

## Practical Nursing Series: Medical-Surgical Nursing II

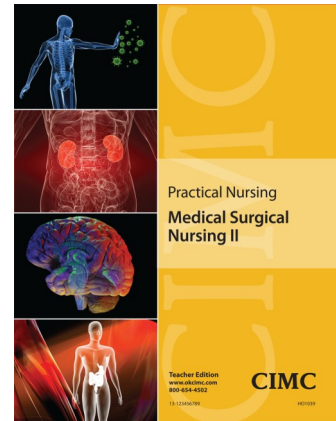
*Medical Surgical Nursing II*, used in conjunction with *Medical Surgical Nursing I*, replaces the 2002 version of *Nursing Focus*. The curriculum adheres to the revised objectives approved by the Oklahoma Board of Nursing.

This full-color text builds on the concepts and skills for previous courses. It focuses on prevention of illness, health management, and care of the individual. Treatments, patient care, diet and pharmacological therapy are included in each module. *Medical Surgical Nursing II* is designed to teach the nursing student focused nursing skills and the ability to apply their knowledge to prepare for the NCLEX-PN.

Modules include:

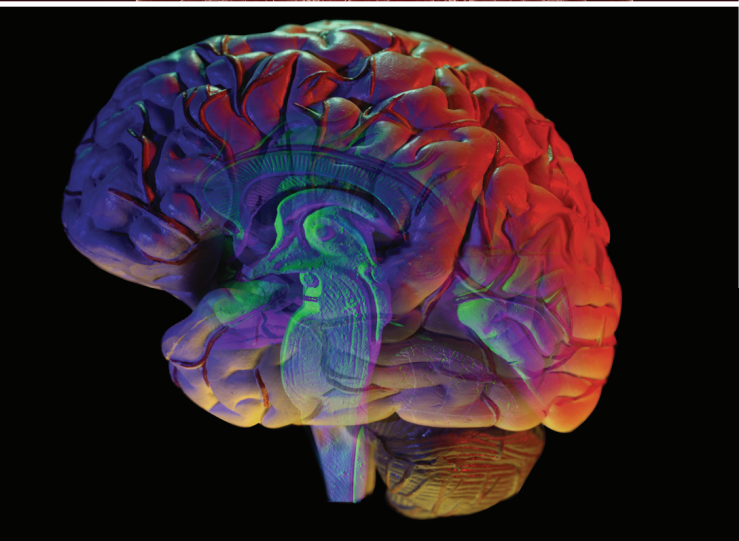
- ◆ Immune Nursing
- ◆ Sensory Nursing
- ◆ Neurology Nursing
- ◆ Digestive Nursing
- ◆ Endocrine Nursing
- ◆ Urinary Nursing
- ◆ Reproductive Nursing
- ◆ Oncology Nursing

We are offering “Sensory Nursing” as a free sample.



**Practical Nursing:  
Medical-Surgical Nursing II**  
2013  
Teacher Edition: HO1039  
Student Workbook: HO3039

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# Practical Nursing Medical Surgical Nursing II

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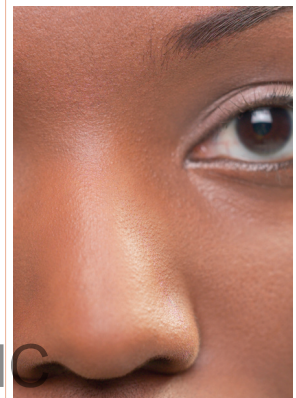
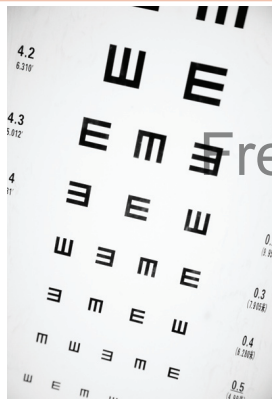
# CIMC

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HO1039

# MODULE 2

## SENSORY NURSING



**T**his module provides an understanding of the sensory organs and their functions, disorders that affect these organs, and treatments of these disorders. The most common senses which display impairments are vision, hearing, taste and smell. Additionally, the sense of touch, position and movement may be impaired. These senses are important for an individual's

interactions with their environment and other individuals. Impairments of these senses must be handled appropriately and carefully by the nurse. Completion of this module should provide an understanding and knowledge of how to provide appropriate nursing care to individuals with sensory disorders and impairments.

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*Review the Learning Objectives with the students. Look ahead*

*to the Learning Activities in this module and plan to introduce them.*

## TEACHING SUGGESTIONS

- Along with many helpful websites, there are now many “apps” available to help students and nurses obtain needed information from their smart phones, tablet devices, etc. Search iTunes or other application databases for the most up-to-date “apps” available for each content area. See the following links for possible apps related to the sensory system.
- Be sure to advise the students that these “apps” may cost to download.
  - Sensory apps  
<http://itunes.apple.com/us/app/hd-five-senses/id373600865?mt=8>
  - Hearing  
<http://itunes.apple.com/us/app/senses-what-u-hear/id398460048?mt=8>

<http://itunes.apple.com/us/app/uhear/id309811822?mt=8>

<http://itunes.apple.com/us/app/soundamp-r/id318126109?mt=8> (amplifier)

<http://itunes.apple.com/app/id450577890>

## LEARNING OBJECTIVES

1. Explain the function of the sensory system.
2. Distinguish among sensory disorders.
3. Relate diagnostic tests and surgical procedures to the nursing care of patients with sensory disorders.
4. Evaluate pharmacological effects of medications used to treat sensory disorders.
5. Contribute to the plan of care for patients experiencing alterations in sensory or perceptual function.
6. Distinguish among patient education needs related to self-care for sensory disorders.

