

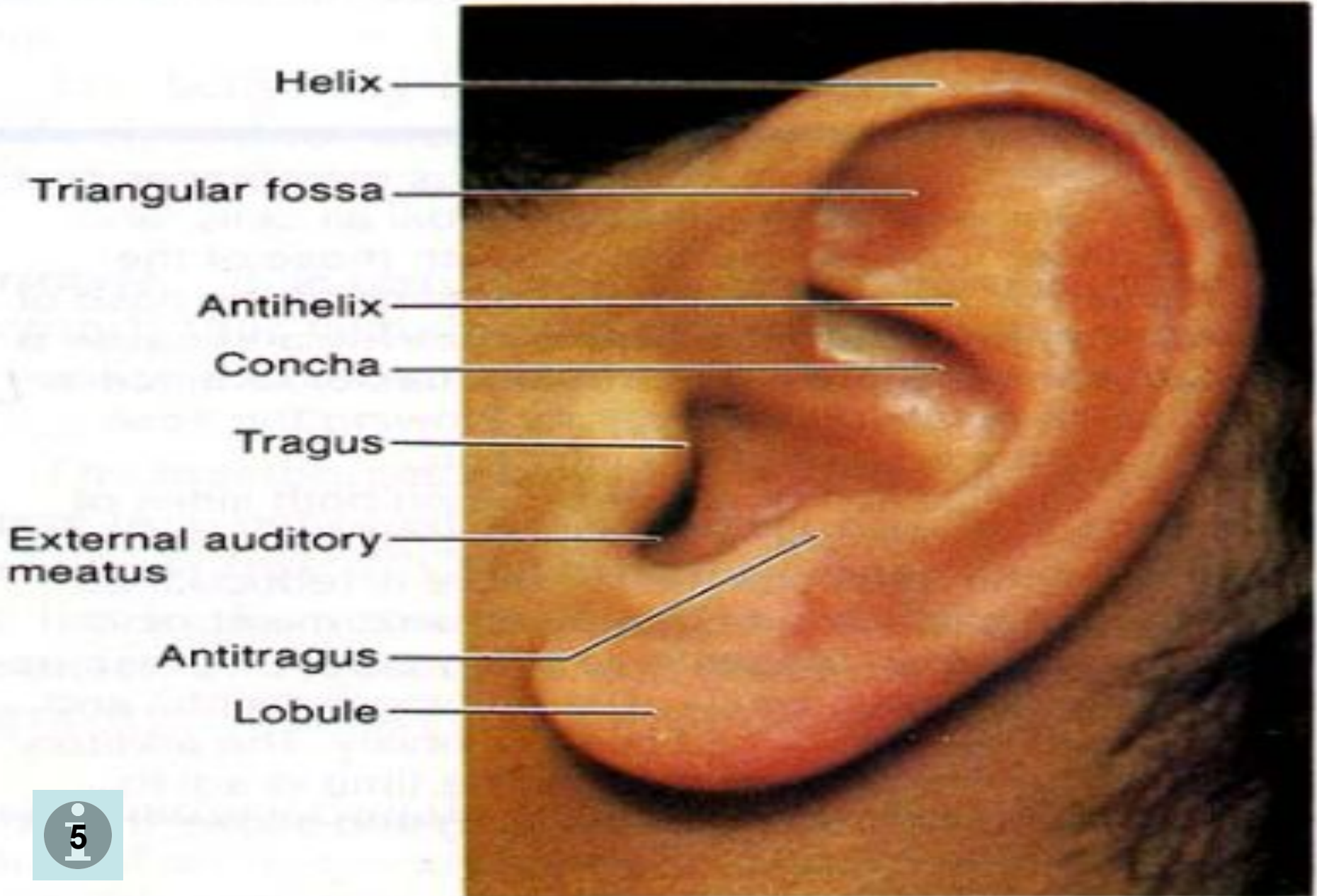
Assessment of the EAR

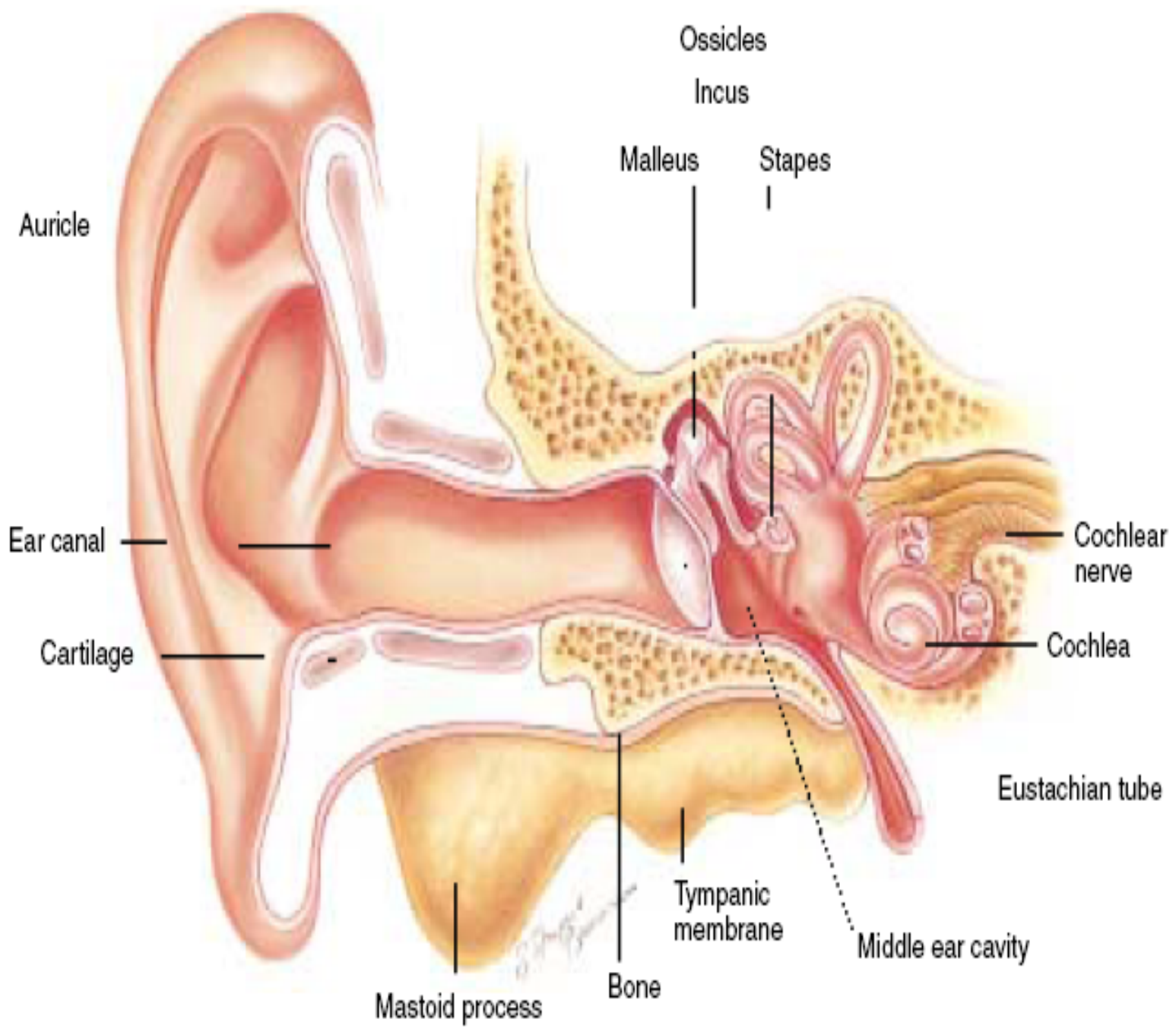


External Ear



The surface anatomy of the auricle of the ear.





External Ear structures

- The external ear is composed of the ***auricle or pinna*** and the **external auditory canal**. The **external auditory canal** is C-shaped in the adult. The outer part of the canal curves up and back and the inner part of the canal curves down and forward.



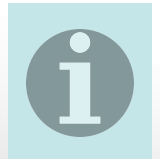
External Ear Structures

- **Modified sweat glands in the external ear canal secrete **cerumen**, a waxlike substance that keeps the tympanic membrane soft, and the stickiness of cerumen serves as a defense against foreign bodies.**



