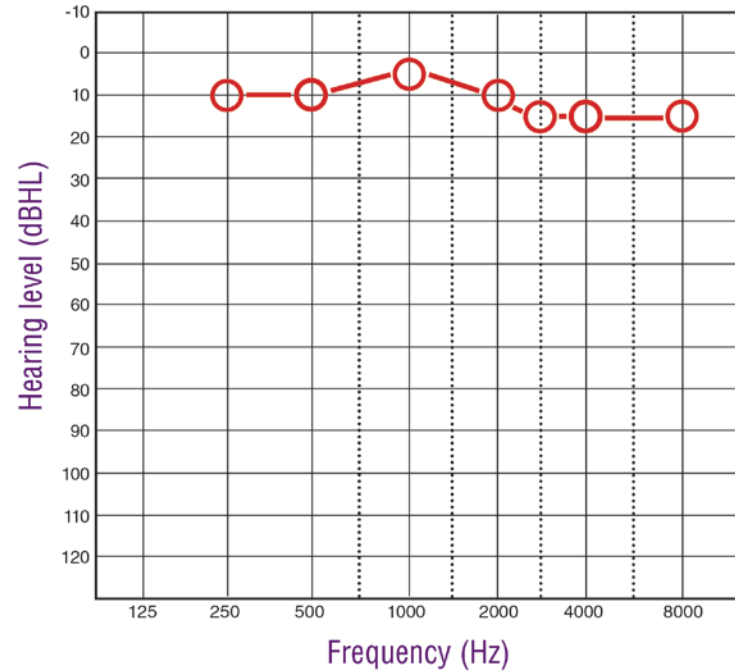
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Normal Hearing