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— Continued on next page

## MODULE OVERVIEW

This module provides concise information regarding sensory disorders including their symptoms and associated medications, diagnostic tests, and nursing care. Students should be encouraged to reacquaint themselves with the sensory system information from their Anatomy and Physiology course.



## LEARNING OBJECTIVE

### Sense of Vision

**Objective** Explain the function of the sensory system.

The senses provide humans with the ability to interact with their environment through seeing, hearing, tasting, smelling, touching, and maintaining position and movement. These senses enable humans to survive because of the appropriate responses. Should these responses not occur, or occur inappropriately, patients may be injured or suffer disorders of the sensory system.

## VISION

The function of the eyeball is transformation of light to nerve signals which are interpreted into visual images in the cerebral cortex of the brain.

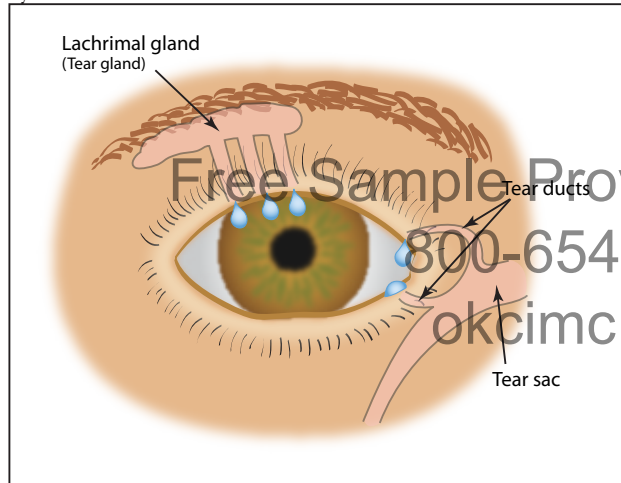
The actual mechanics of vision take place within the retina, the optic nerve, and the brain. *Photoreceptors*, specialized cells that are sensitive to light and color, are the rods and cones of the retina.

### Did You Know?

Color blindness is caused by an absence of one or more cones. Cones are sensitive to the colors red, green, and blue.

Normal aging causes the eye to lose elasticity of the lens; this causes the muscles of the eye to be unable to accommodate (move the lens as needed) and presbyopia (far sightedness due to aging) occurs. The lens may also become slightly opaque, causing difficult vision when glare is present. Because the pupil becomes smaller with age, more light is needed to read.

### Eye Glands



## TEACHING SUGGESTIONS

- Review the following information with the students.
  - Structure of the eye
  - Accessories of the eye
  - Intraocular anatomy
  - Physiology and function of the eye

### • Vision

<http://itunes.apple.com/us/app/senses-what-u-see/id411289776?mt=8>

<http://itunes.apple.com/us/app/vision/id295144131?mt=8>

<http://itunes.apple.com/us/app/vision-test/id380288414?mt=8>

<http://itunes.apple.com/us/app/eyes-vision/id333809694?mt=8>

### • For iPads

<http://itunes.apple.com/us/app/eye-chart-pro/id364802332?mt=8>  
(Eye chart)



### Vision

[www.webmd.com/eye-health/picture-of-the-eyes](http://www.webmd.com/eye-health/picture-of-the-eyes)



## Hearing

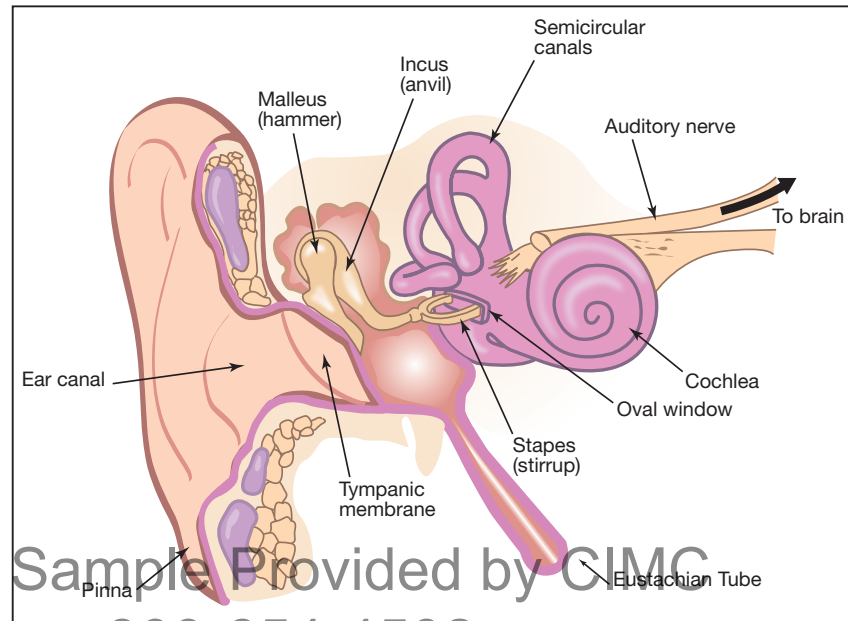
[www.youtube.com/watch?v=PeTriGTENoc&feature=related](http://www.youtube.com/watch?v=PeTriGTENoc&feature=related)

