

W E E K 5

ALTERATIONS IN SENSORY FUNCTION

CHAPTER 15

DISORDERS OF
THE EYES, EARS AND
OTHER SENSORY ORGANS

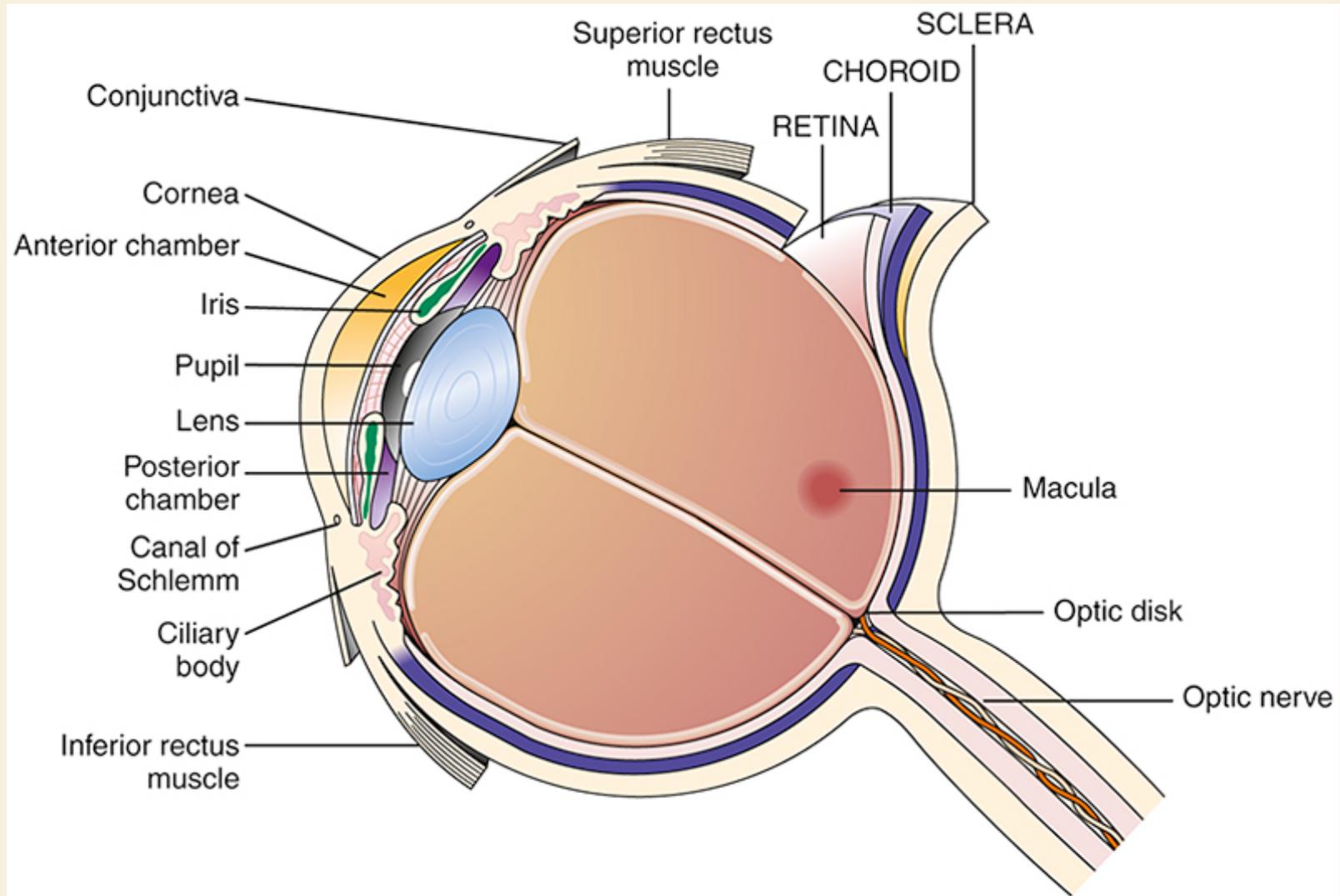
LECTURE OBJECTIVES

- Describe the general functions and structures of the ear and eye.
- Describe the general manifestations of hearing impairment.
- Explain how conductive and sensorineural mechanisms of hearing loss differ in etiology and treatment.
- Identify the predisposing factors, clinical manifestations, and management of otitis media.
- Describe the general manifestations of visual impairment.
- Describe the causes, clinical manifestations, and management of common visual disorders, including errors of refraction, strabismus, cataract, and retinopathies.
- Distinguish between open-angle and acute angle-closure glaucoma.
- Differentiate the two forms of macular degeneration.
- Describe the causes, clinical manifestations, and management of smell and taste disorders.

