

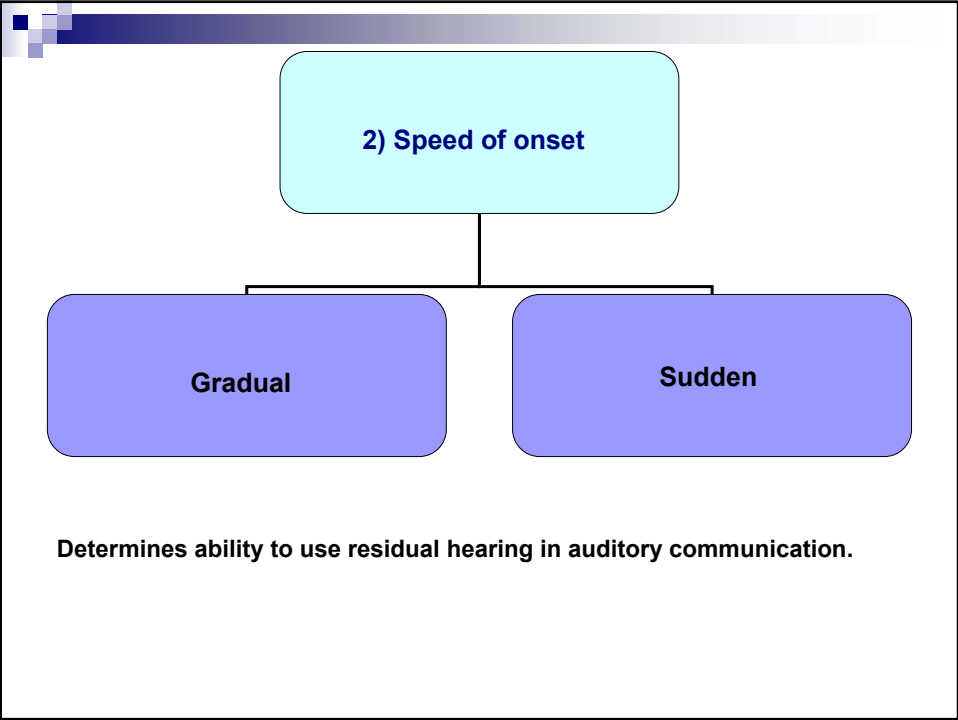
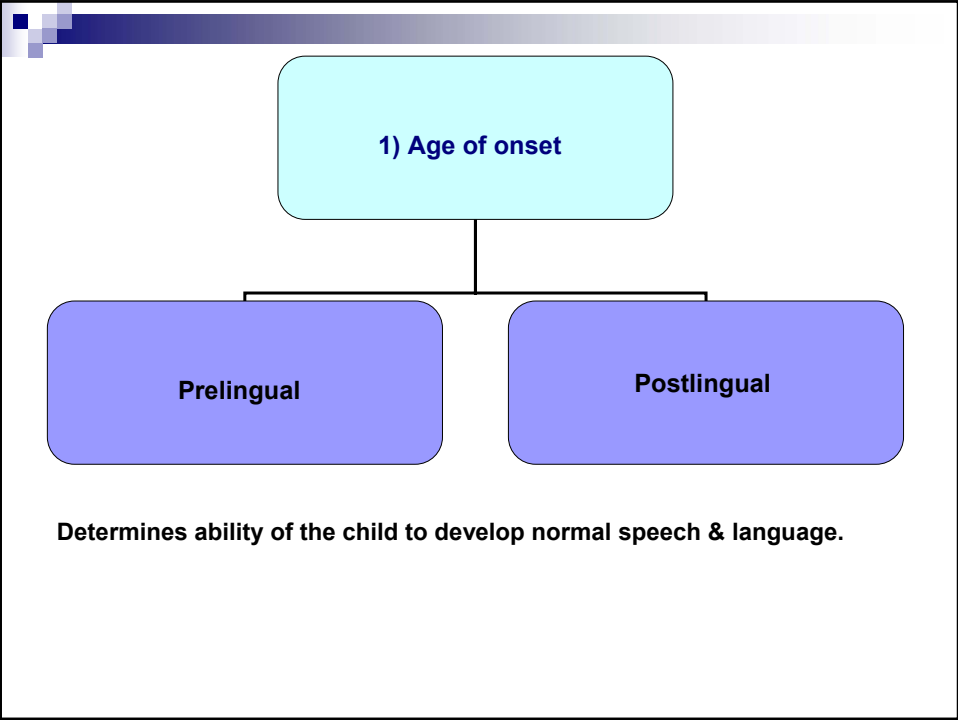


