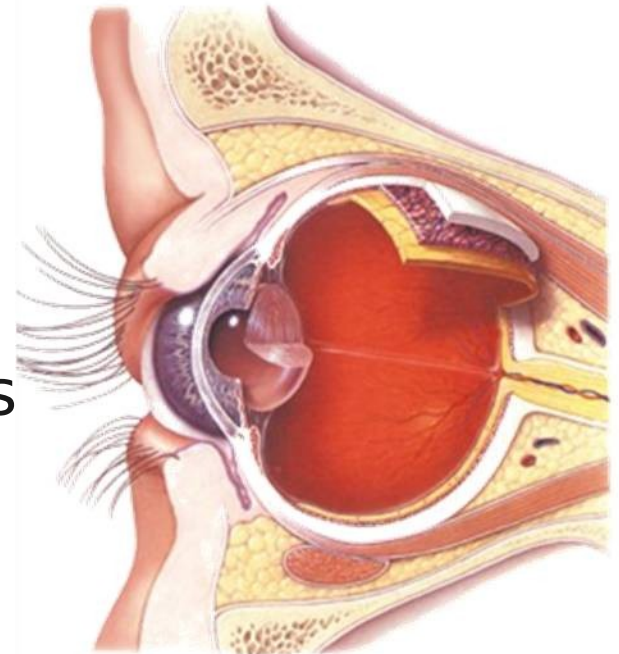


Lecture Notes A PowerPoint Presentation

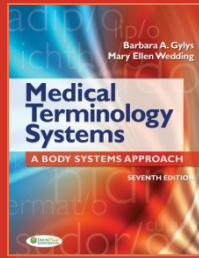
Ophthalmology

Structure and Function

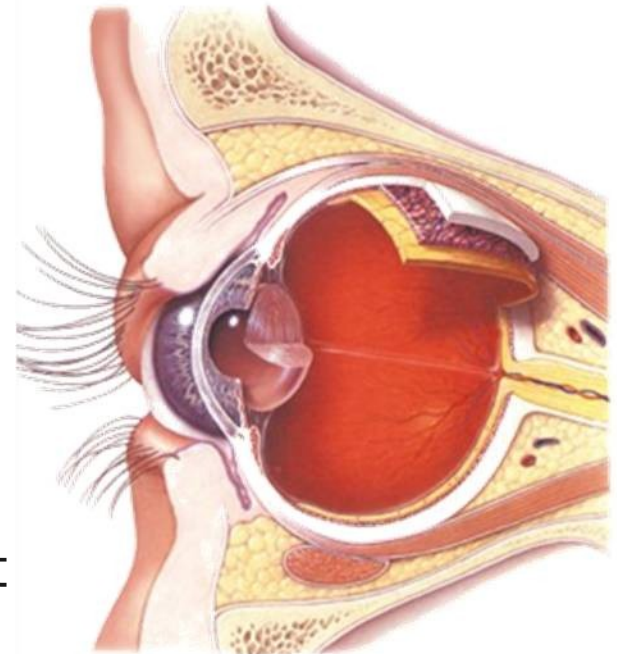
- Outer (fibrous) layer
 - Sclera — white posterior section that supports the eyeball
 - Cornea — transparent anterior section where light is refracted (bent) as it enters the eye



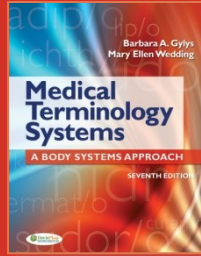
Structure and Function (continued)



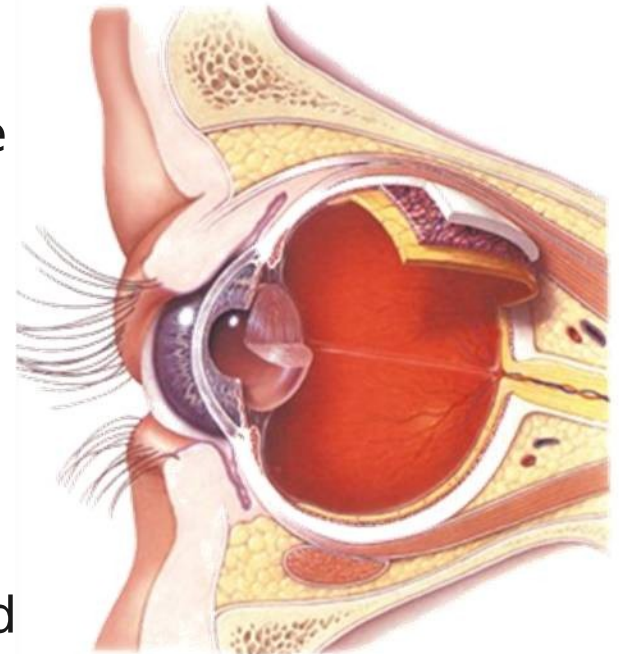
- Middle (vascular) layer
 - Containing vessels that supply most of the blood for the eye
 - Choroid
 - Thin, posterior membrane
 - Anteriorly continuous with ciliary muscles that focus the eye
 - Pupil — black, circular opening of the eye
 - Iris — colored part of the eye that expands and contracts in response to light



Structure and Function (continued)

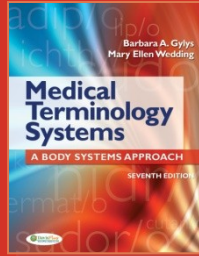


- Interior (sensory) layer
 - Retina
 - Responsible for responding to light energy and sending impulses to the brain by way of the optic nerve for interpretation as vision
 - Rods — black and white vision and function in dim light
 - Cones — color vision and function in bright light
 - Optic disc — place where optic nerve enters the eye; also called *blind spot*

