

# DEAFNESS

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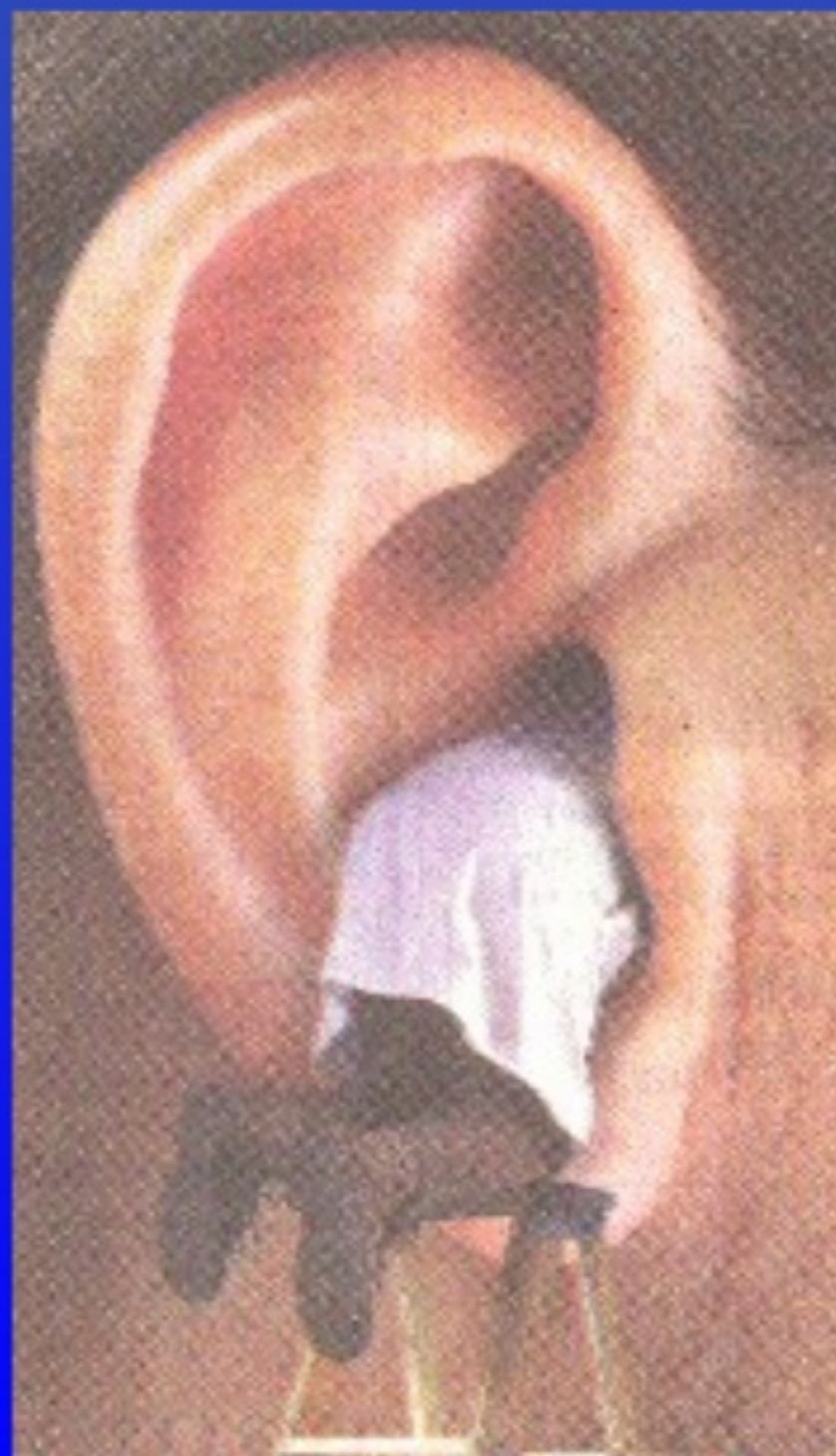
# Definition

- A person who is not able to hear as well as someone with normal hearing – hearing thresholds of 25 dB or better in both ears – is said to have hearing loss.



