

Hearing Loss in Geriatric Primary Care

Mary Ann Forcica MD

Josh Uy MD



Q: In my office practice, I screen for hearing loss with

- A Level of difficulty in office conversation
- Questionnaire
- Hand held audiometer
- Whisper test
- Finger rub
- Tuning fork

Question 1

A 78-year-old man comes for a routine annual physical examination. The patient feels well. He is accompanied by his wife, who is concerned about his hearing. The review of systems is normal, and the patient states that he does not have any difficulty hearing.

Which of the following is the best way to screen this patient for hearing impairment?

- **A** Administer the Screening Hearing Handicap Inventory
- **B** Perform the Weber and Rinne tests
- **C** Perform the whispered-voice test
- **D** Refer for audiometric testing
- **E** No further evaluation is needed

How prevalent is hearing loss in our patients?

- In a population based study of patients over age 75, 60-70% had self reported hearing loss
 - 25% moderate to severe
- Over 70% had never used a hearing aid

How do we grade hearing loss?

- Volume thresholds on audiogram (decibels)
 - Mild: 25-40
 - Moderate: 41-55
 - Severe: 56-80
 - Profound: >80
- “deaf” usually refers to patients who lose their hearing in early childhood before the development of language.
- “hearing impaired” for adults who hearing is moderated to severely impaired.

How do we classify?

- Conductive
- Sensorineural
- Mixed

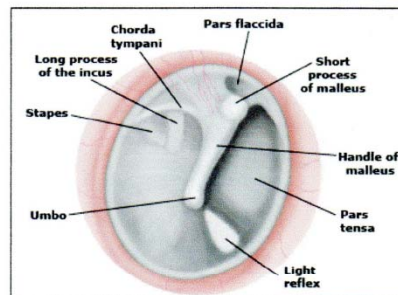
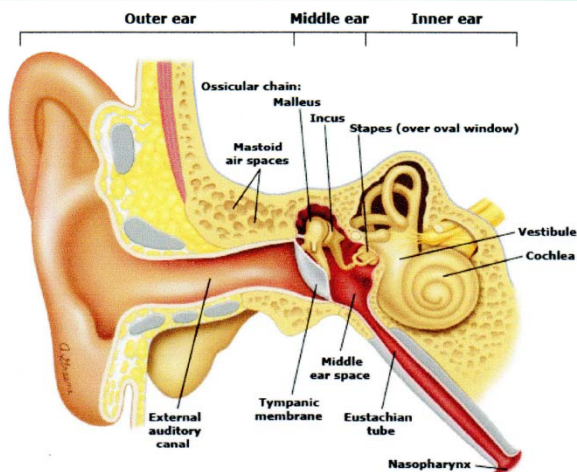
Back to Anatomy!