Normal Hearing
Left Ear

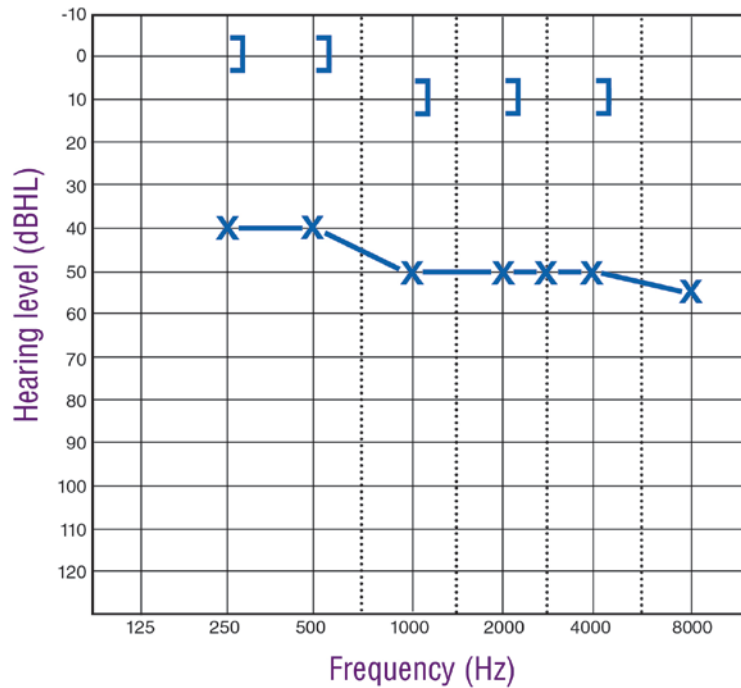


Normal Hearing
Right Ear

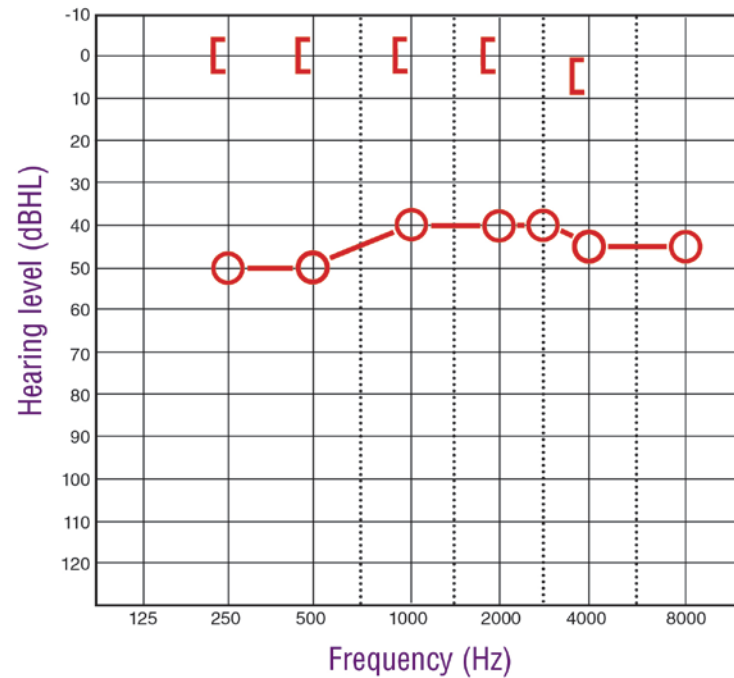


Conductive Hearing Loss

Conductive Hearing Loss
Left Ear

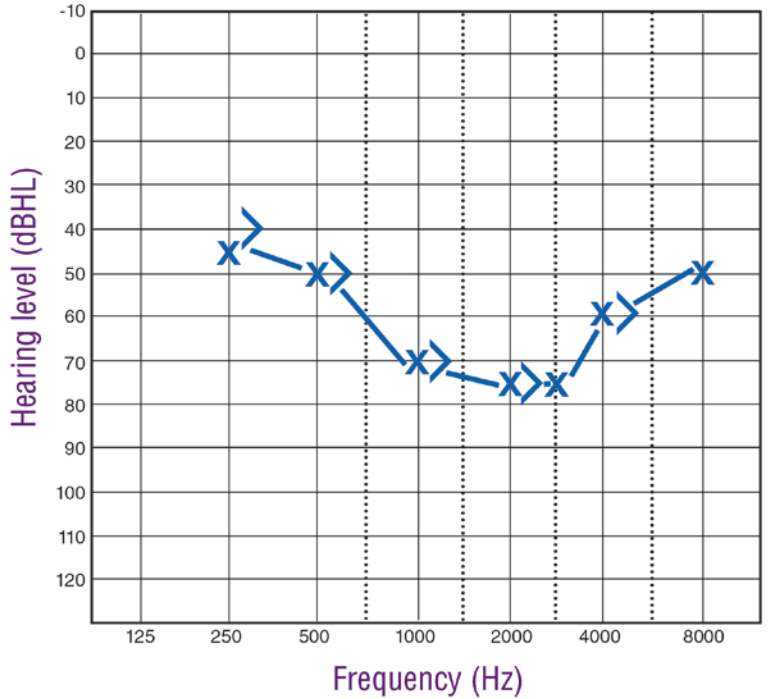


Conductive Hearing Loss
Right Ear

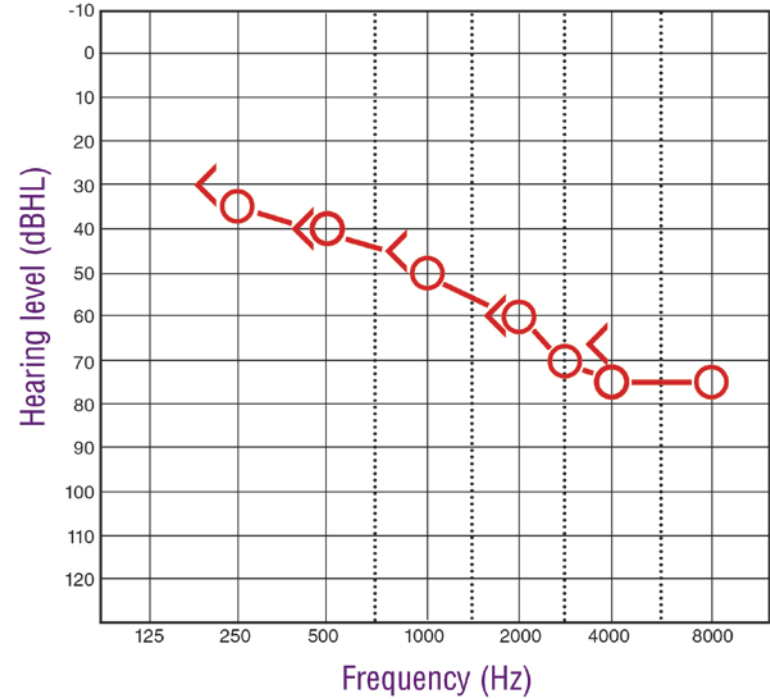


Sensorineural Hearing Loss

Sensorineural Hearing Loss
Left Ear

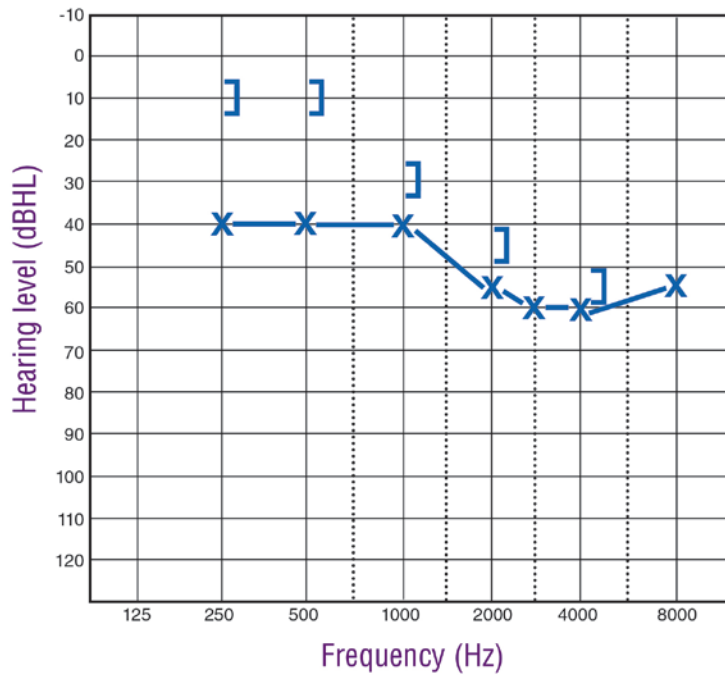


Sensorineural Hearing Loss
Right Ear

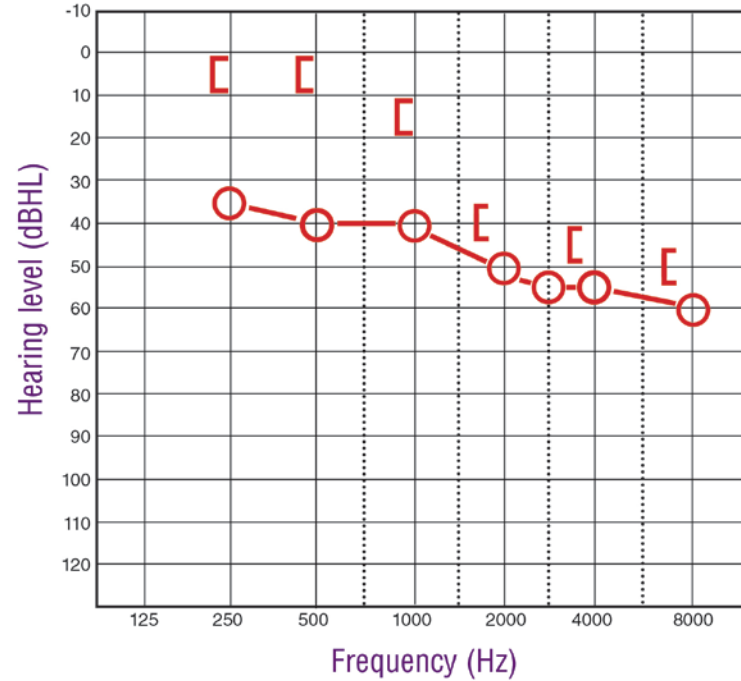


Mixed Hearing Loss

Mixed Hearing Loss
Left Ear



Mixed Hearing Loss
Right Ear





We're here to help. For more information
contact:

American Speech-Language Hearing
Association

2200 Research Boulevard
Rockville, MD 20850

E-mail: audiology@asha.org

Website: www.asha.org

Understanding Hearing Loss

Presentation Notes

Slide 1

No commentary

Slide 2

Before discussing hearing loss, it is important to understand how we hear. We'll take a few minutes to review the parts of the ear and then discuss how sound travels from the outer ear to the brain for interpretation.