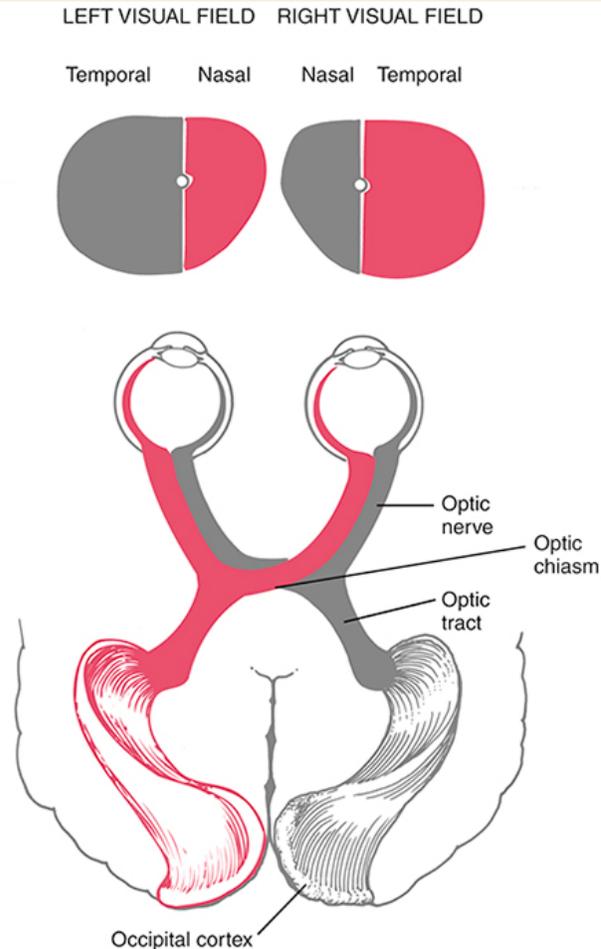


T H E E Y E

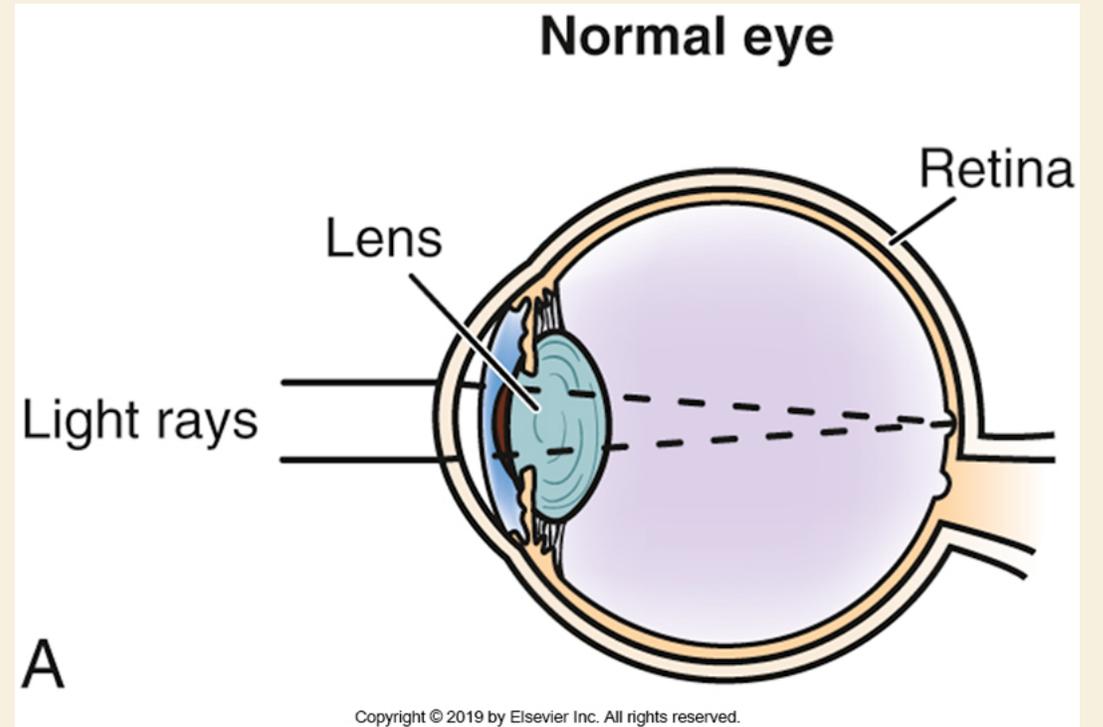
STRUCTURE OF THE EYE



VISUAL PATHWAYS



From Jarvis C: *Physical examination and health assessment*, ed 7, Philadelphia, 2016, Saunders, p 285.