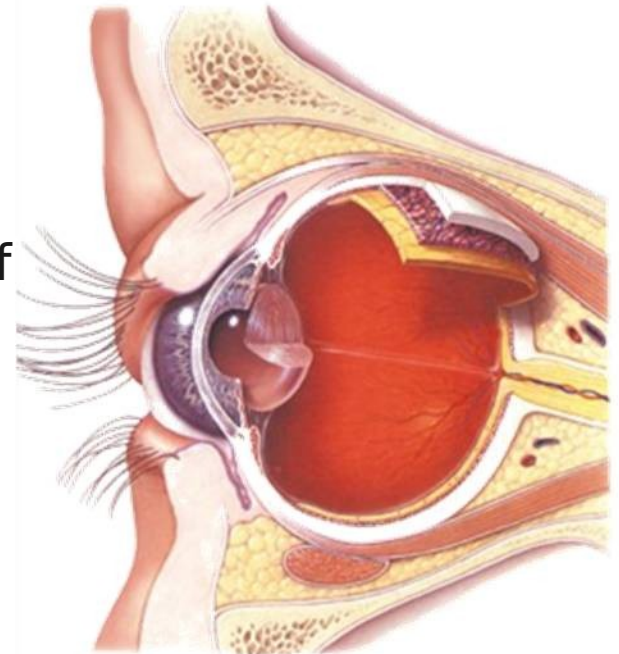


16 SPECIAL SENSES: EYES

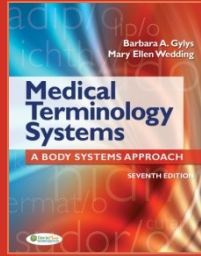
Structure and Function (continued)



- Accessory structures
 - Eyelids
 - Protect eyes from foreign particles, injury, intense light, and trauma
 - Conjunctiva
 - Membrane that covers the inside of the eyelids and anterior surface of the eye
 - Lacrimal glands
 - Produce tears to keep eyeballs moist and clear of dust and other particles

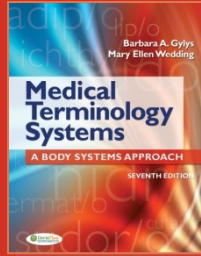


16 SPECIAL SENSES: EYES



Structure and Function Exercise

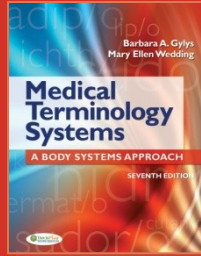
1. Name the outer layer of the eye and its major function.
2. Name the middle layer of the eye and its major function.



Structure and Function Exercise

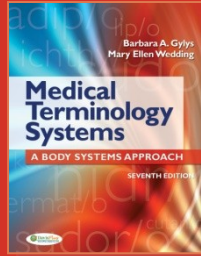
1. Name the outer layer of the eye and its major function. **Fibrous layer, which protects the more sensitive structures beneath**
2. Name the middle layer of the eye and its major function. **Vascular layer, which provides most of the blood supply for the eye**

16 SPECIAL SENSES: EYES



Structure and Function Exercise

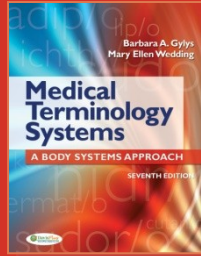
3. What is the retina and where is it located?
4. What are rods and cones and how do they function?



Structure and Function Exercise

3. What is the retina and where is it located? **A photosensitive membrane located in the innermost layer of the eye**
4. What are rods and cones and how do they function? **The are visual receptors of the eye. Rods function in dim light and provide black and white vision. Cones function in bright light and provide color vision.**

16 SPECIAL SENSES: EYES



Combining Forms Exercise

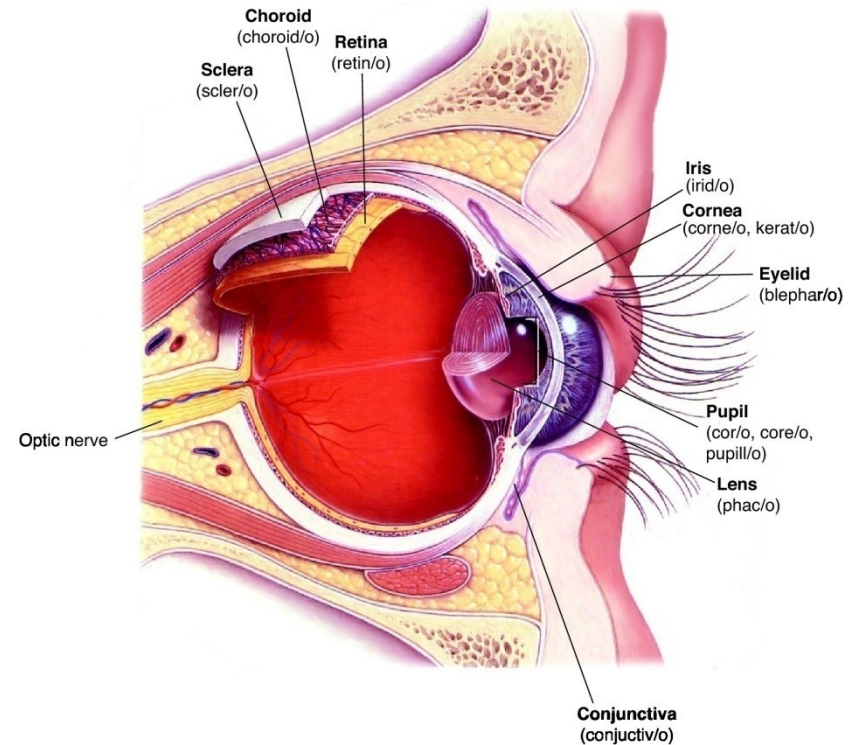
List the CF(s) for:

1. choroid:

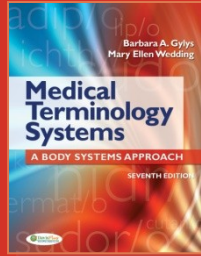
2. retina:

3. iris:

4. cornea:



