The Ear (aur/i; ot/o) → ADD SUFFIX “-otia” p. 526
Ch. 11 – Medical Terminology

-- Ear contains receptors for 2 special senses
  - hearing (audi/o; acoust/o)
  - balance (equilibrium)

I. Anatomy – KNOW FIG. 11-1

A. Outer (external) ear
  - designed to collect and direct sound waves
    1. Pinna (auricle) - elastic cartilage and skin
    2. external auditory meatus (canal)
      - skin-lined bony tunnel with ceruminous glands & hair wax

B. Middle ear (tympanic cavity)
  1. tympanic membrane [TM] (tympan/o; myring/o) - thin partition of fibrous c.t. (eardrum)
     - separates outer/middle ears
  2. size of an aspirin; filled with air
     - connected with nasopharynx via auditory (eustachian) tube = salping/o
     - don’t confuse w/ “uterine tube”
     - so, salpingitis = ?
  3. contains 3 ossicles that transmit sound waves to inner ear
     * malleus (hammer) - connected to eardrum
     * incus (anvil)
     * stapes (stirrup) - attached to oval window
  4. thin bony partition separates inner ear from middle:
     oval window filled with stapes allows passage of vibrations
     conductive hearing loss (deafness) = problems with middle ear transmission
     Ex.: otosclerosis → hardening of ossicles

C. Internal (inner) ear - complex fluid-filled structure
  1. bony labyrinth - series of cavities in temporal bone “maze”
  2. membranous labyrinth - series of fluid-filled sacs lying within bony labyrinth
  3. perilymph - fluid outside membranous
  4. endolymph - fluid inside membranous
Bony labyrinth → contains → Membranous labyrinth

semicircular canals → semicircular ducts
vestibule → utricle and saccule
cochlea → "snail" → cochlear duct

5. membranous labyrinth contains patches of hair cells, the receptor cells for hearing and equilibrium
   -- **organ of Corti** is strip of hair cells within cochlear duct that respond to sound (Fig. 11-1 is misleading)
   -- different clusters of hair cells in semicircular ducts and utricle/saccule detect balance

➤ Be able to sequence path of sound!

*From oval window:*
Perilymph in cochlea → endolymph in cochlear duct → hair cells in the organ of Corti

D. **Vestibulocochlear nerve** carries signals to brainstem, then cerebral cortex, for interpretation
   
   **sensorineural hearing loss (deafness)** = problems with inner ear/vestibulocochlear nerve/brain

II. Clinical
A. **otitis externa**

   media vs. aerotitis media → detected via pneumatic otoscopy (Fig. 11-3) or tympanometry

   interna (labyrinthitis)

B. **presbyacusis**

   *old* ← *hearing condition*

C. **anacusis (deafness)**
   -- differentiated by auditory acuity testing
   
   • tuning fork (bone vs. air conduction) → Fig. 11.5
     
     bone > air = conductive loss
     air > bone = sensorineural loss
   
   • brainstem auditory evoked potential/response (Fig. 11-6)
     
     ▪ measures electrical response in ear and brainstem to sounds
     ▪ good for infants (and pets!)

   NRF BAEP/BAER

D. lavage (irrigation) vs. instillation
E. Cochlear implant (Fig. 11-8)
   - very different from a hearing aid
   - requires surgery and intensive rehabilitation

F. Acronyms/Abbrev.
   binaural = both ears
   Write out: do not use AS/AD/AU