## HEARING

The ear consists of three sections, which work together to provide the sense of hearing. The outer ear receives the sound waves and propels them to the interior portions of the ear. The middle ear is small and contains air and three bones. The three bones are the malleus (hammer), the incus (anvil), and the stapes (stirrup). The inner ear contains fluid-filled cavities and canals. It also contains the cochlea, semicircular canals, and the vestibulocochlear nerve.

### IMPORTANT FACT

It's easy for a throat infection to spread to the ears because it can travel up the Eustachian tubes into the middle ear. These structures are all lined with continuous mucous membrane.



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### Did You Know?

Cerumen is earwax that protects the ear by trapping foreign particles and dust.

### Sense of Hearing

- The eardrum, or tympanic membrane, separates the outer ear from the middle ear.
- The eustachian tubes connect the middle ear with the nasopharynx. They function to equalize pressure on either side of the eardrum. This is why yawning or swallowing, which opens the tube and allows air to enter the middle ear, helps “pop” the ears when at high altitudes.
- Sound waves travel through the middle ear from the vibrating tympanic membrane causing the malleus to vibrate.
- The malleus movement triggers the incus to move and transfer the sound waves to the stapes. The movement of the stapes transfers the sound wave to the oval window, which transfers the sound waves into the inner ear.
- The ossicles of the middle ear are the small bones that carry the sound waves; they are the malleus, incus, and stapes.
- The endolymph and perilymph conduct sound waves from the middle ear through the inner ear.
- The organ of Corti transmits sound waves to the brain through the hair cells. The inside of the organ contains many, many hair cells that stimulate the cochlear nerve (part of the vestibular cochlear nerve, the eighth cranial nerve) in response to sound waves.
- The cochlear nerve then transmits the sound to the brain for interpretation.
- The semicircular canals contain hair cells also. The movement of endolymph within the semicircular canals stimulates these hair cells. The message is sent to the brain, which interprets it to maintain balance and equilibrium.

Normal aging affects hearing by causing a decrease in the ability to distinguish high frequencies of sound. This is thought to be due to declining function of the nerve fibers in the cochlear nerve and the cells of the organ of Corti. The ability to distinguish consonant sounds in hearing also decreases for the same reasons

Sources of damage to hair cells in the organ of Corti, causing permanent hearing loss, include:

- Jet engines
- Factory equipment
- Race car engines
- Loud amplifiers (music or drums)
- Wearing earphones with electronic equipment turned to high volumes

### SENSES OF TASTE AND SMELL

Smell and taste are two very closely related senses. These senses protect us from eating food that is spoiled or poisonous. Many of the toxins in poisonous plants have a bitter taste. Our tongues are most sensitive to bitter tastes, and our brain interprets them as something to reject, thereby protecting the body from possible harm.

#### Taste and Smell

The location of the taste receptors are:

- Sweet receptors—tip of the tongue
- Sour receptors—sides of the tongue
- Salty receptors—tip of the tongue
- Bitter receptors—back of the tongue

Normal aging affects smell and taste by causing a decrease in the nerve receptors for smell and taste. Sweet and salty taste receptors are the most affected.



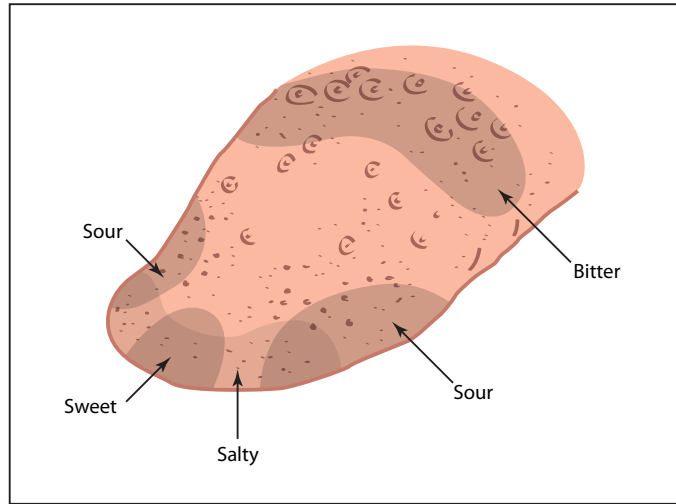
#### Taste

[www.wisc-online.com/objects/ViewObject.aspx?ID=AP14104](http://www.wisc-online.com/objects/ViewObject.aspx?ID=AP14104)

#### Smell

[www.entnet.org/HealthInformation/smellTaste.cfm](http://www.entnet.org/HealthInformation/smellTaste.cfm)

[www.nidcd.nih.gov/health/smelltaste/smell.html](http://www.nidcd.nih.gov/health/smelltaste/smell.html)



The glossopharyngeal nerve transmits the messages of taste to the brain. The olfactory receptors are located in the upper section of the nasal cavity. This is why people breathe deeply when smelling a flower.