16 SPECIAL SENSES: EYES



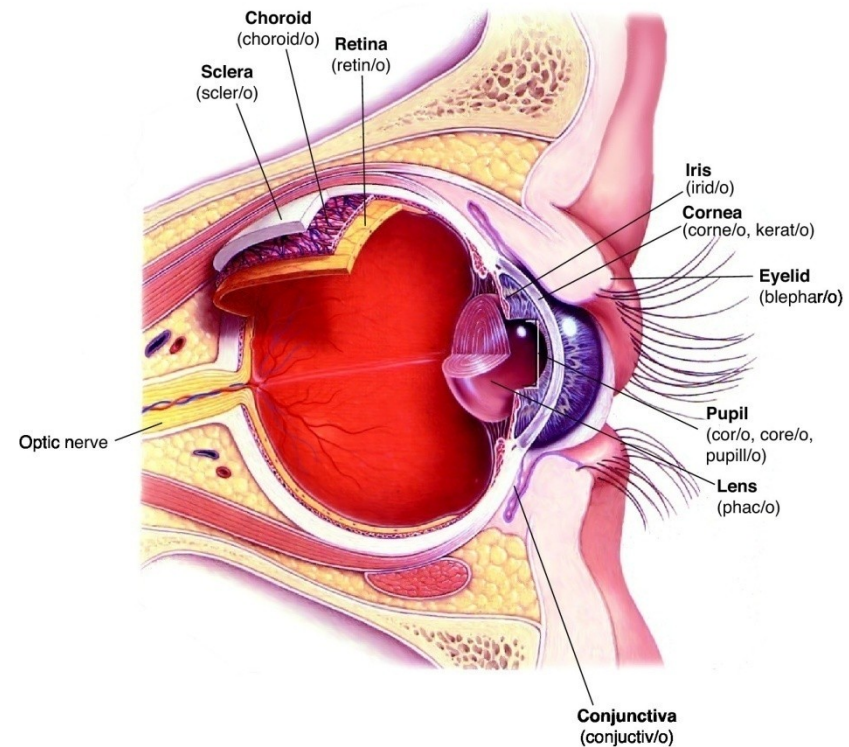
Combining Forms Exercise

1. choroid: **choroid/o**

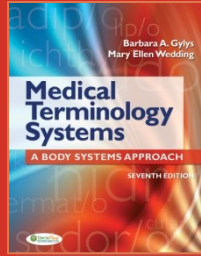
2. retina: **retin/o**

3. iris: **irid/o**

4. cornea: **corne/o**



16 SPECIAL SENSES: EYES



Combining Forms Exercise

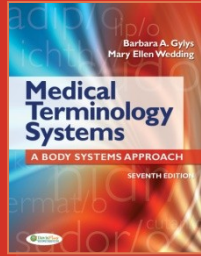
5. hardening; sclera (white of eye):

6. pupil:

7. lens:

8. light:

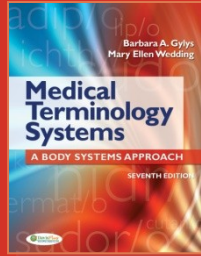
16 SPECIAL SENSES: EYES



Combining Forms Exercise

- 5. hardening; sclera (white of eye): **scler/o**
- 6. pupil: **core/o, cor/o, pupill/o**
- 7. lens: **phac/o**
- 8. light: **phot/o**

16 SPECIAL SENSES: EYES



Combining Forms Exercise

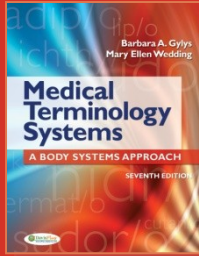
9. eyelid:

10. conjunctiva:

11. angle:

12. water:

16 SPECIAL SENSES: EYES



Combining Forms Exercise

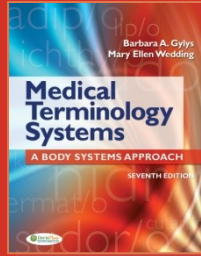
9. eyelid: **blephar/o**

10. conjunctiva: **conjunctiv/o**

11. angle: **goni/o**

12. water: **aque/o, hydr/o**

16 SPECIAL SENSES: EYES



Combining Forms Exercise

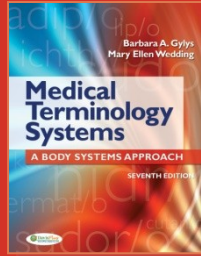
13. eye:

14. horny tissue; hard; cornea:

15. tear; lacrimal apparatus (duct, sac, or gland):

16. eye; vision:

16 SPECIAL SENSES: EYES



Combining Forms Exercise

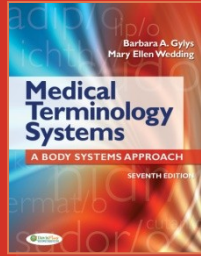
13. eye: **ocul/o**, **ophthalm/o**

14. horny tissue; hard; cornea: **kerat/o**

15. tear; lacrimal apparatus (duct, sac, or gland): **dacry/o**, **lacrim/o**

16. eye; vision: **opt/o**, **optic/o**

16 SPECIAL SENSES: EYES



Combining Forms Exercise

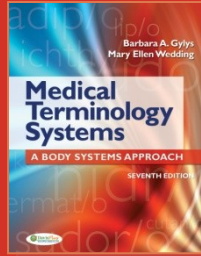
17. gray:

18. dull, dim:

19. old age:

20. vitreous body (of eye):

16 SPECIAL SENSES: EYES



Combining Forms Exercise

17. gray: **glau**c/o

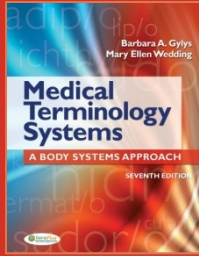
18. dull, dim: **ambly**/o

19. old age: **presby**/o

20. vitreous body (of eye): **vitre**/o

16 SPECIAL SENSES: EYES

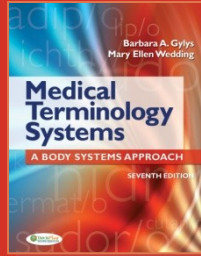
Complete the Medical Word Exercise



1. visual examination of the angle (of iris and cornea): /o/
2. prolapse of the eyelid: /o/
3. vision (associated with) old age:
 _o/

16 SPECIAL SENSES: EYES

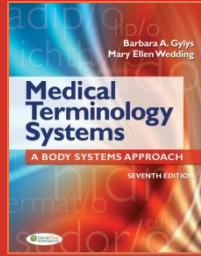
Complete the Medical Word Exercise



1. visual examination of the angle (of iris and cornea): **goni/o/scopy**
2. prolapse of the eyelid: **blephar/o/ptosis**
3. vision (associated with) old age: **presby/opia**

