

Hearing loss

Hearing loss can be split into two main categories, sensorineural or conductive. A mixture of the two is also possible.

Conductive hearing loss

A conductive hearing loss is when the middle ear, the outer ear or both together are not functioning correctly. The most common cause of conductive hearing loss is glue ear. This is when the middle ear, which is usually filled with air, fills up with fluid, stopping the eardrum and ossicles from moving as freely as they usually do.

Sensorineural hearing loss

A sensorineural hearing loss is when there is a problem with the cochlea, auditory nerve or the brain centres where the sound input is processed. This is the type of hearing loss which is most commonly associated with ageing. In age-related hearing loss (presbycusis) the perception of high-frequency sounds is often affected before low-frequency sound perception. This is thought to be because of the structure of the cochlea (see above).

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The ear

How your ear works

Ear anatomy

The ear is made up of three main parts; the outer ear, the middle ear and the inner ear. These three parts work together to enable hearing. Hearing loss is caused by one or more of these parts failing to work correctly.

The outer ear

The pinna

The part of the ear which is visible on the side of the head is called the “pinna” or the “auricle”. The pinna funnels sound waves down into the ear canal. The pinna also helps to give the brain clues about where the sound is coming from

The ear canal

The ear canal, labelled on the diagram as “External Auditory Canal” is the passage down from the pinna to the eardrum. The ear canal helps to amplify the sound as it travels down. The ear canal also helps to protect the eardrum and clean the ears by producing wax and oil which migrate out of the ear canal and down towards the pinna.

The middle ear

The eardrum

Sound waves travelling down the ear canal causes the eardrum to vibrate.

The ear bones (ossicles)

The middle ear contains three tiny bones, the malleus, incus and stapes (nicknamed hammer, anvil and stirrup). Vibrations from the ear drum cause these bones to move. This causes the stapes to push against the cochlea

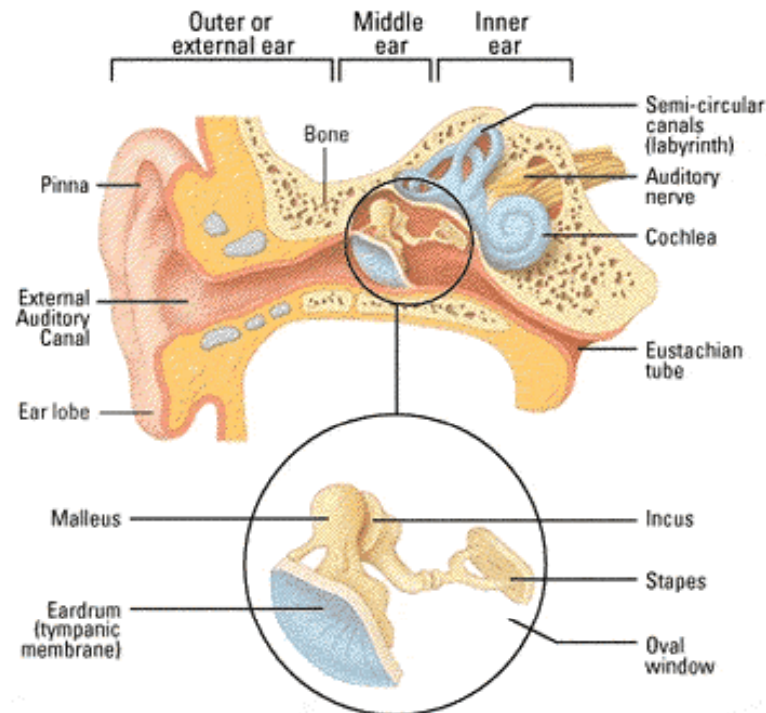


Fig.2: www.medway.nhs.uk/

The eustachian tube

The eustachian tube is a channel which leads from the middle ear to the cavity at the back of the nose. Its functions are ventilating and draining the middle ear, as well as regulating the pressure in the middle ear space.

The inner ear

The cochlea

The cochlea is the organ of hearing and it is coiled up like a snail’s shell. The cochlea separates out the different frequencies or pitches and converts the sound waves transported from the ossicles into nerve impulses. The high frequency sounds are detected nearest to the middle ear and the low frequency sounds are detected right in the centre of the coil.

The auditory nerve

The auditory nerve carries the nerve impulses up to the brain where the sound information can be processed.

Balance function

The inner ear also contains the semi-circular canals (labelled on the diagram) which are partially responsible for the balance system.