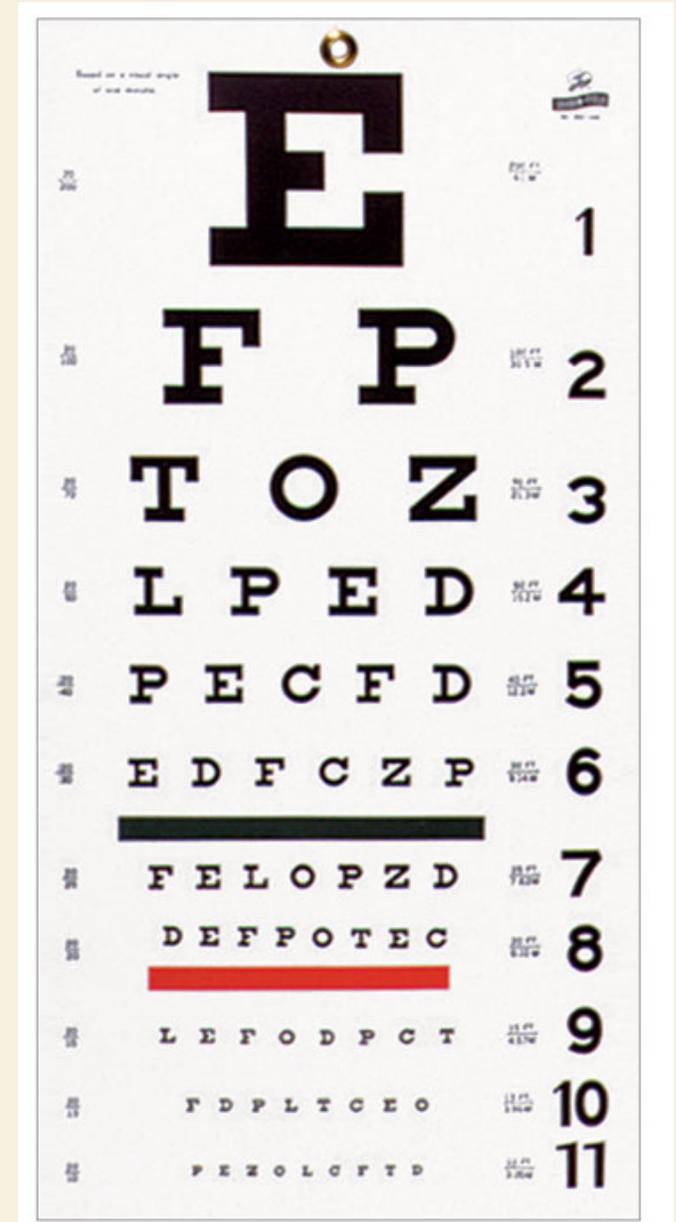
VISUAL IMPAIRMENT

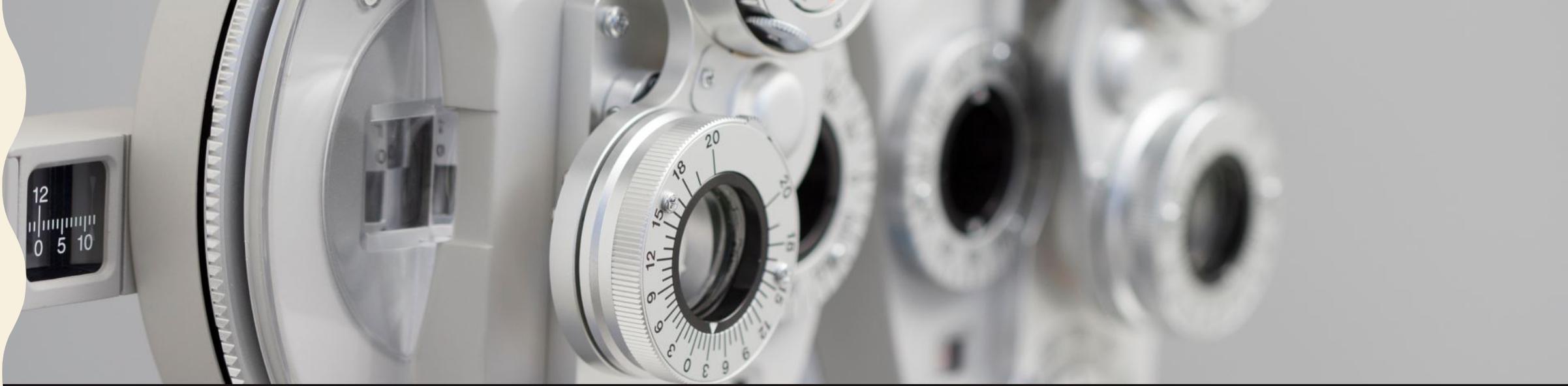
Infancy or early childhood

Older children

In adults

Elderly





DISORDERS OF THE EYE

ERRORS OF REFRACTIO

N Myopia

- Nearsightedness
- Concave lenses

• Hyperopia

- Farsightedness
- Convex lenses



ERRORS OF REFRACTION

PRESBYOPIA



ASTIGMATISM



AGE-RELATED DISORDERS

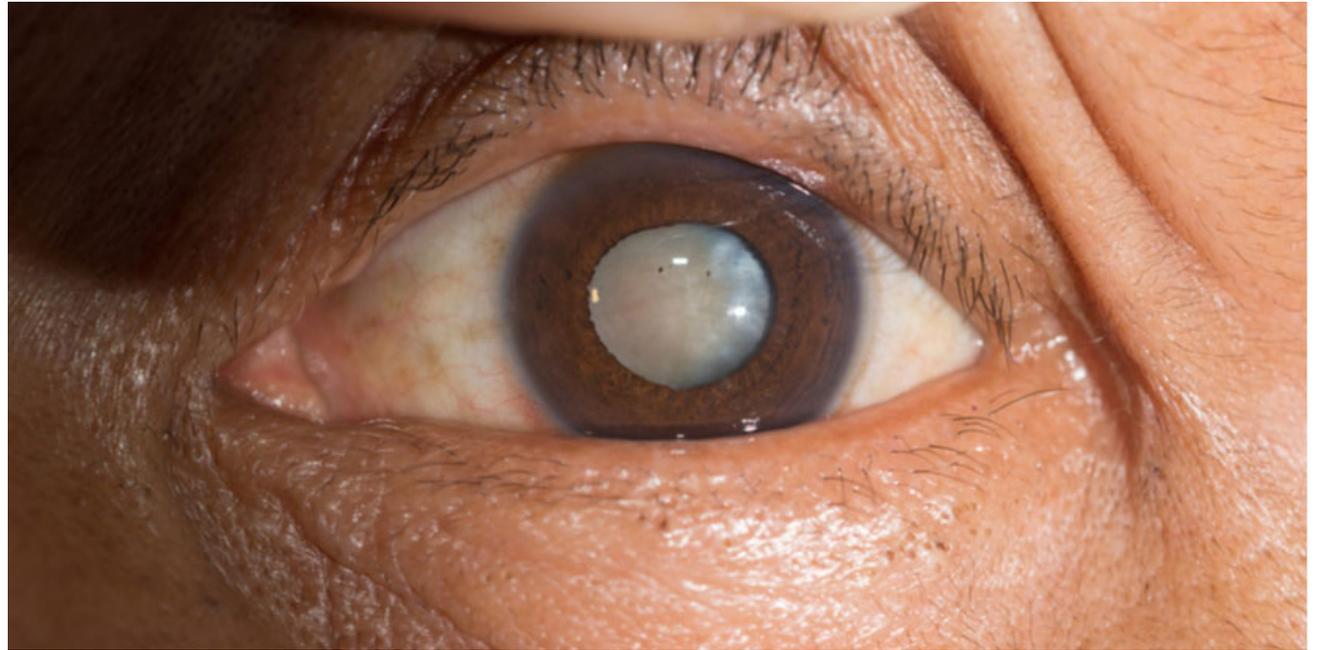
STRABISMUS



AMBLYOMPIA

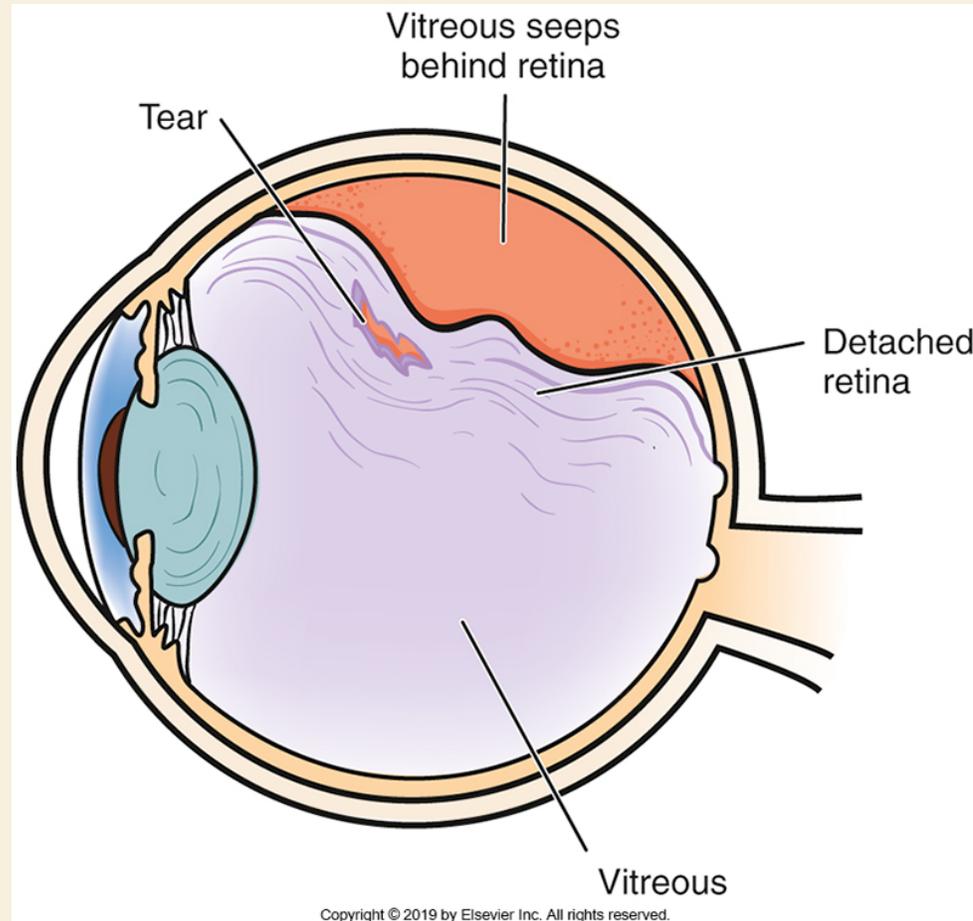


C A T A R A C T S



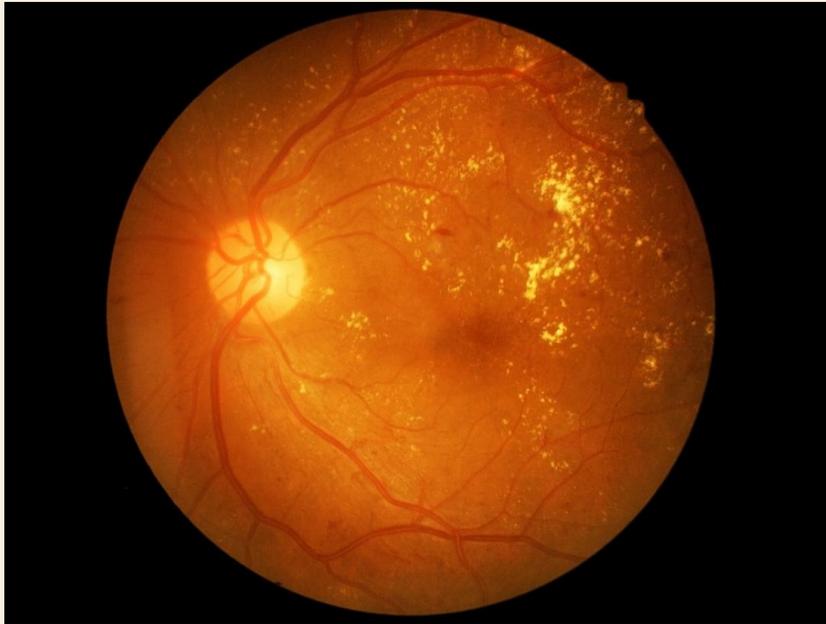
RETINOPATHY

- Retinal detachment



RETINOPATHY

DIABETIC RETINOPATHY

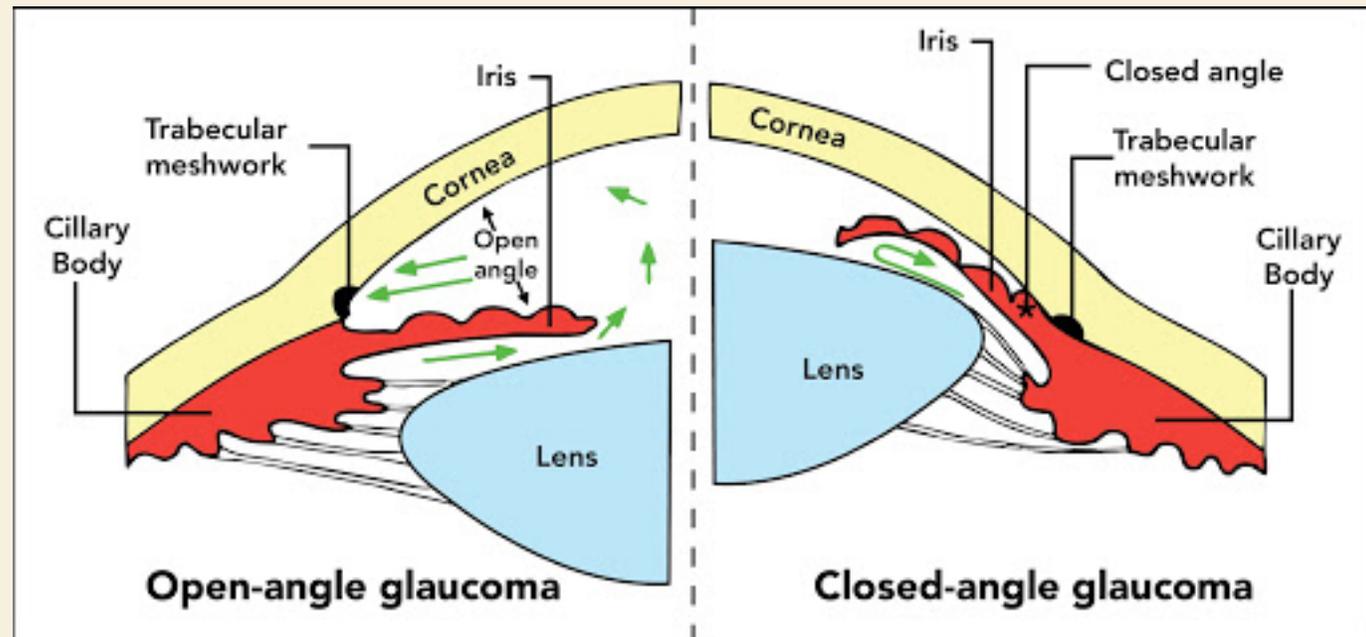


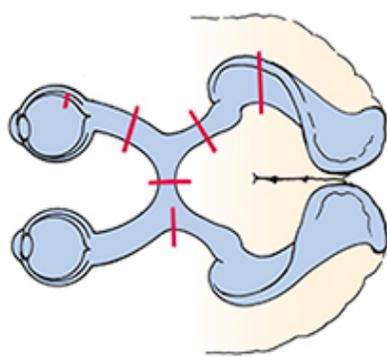
MACULAR DEGENERATION



GLAUCOMA

- Chronic Open-Angle
- Acute Angle Closure





1. Retinal damage

- Macula—central blind area (e.g., diabetes):



- Localized damage—blind spot (scotoma) corresponding to particular area:



- Increasing intraocular pressure—decrease in peripheral vision (e.g., glaucoma). Starts with paracentral scotoma in early stage:



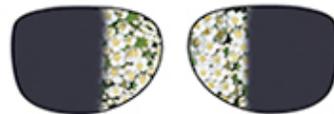
- Retinal detachment. Person has shadow or diminished vision in one quadrant or one half of visual field:



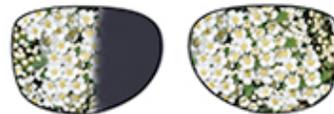
2. Lesion in globe or optic nerve. Injury here yields one blind eye, or unilateral blindness:



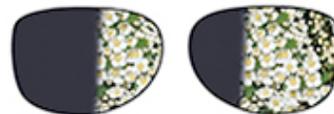
3. Lesion at optic chiasm (e.g., pituitary tumor)—injury to crossing fibers only yields a loss of the nasal part of each retina and a loss of both temporal visual fields. Bitemporal (heteronymous) hemianopsia:



4. Lesion of outer uncrossed fibers at optic chiasm (e.g., aneurysm of left internal carotid artery exerts pressure on uncrossed fibers). Injury yields left nasal hemianopsia:



5. Lesion of right optic tract or right optic radiation. Visual field loss in right nasal and left temporal fields. Loss of same half of visual field in both eyes is homonymous hemianopsia:



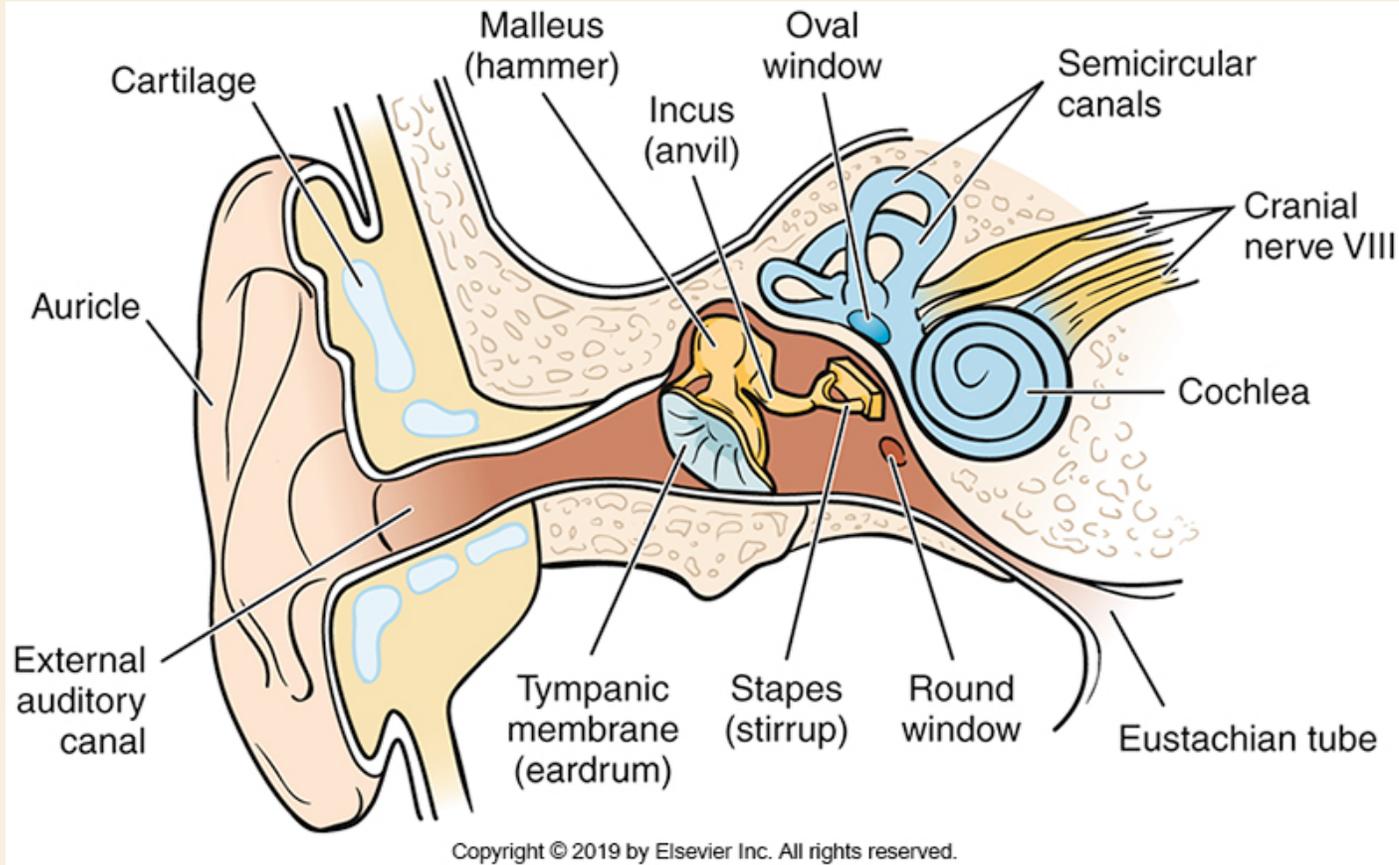
VISUAL FIELD LOSS



INTERVENTIONS

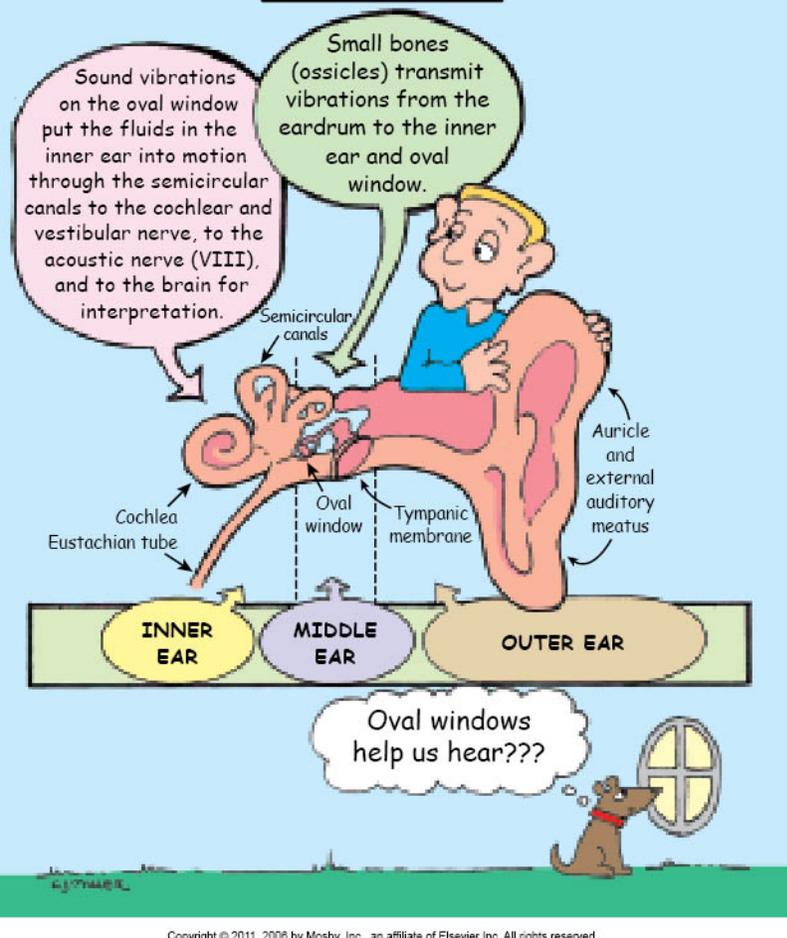
THE EAR





STRUCTURE OF THE EAR

NORMAL EAR



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FUNCTION OF THE EAR

HEARING IMPAIRMENT

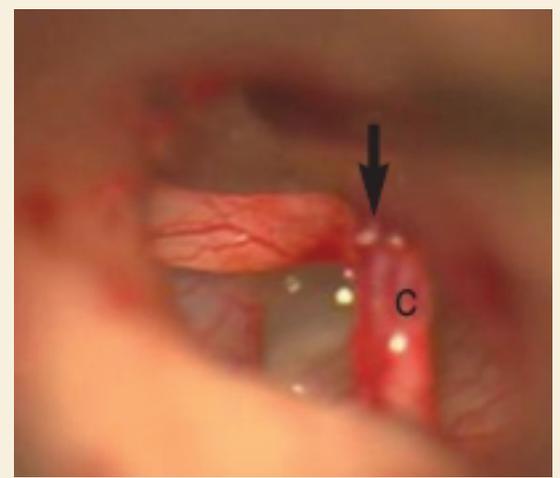
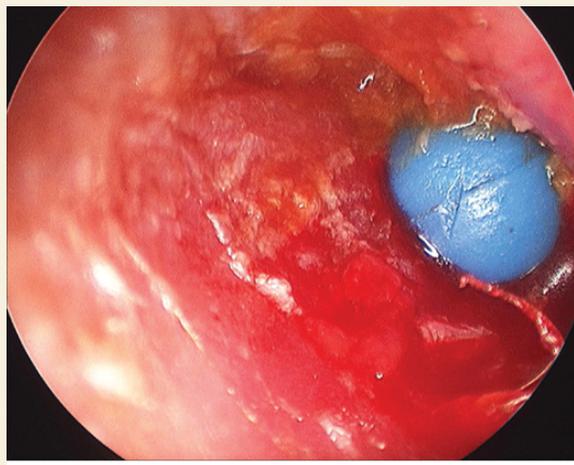
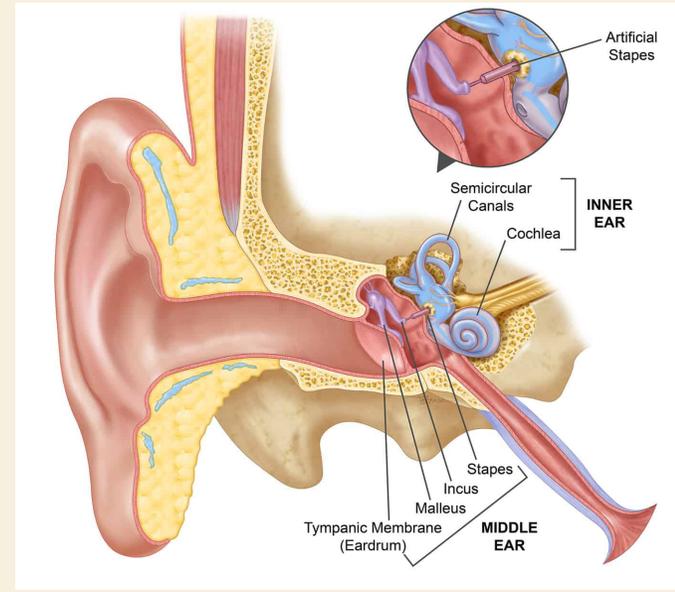
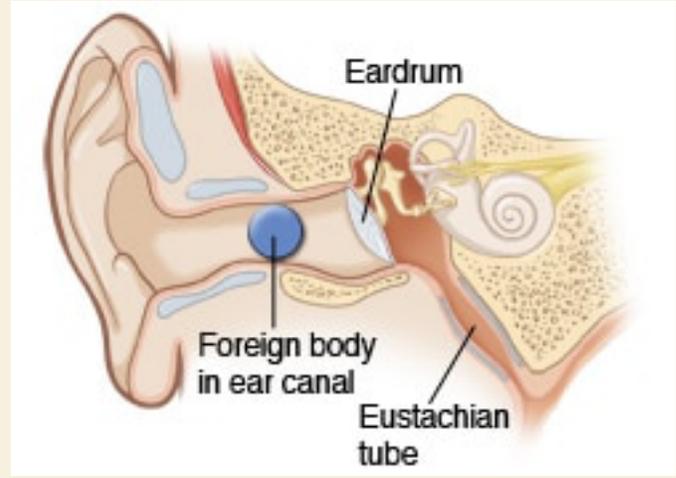
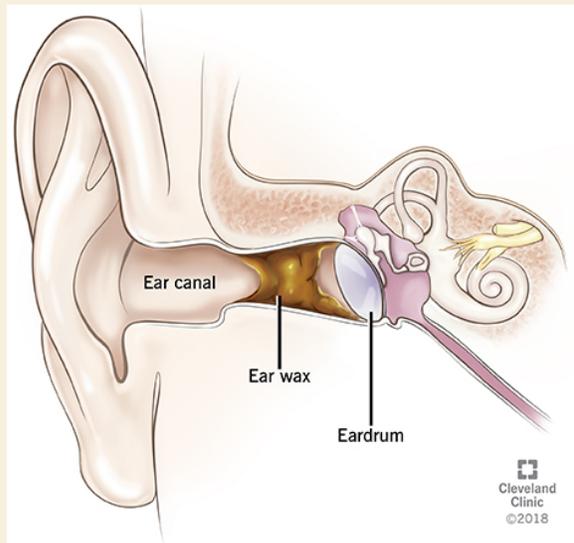
**General
manifestations**

