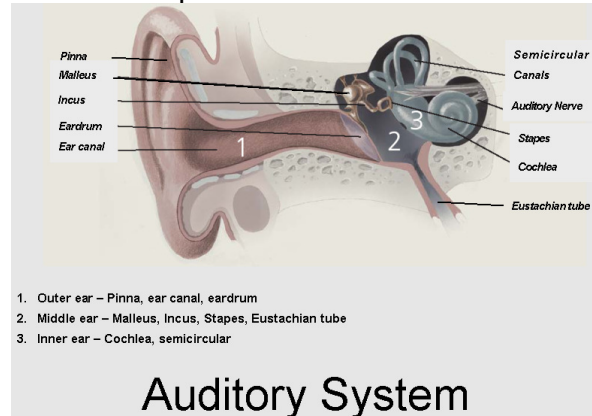


Hearing Loss

Auditory System

The auditory system is the sensory system for the sense of hearing. It comprises the ears, the auditory nerves and the central auditory pathways. The ear includes the outer, middle and inner ears. The pinna in the outer ear helps to collect sound and deliver to the ear canal. When sounds reach the eardrum, it would be amplified and then transfer to the ossicular chain (malleus, incus and stapes).

The ossicular chain would boost the sounds and send them to the cochlea. The hair cell in the cochlea would transform the signal to nerve signals. The auditory nerve would pass the signal to the brain for processing and comprehension.



The Eustachian tube in the middle ear helps to balance the pressure between the middle ear cavity and the outer ear. The semicircular canals control the balance system for us.

When there is a problem in any point of our auditory pathway, there would be a hearing loss.

Hearing Loss

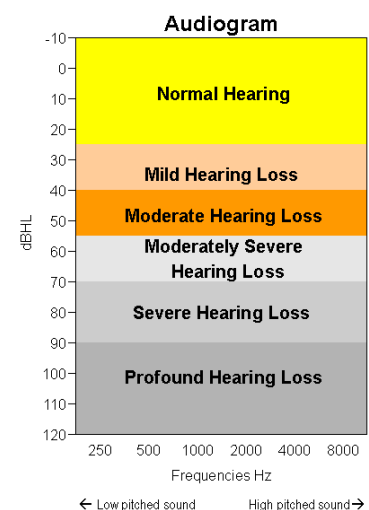
Hearing loss is a decrease in ability to perceive sound. It occurs when there is a problem in any point of our auditory pathway. Hearing loss not only results in communication difficulties and affect interpersonal relationship, but also affects psychological and emotional aspects. For the infant and young children, undetected hearing loss would affect their speech and language development, academic performance, social development etc.

Classification of Hearing Loss

Descriptive Term	Average Hearing Level
Normal Hearing	Under 25 dBHL
Mild	26-40 dBHL
Moderate	41-55 dBHL
Moderately severe	56-70 dBHL
Severe	71-90 dBHL
Profound	91 dBHL and above

We use decibel (dBHL) to measure the lowest level of sound that you can hear. A person who can hear at or below 25 dBHL is classified as normal hearing. For those who

can only detect sound at 26 HL or more is classified to have hearing loss. Depends on the decibel that the individual needs for detecting sound, we can categorize his/her degree of hearing loss.



Types of hearing loss

Depends on the part of auditory system is affected, hearing loss can be classified as conductive, sensorineural and mixed hearing loss.

Conductive Hearing Loss

This is caused by any blockage or pathology found in the outer ear and/or the middle ear. This type of hearing loss can often be medically or surgically corrected. The common causes of the conductive hearing loss are injury and blockage of the ear canal etc.

The conductive element would reduce the overall volume of sounds and make the sound faint to hear. It does not affect the quality of sound and most of the conductive hearing loss can be treated. If the conductive hearing loss is not cured, hearing aid could benefit the patients a lot.

Sensorineural Hearing Loss

This is caused by the damage in the cochlea of the inner ear (sensory) and/or in the auditory nerve (neural).

The most common causes may be hereditary hearing loss, the result of aging, exposure to loud noise and ototoxicity etc. Up to now, there is no medical treatment for the sensorineural hearing loss. The sensorineural hearing loss is a permanent hearing loss. The hearing impaired people need to have wear hearing aid.

Although there was sensorineural nature in the sudden hearing loss, hearing recovery may happen for such patients. Some of the patients would have spontaneous recovery, some would have partial and complete recovery of hearing after treatment and the rest would have no recovery of hearing after treatment. Apart from the etiology of the hearing loss, age, degree of hearing loss and the time to receive treatment since onset would affect the recovery. The sooner the patient was seen and treatment initiated, the better the recovery.

Mixed Hearing Loss

When the hearing loss involves both conductive pathway and the inner ear and the nerve, this is a mixed hearing loss. After medical treatment, it may help to restore the function of outer or middle ear and reduce the conductive component in the hearing loss and leave the sensorineural hearing loss.