The olfactory nerve transmits the messages of smell to the brain.

- Certain odors stimulate memories because the brain stores the odor and the events associated with it in long-term memory.
- When olfactory cells are damaged, the person's sense of smell will be lost since the body cannot regenerate olfactory cells.
- Food does not taste good when you have a cold because the sense of smell is impaired by nasal congestion. When we cannot smell what we eat, some of the taste is lost. The senses of smell and taste work together in our brain.

### SENSE OF TOUCH

Sensory receptors cover the skin and epithelia, skeletal muscles, bones and joints, internal organs, and the cardiovascular system. The sense of touch reacts to diverse stimuli using different receptors:

- Thermoreceptors (temperature)
- Nociceptors (pain)
- Mechanoreceptors (pressure)
- Chemoreceptors (chemical)

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## LEARNING OBJECTIVE

**Objective** Distinguish among sensory disorders.

## VISUAL DISORDERS

Many eye conditions can affect a patient's vision and understanding a patient's vision impairment will allow the nurse to provide care that will meet the patient's needs. Refractory errors prevent light rays from converging into focus on the retina.

### Did You Know?

- Severe visual impairment is defined as the inability to read newspapers with the use of corrective lenses.
- Total blindness is absence of light perception and usable vision.
- Functional blindness occurs when there is some light perception but no usable vision.



### Eye Health Slide Show — visual examples of eye disorders

[www.webmd.com/eye-health/slideshow-eye-conditions-overview](http://www.webmd.com/eye-health/slideshow-eye-conditions-overview)

### Lasik Eye Procedures

[www.tlcvision.com/lasik-laser-vision-expectations/lasik/](http://www.tlcvision.com/lasik-laser-vision-expectations/lasik/)

### Hyperopia

[www.aoa.org/x4696.xml](http://www.aoa.org/x4696.xml)

[www.nlm.nih.gov/medlineplus/ency/article/001020.htm](http://www.nlm.nih.gov/medlineplus/ency/article/001020.htm)

### Myopia

[www.aoa.org/x4688.xml](http://www.aoa.org/x4688.xml)

[www.nlm.nih.gov/medlineplus/ency/article/001023.htm](http://www.nlm.nih.gov/medlineplus/ency/article/001023.htm)

### Presbyopia

[www.aoa.org/x4697.xml](http://www.aoa.org/x4697.xml)

[www.nlm.nih.gov/medlineplus/ency/article/001026.htm](http://www.nlm.nih.gov/medlineplus/ency/article/001026.htm)

### Astigmatism

[www.aoa.org/Astigmatism.xml](http://www.aoa.org/Astigmatism.xml)

[www.nlm.nih.gov/medlineplus/ency/article/001015.htm](http://www.nlm.nih.gov/medlineplus/ency/article/001015.htm)

### Refractory Errors

Disorder	Structure Affected	Physical Findings	Treatment/Nursing Care
Hyperopia • Farsightedness	Causes light rays to focus behind the retina	Blurred vision	<ul style="list-style-type: none"> <li>• LASIK (laser-assisted in-situ keratomileusis)</li> <li>• PRK (photorefractive keratectomy)</li> <li>• ICRs (intra-corneal ring segments)</li> <li>• Refractive IOL (intraocular lens) implantation</li> <li>• Phakic IOL's                             <ul style="list-style-type: none"> <li>▶ Administer medications as directed by physician</li> <li>▶ Teach patient signs and symptoms of infection</li> <li>▶ Patient will return for follow-up care as directed</li> </ul> </li> <li>• Corrective lenses</li> <li>• Contact lens</li> </ul>
Myopia • Nearsightedness	Causes light rays to be focused in front of the retina		
Presbyopia • Farsightedness due to aging	<ul style="list-style-type: none"> <li>• The lens becomes less elastic</li> <li>• Decreases accommodative ability of the eye</li> </ul>		
Astigmatism	<ul style="list-style-type: none"> <li>• Irregularity of curve of cornea</li> <li>• Causes light rays to bend unequally</li> </ul>		

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### Penetrating Eye Injury

[www.insidermedicine.com/insidermedicine-if-i-had.aspx?Category=349](http://www.insidermedicine.com/insidermedicine-if-i-had.aspx?Category=349)

### Hordeolum

<http://health-pictures.com/hordeolum.htm>

[www.ncbi.nlm.nih.gov/pubmedhealth/PMH0002004/](http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0002004/)

### Chalazion

[www.mayoclinic.com/health/medical/IM03093](http://www.mayoclinic.com/health/medical/IM03093)

[www.webmd.com/eye-health/tc/styes-and-chalazia-topic-overview](http://www.webmd.com/eye-health/tc/styes-and-chalazia-topic-overview)

### Blepharitis

[www.southcoasteyecare-inc.com/pages/blepharitis.html](http://www.southcoasteyecare-inc.com/pages/blepharitis.html)

[www.nei.nih.gov/health/blepharitis/blepharitis.asp](http://www.nei.nih.gov/health/blepharitis/blepharitis.asp)

