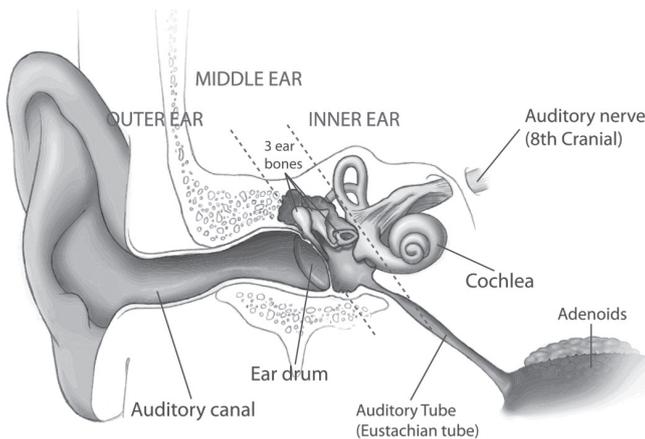




General Information Our Ears and How We Hear



The Outer Ear

The outer ear consists of the visible portion of the ear (pinna), the ear canal and the eardrum. The eardrum (tympanic membrane) is the boundary between the outer and middle ear.

The Middle Ear

The middle ear consists of an air filled cavity containing a chain of three little bones. These bones are called the malleus, incus and stapes and they transmit sound vibrations from the eardrum to the inner ear, connecting with the inner ear at the oval window.

A small passage called the eustachian tube connects the air-filled middle ear cavity with the back of the throat. The eustachian tube opens and closes to equalise the air pressure in the middle ear with that outside the ear. This is why we sometimes hear a 'popping' ear sound when we fly or change altitude.

The Inner Ear

The inner ear consists of the cochlea, a shell-shaped bony spiral filled with special fluids and lined with tiny hair cells that connect to nerve endings.

These nerve endings connect to the hearing (auditory) nerve that transmits sound messages to the brain. The organ of balance is also connected to the inner ear.

How We Hear

Sound waves travel through the ear canal and cause the eardrum to vibrate, in the same way as a normal drum. The movement of the eardrum causes the little bones in the

middle ear to vibrate, and these vibrate the oval window. This enables sound to be transmitted to the cochlea in the inner ear, which in turn sets the cochlear fluid in motion.

The tiny hair cells in the cochlea respond to this movement by creating electrical signals. These are carried along the hearing nerve to the brain, where they are processed and interpreted as sound.

High pitched sounds are detected by the hair cells at the first turn of the cochlea, and low pitched sounds towards the last turn (apex) of the cochlea.

Types of Hearing Loss

Conductive (Middle Ear) Hearing Loss

Conductive hearing loss occurs when there is disruption of sound transmission in the outer or middle ear. It is sometimes a temporary condition and can often be corrected or improved with medical or surgical treatment. People with conductive hearing loss notice a reduction in the volume of sound. Hearing aids may be considered if medical or surgical treatment is ineffective.

Sensorineural (Inner Ear or Auditory Nerve) Hearing Loss

Sensorineural hearing loss occurs when the hair cells lining the cochlea are damaged, resulting in a diminished sound signal being sent to the brain.

Sensorineural hearing loss is usually permanent and does not normally respond to medical or surgical treatment. It may be related to ageing and/or noise exposure.

As well as noticing a reduction in the volume of sound, people with sensorineural hearing loss may also have a distortion in sound clarity. Recruitment problems (increased sensitivity to loud sound) can also be present.

Sensorineural hearing loss can be assisted by the fitting of an appropriate hearing aid and an education program that includes strategies designed to assist the person in managing their hearing loss effectively. Assistive listening devices may also be helpful.

Note: People may have a combined conductive/sensorineural hearing loss.

Care of the Ears

Earwax

Earwax (cerumen) is produced by special glands situated in the ear canal and is a normal part of the “self cleaning” mechanism of the outer ear.

Use of a cotton bud or similar object to try and remove wax may cause injury and will only push most of the wax further into the ear canal. Consult a doctor if a blockage of wax occurs. Do not attempt to remove it yourself.

Noise

Prolonged exposure to loud noise can permanently damage hearing by causing the destruction of hair cells in the cochlea.

Ears should be protected from loud noise, whether it be industrial noise from machinery, or loud recreational noise from music concerts, firearms, power tools or motors. Earmuffs and earplugs will provide some protection. Cotton wool is not adequate to protect ears from the potential risk of damage from noise exposure.

For more information speak to an expert at:



Expression
Australia

Expression Australia

Email. info@expression.com.au

SMS/FaceTime. 0402 217 586

Skype. [expression.australia](https://www.skype.com/au/people/expressionaustralia)

Phone. (03) 9473 1111

expression.com.au

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Expression Australia

Level 4, 340 Albert Street, East Melbourne VIC 3002

expression.com.au

Victorian Deaf Society ABN. 56 004 058 084

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