Presbycusis

Page 12 of 21

GRAPHICS

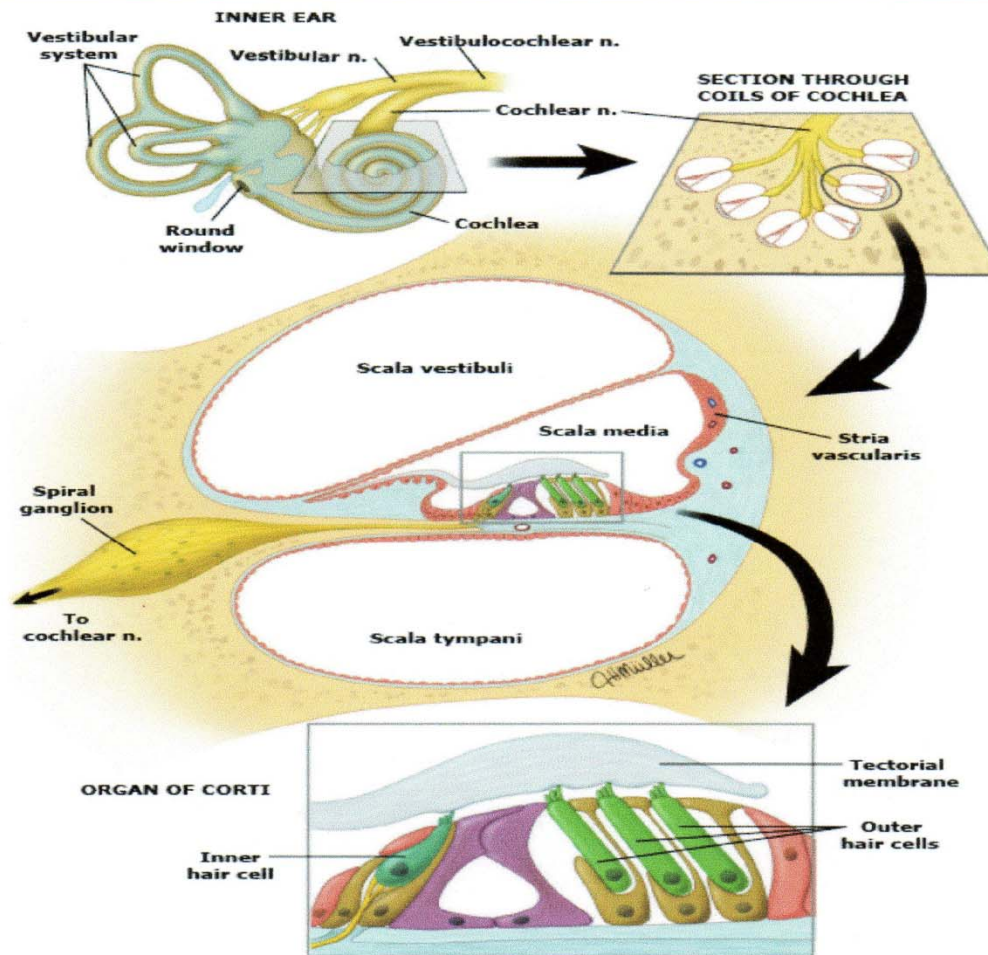
Anatomy of the adult ear



Otoscope view of right tympanic membrane

Even tinier anatomy (and invisible on exam)!

Cochlear and vestibular anatomy



Classification

- Conductive: cerumen impaction, otosclerosis, chronic infections, trauma, cholesteotoma
- Sensorineural: noise-induced, Meniere's, drug induced, autoimmune
- Presbycusis: hearing loss in older patients which begins with high tone loss.

Issues in Screening

- All or at risk or symptomatic
 - USPSTF – ‘I’ recommendation for screening asymptomatic patients
 - Large study showing little benefit of treatment on quality of life
 - ACP – screen ‘at risk’ (all over 65)
 - Medicare Wellness Visit – require screen
- For our practice, screen once

How to screen

- Finger rub: Examiner gently rubs fingers together at a distance of 6 inches from patient's ear
- A positive test is failure to identify rub in > 2 of 6 attempts.
- Whisper test: Examiner stands at arm's length (approximately 2 feet) behind patient. Patient occludes one ear canal. Examiner whispers 6 letter/number combinations.
- A positive test is a failure to repeat at least 3 of the 6 letter/number combinations.

Other screens

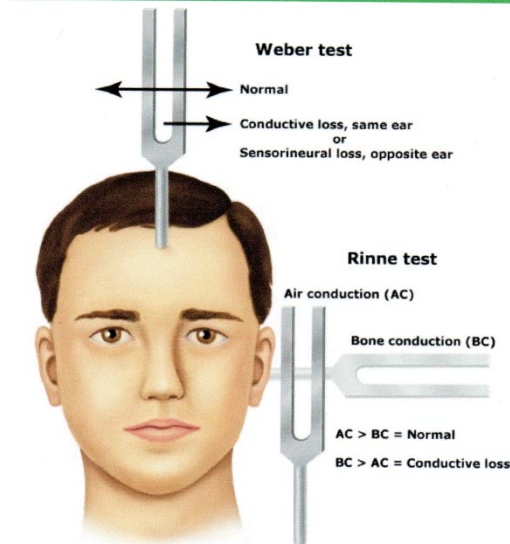
- Questionnaires
- Hand held audiometers

Diagnosis : II

- If hearing loss is present, of what type:
- Weber, followed by Rinne

Separating conductive from sensorineural loss

Evaluation of hearing loss, Weber and Rinne tests



Weber test: Place the base of a struck tuning fork on the bridge of the forehead, nose or teeth. In a normal test there is no lateralization of sound. With unilateral conductive loss, sound lateralizes towards affected ear. With unilateral sensorineural loss, sound lateralizes to the normal or better-hearing side.

Rinne test: Place the base of a struck tuning fork on the mastoid bone behind the ear. Have the patient indicate when sound is no longer heard. Move fork (held at base) beside ear and ask if now audible. In a normal test, AC > BC; patient can hear fork at ear. With conductive loss, BC > AC; patient will not hear fork at ear.

AC: air conduction; BC: bone conduction.

For mathematical minds



UpToDate. Official reprint from UpToDate®
www.uptodate.com
©2012 UpToDate®

Interpreting Weber and Rinne tests: Conductive versus sensorineural hearing loss

	Weber lateralizes	Rinne test
Conductive loss		
Good ear		AC > BC
Bad ear	To bad ear	BC > AC
Sensorineural loss		
Good ear	To good ear	AC > BC
Bad ear		AC > BC

AC > BC: air conduction better than bone conduction (normal or "positive" Rinne).