[www.medicinenet.com/blepharitis/article.htm](http://www.medicinenet.com/blepharitis/article.htm)

### Conjunctivitis

[www.webmd.com/eye-health/slideshow-pinkeye](http://www.webmd.com/eye-health/slideshow-pinkeye)

[www.webmd.com/eye-health/eye-health-conjunctivitis](http://www.webmd.com/eye-health/eye-health-conjunctivitis)

[www.aoa.org/x4720.xml](http://www.aoa.org/x4720.xml)

### Keratitis

[www.lyme.org/gallery/keratitis.html](http://www.lyme.org/gallery/keratitis.html)

[www.medicinenet.com/keratitis/article.htm](http://www.medicinenet.com/keratitis/article.htm)

[www.nlm.nih.gov/medlineplus/ency/article/001609.htm](http://www.nlm.nih.gov/medlineplus/ency/article/001609.htm)

## EYE INJURIES

Eye injuries can result in permanent visual impairment. Causes of eye injury include trauma, through auto accidents and sports injuries, or chemical exposure. The patient may experience pain, *photophobia*, redness, edema, tearing, blood present in chamber, abnormality in vision, abnormal *intraocular pressure*, or deficits in peripheral vision.

Penetrating wounds to the eye can result in complete loss of vision and loss of the eye itself. It is important for the nurse to assess the size of the object that is penetrating the eye and whether fluid is leaking from the eye. When vitreous humor, the jelly-like fluid that gives the eyeball its shape, escapes from the eye, vision is usually lost. When a penetrating wound

to the eye occurs, first aid measures include having the victim lie down to prevent fluid from escaping from the eye. The penetrating object should be stabilized (a Styrofoam cup works well to cover the eye and the object), and the victim transported to an emergency department as soon as possible. Only a physician should remove the penetrating object.

To provide care for an eye injury, the nurse should cover the eye with a dry sterile patch and a protective shield, stabilize any foreign objects, elevate head of bed 45 degrees, avoid pressure on the eye, and instruct patient not to blow their nose. In the case of chemical exposure, the eye should be irrigated as soon as possible with sterile saline or water.

### Infections and Inflammation of the Eye

Disorder	Structure Affected	Physical Findings	Treatment/Nursing Care
<i>Hordeolum</i> • Stye	Sebaceous glands in the eyelid	<ul style="list-style-type: none"> <li>• Red</li> <li>• Swollen</li> <li>• Tender area</li> </ul>	<ul style="list-style-type: none"> <li>• Treatment consists of application of warm, moist compresses four times daily until healed</li> <li>• Antibiotic ointment or drops</li> </ul>
<i>Chalazion</i>	Sebaceous glands in the upper lid	<ul style="list-style-type: none"> <li>• Swelling</li> <li>• Tender</li> <li>• Red</li> </ul>	<ul style="list-style-type: none"> <li>• Warm, moist compresses</li> <li>• If this treatment is not effective, then an ophthalmologist may remove it surgically or inject it with corticosteroids</li> </ul>
<i>Blepharitis</i>	Infection of follicles of the eyelash along the rim of the eyelid	<ul style="list-style-type: none"> <li>• Itching</li> <li>• Burning</li> <li>• Crusting mucus</li> </ul>	<ul style="list-style-type: none"> <li>• Warm compresses</li> <li>• Antibiotic eyedrops</li> </ul>
<i>Conjunctivitis</i> (pink eye)	Inflammation of the conjunctiva caused by a bacterial infection	<ul style="list-style-type: none"> <li>• Redness of the eye</li> <li>• Pain</li> <li>• Tearing</li> <li>• Itching</li> </ul>	<ul style="list-style-type: none"> <li>• Antibiotic eyedrops</li> </ul>
<i>Keratitis</i>	Inflammation of the cornea	<ul style="list-style-type: none"> <li>• Pain and discomfort</li> <li>• Photophobia</li> <li>• Blurred vision</li> </ul>	<ul style="list-style-type: none"> <li>• Antibacterial, antifungal, and antiviral drugs</li> <li>• Response to trauma</li> <li>• Response to immune-mediated reactions</li> <li>• Replacement of vitamin A due to deficiency</li> </ul>

### IMPORTANT FACT

Pink eye (conjunctivitis) is highly contagious and can easily be spread to others. Reinfection within a house or school can occur if preventative measures aren't followed.

These include:

- Hand washing
- Not sharing eye makeup
- Not sharing towels and handkerchiefs
- Changing pillowcases frequently

### Conditions Affecting Vision

Disorder	Structure Affected	Physical Findings	Treatment/Nursing Care
<i>Cataract</i>	Opacity of the lens, causing cloudiness	<ul style="list-style-type: none"><li>• Blurred vision/ photophobia</li><li>• Double vision</li><li>• Decreased night vision</li><li>• Increased nearsightedness</li><li>• Need for increased light with detailed work or reading</li><li>• The lens becomes cloudy in appearance</li></ul>	<p>Surgical removal of cataract</p> <p>Teach patient it is extremely critical to follow their physician's instructions following cataract surgery for optimal healing</p>
<i>Open-angle Glaucoma (chronic)</i>	Increased intraocular pressure, causing damage to the optic disc	<ul style="list-style-type: none"><li>• Decrease in peripheral vision</li><li>• Occurs more gradually and has mild symptoms</li></ul>	<ul style="list-style-type: none"><li>• <b>Photocoagulation</b> is used to seal the leaking of serous fluid and blood vessels in the region</li><li>• Medication</li><li>• Surgery</li></ul> <p>Postop care includes:</p> <ul style="list-style-type: none"><li>• Notify physician if worsening pain is experienced</li><li>• Avoid strenuous activity</li><li>• Do not strain with stool or bend over</li><li>• Take a stool softener</li></ul>