16 SPECIAL SENSES: EYES

Complete the Medical Word Exercise



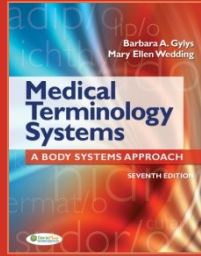
4. paralysis of the iris: /o/

5. hernia of the lens: /o/

6. fear (intolerance) of light: _/o/

16 SPECIAL SENSES: EYES

Complete the Medical Word Exercise

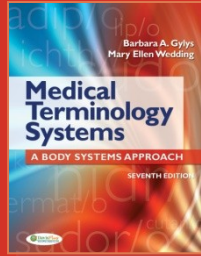


4. paralysis of the iris: **irid/o/plegia**

5. hernia of the lens: **phac/o/cele**

6. fear (intolerance) of light: **phot/o/phobia**

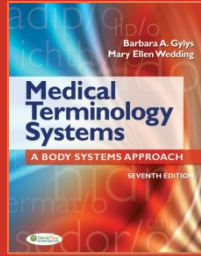
16 SPECIAL SENSES: EYES



Build Medical Words Exercise

1. disease of the retina: _____
2. inflammation of the conjunctiva:
3. instrument for measuring (curvature) of the cornea:

16 SPECIAL SENSES: EYES

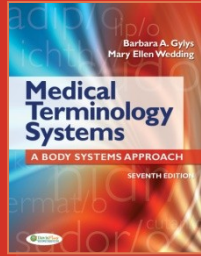


Build Medical Words Exercise

1. disease of the retina: **retin/o/pathy** _____

2. inflammation of the conjunctiva:
conjunctiv/itis
3. instrument for measuring (curvature) of
the cornea: **kerat/o/meter**

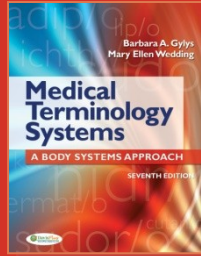
16 SPECIAL SENSES: EYES



Build Medical Words Exercise

- 4. dim or dull vision:
- 5. turning outward (of the eyes):
- 6. excision of the vitreous body (of the eye):

16 SPECIAL SENSES: EYES



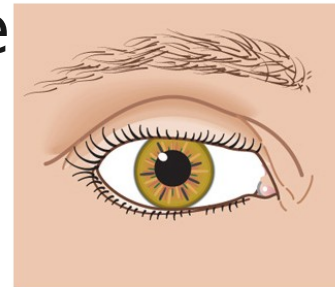
Build Medical Words Exercise

- 4. dim or dull vision: **ambly/opia**
- 5. turning outward (of the eyes): **exo/tropia**
- 6. excision of the vitreous body (of the eye): **vitrectomy**

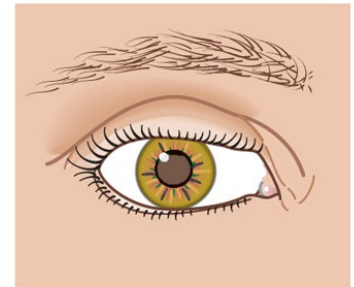
Diseases and Conditions

Cataract

- Opacity or clouding of the crystalline lens or its surrounding membrane (See illustration.)
- Unilateral or bilateral
- Slow development affecting visual acuity
- Especially common in older persons



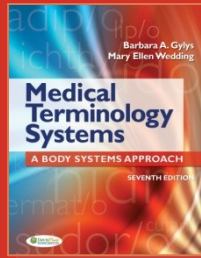
Normal, clear lens



Lens clouded by cataract

Diseases and Conditions

(continued)

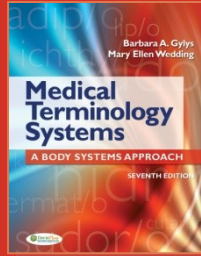


Cataract (continued)

- Signs and symptoms
 - Sensitivity to light and glare
 - Difficulty seeing at night
 - Glare or halos around lights
 - Double vision (sometimes), especially in one eye
 - White appearance to pupil of the eye as the cataract matures

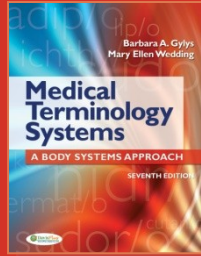
Diseases and Conditions

(continued)



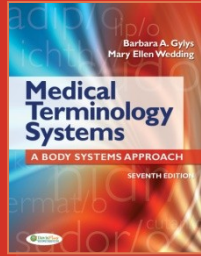
Cataract (continued)

- Treatment
 - Depending on degree of visual impairment, age, general health, and occupation of the individual
 - Corrective lenses for mild cases
 - Surgical extraction of the defective lens when other forms of correction are ineffective



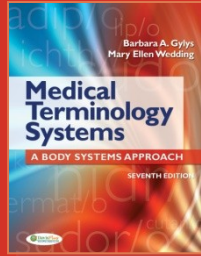
Clinically Related Exercise

1. Mrs. P. is an 80-year-old woman undergoing her annual eye exam. The ophthalmologist observes that considerable cloudiness has developed on both lenses since her last visit. This disorder is known as (glaucoma, macular degeneration, cataract).



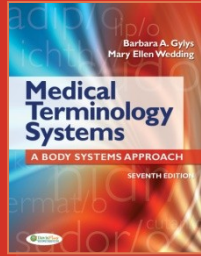
Clinically Related Exercise

1. Mrs. P. is an 80-year-old woman undergoing her annual eye exam. The ophthalmologist observes that considerable cloudiness has developed on both lenses since her last visit. This disorder is known as (glaucoma, macular degeneration, **cataract**).



Clinically Related Exercise

2. Ms. K. is scheduled for cataract surgery. She has difficulty reading and driving at night. She also complains of a marked intolerance to light, which the physician charts as (photometry, photolysis, photophobia).
3. Mr. B. has postponed cataract surgery several times but now has developed double vision in his left eye. The physician charts this recent development as .