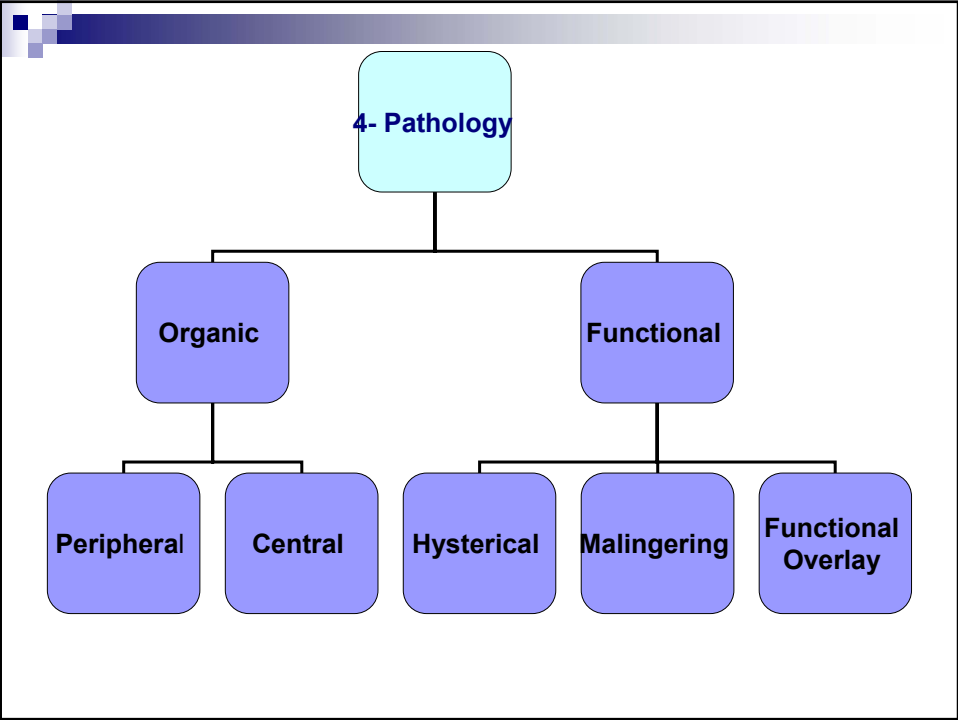
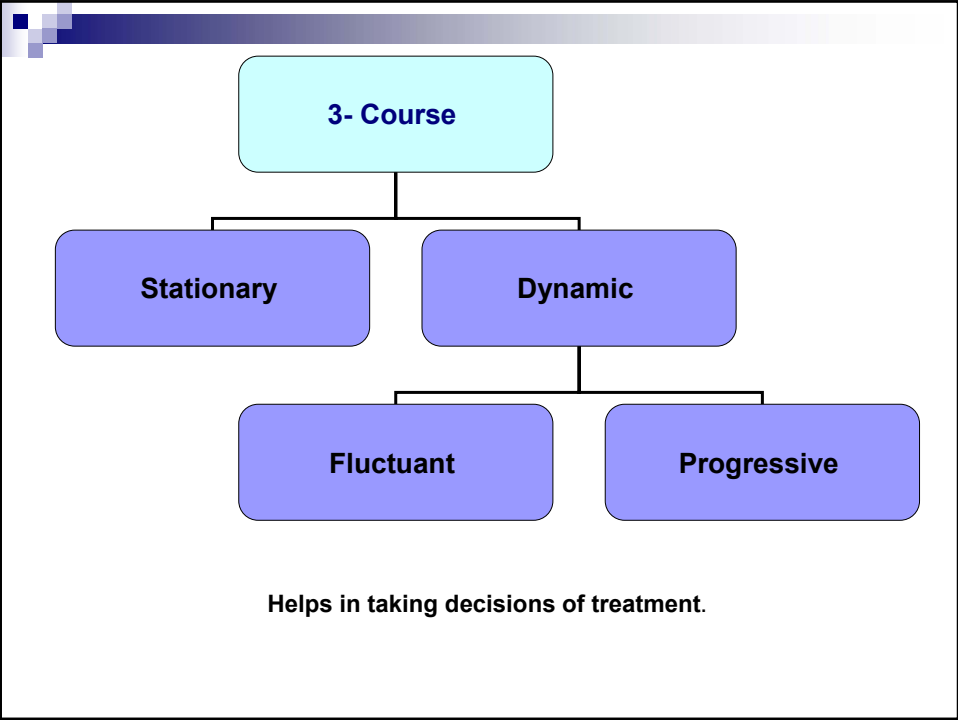
Hearing loss: Deviation from normal hearing in one or both ears.