### Cataracts

[www.nei.nih.gov/nei.nih.gov/health/ataract/cataract\\_facts.asp](http://www.nei.nih.gov/nei.nih.gov/health/ataract/cataract_facts.asp)

[www.geteyesmart.org/eyesmart/diseases/cataracts.cfm](http://www.geteyesmart.org/eyesmart/diseases/cataracts.cfm)

### Cataract Simulation

[www.cataracteye.com/simulation.html](http://www.cataracteye.com/simulation.html)

### Open-Angle Glaucoma (Chronic)

[www.visionrx.com/library/enc/enc\\_oaglaucoma.asp](http://www.visionrx.com/library/enc/enc_oaglaucoma.asp)

[www.glaucoma.org/glaucoma/types-of-glaucoma.php](http://www.glaucoma.org/glaucoma/types-of-glaucoma.php)

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### Narrow-Angle Glaucoma (Acute)

[www.youtube.com/watch?v=gDfM3s7jxqM](http://www.youtube.com/watch?v=gDfM3s7jxqM)

[www.webmd.com/eye-health/glaucoma-eyes](http://www.webmd.com/eye-health/glaucoma-eyes)

### Retinal Detachment

[www.ncbi.nlm.nih.gov/pubmedhealth/PMH0002022/](http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0002022/)

[www.maculacenter.com/EyeConditions/retinal-Detachment.htm](http://www.maculacenter.com/EyeConditions/retinal-Detachment.htm)

### Scleral Buckling

[www.webmd.com/eye-health/scleral-buckling-surgery-for-retinal-detachment](http://www.webmd.com/eye-health/scleral-buckling-surgery-for-retinal-detachment)

[www.youtube.com/watch?v=YftCbXIw11k](http://www.youtube.com/watch?v=YftCbXIw11k)

### Nursing Care for Patient Having Eye Surgery

[http://wps.prenhall.com/wps/media/objects/737/755395/eye\\_surgery.pdf](http://wps.prenhall.com/wps/media/objects/737/755395/eye_surgery.pdf)

### Retinopathy

[www.bmj.com/content/328/7440/625.full](http://www.bmj.com/content/328/7440/625.full)

### Diabetic Retinopathy

[www.nei.nih.gov/health/diabetic/retinopathy.asp](http://www.nei.nih.gov/health/diabetic/retinopathy.asp)

### Macular Degeneration

[www.nei.nih.gov/health/macularden/gen/armd\\_facts.asp](http://www.nei.nih.gov/health/macularden/gen/armd_facts.asp)

[www.allaboutvision.com/conditions/amd.htm](http://www.allaboutvision.com/conditions/amd.htm)

[www.macular.org/1\\_blindness.html](http://www.macular.org/1_blindness.html)

### Conditions Affecting Vision Continued

Disorder	Structure Affected	Physical Findings	Treatment/Nursing Care
<i>Narrow-angle Glaucoma (acute)</i>	Iris is too close to the canal that drains aqueous humor and blocks it	<ul style="list-style-type: none"> <li>Severe eye pain with colored haloes</li> <li>Blurry vision</li> <li>Nausea</li> <li>Comprises a medical emergency</li> </ul>	<ul style="list-style-type: none"> <li>Treatment is aimed at decreasing the intraocular pressure</li> <li>A laser is used to create openings that allow the excess fluid to escape</li> <li>Teach patient proper after-surgery care and medication usage</li> </ul>
<i>Retinal detachment</i>	Separation of retinal layers from the choroid	<ul style="list-style-type: none"> <li>Flashes of light with floaters</li> <li>Possible complete loss of vision</li> </ul>	<ul style="list-style-type: none"> <li>Laser surgery is often used to repair the retinal tear</li> <li>Scleral buckling</li> <li>More invasive repair</li> <li>Reinforce instructions regarding the need to wear eye patches and/or eye shields after surgery</li> <li>Explain that light sensitivity is common for several weeks post-op</li> </ul>
<i>Retinopathy</i>	Rupture of aneurysms on retinal blood vessels	<ul style="list-style-type: none"> <li>Symptoms occur later and include blurred vision</li> <li>Missing areas in vision</li> <li>Abnormal spots or lines in vision</li> </ul>	<ul style="list-style-type: none"> <li>The best treatment is prevention, which involves management of diabetes and/or hypertension</li> <li>Photocoagulation</li> </ul>
<i>Macular degeneration</i>	Photoreceptors, bleeding of abnormal vessels near macula	<ul style="list-style-type: none"> <li>Inability to see colors or details</li> <li>Blurry vision</li> <li>Straight lines appearing wavy</li> <li>Loss of central vision with intact peripheral vision</li> </ul>	<ul style="list-style-type: none"> <li>Laser therapy is effective if initiated early in progression of disorder</li> <li>Photocoagulation</li> </ul>

#### IMPORTANT FACT

The most common cause of loss of vision from aging is macular degeneration.