**Geriatric
considerations**



HEARING
IMPAIRMENT
T
DISORDERS

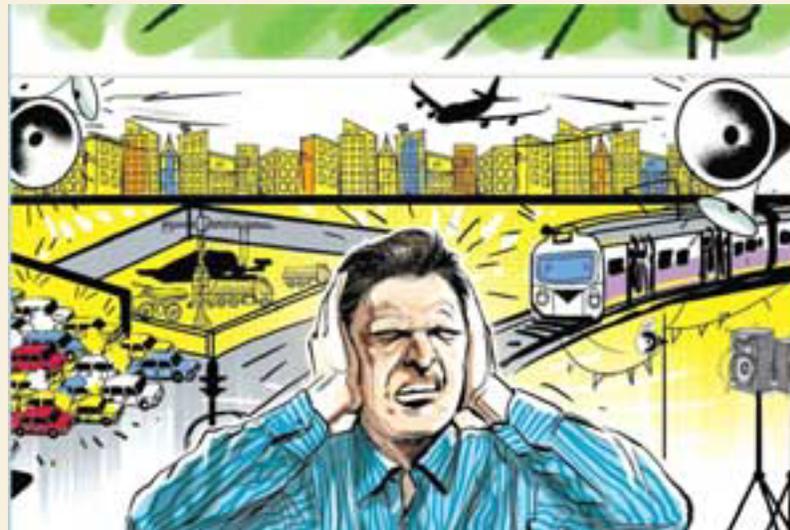
CONDUCTIVE HEARING IMPAIRMENTS



Source: Usatine RP, Smith MA, Mayeaux EJ, Chumley HS: The Color Atlas of Family Medicine, Second Edition: www.accessmedicine.com Copyright © The McGraw-Hill Companies, Inc. All rights reserved.

SENSORINEURAL HEARING IMPAIRMENTS

- Ototoxic medications
 - aminoglycoside antibiotics, salicylates, quinine and related antimalarials, and cytotoxic antineoplastic drugs
- Trauma





SENSORINEURAL HEARING IMPAIRMENTS CONT'

- Presbycusis
 - Sensory
 - Neural
 - Metabolic
 - Mechanical
- Meniere's syndrome

OTITIS MEDIA

- Inflammation of the middle ear
- Acute Otitis Media
- Chronic Otitis Media



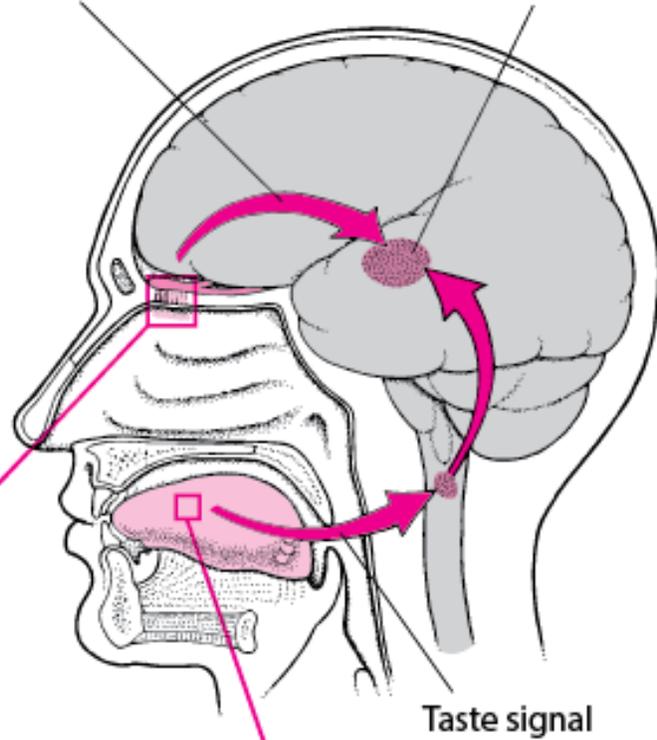


INTERVENTIONS

SMELL AND
TASTE



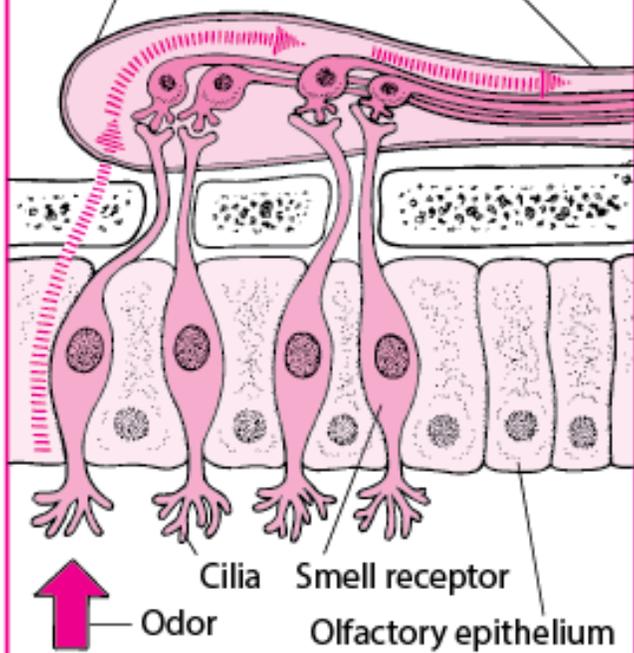
Smell signal Smell and taste center



STRUCTURE OF SMELL AND TASTE

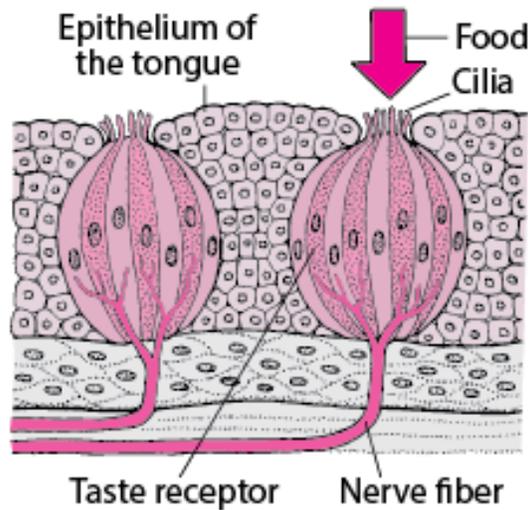
Detecting an Odor

Olfactory bulb Olfactory nerve



Detecting a Taste

Epithelium of the tongue Food Cilia



DISORDERS OF SMELL AND TASTE

Causes

Diagnostics

Treatment



CHAPTER 24
COMPLICATIONS OF AGING

THE AGING PROCESS

- Rate and effects of aging vary among individuals.
- May not match chronological age
- Rate of changes depend on...
- Overall, women live longer than men.
- General reduction in function occurs throughout body
- Hormonal changes