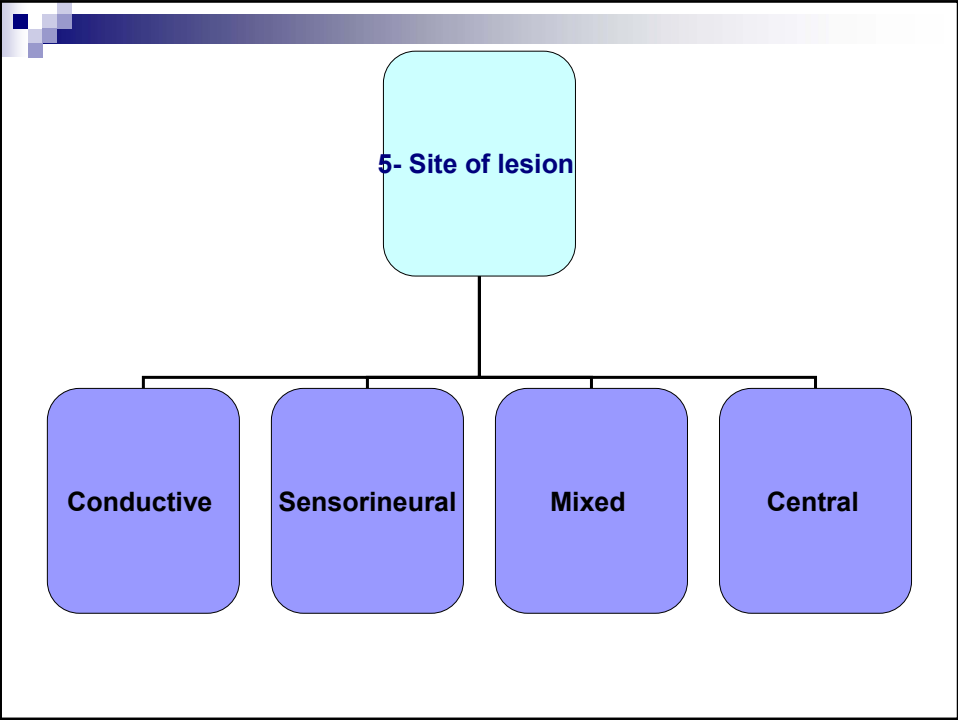
Hearing handicap: This term refers to total or partial hearing loss that interferes with oral communication

Deafness: this term is reserved for profound or total degrees of hearing loss.

CLASSIFICATION OF HEARING LOSS







Causes of hearing loss

1) Conductive HL

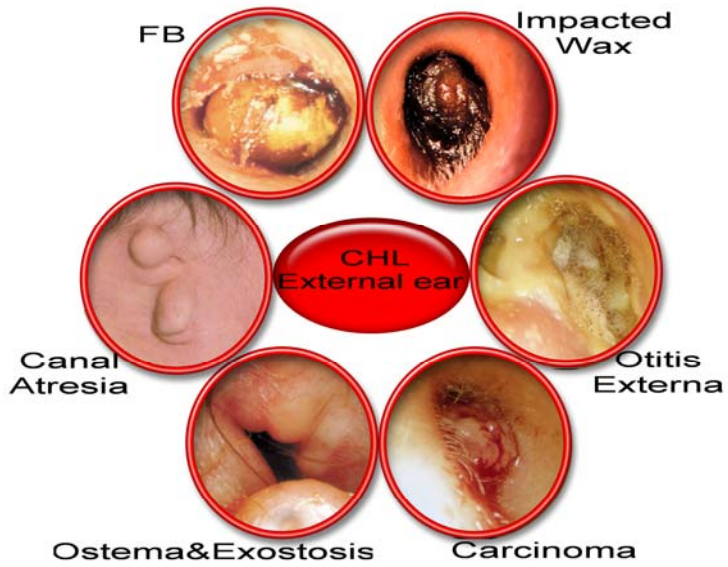
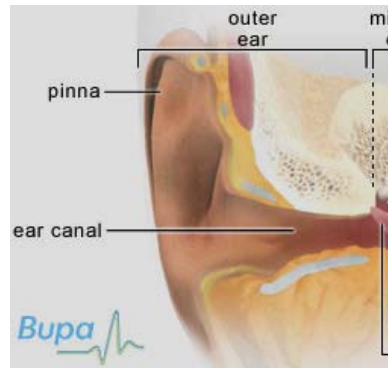
1- Causes in external ear