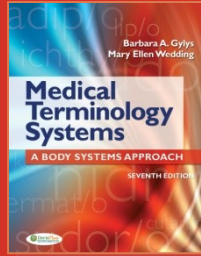


Clinically Related Exercise

2. Ms. K. is scheduled for cataract surgery. She has difficulty reading and driving at night. She also complains of a marked intolerance to light, which the physician charts as (photometry, photolysis, **photophobia**).
3. Mr. B. has postponed cataract surgery several times but now has developed double vision in his left eye. The physician charts this recent development as **diplopia**.

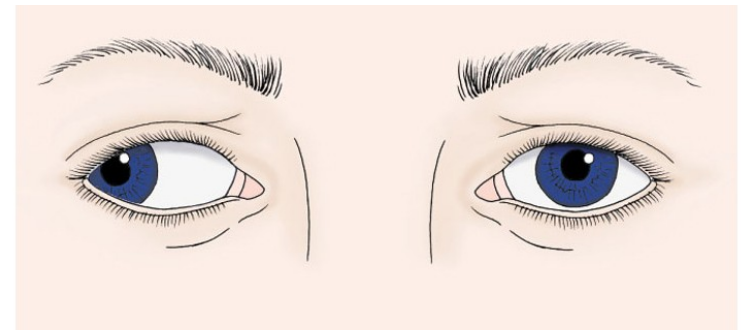
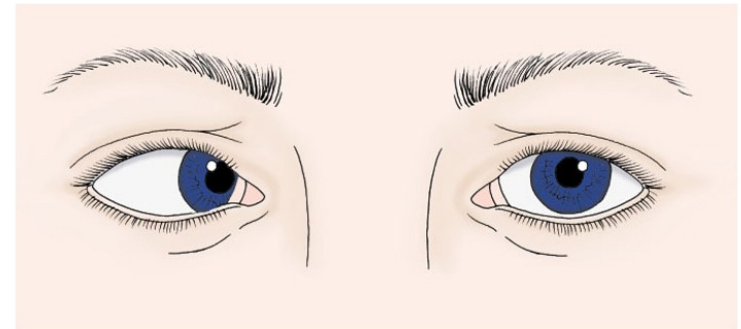
Diseases and Conditions

(continued)



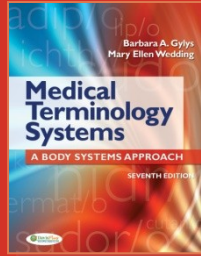
Strabismus

- Failure of both eyes to focus on the same object
- Two types
 - Esotropia — eye turns inward, also called *cross eye* (See illustration, top.)
 - Exotropia— eye turns outward, also called *wall eye* (See illustration, bottom.)



Diseases and Conditions

(continued)

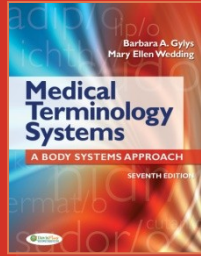


Strabismus (continued)

- Signs and symptoms
 - Eyes that do not look in the same direction at the same time
 - Squinting or closing one eye
 - Tilting or turning the head to look at objects
 - Poor depth perception

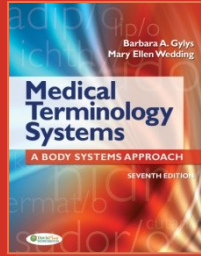
Diseases and Conditions

(continued)



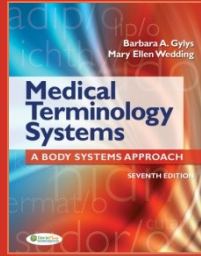
Strabismus (continued)

- Treatment
 - Depending on cause
 - Commonly, covering of the normal eye, forcing the child to use the deviating one
 - Possibly exercises and corrective lenses
 - Surgical correction if necessary



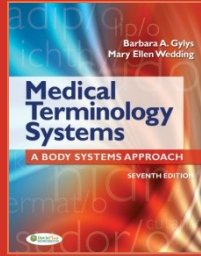
Clinically Related Exercise

1. The condition of eyes that do not look in the same direction at the same time, is called .
2. A 5-year-old girl is diagnosed with strabismus. She has a deviation of one eye toward the other eye, commonly referred to as *cross eye*. The medical term for this type of strabismus is .



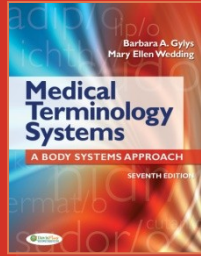
Clinically Related Exercise

1. The condition of eyes that do not look in the same direction at the same time, is called **strabismus**.
2. A 5-year-old girl is diagnosed with strabismus. She has a deviation of one eye toward the other eye, commonly referred to as *cross eye*. The medical term for this type of strabismus is **esotropia**.



Clinically Related Exercise

3. A 7-year-old boy displays deviation of the visual axis of one eye toward the other and complains of double vision. His pediatrician refers him to a physician who specializes in eye disorders, called a(n) .
4. Mr. T.'s right eye intermittently deviates away from the other eye. The medical term for this type of strabismus is .

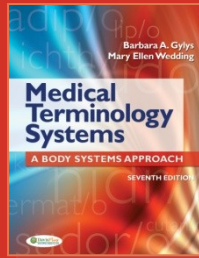


Clinically Related Exercise

3. A 7-year-old boy displays deviation of the visual axis of one eye toward the other and complains of double vision. His pediatrician refers him to a physician who specializes in eye disorders, called an **ophthalmologist**.
4. Mr. T.'s right eye intermittently deviates away from the other eye. The medical term for this type of strabismus is **exotropia**.