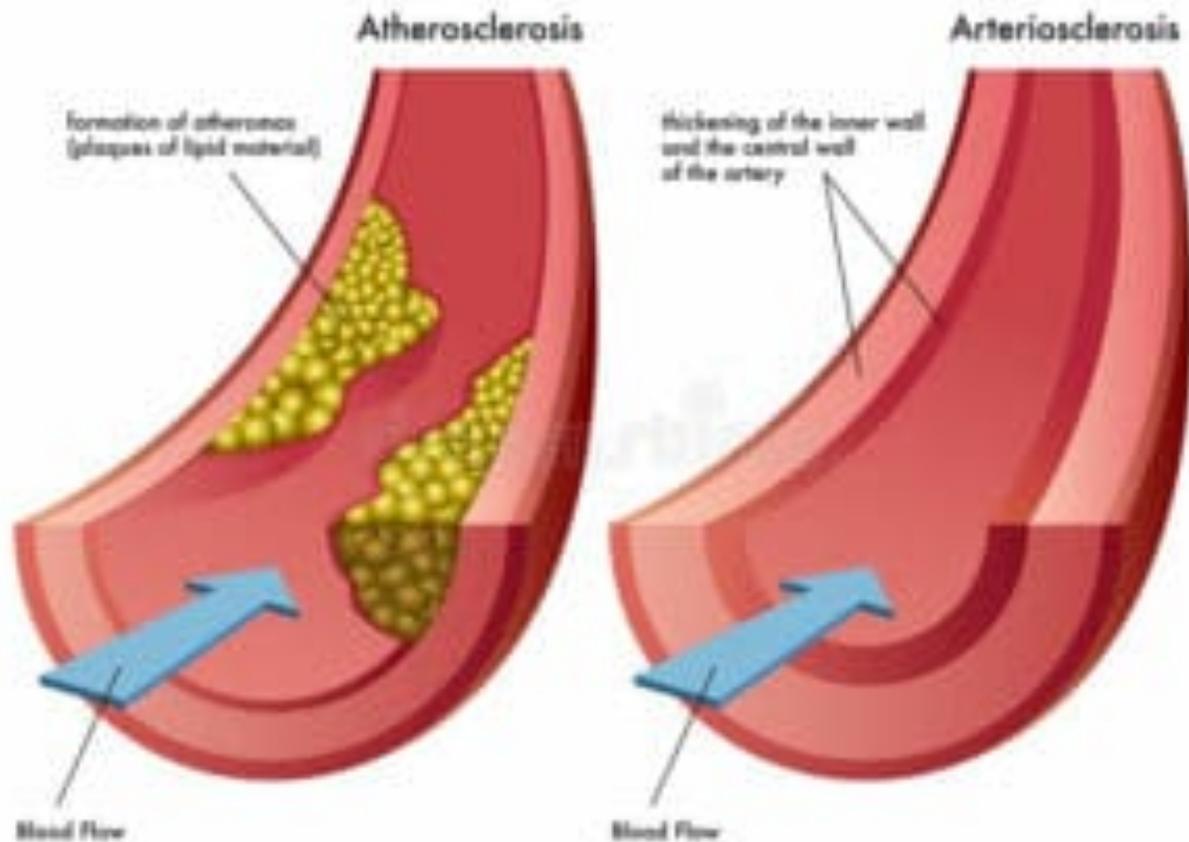
REPRODUCTIVE SYSTEM

- Females
 - Menopause
- Males
 - Benign prostatic hypertrophy

INTEGUMENTAR Y

- Exposure
- Skin thins
 - Appears wrinkled
 - Elastic fibers reduced
 - Collagen fibers less flexible
- Lesions include skin tags, keratoses, and lentigines.
- Hair becomes gray and thins.
 - Melanocytes are reduced in number.





CARDIOVASCULAR

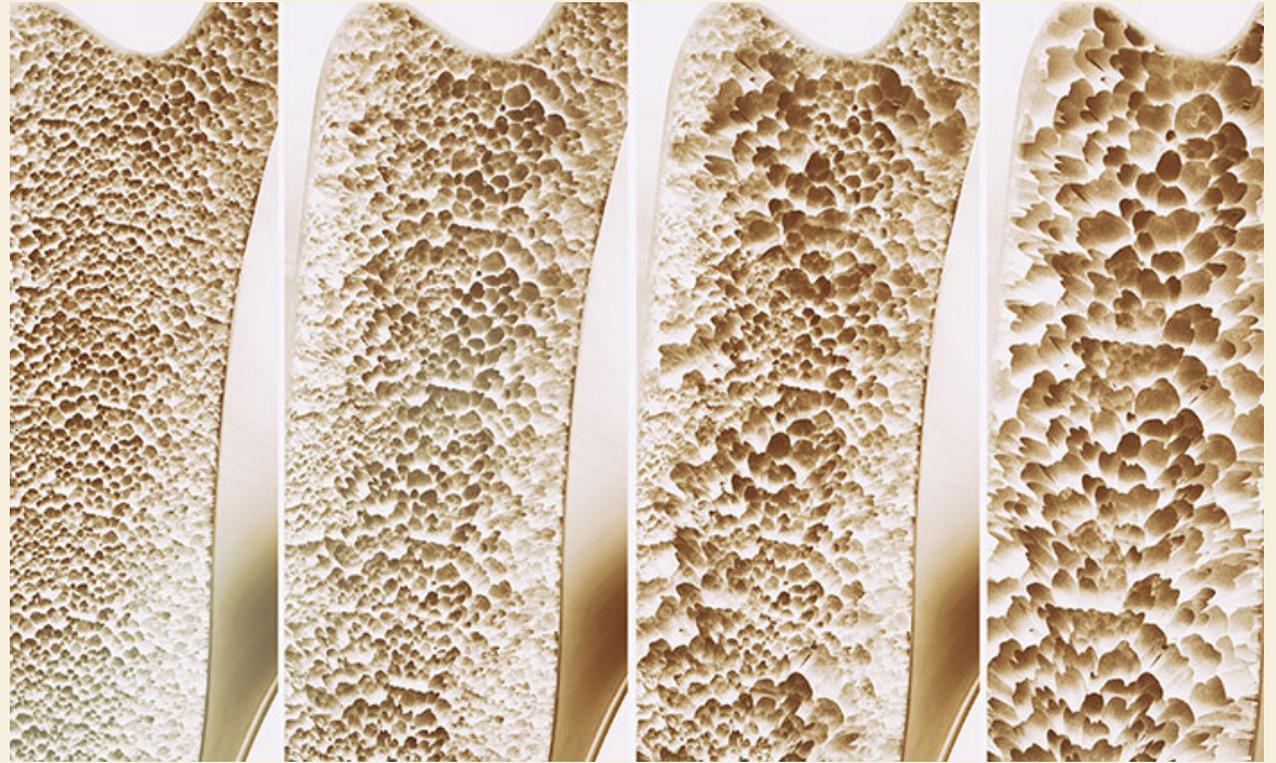
Muscle fibers decrease

Reduced strength of
contractions

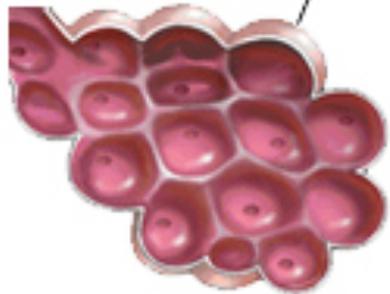
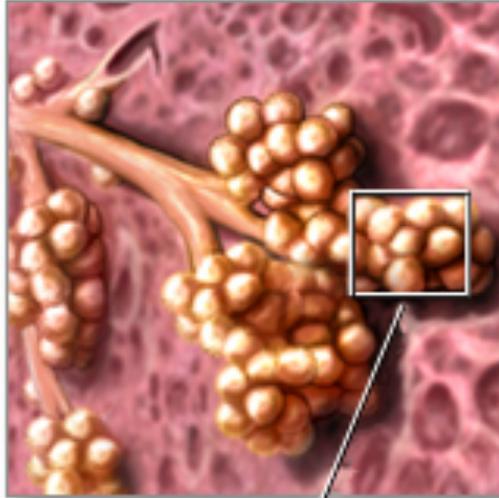
Arteriosclerosis vs
Atherosclerosis