Congenital

atresia

Acquired

wax / foreign body
infection
tumor

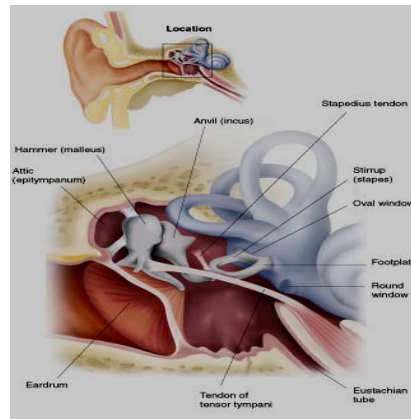


2- Causes in the middle

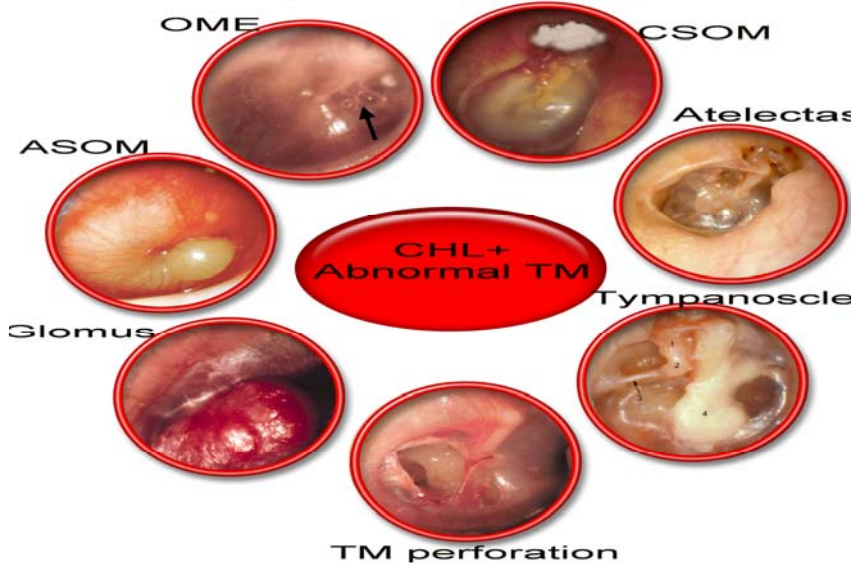
Acquired

Congenital

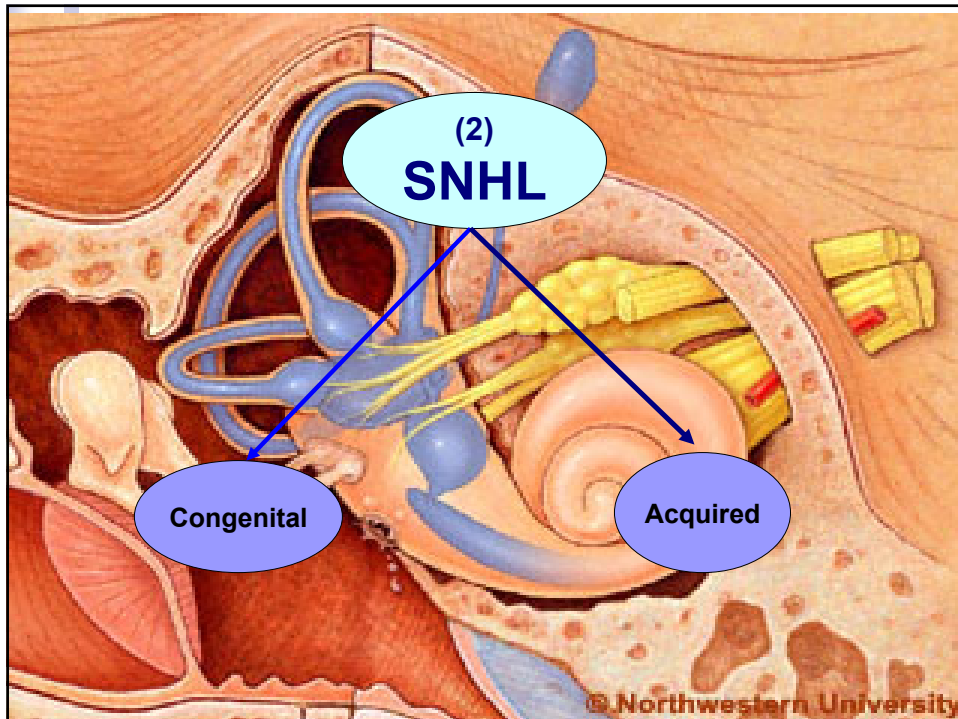
- 1- Trauma
TM perforation
- 2- Infection
Otitis media (Acute & chronic, suppurative & non-suppurative)
- 3- Otosclerosis
- 4- Middle ear effusion
- 5- Ossicular discontinuity.
- 5- Tumor