The ear can be divided into three parts leading up to the brain—the outer ear, the middle ear, and the inner ear.

- The outer ear consists of the ear canal and eardrum. Sound travels down the ear canal, striking the eardrum and causing it to move or vibrate.
- The middle ear is a space behind the eardrum that contains three small bones called ossicles. This chain of tiny bones is connected to the eardrum at one end and to an opening to the inner ear at the other end. Vibrations from the eardrum cause the ossicles to vibrate, which, in turn, creates movement of the fluid in the inner ear.
- Movement of the fluid in the inner ear, or cochlea, causes changes in tiny structures called hair cells. This movement of the hair cells sends electrical signals from the inner ear up the auditory nerve (also known as the hearing nerve) to the brain.

The brain then interprets these electrical signals as sound.

Slide 3

There are two types of hearing loss: conductive and sensorineural. These are categorized based on where in the auditory pathway the blockage or damage has occurred.

Conductive HL is caused by blockage in the outer or middle ear. This can include things like an ear infection or fluid in the middle ear space or wax in the ear canal. It can also be caused by malformations in these parts of the ear—atresia, or malformation of the bones of the middle ear. These causes are generally medically treatable.

Sensorineural hearing loss is caused by a problem in the inner ear or on the auditory nerve. This can be a genetic disorder that causes damage or malformed hair cells in the cochlea or can be caused by prenatal, perinatal, or postnatal infections that damage hair cells. This type of HL is not typically treatable.

Both types of hearing loss can range in degree from very mild to profound.

Mixed HL is caused by a combination of both conductive and sensorineural hearing loss in the same ear.

Auditory neuropathy: This type of hearing loss is relatively rare and occurs when the inner ear is receiving sounds normally but the signals are not reaching the hearing nerve in the proper way.

Slide 4

No commentary

Slide 5

Audiologists use several different tests to help determine the type and degree of hearing loss. They select these tests based on the age and developmental level of the patient. Testing hearing in young children requires a great deal of expertise and special equipment, so it is important to work with an audiologist who specializes in evaluating children. Babies of any age can be tested for hearing. The purpose of hearing testing is to determine the type, degree, and configuration of hearing loss in both ears so that appropriate recommendations for treatment can be made.

Slide 6

Understanding how hearing loss is recorded on an audiogram can help you better understand implications of the loss. The audiogram is a picture of the type (conductive, SN, or mixed), degree (mild, moderate, severe, or profound) and configuration, or pattern, of hearing loss (how much hearing loss exists at different pitches or frequencies).

Describe the axes: Frequency and Loudness.

Describe threshold and how it is determined given the age of the patient (the softest sound a person can hear at each frequency).

Describe the degree of loss categories.

Describe the speech banana and what speech sounds will be inaudible at different degrees of HL: Emphasize high frequency speech sounds and how they are important to understanding speech.

Slide 7

No commentary

Slide 8

Conductive hearing loss occurs when sound is not conducted efficiently through the outer ear canal to the eardrum and the tiny bones (ossicles) of the middle ear. Conductive hearing loss usually involves a reduction in sound level or the ability to hear faint sounds. This type of hearing loss can often be corrected medically or surgically.

Slide 9

Sensorineural hearing loss (SNHL) occurs when there is damage to the inner ear (cochlea), or to the nerve pathways from the inner ear to the brain. Most of the time, SNHL cannot be medically or surgically corrected. This is the most common type of permanent hearing loss.

SNHL reduces the ability to hear faint sounds. Even when speech is loud enough to hear, it may still be unclear or sound muffled.

Slide 10

Sometimes a conductive hearing loss occurs in combination with a sensorineural hearing loss (SNHL). In other words, there may be damage in the outer or middle ear and in the inner ear (cochlea) or auditory nerve. When this occurs, the hearing loss is referred to as a mixed hearing loss.

Slide 11

No commentary