External Ear Structures

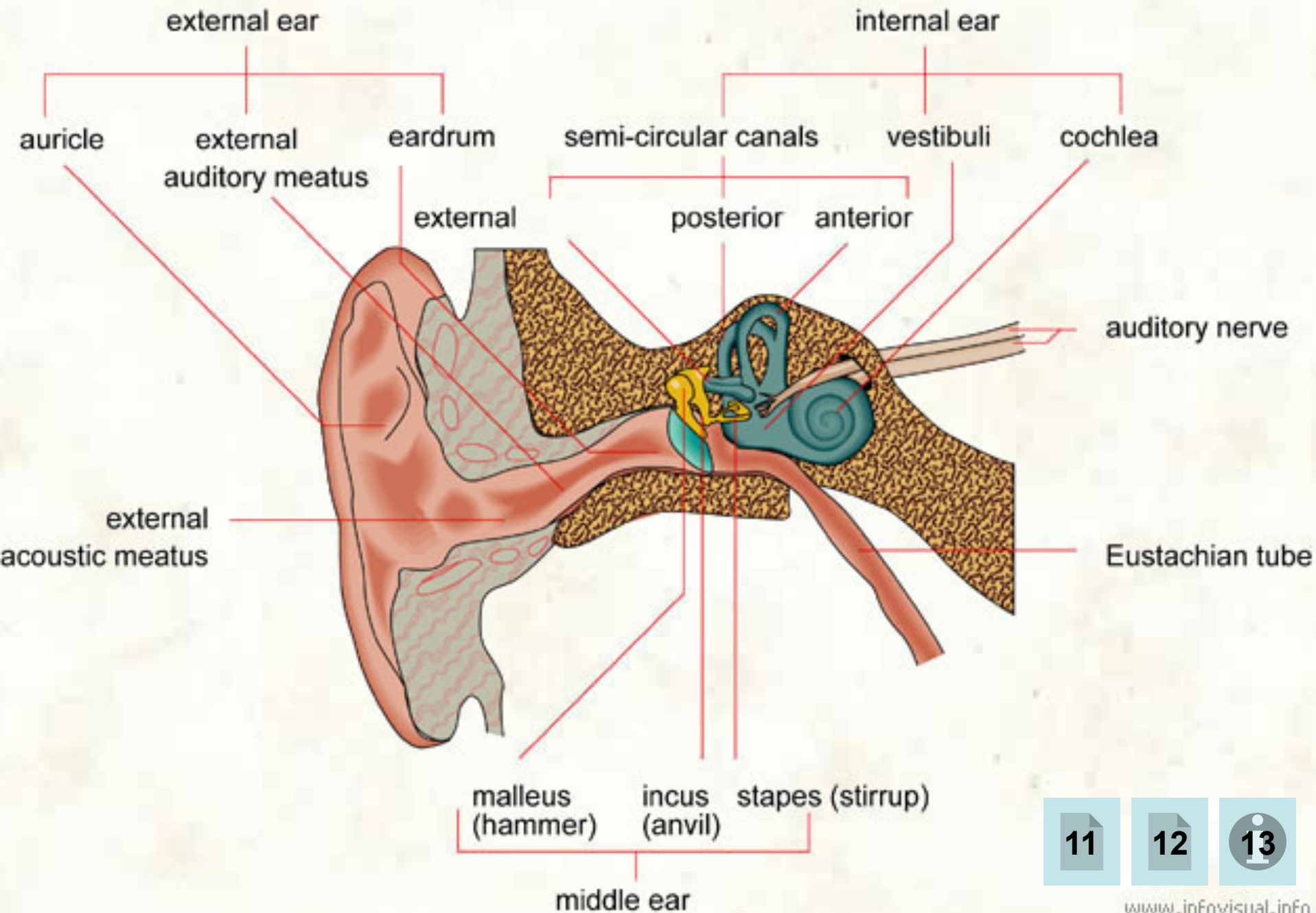
- The **tympanic membrane** is a translucent pearly gray, concave membrane which serves as a partition stretched across the inner end of the auditory canal, separating it from the middle ear.



Middle East



EXTERNAL, MIDDLE, INTERNAL EAR



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Middle Ear Structures

- The **tympanic cavity** is a small, air-filled chamber in the temporal bone. It is separated from the external ear by the eardrum and from the inner ear by a bony partition containing two openings, the round and oval window.



Middle Ear Structures

- The middle ear contains three auditory ossicles: the **malleus**, the **incus**, and the **stapes**. These tiny bones are responsible for transmitting sound waves from the eardrum to the inner ear through the oval window. Air pressure is equalized on both sides of the tympanic membrane by means of ***Eustachian tube*** which connects the middle ear to the nasopharynx.



