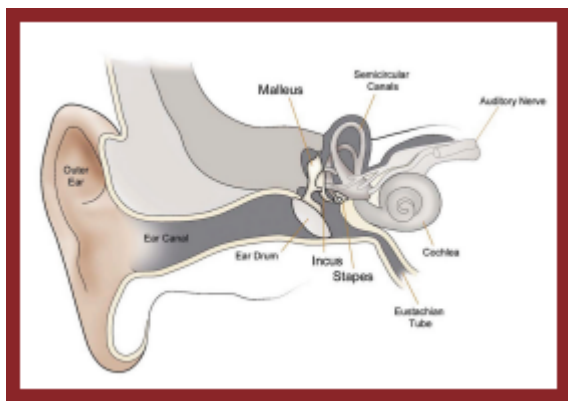




## Hearing Loss - UNDER REVIEW

### What is Hearing Loss?

Hearing loss is a symptom of a variety of conditions affecting the hearing organ or its nerve connection to the brain. It may be caused by problems affecting the transmission of sound through the eardrum and bones of hearing (called ossicles) to the cochlea (the organ of hearing), or it may be due to problems in the cochlea and the auditory nerve that connects the cochlea to the brain (Figure 1).



Conductive hearing loss is caused when something interferes with the transmission of sound from the ear canal to the cochlea. Sensorineural hearing loss is caused when there is a problem with the cochlea, or the nerve connection from the cochlea to the brain.

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### What Causes Hearing Loss?

Conductive hearing loss can be due to problems in the ear canal, eardrum (tympanic membrane) or the middle ear bones (ossicles). These three bones are called the Hammer, Anvil and Stirrup (or Malleus, Incus and Stapes).

In children, the commonest type of hearing loss is conductive hearing loss. This is usually due to fluid being trapped behind the eardrum. This condition is called glue ear, or Otitis Media with Effusion (OME). The fluid stops the eardrum from vibrating. Sometimes there are other causes for childhood conductive hearing loss. Rarely children may be born with poorly formed middle ear bones, or these structures can be damaged through ear infections.

Conductive hearing loss in adults is less common but may be due to problems with the bones of hearing or occasionally glue ear. Heavy wax accumulation in the ear canal can also cause a mild degree of conductive hearing impairment.

Infection which damages the ossicles may lead to conductive hearing loss. One such condition is called cholesteatoma. Here infected skin grows around the ossicles. This can restrict movement of the ossicles or even damage their structure and connections. Other conditions may affect the ossicles, for instance the stapes bone can become attached to the surrounding bone which stops it transmitting sound. This is a condition called otosclerosis.

Sensorineural hearing loss is due to loss of sound sensing cells in the cochlea (These are called hair cells) or damage to the nerves that take hearing signals to the brain. There are many causes of this type of hearing loss.

Age related hearing loss is sensorineural, and due to loss of hair cells with ageing. It is the commonest cause of hearing loss in adults. Sensorineural loss can also be due to excessive noise exposure in both work situations (industrial noise damage) or through excessively loud music exposure (recreational noise damage). Other causes of sensorineural hearing loss include some prescribed medication, and some infections.

Children can also suffer from sensorineural hearing loss, and for some children this is an inherited disorder that may even be present at birth. It can vary from a mild hearing loss to severe deafness.

Finally it is worth remembering that hearing loss can be due to a mixture of conductive and sensorineural causes.

Some types of sensorineural hearing loss require urgent treatment. Please seek medical advice immediately if:

1. You lose your hearing suddenly ie over just a few hours or days
2. If your hearing loss is associated with ear discharge, dizziness or ear ache

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## What are the symptoms?

Most adults first start to notice difficulty in following conversation when there is background noise or when more than one person is talking. Often their friends will complain that they don't listen or that they turn the television volume up too loud. They may become increasingly withdrawn and frustrated that they cannot socialise easily. In children, parents find that they might be inattentive, or ignore instructions or appear naughty. Listening to the television at high volumes is common and some times the child's teachers will complain. Young children with delayed speech production should always be assessed for hearing loss.

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## What should you do if you suspect hearing loss?

The Royal National Institute for the Deaf offers an [online screening test](#) . In most circumstances, you should see your doctor, who will be able to examine you for wax impaction and look for signs of ear disease. Your doctor can then arrange hearing tests and if necessary review by an ENT consultant.

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## Investigations and Treatment

Your doctor or specialist will arrange for you to have hearing tests performed. A variety of tests are available, and special test techniques can be used to assess children, even when they are newborns.

This will help establish the nature and severity of the hearing loss. The severity of the hearing loss is graded mild, moderate, severe and profound. Treatment depends on the severity of the hearing loss and whether it is conductive or sensorineural.

In conductive hearing loss there may be an infection of other disease process that needs to be treated. Treatment may include surgery, both to treat the infection and also restore the hearing.

In cases where the hearing loss is due to a problem with the ossicles (eg otosclerosis) surgical hearing restoration is usually possible. This may involve using metal or plastic implants or reusing your existing ossicles to restore the hearing mechanism.



In many cases hearing aids will be advised. These come in different sizes and types to suit different users and hearing needs. The technology in hearing aids is always improving to make them more discrete and offer better sound quality. Some examples of modern hearing aids are shown in Figures 2 & 3. Your doctor will be able to refer you to an NHS audiology unit for assessment and fitting of hearing aids. There are also many private providers of hearing aid services. For some patients with specific types of hearing loss a surgically implanted hearing device may be advised. These devices include bone anchored hearing aids and cochlear implants. With modern surgery and high-technology devices ENT surgeons are able to offer even the most severely deaf patients useful hearing. There is a hearing restoration solution available for almost everyone who is hearing impaired.

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**Disclaimer:** *This publication is designed for the information of patients. Whilst every effort has been made to ensure accuracy, the information contained may not be comprehensive and patients should not act upon it without seeking professional advice.*

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