# Type of Loss

- Conductive
- Sensorineural
- Mixed
- Auditory Processing Disorder



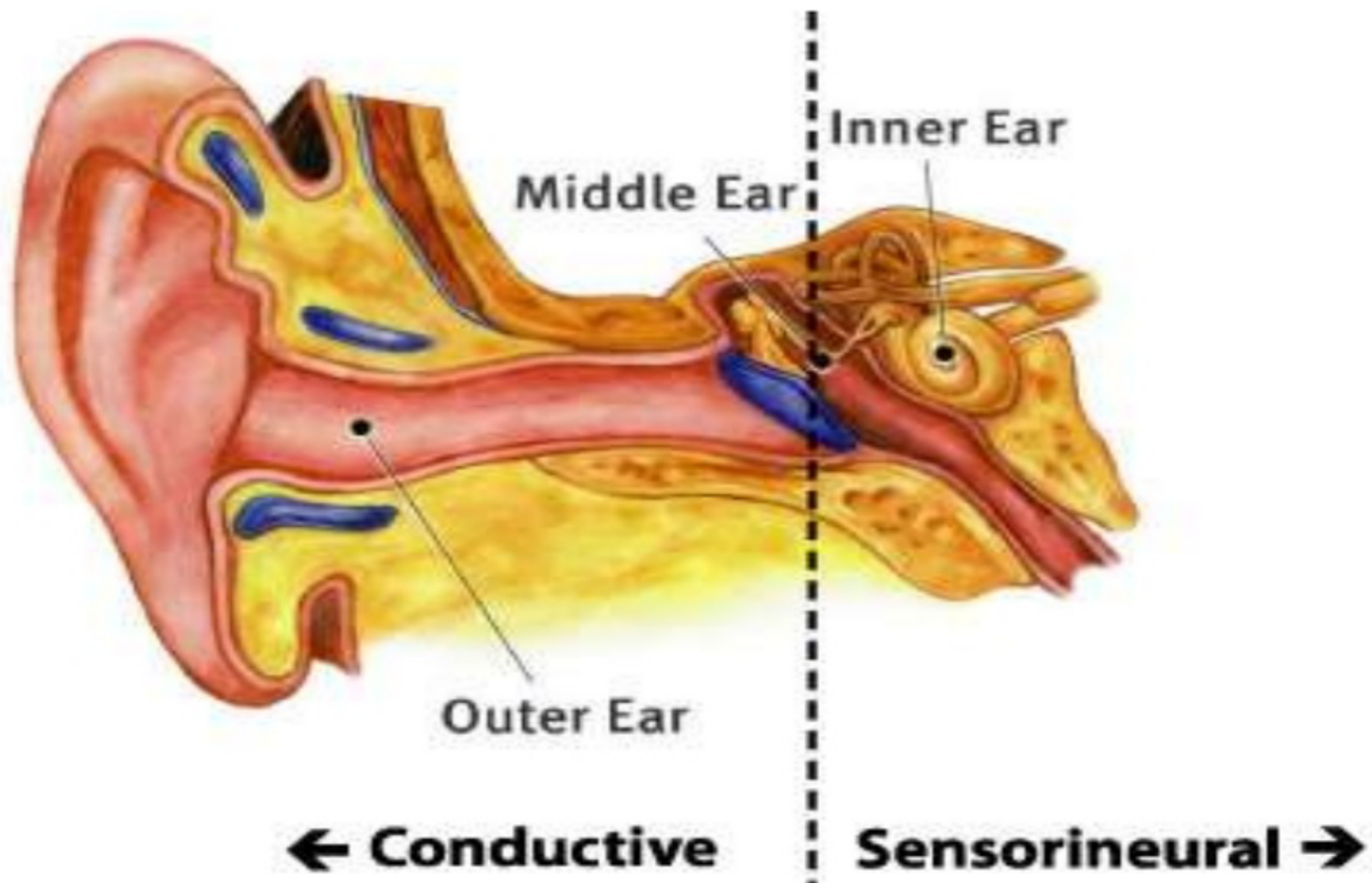
# Quantification of Hearing Loss

- Unable to hear sound at
  - “Mild” Hearing Loss
    - 26 – 40 dB
  - “Moderate” Hearing Loss
    - 41-55 dB
  - “Severe” Hearing Loss
    - 56- 70 dB
  - “Profound” Hearing Loss
    - 91 dB & greater



1. *A conductive* hearing impairment: Hearing impairment caused by interference with sound or vibratory energy in the external canal, middle ear, or ossicles.
2. *A sensorineural* hearing impairment: One resulting from dysfunction in the inner ear, especially the cochlea where sound vibrations are converted into neural signals, or in any part of the brain that subsequently processes these signals.