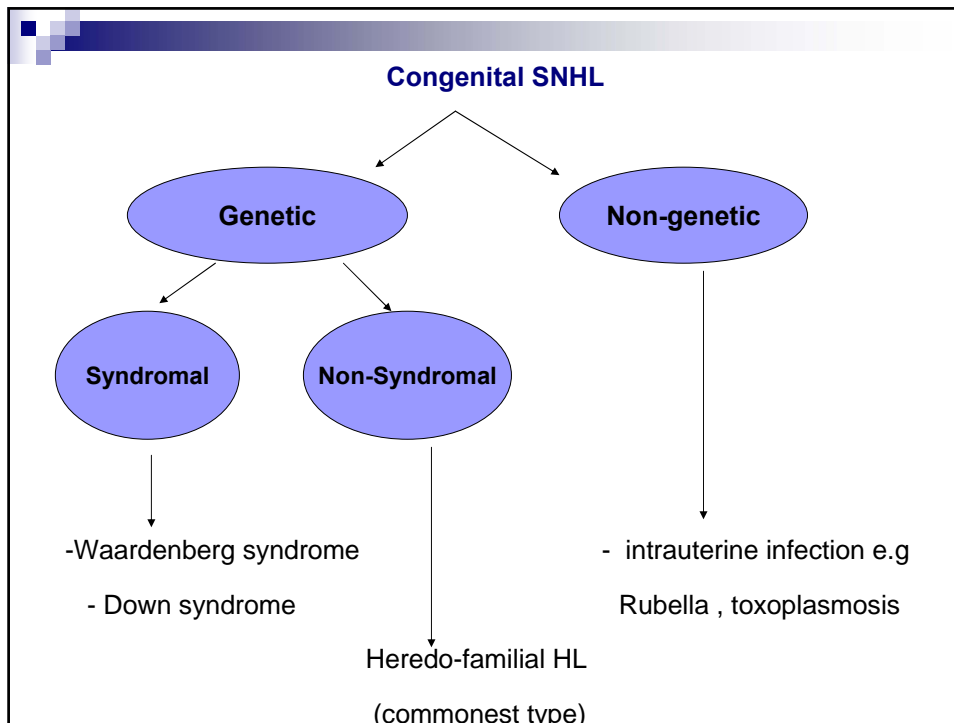


1) Group where otoscopy show abnormality



2) Group where otoscopy is normal





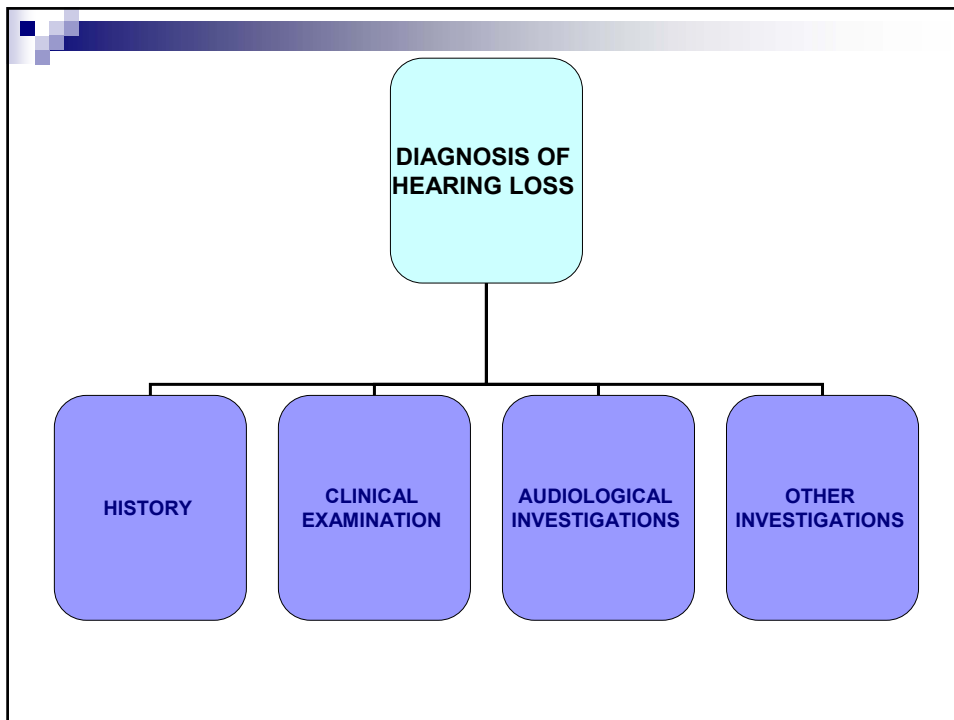
- Acquired SNHL**
- 1- Infectious:**
Meningitis
Mumps
 - 2- Traumatic:**
 - Physical trauma: Skull fracture (temporal bone)
 - Acoustic trauma such as from explosions, fireworks, gunfire.
 - Barotrauma: differences in pressure during deep-sea diving.
 - 3- Toxic:**
Aminoglycoside antibiotics.
 - 4- Age-related hearing loss (presbycusis), commonest cause of SNHL.**
 - 5- Occupational (noise-induced HL):**
Any occupation with exposure to loud noise on a continuous day-to-day basis can result in hearing loss due to nerve end damage.
 - 6- Others:**
 - Meniere's disease
 - Acoustic neuroma

What happens in hearing loss

- In conductive hearing loss, sound energy is **partially** blocked before it reaches the inner ear. Examples of conductive hearing loss include [earwax](#) or a growth blocking sound, such as what occurs in otosclerosis.
- In sensorineural hearing loss, sound reaches the inner ear, but a problem in the inner ear or in the auditory nerve prevents further ascent of auditory stimulation to the CNS.