BC > AC: bone conduction better than air conduction (abnormal or "negative" Rinne).

Diagnosis III

- Look for cerumen!!!!
 - If present, remove
- If patient interested in improvement
 - Refer for audiology evaluation
 - Possible referral for ENT, especially for conductive loss

Q When I perform a cerumen extraction, I use

- A a standard curette
- B a lighted curette
- C a water irrigator
- D the office staff
- E other

Outcomes of cochlear implants in older patients

Clark et al JAGS 2012

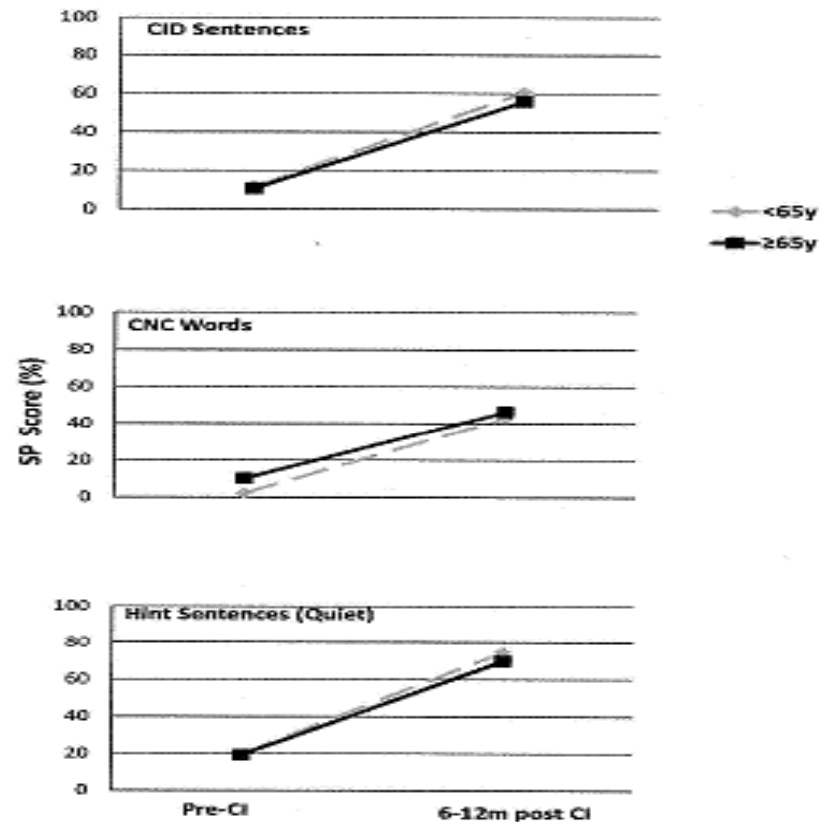


Figure 2. Communicative capacity as indicated by mean speech perception scores reported in the literature before and 6 to 12 months after cochlear implant (CI) surgery,^{22,24,35,38,44,50} is similar for older (≥ 65) and younger (<65) adults. CID = Central Institute for the Deaf; CNC = consonant-nucleus consonant; HINT = Hearing in Noise Test; SP = speech perception.