MUSCULOSKEL ETAL

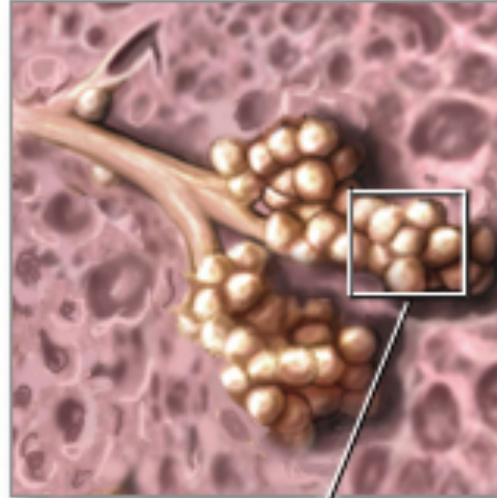
- Osteoporosis
- Osteoarthritis



Younger



Older



RESPIRATORY

Ventilation is limited

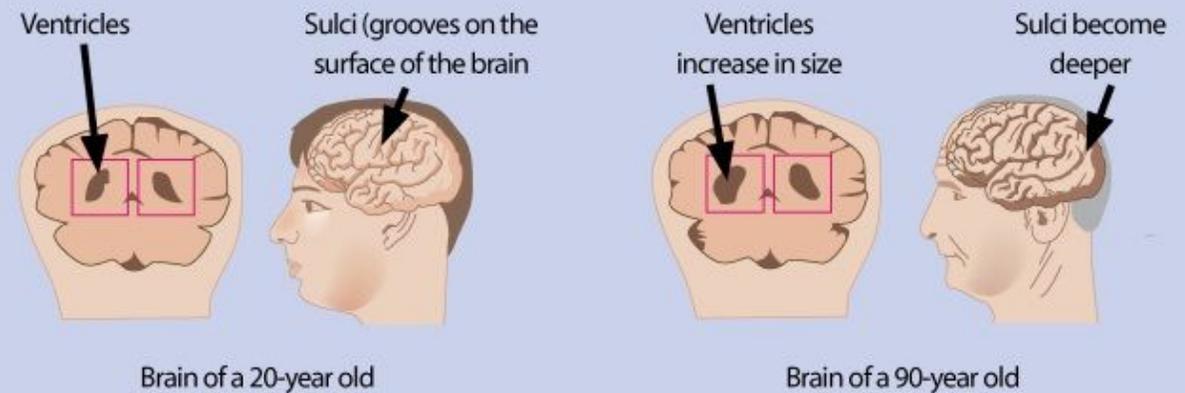
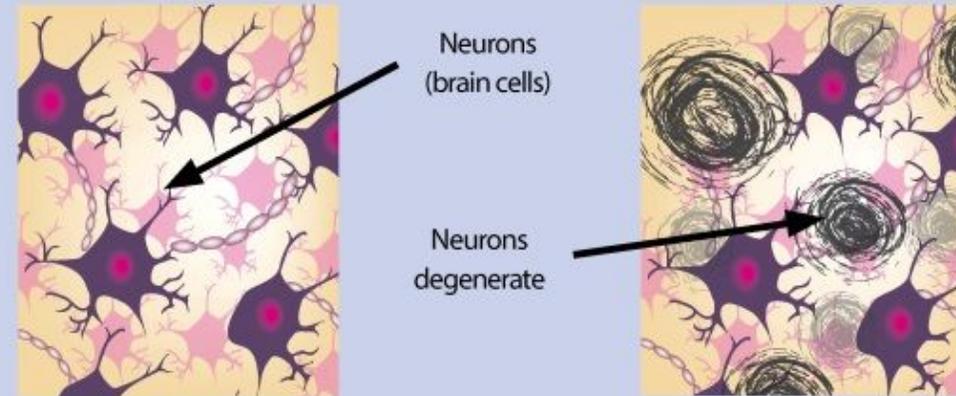
Expiration is reduced

Vascular changes

NERVOUS SYSTEM

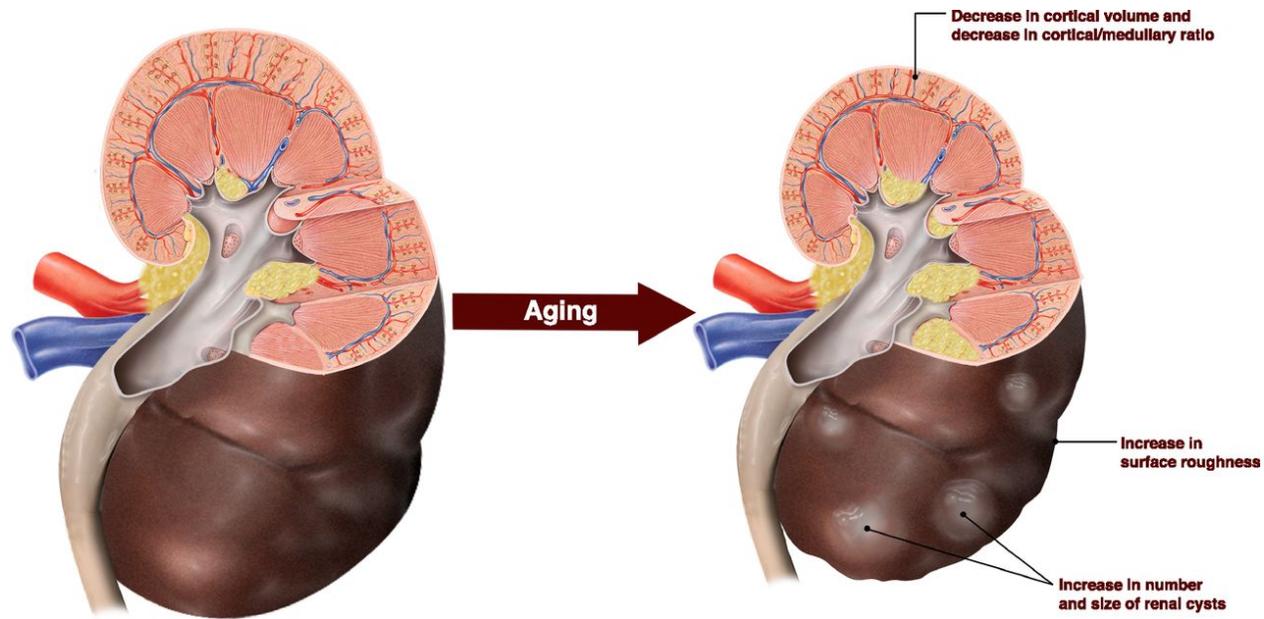
- Natural reduction of brain mass
- Slower response time
- Decreased reflexes
- Short-term memory lapses
- Vision, Hearing and Taste changes (As discussed in chapter 15)

Fig 1. Three age-related changes in the brain



GASTROINTESTINAL

- Atrophy of mucosa and glands
 - Reduces digestive secretion
 - Impaired absorption of vitamin B₁₂, calcium, and iron
- Constipation common in older adults
 - Frequently leads to hemorrhoids



RENAL

Kidney function reduced

Weakened urinary sphincter and bladder

Nocturia (frequent urination)

Incontinence (involuntary voiding of urine)



Q U E S T I O
N S ?

REFERENCES

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