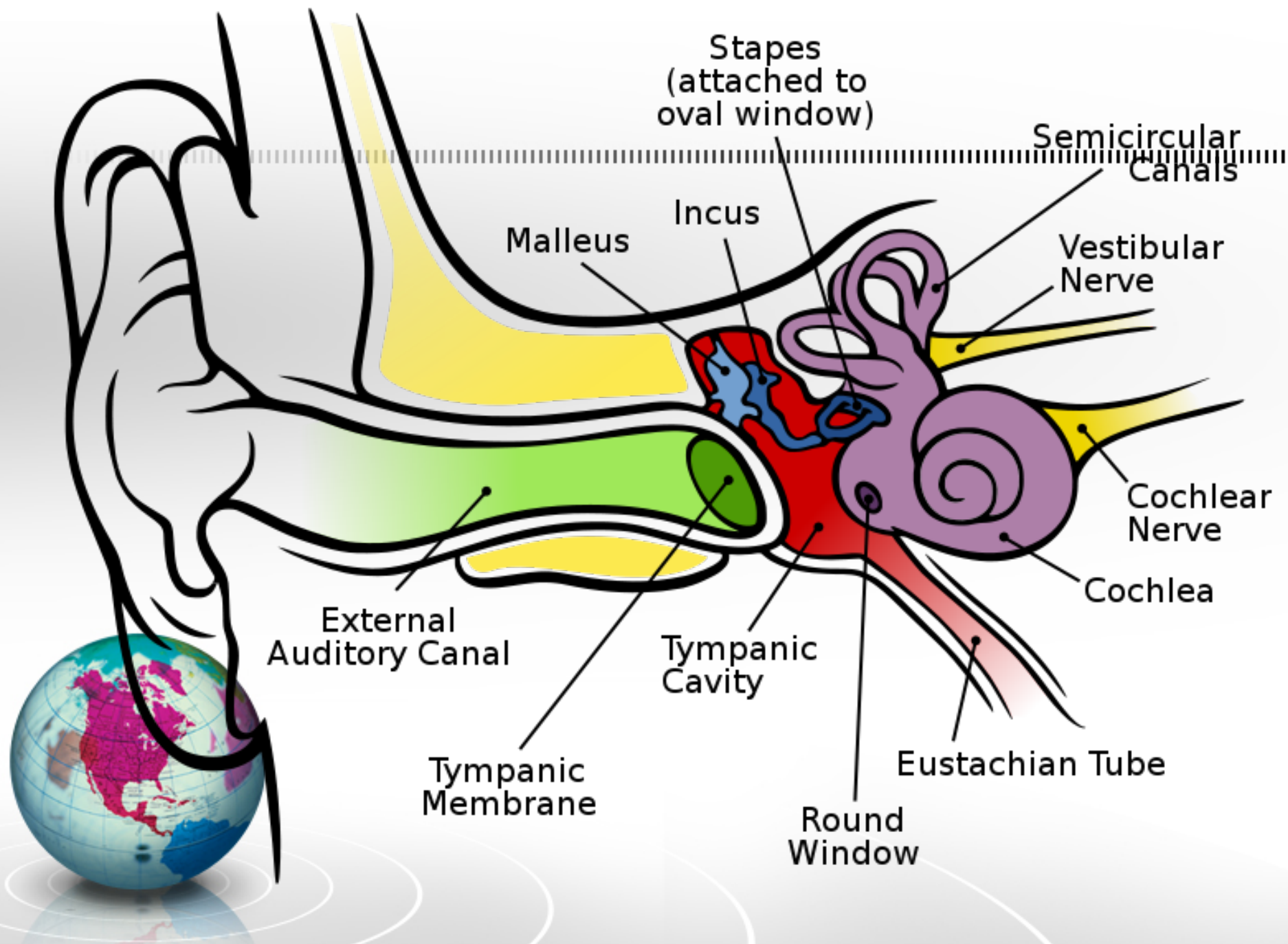
Inner Ear Structures

- **Labyrinth** is a fluid filled and is made up of the bony labyrinth. It has three parts: the *cochlea*, the *vestibule*, and the *semicircular canals*. The inner cochlear duct contains the *spiral organ of Corti*, which is the sensory organ for hearing.