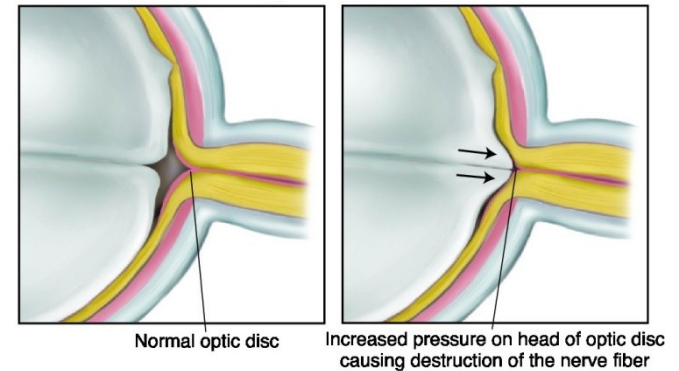
Diseases and Conditions

(continued)



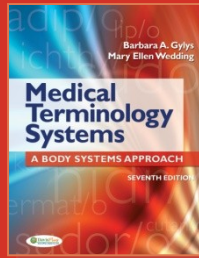
Glaucoma

- Accumulated fluid within the eyeball, causing pressure that damages the retina and optic nerve (See illustration.)
- Commonly causes blindness



Diseases and Conditions

(continued)

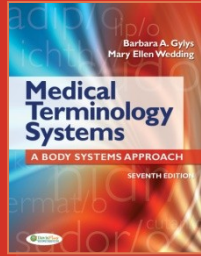


Glaucoma (continued)

- Signs and symptoms
 - Asymptomatic development in most common forms
 - Commonly not detected until irreparable damage occurs to the retina or optic nerve
 - Late symptoms possibly including aching eyes and visual disturbances (halos around lights or a noticeable loss of peripheral vision)

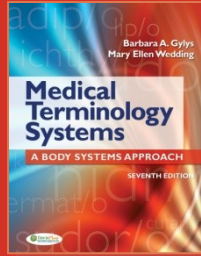
Diseases and Conditions

(continued)



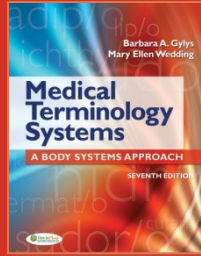
Glaucoma (continued)

- Treatment
 - Drug therapy (standard course of treatment)
 - Eyedrops to decrease intraocular pressure
 - Drugs that decrease production of aqueous humor
 - Laser surgery in severe cases to promote drainage of aqueous humor



Clinically Related Exercise

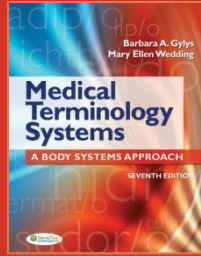
1. Mrs. J. is diagnosed with glaucoma. She will undergo a specialized test that shows the angle where eye drainage occurs. This test is called (gonioscopy, tonometry, ophthalmoscopy).
2. During his yearly checkup, the ophthalmologist checks the pressure in Mr. C.'s eyes. This test is called (goniometry, tonometry, retinometry).



Clinically Related Exercise

1. Mrs. J. is diagnosed with glaucoma. She will undergo a specialized test that shows the angle where eye drainage occurs. This test is called (**gonioscopy**, tonometry, ophthalmoscopy).
2. During his yearly checkup, the ophthalmologist checks the pressure in Mr. C.'s eyes. This test is called gonioscopy, **tonometry**, retinometry).

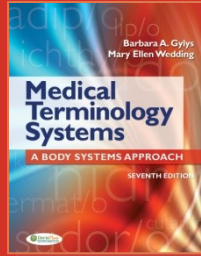
16 SPECIAL SENSES: EYES



Clinically Related Exercise

3. Ms. M. complains of aching eyes and seeing halos around lights. The ophthalmologist finds an increase in intraocular pressure and charts the diagnosis as .
4. Mrs. E. has been diagnosed with glaucoma during her most recent office visit. Her ophthalmologist explains that the initial treatment for this disorder is (eyedrops, dietary restrictions, surgical intervention).

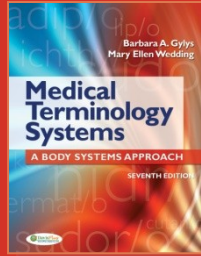
16 SPECIAL SENSES: EYES



Clinically Related Exercise

3. Ms. M. complains of aching eyes and seeing halos around lights. The ophthalmologist finds an increase in intraocular pressure and charts the diagnosis as **glaucoma**.
4. Mrs. E. has been diagnosed with glaucoma during her most recent office visit. Her ophthalmologist explains that the initial treatment for this disorder is (**eyedrops**, dietary restrictions, surgical intervention).

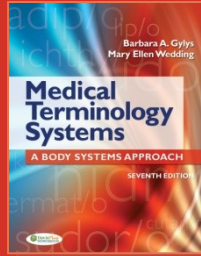
16 SPECIAL SENSES: EYES



Vocabulary Challenge Exercise

1. diopter:
2. ectropin:
3. emmetropia:

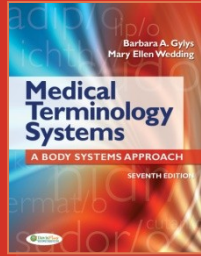
16 SPECIAL SENSES: EYES



Vocabulary Challenge Exercise

1. diopter: measurement of refractive error
2. ectropin: eversion or outward turning of the lower eyelid
3. emmetropia: state or normal vision

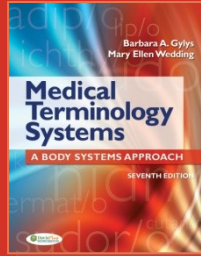
16 SPECIAL SENSES: EYES



Vocabulary Challenge Exercise

4. hordeolum:

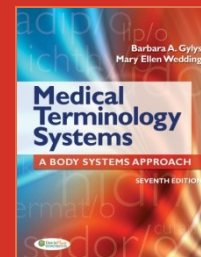
5. papilledema:



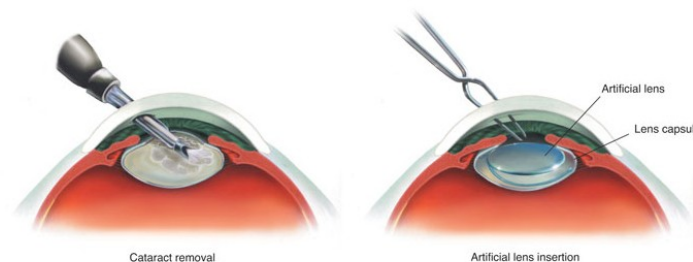
Vocabulary Challenge Exercise

4. hordeolum: localized inflammatory swelling of a sebaceous gland of the eyelid, generally caused by a bacterial infection; also called *stye*
5. papilledema: swelling of the optic nerve with dilated veins and an enlarged blind spot on the visual field