Q: I have referred a patient for a cochlear implant

- A yes
- B no

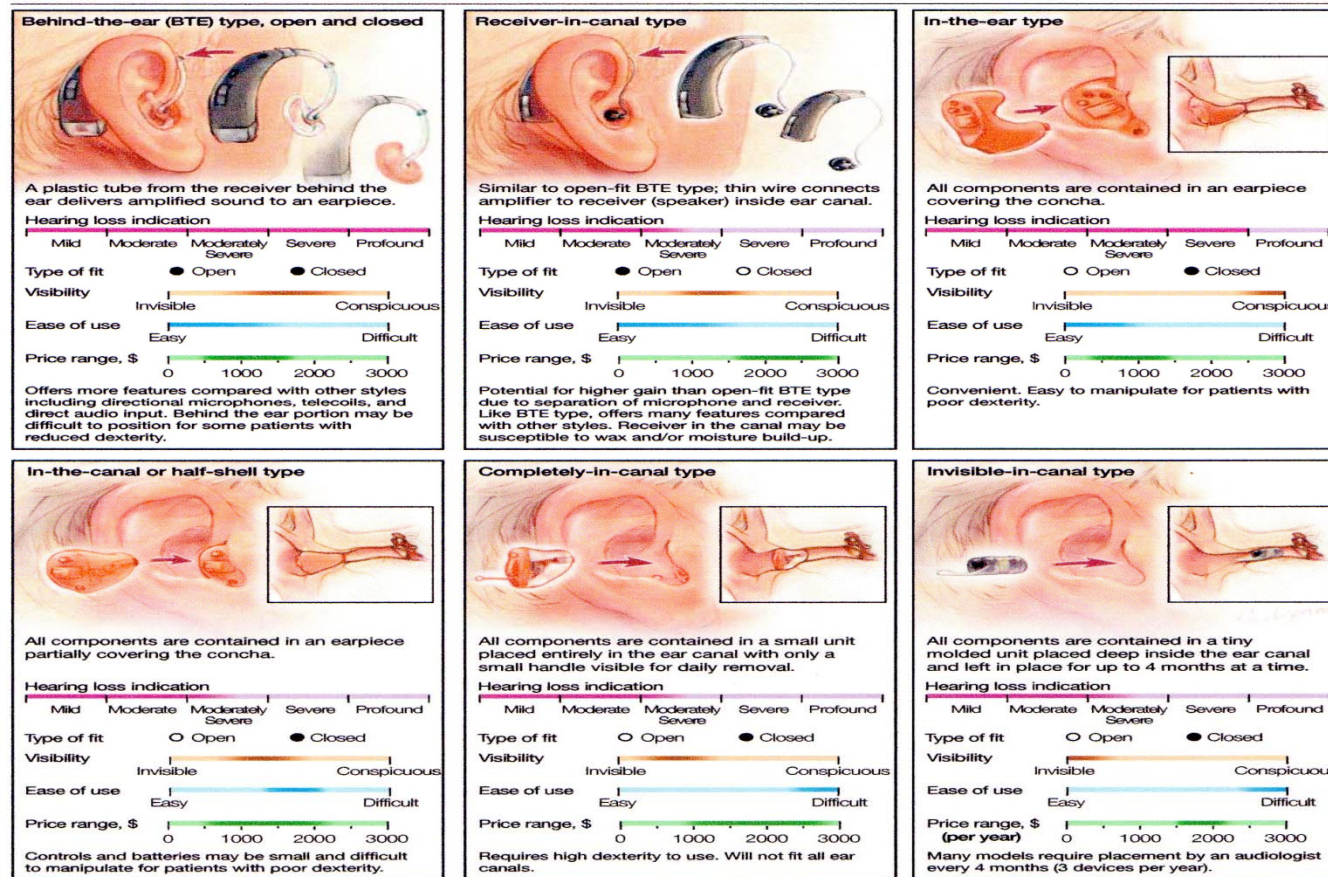
Sensorineural loss

- Hearing amplification
 - Amplifiers
 - ‘pocket talkers’
 - Infra red systems with headphones
 - Hearing aids

Hearing Aid Comparisons

HEARING DEFICITS IN THE OLDER PATIENT

Figure 2. Types of Hearing Aids



Ratings are based on clinical experience and review of available evidence. Open fit means that the earpiece does not occlude the ear canal. In closed fit types, the canal is completely occluded. The price estimates reflect 2011 prices for the majority of models in each type offered by most vendors; highest-end models can cost as much as \$6000. Prices are for a single hearing aid device except for the price of the invisible-in-canal type, which is an annual price reflecting replacement with a new device every 4 months (3 devices per year). It is usually recommended that hearing aids be replaced approximately every 5 years, but many patients wear them for longer periods.

Question 3

- An 89 yr old long term care patient is uncooperative with staff for daily care. She has severe hearing loss, and dementia. Two 'behind the ear' hearing aids have been lost since her admission. Her care plan should include:
 - A Use of a 'pocket talker' during daily care
 - B Daily removal of cerumen
 - C Fitting for 'completely in the ear' devices
 - D Teaching of simple sign language icons for daily needs

Q: My office has:

- A hand held audiometer
- A 'pocket talker'
- A lighted ear curette
- An ear irrigator

Question 2

A 75-year-old woman is evaluated because of the gradual onset of right-sided hearing loss and a 3-year history of tinnitus. She does not have ear pain or drainage, dizziness, or headache. There is no history of trauma to the ear or excessive exposure to loud noises.

- On examination, the patient is unable to hear numbers whispered 2 feet from the right ear with the left auditory canal blocked. Examination of the external auditory canals and tympanic membranes is normal. Neurologic examination is normal. When a tuning fork is placed on the top of her head, she reports that the sound is heard toward the left ear (Weber test). Results of audiometry show normal hearing on the left and 45-decibel high-frequency hearing loss on the right.
- Which of the following is the most likely diagnosis?
 - **A** Acoustic neuroma
 - **B** Cholesteatoma
 - **C** Meniere disease
 - **D** Otosclerosis
 - **E** Presbycusis