Early warning signs of hearing loss

- Muffled hearing .
- Difficulty understanding what people are saying, especially when there are competing voices or background noise. .
- Listening to the television or radio at higher volumes than in the past .
- Avoiding conversation and social interaction.
- Depression. Many adults may be depressed because of how hearing loss is affecting their social life .
- **Other symptoms that may occur with hearing loss include:**
 - [tinnitus](#)
 - Ear pain, itching, or irritation .
 - Pus or fluid leaking from the ear.
 - [Vertigo](#) ,which can occur with hearing loss caused by [Ménière's disease](#) ,[acoustic neuroma](#) ,or [labyrinthitis](#)



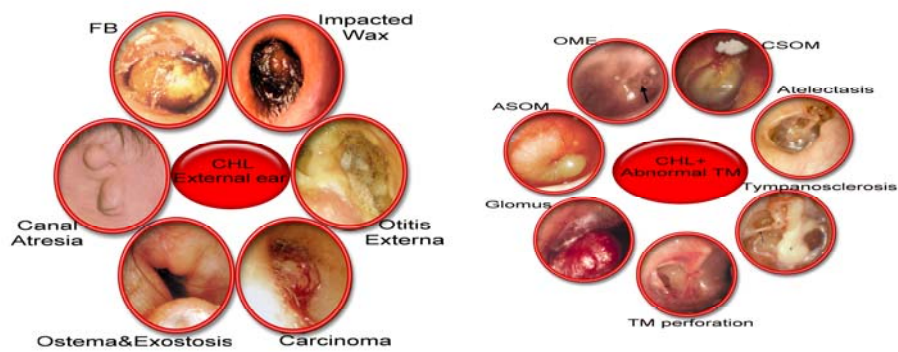
CLINICAL EXAMINATION

1) OTOSCOPY

The block contains two images. The left image shows a collection of otoscopy equipment: a silver otoscope with a black handle and a black speculum, and several black speculums of different sizes. The right image shows a clinical application where a healthcare professional in a white coat is using an otoscope to examine the ear of a patient wearing a dark suit and tie.

CLINICAL EXAMINATION

1) OTOSCOPY

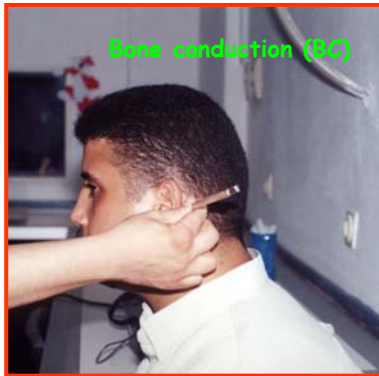


2) Clinical tests

- **Whispered speech test** (Crude measure): The doctor may use this as a basic screening test by whispering words behind the patient and asking if he/she can hear anything.
- **Tuning fork test** .Different tuning forks can be used to test hearing at a variety of frequencies

Rinne test:

Determines if ear is conductive or sensorineural



$AC > BC$ (Positive Rinne test) → Normal (or SNHL)
 $BC > AC$ (Negative Rinne test) → Conductive HL

Weber test:

Determines if unilateral or asymmetric loss is conductive or sensorineural

Midline or not lateralized

→ No significance between ears

Lateralized to better ear

→ Poorer ear is SNHL

Lateralized to poorer ear

→ Poorer ear is conductive



3) Audiological investigations

1) Pure tone audiometry

It measures 1- air conduction thresholds,

2- bone conduction thresholds,

At six different frequencies at octave intervals from 250 Hz to 8000 Hz.

