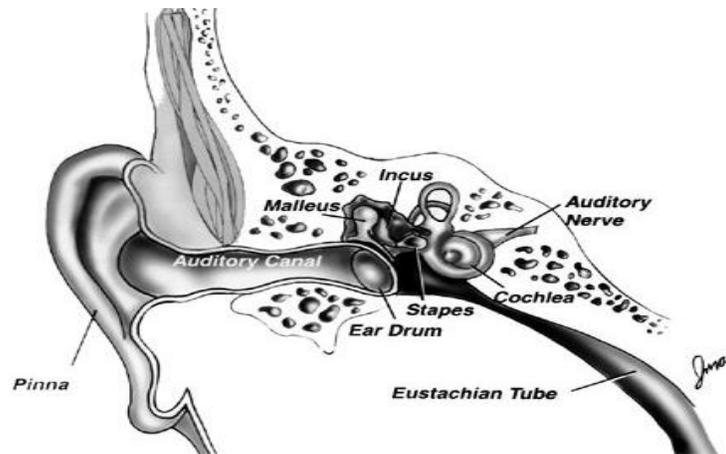


# Hearing Facts

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Outer Ear

Middle Ear

Inner Ear

## How People Hear

Hearing is a series of events in which the ear converts sound waves into electrical signals and causes nerve impulses to be sent to the brain, where they are interpreted as sound. The ear has three main parts: the outer ear and reach the middle ear, where they cause the eardrum to vibrate. The vibrations are transmitted through three tiny bones in the middle ear called the ossicles. These three bones are named the malleus, incus, and stapes (and are also known as the hammer, anvil, and stirrup). The eardrum and ossicles amplify the vibrations and carry them to the inner ear. The stirrup transmits the amplified vibrations through the oval window and into the fluid that fills the inner ear. The vibrations move through fluid in the snail-shaped hearing part of the inner ear (cochlea) that contains the hair cells. The fluid in the cochlea moves the top portion of the hair cells, called the hair bundle, which initiates the changes that lead to the production of the nerve impulses.

These nerve impulses are carried to the brain, where they are interpreted as sound. Different sounds move the population of hair cells in different ways, thus allowing the brain to distinguish among various sounds, such as different vowel and consonant sounds.

## Two Types of Hearing Loss

1. Conductive due to the disruption of the transmission of sound through the center and/or middle ear Otitis media (chronic and acute) is the main cause of conductive hearing loss for children.

2. Sensorineural due to sensory or nerve damage in the inner ear, auditory nerve, or auditory cortex of the brain Noise -- explosions, rock music, heavy machinery – is the main cause of sensorineural hearing loss.

When both types occur together, it is called mixed which may rise from an infection or from a surgery.

People, who were born deaf, would not want to identify themselves as people with hearing losses. In other words, they actually never lost their hearing after they were born.

## Cochlear Implants

A cochlear implant is a small, complex electronic device that can help to provide a sense of sound to a person who is profoundly deaf. The implant is surgically placed under the skin behind the ear.

An implant has four basic parts: (1) a microphone, which picks up sound from the environment; (2) a speech processor, which selects and arranges sounds picked up by the microphone; (3) a transmitter and receiver/stimulator, which receives signals from the speech processor and convert them into electric impulses, and (4) electrodes, which collect the impulses from the stimulator and send them to the brain.

An implant does not restore or create normal hearing. Instead, under the appropriate conditions, it can give a deaf person a useful auditory understanding of the environment and help her or him to understand speech. A cochlear implant is very different from a hearing aid. Hearing aids amplify sound. Cochlear implants compensate for damaged or non-working parts of the inner ear.

**Source:** National Institute on Deafness and Other Communication Disorders, United States <http://www.nidcd.nih.gov/>

**Keywords :** Hearing, Hearing Loss, Cochlear Implant

**Annual Deaf Event:** May is Better Hearing and Speech Month