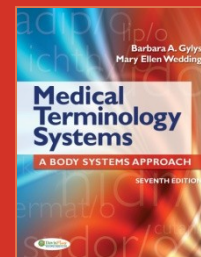
Medical and Surgical Procedures



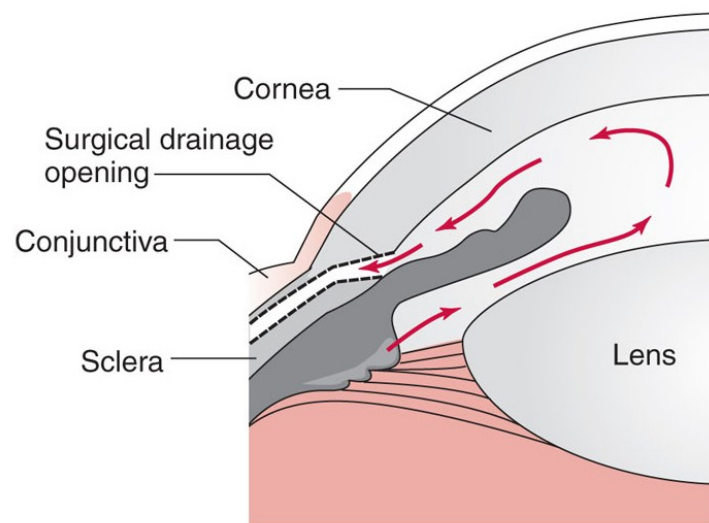
- Phacoemulsification
 - Use of ultrasound to destroy a cloudy lens or cataract
 - Usually followed by an intraocular lens implant (See illustration.)



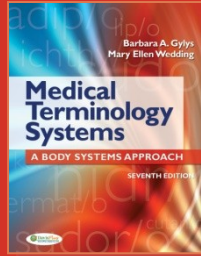
Medical and Surgical Procedures *(continued)*



- Trabeculoplasty
 - Laser surgery to correct the drainage angle
 - Used to aid in the flow of aqueous humor (See illustration.)

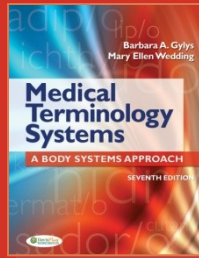


Medical and Surgical Procedures *(continued)*

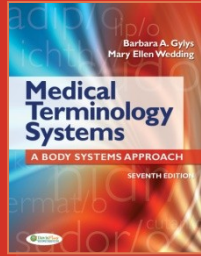


- Laser photocoagulation
 - Coagulation of tissue from heat of a laser
 - Used to seal leaking or hemorrhaging retinal blood vessels associated with diabetic neuropathy or macular degeneration

Medical and Surgical Procedures *(continued)*

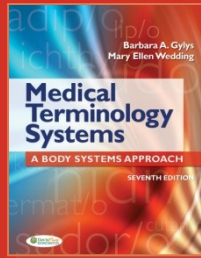


- Refraction
 - Examination of each eye (separately) to determine the amount of ocular refractive errors and their corrections
 - Used to prescribe corrective lenses



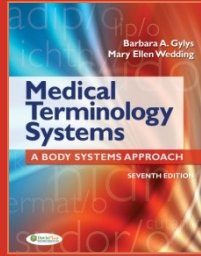
Clinically Related Exercise

1. Mr. L. is scheduled for cataract surgery. The surgeon will destroy the cataract using ultrasound and implant an intraocular lens. This surgery is called (extracapsular extraction, intracapsular extraction, phacoemulsification).
2. Ms. D.'s eyelids droop over her cornea and impair her vision. She will undergo a surgery to correct her eyelids, called .



Clinically Related Exercise

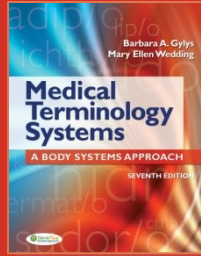
1. Mr. L. is scheduled for cataract surgery. The surgeon will destroy the cataract using ultrasound and implant an intraocular lens. This surgery is called (extracapsular extraction, intracapsular extraction, **phacoemulsification**).
2. Ms. D.'s eyelids droop over her cornea and impair her vision. She will undergo a surgery to correct her eyelids, called **blepharoplasty**.



Clinically Related Exercise

3. Mrs. A. has glaucoma and uses eyedrops to control pressure in her eye. She requires surgery to correct the drainage angle to allow fluid to flow out of the front of the eye, called (laser photocoagulation, phacoemulsification, trabeculoplasty).

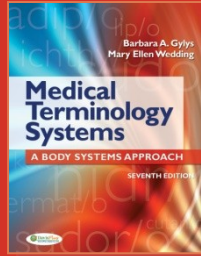
16 SPECIAL SENSES: EYES



Clinically Related Exercise

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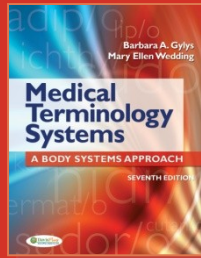
16 SPECIAL SENSES: EYES



Clinically Related Exercise

4. Mrs. P. received a referral from the school nurse regarding her son. He requires a vision check. The clinical term for this procedure is _____.

16 SPECIAL SENSES: EYES



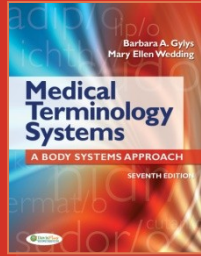
Clinically Related Exercise

4. Mrs. P. received a referral from the school nurse regarding her son. He requires a vision check. The clinical term for this procedure is **refraction**.

Diagnostic Procedures

- Tonometry
 - Detects glaucoma by measuring intraocular pressure
 - Commonly performed using a slit lamp (See illustration.)



