Workbook Answers
Chapter 5
Diseases and Disorders of the Eye and Ear
1. Sclera, choroid, retina
2. Cornea
3. Conductive loss, sensorineural loss
4. Gradual hearing loss of low or soft sounds, tinnitus
5. Eustachian tube
6. Labyrinth
7. Spherical (circular)
8. Cones
9. Cerumen
10. Vitreous humor
11. Lens
12. This condition may develop in infancy or may be the result of chronic ear infection. The eustachian tube fails to open properly or becomes blocked with material from recurring ear infections. As a result, the chamber develops a weak vacuum, and a pocket is formed in the ear drum, allowing the skin cells to collect.

13. Hyperopia (farsightedness)

14. Myopia (nearsightedness)

15. Cornea that is not spherical, thereby causing light rays to be unevenly distributed on retina

16. Blurred vision, eye fatigue, squinting, rubbing of eyes

17. Congenital

18. Staphylococci

19. Decreased visual acuity, irritation, tearing, photophobia, and mild redness of the conjunctiva
20. Opacification of the lens that is caused by the aging process
21. No
22. Diabetic retinopathy
23. The impacted cerumen may have to be softened with oil drops or with hydrogen peroxide, then the ear is irrigated with warm water.
24. Placement of sharp objects in ear canal, explosion, severe middle ear infection, blow to the ear
25. Macular degeneration, glaucoma, diabetic retinopathy
26. Bacteria following ruptured tympanic membrane, influenza, or mumps; allergic response causing swelling of eustachian tube
27. Feeling of fullness or pressure in ears, diminished hearing, pain in suppurative, fever, chills, nausea and vomiting. Children tend to rub or pull at an infected ear or ears or lean head to side of infected ear. There may be dizziness.

28. Administration of analgesics and decongestants. When infection is present, antibiotics may be administered. In severe and recurring episodes, myringotomy with or without insertion of tympanoplasty tubes may be necessary.

29. Recurring syndrome of vertigo, tinnitus, hearing loss, and a sensation of fullness or pressure in the affected ear. The symptoms have sudden onset following an acute attack of vertigo. The disease usually only affects one ear and individuals 40 to 50 years in age.

30. An acute onset associated with fever and extreme vertigo.

31. Severe blow to head, near explosion, infection, object inserted into ear canal.
Fill in the Blanks

1. Light
2. vitreous humor
3. hyperopia, myopia, astigmatism, presbyopia
4. distant
5. strabismus, weakness, position
6. esotropia
7. pain, swelling, redness
8. herpes simplex
9. smoke, chemicals
10. age, familial, vision
11. viral, bacterial
12. surface, cornea
13. white
14. routine ophthalmic
15. hearing loss, pain, pressure, tinnitus, vomiting
16. cerumen
17. media
18. blood glucose
19. retina, choroid
20. metastasize, eye
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<tr>
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<th>Anatomic Structures - Normal Eye</th>
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<tbody>
<tr>
<td>1.</td>
<td>Retinal artery</td>
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<td>2.</td>
<td>Retinal vein</td>
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<td>3.</td>
<td>Optic nerve</td>
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<td>Central retinal artery and vein</td>
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<td>5.</td>
<td>Optic disc “blind spot”</td>
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<td>6.</td>
<td>Macula</td>
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<td>Sclera</td>
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<td>8.</td>
<td>Choroid</td>
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<td>Lateral rectus muscle</td>
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<td>Conjunctiva</td>
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<td>Anterior chamber</td>
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<td>Lens</td>
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<td>Iris muscles</td>
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<td>Ciliary muscle</td>
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<td>18.</td>
<td>Vitreous body</td>
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<td>19.</td>
<td>Medial rectus muscle</td>
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Anatomic Structures - the Visual Pathway

1. Optic nerve
2. Optic chiasm (crossover)
3. Optic tract
4. Brain
5. Occipital lobe
Anatomic Structures-
Normal Ear

1. Vestibulocochlear nerve
2. Semicircular canals
3. Cochlea
4. Eustachian (auditory) tube
5. Oval window
6. Round window
7. Stapes
8. Incus
9. Tympanic membrane
10. Malleus
11. External auditory canal
12. Pinna (auricle)
Anatomic Structures - Labyrinth (inner ear)

1. Vestibulocochlear nerve
2. Cochlear nerve
3. Cochlea
4. Endolymph
5. Semicircular canals
6. Vestibular nerve
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Essay Question #1
Discuss the symptoms, causes and treatment for a ruptured tympanic membrane.

A torn or ruptured eardrum causes symptoms of slight pain, partial hearing loss, and possible discharge or bleeding from the ear. If the rupture is from an ear infection, purulent drainage can occur.

Many reasons explaining why a person may have this type of trauma or rupture exist, but the four most common are a severe middle ear infection, a blow to the ear, placement of sharp objects into the ear canal, and an explosion (including lightning injuries).

The treatment for a ruptured eardrum is a patch applied to the eardrum to help with healing and improve hearing. A tympanoplasty may be necessary. Antibiotics are usually prescribed to help prevent infection.
Essay Question #2
Write a description of points to stress in patient teaching for a person diagnosed with macular degeneration.