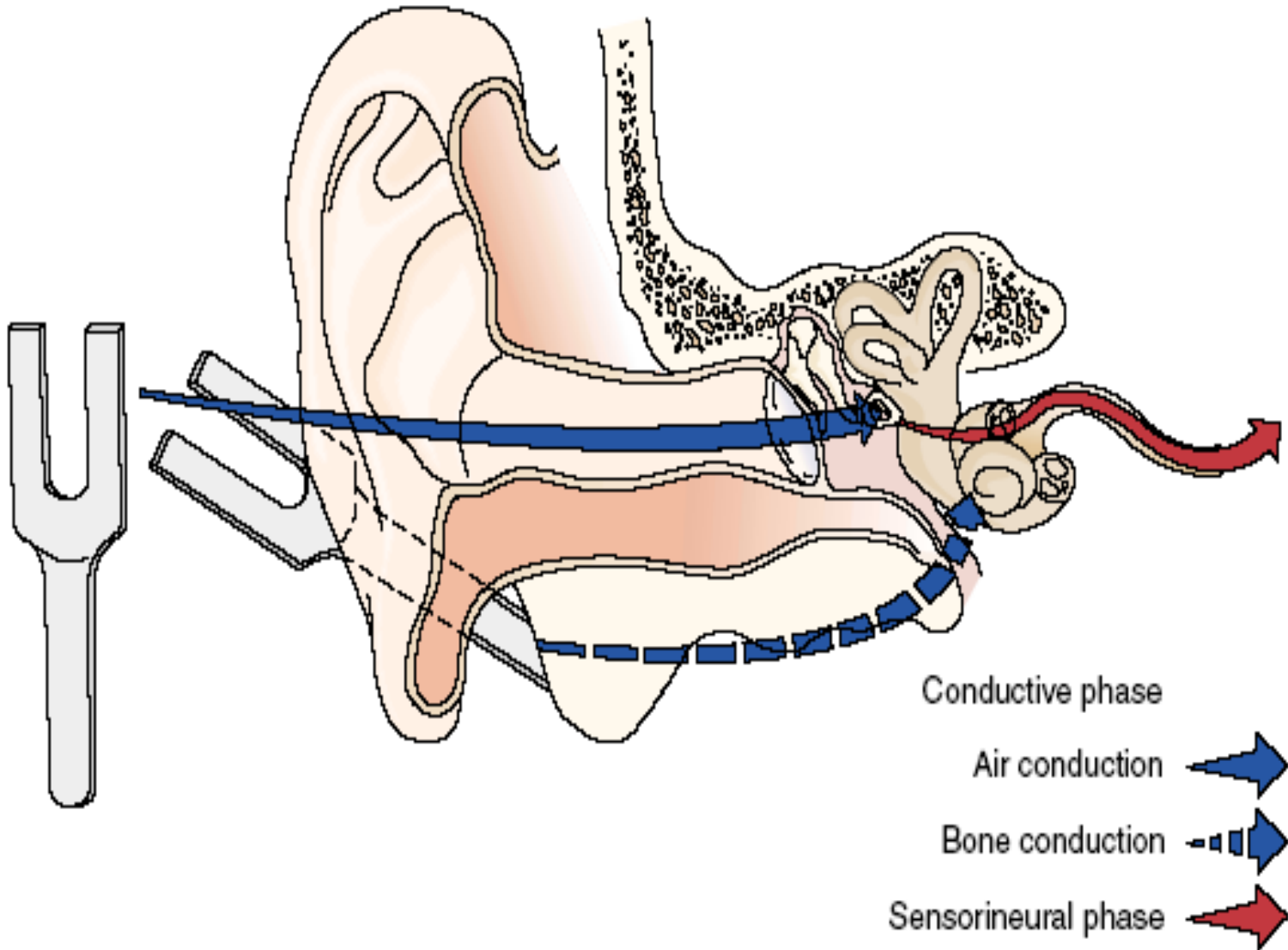


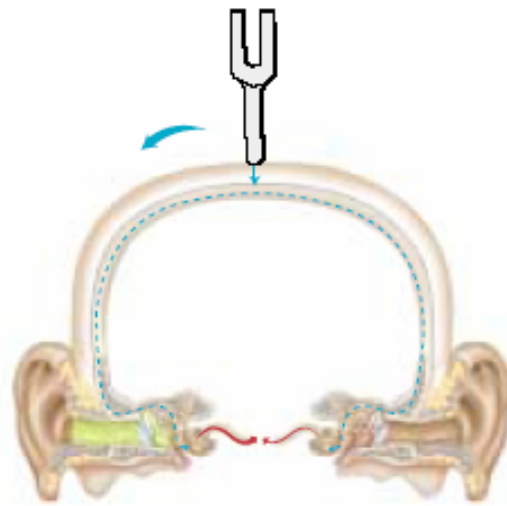
- **Sensory receptors, located in the vestibule and in the membranous semicircular canals, sense position and head movements to help maintain both static and dynamic equilibrium.**
- **Nerve fibers from these areas form the vestibular nerve, which connects with the cochlear nerve to form the 8th cranial nerve.**



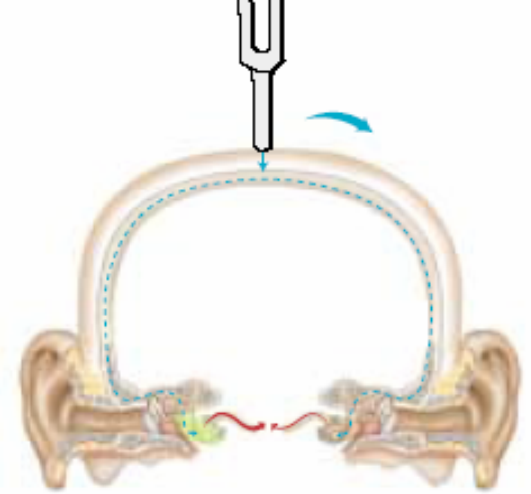


Hearing Pathways



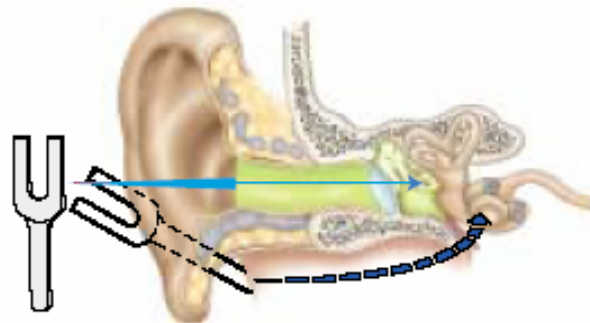


The sound lateralizes to the impaired ear. Because this ear is not distracted by room noise, it can detect the tuning fork's vibrations better than normal. (Test yourself while plugging one ear with your finger.) This lateralization disappears in an absolutely quiet room.



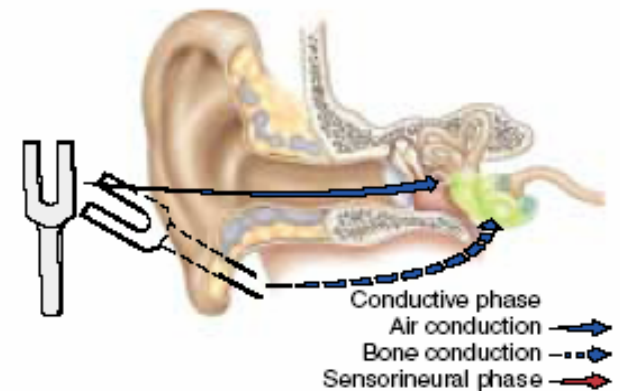
The sound lateralizes to the good ear. The impaired inner ear or cochlear nerve is less able to transmit impulses no matter how the sound reaches the cochlea. The sound is therefore heard in the better ear.

Rinne Test



Bone conduction lasts longer than or is equal to air conduction ($BC > AC$ or $BC = AC$). While air conduction through the external or middle ear is impaired, vibrations through bone bypass the problem to reach the cochlea.