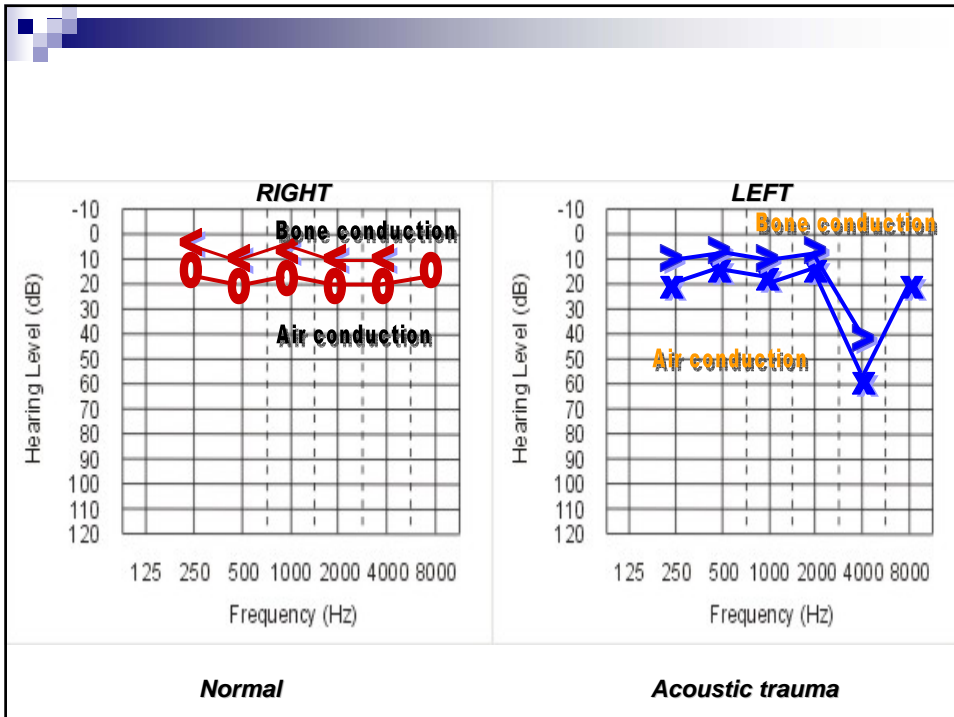
Analysis of these thresholds on the audiogram gives information about

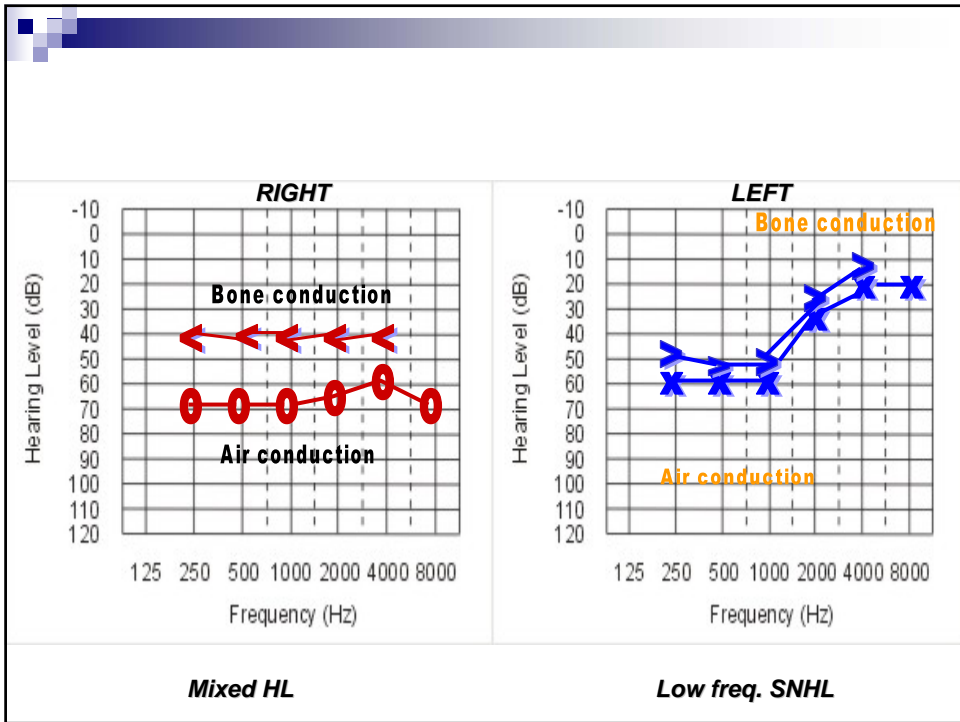
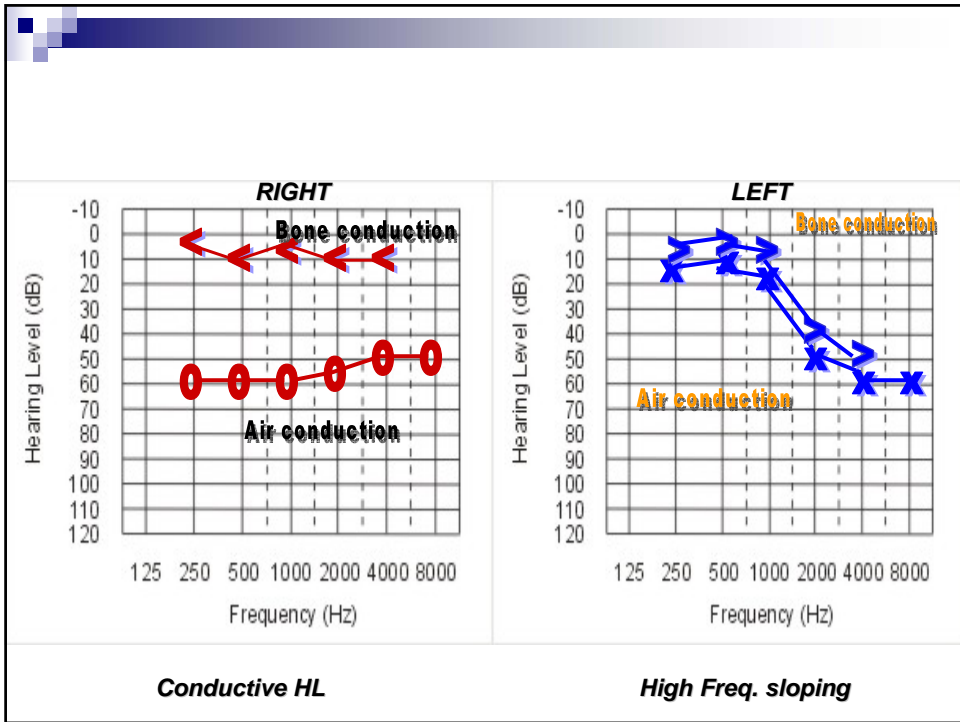
1- type of hearing loss: differences between AC & BC thresholds.