Patients benefit from an explanation of why their vision and depth perception have changed and how they can use visual aids to improve vision. Explain and demonstrate the use of the Amsler grid for home monitoring. Instruct the patient to contact the physician immediately if a sudden worsening of vision is noted. Stress the importance of follow-up appointments as suggested by the physician.
Benign paroxysmal positional vertigo causes patients to experience a spinning sensation upon moving their heads. They also experience a false sensation of dizziness that the body is still and the room is spinning. When their eyes are closed, they feel that the body is moving, and when eyes are open, they feel that the surroundings are spinning. In addition, the individual may experience nausea, vomiting, involuntary eye movement, and difficulty with standing or walking. Most episodes of vertigo are transient, 3 to 5 seconds or longer. The spinning sensation usually is the result of balance or equilibrium disorders. Normal functioning of the vestibular system occurs with movement of the head, causing transmission of impulses to the labyrinth in the inner ear. The labyrinth contains the three semicircular canals that are surrounded by fluid. This transmission of impulses causes a subsequent transmission to the vestibular nerve that then transmits the impulse to the brainstem and the cerebellum. The brainstem and the cerebellum are responsible for the coordination of balance, movement, consciousness, and blood pressure. When the system is not functioning properly, the problems of equilibrium, dizziness, light-headedness, and balance disorders occur. Head trauma may be a causative factor. Occasionally, otitis media may be a precursor. Free-floating carbonate crystals that find their way into the semicircular canals may be the cause of the vertigo. Additional causes may be a viral infection, vascular in origin, or as an isolated symptom of unknown cause. Antihistamines (Antivert, Dramamine), anticholinergics (Scopolamine), and benzodiazepines (Compazine) may be prescribed to reduce symptoms of positional vertigo. Exercises in which the individual repeatedly turns the head from side to side may also be helpful.
Sensorineural hearing loss (deafness) is often referred to as *occupational hearing loss*. In this condition, sound waves reach the inner ear but are not perceived because the nerve impulses are not transmitted to the brain. Symptoms include tinnitus and partial to severe hearing loss.

Sensorineural hearing loss usually has an insidious onset. Many times the hearing loss is detected during a routine medical examination or pre-employment screening. Abrupt onset of hearing loss is possible after sudden exposure to a loud explosive type of noise or nearby lightning strike.

The cause of sensorineural hearing loss is nerve failure or damage to the cochlea or the auditory nerve (VIII vestibulocochlear cranial nerve). This can be the result of the aging process; however, loud music, machinery noise, or sometimes the side effects of medications—including aminoglycosides (tobramycin), loop diuretics, aspirin, or antimetabolites (methotrexate)—can cause such damage at any age. Other causes include mumps, measles, syphilis, meningitis, suppurative labyrinthitis, or viral infections. In addition, physical trauma with a fracture of the temporal bone may be a causative factor. Regardless of the amount of damage to the cochlea, steps *must* be taken to prevent further damage. Reducing noise levels by implementing measures, such as turning down the volume on loud music and wearing ear protectors at rock concerts or in work areas with high noise levels, can prevent further or future damage to the ears.
Patient Screening #1

- Possible Corneal Injury Caused by Contact Lens

Prompt medical care is indicated. Follow office policy for referral to an ophthalmologist. An alternate option is to refer the individual to an urgent care or emergency facility.
Possible Cataract

Patients reporting changes in visual acuity or photosensitivity should be given the first available appointment for an ophthalmic examination. Follow office policy for referral to an ophthalmologist.
Possible Macular Degeneration

Patients reporting changes in visual acuity or loss of sharpness in central vision are scheduled for a prompt Ophthalmic Examination. Follow Office Policy For Referral To An Ophthalmologist.
When a patient reports experiencing light flashes, painless changes in vision, or new floating spots, the information is immediately brought to the physician’s attention. Referral to an ophthalmologist will probably be ordered for an immediate dilated examination.
Possible Otitis Media

The febrile individual or child experiencing ear pain and possible diminished hearing requires prompt assessment and pain relief. If it is not possible to see the patient that day, refer to a medical care facility where he or she can be promptly assessed.
Labyrinthitis

Individuals reporting sudden onset of fever, vertigo, balance problems, and nausea and vomiting require prompt assessment. Refer the patient to an emergency facility for assessment to rule out a severe neurologic infection.
Patient Teaching #1

- Hordeolum (Stye)

Using printed material available in the office, instruct the patient on the correct technique of eye compress as prescribed. Demonstrate to the patient the correct application and use of topical antibiotic therapies. Explain to the patient how touching the infected eye and then the uninfected eye with unwashed hands can spread the infection to the other eye.
Keratitis

Provide the patient with the printed material and discuss. Explain how an infection can be transferred to the eyes by the fingers. Encourage a contact lens wearer to adhere to strict hand hygiene. Teach the patient the proper instillation of ophthalmic ointment and eye drops as prescribed; emphasize the importance of proper hand washing. Inform the patient of the increased risk for keratitis when wearing contact lenses while sleeping.
Patient Teaching #3

- Conjunctivitis

Provide written instructions on how to apply cool compresses and on the dosage schedule for medications. Teach the patient the proper instillation of ophthalmic ointment and eye drops as prescribed; emphasize the importance of good hand washing before and after the procedure. If an oral antibiotic is ordered, tell the patient to take the entire course of the medication.
Patient Teaching #4

Glaucoma

Teach the patient the proper instillation of ophthalmic ointment and eye drops as prescribed; emphasize the importance of hand washing before the procedure. Review the symptoms and signs that should be reported to the physician: severe eye pain, headache, blurred vision, halos, nausea, and vomiting. Stress the importance of good compliance with medications and follow-up care. Provide referrals for support services. Provide printed materials to reinforce your instructions.
Patient and parent teaching involve reinforcement of placing nothing in the ear that has the ability to push or pack the earwax down in the outer ear canal. Providing written information concerning proper ear care to the patient and family is helpful. A picture of the anatomy of the ear is also helpful in illustrating why using a cotton-tipped applicator to clean the ear can create the problem.
Patient Teaching #6

Swimmer’s Ear

Patient and parent teaching involve educating all on the ear structure and the importance of drying the ear canal after each exposure. It may require counseling to parents that if children refuse to be compliant with drying the ears thoroughly and continue to experience the condition that swimming may have to cease for a specific amount of time.