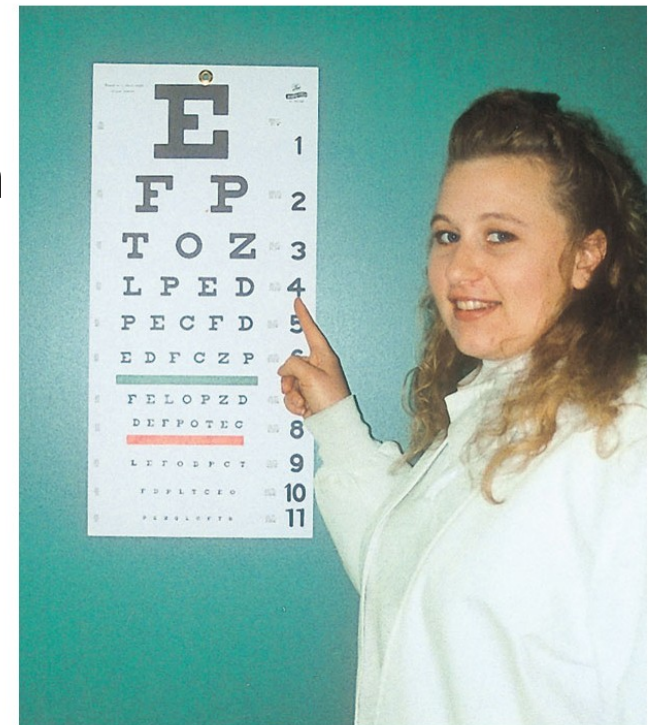


Diagnostic Procedures

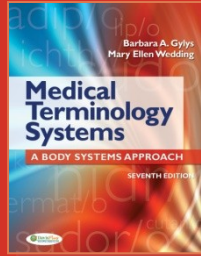
- Gonioscopy
 - Examination of the angle of the anterior chamber
 - Used to diagnose and manage glaucoma
- Fluorescein angiography
 - Used to assess blood vessels and their leakage in and beneath the retina after injection of fluorescein dye
 - Photographs taken as the dye circulates
 - Used in diagnosis and management of diabetic retinopathy and macular degeneration

Diagnostic Procedures

- Visual acuity test
 - Determination of the small line of letters a patient can read when positioned 20' from a vision testing chart, such as a Snellen chart (See illustration.)
 - Each eye tested individually
 - Normal result of 20/20, which means the patient can read at 20' what a normal eye can read at that distance



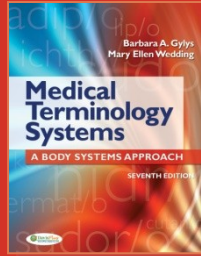
16 SPECIAL SENSES: EYES



Build a Medical Word Exercise

1. visual examination of the pupil:
2. instrument for examining the eye:
3. process of recording the vessels (of the eye):

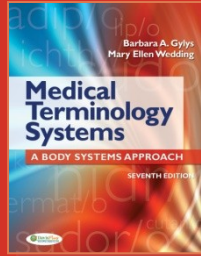
16 SPECIAL SENSES: EYES



Build a Medical Word Exercise

1. visual examination of the pupil:
pupill/o/scopy
2. instrument for examining the eye:
ophthalm/o/scope
3. process of recording the vessels (of the eye): **angi/o/graphy**

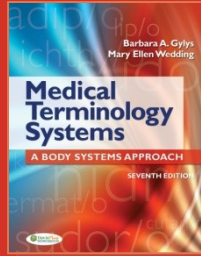
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Build a Medical Word Exercise

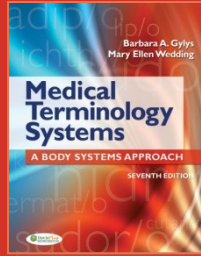
4. visual examination of the retina:
5. instrument for examining the angle (of the anterior chamber):
6. process of measuring the tension (of the eye):

16 SPECIAL SENSES: EYES



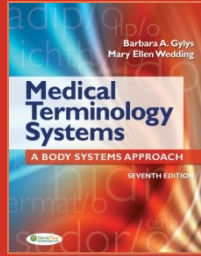
Build a Medical Word Exercise

4. visual examination of the retina:
retin/o/scopy
5. instrument for examining the angle (of the anterior chamber): **goni/o/scope**
6. process of measuring the tension (of the eye): **ton/o/metry**



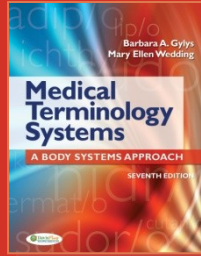
Pharmacology

- Antiglaucoma drugs
- Miotics
- Mydriatics
- Ophthalmic anesthesia



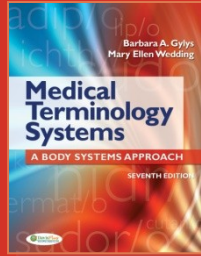
Clinically Related Exercise

1. Mrs. G. is undergoing tonometry. Prior to the procedure, the technician administers a medication to ensure that the examination is painless. This medication is called an ophthalmic (anesthetic, antibiotic, moisturizer).
2. The nurse administers drops to constrict Mr. K.'s pupils. This medication is known as a(n) (antiglaucoma drug, miotic, mydriatic).



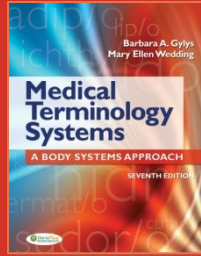
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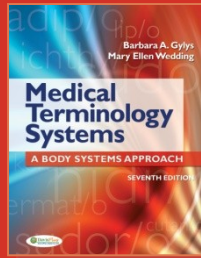
Clinically Related Exercise

3. Ms. S. has increased intraocular pressure. The physician prescribes a drug that reduces intraocular pressure by lowering the amount of aqueous humor in the eyeball, which is called a(n) (antiglaucoma drug, miotic, mydriatic).



Clinically Related Exercise

3. Ms. S. has increased intraocular pressure. The physician prescribes a drug that reduces intraocular pressure by lowering the amount of aqueous humor in the eyeball, which is called an (**antiglaucoma drug**, miotic, mydriatic).



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