2- degree of hearing loss: absolute AC thresholds.

3- causes of hearing loss: Configuration (Shape) of audiogram.







Speech Audiometry

Helps to localize the site-of-lesion

- CHL excellent discrimination scores (90-100%)
- Sensory score 70-90%
- Neural scores are very poor (0-50%)

(4) Other investigations

1- ABR

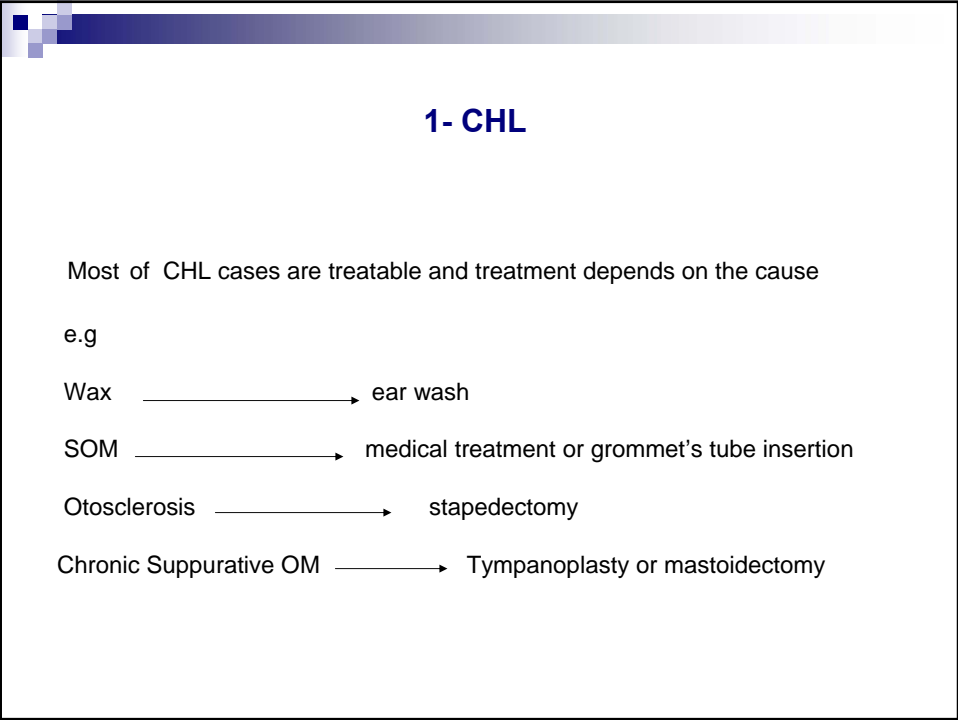
- Determination of hearing thresholds in infant, newborns & malingerers
- Detect acoustic neuroma: by studying time differences (interpeak latencies) between different ABR waves.

2- MRI

Detect acoustic neuroma



TREATMENT



1- CHL

Most of CHL cases are treatable and treatment depends on the cause

e.g

Wax → ear wash

SOM → medical treatment or grommet's tube insertion

Otosclerosis → stapedectomy

Chronic Suppurative OM → Tympanoplasty or mastoidectomy



2- SNHL

Most of SNHL cases are untreatable (except Meniere's disease & sudden SNHL) and treatment depends on rehabilitation

e.g

Hearing aids , cochlear implant