Causes Include:
Obstruction of the ear canal, otitis media, a perforated or relatively immobilized eardrum, and otosclerosis (a fixation of the ossicles by bony overgrowth)



Air conduction lasts longer than bone conduction ($AC > BC$). The inner ear or cochlear nerve is less able to transmit impulses regardless of how the vibrations reach the cochlea. The normal pattern prevails.

Sustained exposure to loud noise, drugs, infections of the inner ear, trauma, tumors, congenital and hereditary disorders, and aging (presbycusis)

Collecting Subjective Data

Nursing History

Current Symptoms

- A sudden decrease in ability to hear in one ear associated with **otitis media**.
- Drainage “**otorrhea**” usually indicates infection. Purulent bloody drainage infection of the external ear. Purulent drainage with **pain and a popping sensation** is characteristics of otitis media with perforation of tympanic membrane.



- **ringing in the ears “tinnitus” associated with excessive ear wax build up, high blood pressure, or certain medication such as streptomycin, gentamicin, indomethacin or aspirin.**
- **Vertigo “true spinning motion” associated with an inner ear problem.**



Past History

- **A history of repeated infections can affect the tympanic membrane and hearing**
- **Client may be dissatisfied with past treatments for ear or hearing problems**



- **The older client may have had bad experience with certain hearing aids and may refuse to wear one. The client may also associate with a negative self-image with a hearing aid.**
- **Hearing loss is heredity**



HISTORY QUESTIONS

- **Ear Infections**
- **Ear Injuries or Surgery**
- **Hearing Difficulties (Family HX?)**
- **Dizziness / Trouble Maintaining Balance**
- **Pain or Tinnitus (Ringing in Ears)**
- **Discharge from Ears**
- **Exposure to Excessive Noise**
- **Use of Cotton-Tipped Applicators**
- **Air Travel**



External Ear_

- ***Inspect & Palpate***
- ***Auricle*** for masses, lesions, deformity, placement
- **Move to check for pain**
- **Assess for Discharge**



Internal Ear

How To:

- Use *otoscope* (**inverted**)
- Use Largest Speculum
- Tip Client's Head Away
- **Adult:** Up and Back, Slightly Away
- **Child:** Down and Back



ASSESS:

- **Ear Canal**

Normal = **Pink** & Intact

May see *Cerumen* (wax)

Check for ***Erythema & Edema***

Check for **Tenderness**

- **Eardrum (Tympanic Membrane)**

Intact

Color (pearly gray)



Lifestyle and Health Practices

- **Continuous loud noise can cause a hearing loss unless the ears are protected with ear guards.**
- **Swimmer's ear when contaminated water is left in the ear.**
- **Hearing loss or ear pain may interfere with the client's ability to perform usual activities of daily living. Clients may not be able to drive, talk on the telephone, or operate machinery safely because of poor hearing ability.**



- **Clients who have decreased hearing may withdraw, isolate themselves, or become depressed because of the stress or verbal communication.**
- **Yearly hearing tests are recommended for clients who are exposed to loud noises for long periods.**
- **Use of cotton-tipped applicators inside the ear can cause ear wax to become impacted and cause ear damage**



Risk Reduction Teaching Tips for Hearing Loss

- **Avoid loud noises or sustained loud reverberations**
- **Wear ear protection when exposed to loud noises**
- **Obtain treatment for otitis media**
- **Seek treatment for recurrent sinusitis, which can lead to otitis media**
- **Eat a varied, well-balanced diet**
- **Have any sudden hearing loss, dizziness, and tinnitus evaluated as soon as possible**
- **Avoid medications associated with ototoxicity, if possible.**



Types of Test

- ***Rinne Test***

- *It compares perception of sounds, as transmitted by air or by bone conduction through the mastoid. Thus, one can quickly suspect conductive hearing loss.*

- ***Weber***

- *It can detect unilateral (one-sided) conductive hearing loss and unilateral sensorineural hearing loss*

