

How Does the Ear Work?

The aural or hearing-sense is a complex and intricate process. The ear is made up of three 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. The sound vibrations make the tiny hairs move. The hairs then change the sound vibrations into nerve signals, so your brain can interpret the sound.

Any source of sound sends vibrations or sound waves into the air. These funnel through the ear opening, down the ear, canal, and strike your eardrum, causing it to vibrate. The vibrations are passed to the small bones of the middle ear, which transmit them to the hearing nerve in the inner ear. Here, the vibrations become nerve impulses and go directly to the brain, which interprets the impulses as sound (music, voice, a car horn, etc.).

Video: Youtube link

What is hearing loss?

A hearing impairment refers to all degrees of hearing loss. You may have hearing loss, and not even be aware of it. People of all ages experience gradual hearing loss, often due to the natural aging process or long exposure to loud noise. Other causes of hearing loss include viruses or bacteria, heart conditions or stroke, head injuries, tumors, and certain medications. Treatment for hearing loss will depend on your diagnosis.

What are the types of hearing loss?

Types of hearing loss are classified by where in the ear the problem occurs and the severity of loss.

1. Conductive hearing loss

A conductive hearing loss results when something interferes with sound waves traveling through the outer and middle parts of the ear. Causes of conductive hearing loss include:

Complete blockage in the outer ear by wax or infection in the middle ear (otitis media)

Damage to the ear drum or bones in the middle ear.

2. Sensorineural hearing loss

A sensorineural hearing loss results from a problem in the innermost part of the ear or in the auditory nerve (the term auditory refers to hearing). Causes of sensorineural hearing loss include:

Abnormal development of the inner part of the ear and other genetic conditions

Diseases, such as meningitis and rubella

Tumors

Physical injury to the inner ear.

Sensorineural hearing losses are permanent. Sometimes the problem with the inner ear also causes problems with balance.

3. Mixed hearing loss

A person may have both a sensorineural hearing loss and a conductive hearing loss. This type of hearing loss is called a mixed loss.

What are the levels of severity?

Hearing losses are also classified by their severity: mild, moderate, severe, and profound. The level of severity is determined by the loudness of sound that a person can hear without a hearing aid. The loudness of sound is measured in decibels (dB).

Mild: Person with mild hearing losses can hear sounds of 20 to 40 dB or louder. They may have trouble hearing faint or distant speech.

Moderate: Person who have moderate losses of hearing can hear sounds louder than 45 to 60 dB. They need speech to be loud. It is hard for these people to understand speech in group situations.

Severe: Person with severe losses can hear sounds of 65 to 85 dB or louder. They can hear only loud voices one foot or less away, or loud sounds in the environment.

Profound: Person with profound hearing losses may hear loud sounds of 90 dB or more, but they may be more aware of vibrations than sound. The term deaf usually applies to Person with profound hearing losses or with no hearing at all.

Five minute hearing test:

Test your hearing NOW

Answer the following questions, then calculate your score. To calculate your score, give yourself 3 points for every "Almost always" answer, 2 points for every "Half the time" answer, 1 point for every "Occasionally" answer, and 0 for every "Never." Please note: If hearing loss runs in your family, add an additional 3 points to your overall score.

The American Academy of Otolaryngology–Head and Neck Surgery recommends the following:

0-5 points – Your hearing is fine. No action is required.

6-9 points – Suggest you see an ear, nose, and throat (ENT) specialist.

10+ points – Strongly recommend you see an ear, nose, and throat (ENT) specialist.

1. I have a problem hearing over the telephone.

Text Box: 1 points

Almost always

Occasionally

Text Box: 2 points Half the time Never

2. I have trouble following the conversation when two or more people are talking at the same time.

Text Box: 1 points Almost always Occasionally

Text Box: 2 points Half the time Never

3. People complain that I turn the TV volume too high.

Text Box: 1 points Almost always Occasionally

Text Box: 2 points Half the time Never

4. I have to strain to understand conversations.

Text Box: 1 points Almost always Occasionally

Text Box: 2 points Half the time Never

5. I miss hearing some common sounds like the phone or doorbell ring.

Text Box: 1 points Almost always Occasionally

Text Box: 2 points Half the time Never

6. I have trouble hearing conversations in a noisy background, such as a party.

Text Box: 1 points Almost always Occasionally

Text Box: 2 points Half the time Never

7. I get confused about where sounds come from.

Text Box: 1 points Almost always Occasionally

Text Box: 2 points Half the time Never

8. I misunderstand some words in a sentence and need to ask people to repeat themselves.

Text Box: 1 points Almost always Occasionally

Text Box: 2 points Half the time Never

9. I especially have trouble understanding the speech of women and children.

Text Box: 1 points Almost always Occasionally

Text Box: 2 points Half the time Never

10. I have worked in noisy environments (such as assembly lines, construction sites, or near jet engines).

Text Box: 1 points Almost always Occasionally

Text Box: 2 points Half the time Never

11. Many people I talk to seem to mumble, or don't speak clearly.

Text Box: 1 points Almost always Occasionally

Text Box: 2 points Half the time Never

12. People get annoyed because I misunderstand what they say.

Text Box: 1 points Almost always Occasionally

Text Box: 2 points Half the time Never

13. I misunderstand what others are saying and make inappropriate responses.

Text Box: 1 points Almost always Occasionally

Text Box: 2 points Half the time Never

14. I avoid social activities because I cannot hear well and fear I'll make improper replies.

Text Box: 1 points Almost always Occasionally

Text Box: 2 points Half the time Never

15. Ask a family member or friend to answer this question: Do you think this person has a hearing loss?

Text Box: 1 points Almost always Occasionally

Text Box: 2 points Half the time Never

Tips to maintain hearing health: What can I do to improve my hearing?

Eliminate or lower unnecessary noises around you.

Let friends and family know about your hearing loss and ask them to speak slowly and more clearly.

Ask people to face you when they are speaking to you, so you can watch their faces and see their expressions.

Utilize sound amplifying devices on phones.

Use personal listening systems to reduce background noise.

Tips to maintain hearing health

If you work in noisy places or commute to work in noisy traffic or construction, choose quiet leisure activities instead of noisy ones.

Develop the habit of wearing earplugs when you know you will be exposed to noise for a long time.

Earplugs quiet about 25 dB of sound and can mean the difference between a dangerous and a safe level of noise.

Try not to use several noisy machines at the same time.

Try to keep television sets, stereos and headsets low in volume.