# MIXED H.L

- It is caused by combination of conductive and sensorineural

## Central/ functional H.L

- It is caused by problem along the pathway from the inner ear to the auditory region of brain

## Presbycusis

- Deafness occurs due to ageing

# Unilateral vs bilateral

- Single-sided deafness (SDD), or unilateral deafness, refers to hearing impairment in just one ear, while bilateral deafness is hearing impairment in both.



# Causes of Conductive deafness

## External ear:

- Wax,
- Fungus,
- Otitis Externa,
- Foreign Bodies,
- Polyps,
- Myringitis,
- Stenosis,
- Atresia,
- Tumours.

# Cont.....

## Middle Ear

- Congenital defects of the ear drum and ossicles.
- Traumatic: Barotrauma, rupture of ear drum, # of the base of the skull
- Inflammation: AOM, COM, Serous OM, Adhesive OM.
- Tuberculosis and syphilitic OM
- Neoplasms
- Otosclerosis

# Causes of Conductive deafness

## Eustachian tube

- Eustachian catarrh
- Eustachian tube dysfunction due to diseases of the nose, paranasal sinuses & pharynx
- Barotrauma



# Causes of Sensori-neural deafness

## Local causes (inner ear)

- Congenital
- Trauma: Head injury, surgical injury to labyrinth, loud sounds (acute or chronic acoustic trauma) producing concussion.
- Infections: mumps, syphilis, tuberculous meningitis, enteric fever, labyrinthitis.
- Tumours: Acoustic neuroma (Schwannoma of C8 nerve)
- Meniere's disease
- Ototoxic drugs: streptomycin, Kanamycin, neomycin, salicylates, frusemide and quinine.

# Causes of Sensori-neural deafness

## General causes

- Presbycusis
- CVS: atherosclerosis, HTN
- CNS: disseminated sclerosis
- DM
- Avitaminosis
- Hypothyroidism
- Smoking
- Alcoholism
- **Presbycusis:** is a progressive bilateral symmetrical age-related sensorineural hearing loss. It is also known as **age-related hearing loss**

# Causes of Mixed deafness

- Trauma: Blast injury, acoustic trauma, head injury.
- CSOM with labyrinthitis.
- Otosclerosis
- Senile deafness superimposed on conductive deafness.

# Clinical features

- Not responding when speaking others
- Straining to ear
- Difficulty to communicate
- Suspicion
- Loss of self esteem

# Diagnosis

- H.C
- P/E
- Rinne's test & weber's test
- Audiometry
- Auditory brain stem response
- Tympanometry
- EOAEs(evoked otoacoustic emissions) measures sound originated in haircells of cochlea using microphone and transducer



# Treatment

- Conductive deafness: Hearing aid
- Sensori-neural deafness:
  - For sudden deafness:
    - Steroids
    - Vasodilators
    - Vit. B<sub>1</sub>, B<sub>6</sub> & B<sub>12</sub>
    - Vit. A, C & E
    - Carbogen (5% CO<sub>2</sub> with 95% O<sub>2</sub>) [to improve blood circulation in the cochlea]

- For chronic deafness
  - Hearing aids
  - Cochlear implants
  - Conversation should be slow, clear & not too clear
  - Auditory training & lip reading.

# Surgical management

- Surgery is indicated for conductive or mixed hearing loss.
- To restore conductive hearing
  - Myringotomy
  - Stapedectomy
- Assisted hearing in profound deafness
  - Cochlear implants
  - Temporal bone stimulators (Bone hearing devices)
  - Middle ear implants (Semi-implantable hearing device)
- Tumour excision for acoustic neuroma

# Impact of HL on Quality of Life

- Physical health
- Emotional & mental health
- Other's perceptions of a person's mental acuity
- Social skills
- Family relationships
- Self-esteem
- Work & school performance

# CONTROL AND PREVENTION

- Avoid using cytotoxic drugs
- Avoid exposure to loud noises
- No buds for ear cleaning
- Protect ear from any injury
- Monitor hearing ability periodically
- Do not practice traditional way of pouring hot oil into the ear