### Amsler Grid to Check for Macular Degeneration

[www.allaboutvision.com/conditions/amsler-grid.pdf](http://www.allaboutvision.com/conditions/amsler-grid.pdf)

## STRABISMUS

Strabismus (crossed eyes) occurs when the eye muscles are weak in one or both eyes. This muscle weakness may occur because of muscle imbalance, muscle paralysis, or a congenital condition. Often the good eye is patched for six to eight weeks to strengthen the muscles of the affected eye. Sometimes glasses may be prescribed as well as eye exercises. In some cases, surgery is indicated to straighten the deviated eye.

### Did You Know?

**Intraocular pressure is the pressure within the eye and is determined by the amount of aqueous humor present.**

*Q: How would you communicate differently with a patient with severely impaired vision?*

## AUDITORY DISORDERS

There are two different types of hearing loss attributed to problems with the ear. *Sensorineural hearing loss* is due to dysfunction of the auditory nerve. When the hearing loss is caused by problems with sound transmission through the ear it is conductive hearing loss.

### Causes of Hearing Loss

Conductive:

- Obstruction by cerumen (earwax)
- Scarring of tympanic membrane (repeated otitis media)
- Congenital disorder

Sensorineural:

- Ototoxic drugs
- Repeated exposure to loud noise
- History of mumps, measles, meningitis, or Meniere's disease
- Acoustic neuroma

*Q: How would you communicate with a patient with severe hearing loss?*

### Causes of Hearing Loss

Disorder	Structure Affected	Physical Findings	Treatment/Nursing Care
Ototoxicity	Damage to the inner ear or vestibulocochlear nerve from certain drugs	<ul style="list-style-type: none"> <li>• Problems with hearing and/or balance</li> <li>• Permanent or temporary</li> <li>• Ototoxicity—ringing in the ears and a decrease in hearing ability</li> <li>• Low urine output</li> </ul> <p>Drugs causing condition include:</p> <ul style="list-style-type: none"> <li>• Antibiotics</li> <li>• Antineoplastics</li> <li>• Loop diuretics</li> <li>• Non-steroidal anti-inflammatory drugs</li> </ul>	<ul style="list-style-type: none"> <li>• Determine cause such as the use of ototoxic drugs</li> <li>• Instruct patients to report hearing loss, problems with balance</li> <li>• Warn patients about the use of aspirin and other medications, which can cause condition</li> <li>• Monitor urine output</li> </ul>



### Strabismus

[www.pedseye.com/strabismus\\_adult\\_strabismus.htm](http://www.pedseye.com/strabismus_adult_strabismus.htm)

[www.aapos.org/terms/conditions/11](http://www.aapos.org/terms/conditions/11)

[www.nlm.nih.gov/medlineplus/ency/article/001004.htm](http://www.nlm.nih.gov/medlineplus/ency/article/001004.htm)

### Deaf Communication Technologies

[www.assistech.com/deaf-communication.htm](http://www.assistech.com/deaf-communication.htm)

### Ototoxicity

[www.hearinglosshelp.com/articles/ototoxicupheaval.htm](http://www.hearinglosshelp.com/articles/ototoxicupheaval.htm) (Part 1)

[www.hearinglosshelp.com/articles/ototoxicaudiology.htm](http://www.hearinglosshelp.com/articles/ototoxicaudiology.htm) (Part 2)

## CRITICAL THINKING QUESTION ANSWERS

*Q: How would you communicate differently with a patient with severely impaired vision?*

**Answer:** How a nurse communicates with a person with severe vision impairment may depend on whether there are other concurrent health issues. See the links below for information on this topic. Vision impaired: [www.afb.org/Section.asp?SectionID=36&TopicID=163&DocumentID=194](http://www.afb.org/Section.asp?SectionID=36&TopicID=163&DocumentID=194)

*Q: How would you communicate with a patient with severe hearing loss?*

**Answer:** Several tips for communicating with people who have severe hearing loss can be found at: [www.mich-dhh.org/hearing/comm\\_tips.html](http://www.mich-dhh.org/hearing/comm_tips.html)





### Meniere's Disease

[www.nidcd.nih.gov/health/balance/meniere.html](http://www.nidcd.nih.gov/health/balance/meniere.html)

[www.medicinenet.com/meniere\\_disease/article.htm](http://www.medicinenet.com/meniere_disease/article.htm)

### Otitis Media

[www.nidcd.nih.gov/health/hearing/earinfections](http://www.nidcd.nih.gov/health/hearing/earinfections)

[www.umm.edu/altmed/articles/otitis-media-000121.htm](http://www.umm.edu/altmed/articles/otitis-media-000121.htm)

### Image of Tympanic Membrane with and without OM

[www.pedisurg.com/pt-educent/otitis\\_media.htm](http://www.pedisurg.com/pt-educent/otitis_media.htm)