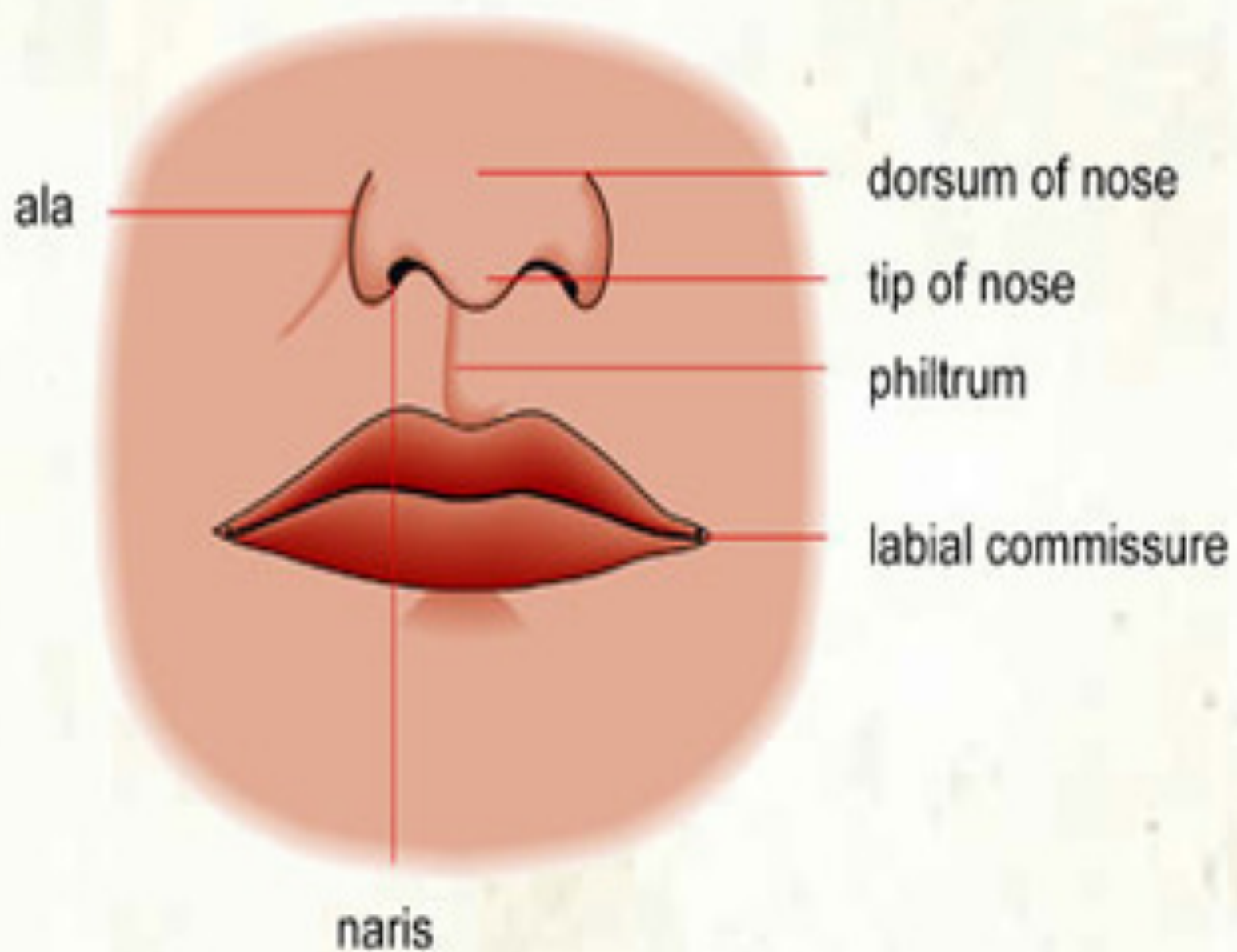


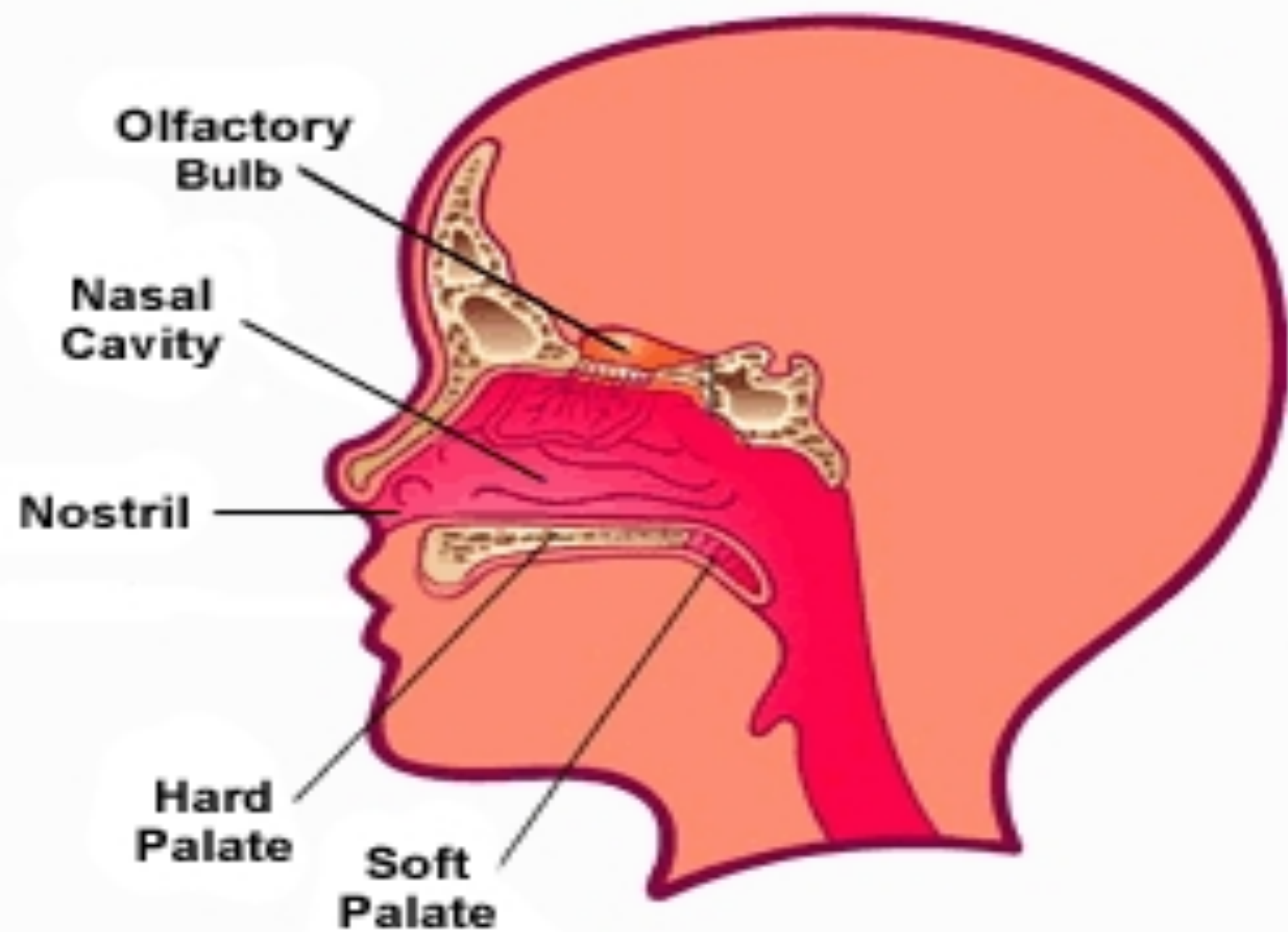
Video

Assessment of the NOSE



EXTERNAL NOSE





- **NOSE**

Divided into two narrow passages by a thin wall of soft bone.

Filter the air that goes into the lungs

- **NOSTRILS**

- two openings of the nose where air enters. It lets air in and out of our lungs

- **OLFACTORY NERVE**

send message to the brain



Functions of Nose

- **Identify odors**
- **Air passageway**
- **“Air conditioning”**
 - Humidify
 - Warms/cools air
 - Cleans and filters air of dust and bacteria
 - Voice resonance



COMMON AILMENT OF THE NOSE

- **SINUSITIS** - *an inflammation of the nasal mucosa (mucus membrane) lining of the nose and the sinus*
- **NOSE BLEEDING** - *when weather is very hot that can be a result of broken blood vessels in the nostrils.*



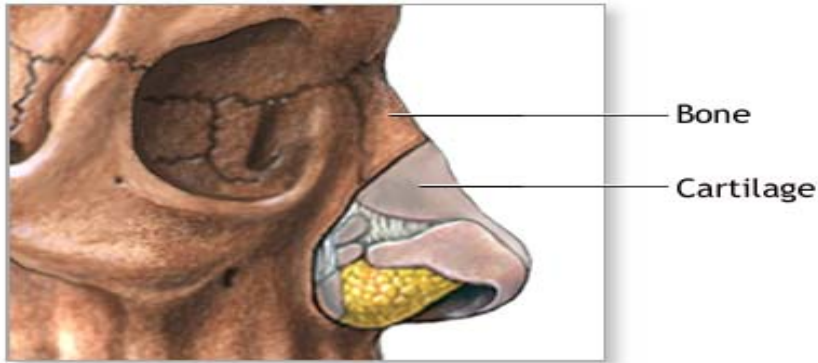
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- **RHINITIS** - *an inflammation of the nasal cavity and mucus membrane. An allergy caused by pollen from certain plants*
 - **COMMON COLDS** - *cause sneezing and sore throat. cannot smell very well because your nose is blocked by mucus and it makes difficult to breathe.*



Assessment

- **The external portion of the nose is inspected for the following:**
 - 1. Placement and symmetry.**
 - 2. Patency of nares** (done by occluding nostril one at a time, and noting for difficulty in breathing)
 - 3. Flaring of alaenasi**
 - 4. Discharge**





The external nares are palpated for:

1. Displacement of bone and cartilage.
2. For tenderness and masses.

The internal nares are inspected by hyperextending the neck of the client, the ulnar aspect of the examiner's hand over the forehead of the client, and using the thumb to push the tip of the nose upward while shining a light into the naris.



Inspect for the following:

- 1. Position of the septum.**
- 2. Check septum for perforation. (can also be checked by directing the lighted penlight on the side of the nose, illumination at the other side suggests perforation).**
- 3. The nasal mucosa (turbinates) for swelling, exudates and change in color.**



Paranasal Sinuses

- Examination of the paranasal sinuses is indirectly. Information about their condition is gained by **inspection** and **palpation** of the overlying tissues. Only frontal and maxillary sinuses are accessible for examination.
- By palpating both cheeks simultaneously, one can determine tenderness of the maxillary sinusitis, and pressing the thumb just below the eyebrows, we can determine tenderness of the frontal sinuses.



Normal Findings:

1. Nose in the midline
2. No Discharges.
3. No flaring alae nasi.
4. Both nares are patent.
5. No bone and cartilage deviation noted on **palpation**.
6. No tenderness noted on **palpation**.
7. Nasal septum in the mid line and not perforated.
8. The nasal mucosa is **pinkish** to **red** in color. (Increased redness turbinates are typical of allergy).
9. No tenderness noted on **palpation** of the paranasal sinuses.



Video