### Causes of Hearing Loss Continued

Disorder	Structure Affected	Physical Findings	Treatment/Nursing Care
Meniere's disease	<p>Increased fluid in the labyrinth spaces, causing swelling of the membranes of the cochlea</p> <p>Increased pressure in the inner ear, causing damage to structures</p>	<ul style="list-style-type: none"> <li>Hearing loss</li> <li>Vertigo</li> <li>Loss of balance</li> <li>Dizziness</li> <li>Nausea</li> </ul>	<ul style="list-style-type: none"> <li>Treatment includes drugs such as:               <ul style="list-style-type: none"> <li>▶ Atropine</li> <li>▶ Epinephrine</li> <li>▶ Valium</li> <li>▶ Antihistamines</li> <li>▶ Antiemetics</li> <li>▶ Anticholinergics</li> <li>▶ Vasodilators</li> <li>▶ Diuretics</li> </ul> </li> <li>Surgical removal of the <i>endolymph sac</i></li> <li>Assess and document symptoms and frequency</li> <li>Instruct patient on safety precautions during acute attacks</li> <li>Assist patient to determine if they experience an aura and what actions to take should it occur</li> <li>Instruct patient to rest in dark, quiet room</li> <li>Tell patient to avoid:               <ul style="list-style-type: none"> <li>▶ Caffeine</li> <li>▶ Decongestants</li> <li>▶ Stimuli that cause attacks such as bright lights or noisy places</li> </ul> </li> <li>Bending over with head down</li> <li>A low-sodium diet and diuretics may help reduce excess fluid</li> </ul>
Otitis media	Infection of the middle ear from bacteria or viruses	<ul style="list-style-type: none"> <li>Occurs after a respiratory infection and causes fluid to build up</li> <li>Pain in infected ear, fever</li> <li>Feeling of fullness in the ear</li> <li>Impairment in hearing</li> <li>Redness and bulging of the tympanic membrane</li> </ul>	<ul style="list-style-type: none"> <li>Antibiotics, antihistamines, and/or decongestants</li> <li>Incision may be made into the eardrum and a tube inserted to drain the fluid and equalize pressure</li> <li>Administer pain meds as needed</li> </ul>

### TEACHING SUGGESTIONS

- Remind students that when a patient experiences hearing loss while on a medication known to cause ototoxicity, it isn't necessarily ototoxicity. The nurse should always assess if the patient has had prior hearing loss or if the hearing loss they are experiencing is different from what they normally experience.

### Causes of Hearing Loss Continued

Disorder	Structure Affected	Physical Findings	Treatment/Nursing Care
Otosclerosis	Affects the bones of the middle ear, causing the stapes to become fixed so it cannot vibrate or produce sound waves	<ul style="list-style-type: none"> <li>• Difficulty hearing external sounds</li> <li>• The sound of patient's own voice becomes louder</li> </ul>	<ul style="list-style-type: none"> <li>• Hearing aid</li> <li>• Surgical procedure called a <i>stapedectomy</i>, or a <i>tympanoplasty</i></li> <li>• Provide post-operative treatment</li> </ul>

### OTHER SENSORY IMPAIRMENTS

Other sensory impairments can be problematic to the patient. If a patient is unable to smell or taste food, they may become malnourished. The sense of smell and taste work together to make the dining experience more appealing.

#### Other Sensory Impairments

Disorder	Structure Affected	Physical Findings	Treatment/Nursing Care
Dysgeusia	Taste buds	<ul style="list-style-type: none"> <li>• Foul, salty, rancid, or metallic taste sensation will persist in the mouth</li> <li>• Burning mouth syndrome, a condition in which a person experiences a painful burning sensation in the mouth</li> </ul>	<ul style="list-style-type: none"> <li>• Determine cause such as smoking, flu, medications</li> <li>• Prepare foods with a variety of colors and textures</li> <li>• Use spices</li> <li>• Add foods that have butter, olive oil and other forms of fat</li> <li>• Avoid dishes that have a combination of ingredients</li> </ul>
Hyposomia  Presbyosmia – loss of smell due to aging	Diminished sense of smell	<ul style="list-style-type: none"> <li>• Total or partial loss of smell</li> <li>• Think they smell bad odors</li> <li>• Headaches, dizziness, shortness of breath, or anxiety</li> </ul>	<ul style="list-style-type: none"> <li>• Assess to determine if condition is related to aging or other conditions</li> <li>• Determine if medications could be possible cause</li> <li>• Support treatment of underlying cause such as flu, cold, infection, nasal swelling</li> <li>• Recommend patient stop smoking if applicable</li> <li>• Tell patient to check for spoilage of foods</li> </ul>



### Otosclerosis

[www.entnet.org/HealthInformation/otosclerosis.cfm](http://www.entnet.org/HealthInformation/otosclerosis.cfm)

### Otosclerosis and Stapedectomy

[www.audiologynet.com/otosclerosis-stapedectomy.html](http://www.audiologynet.com/otosclerosis-stapedectomy.html)

### Loss of Taste Sensation — Dysgeusia

[www.medicinenet.com/loss\\_of\\_taste\\_sensation/symptoms.htm](http://www.medicinenet.com/loss_of_taste_sensation/symptoms.htm)

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**Sensory Integration Disorder (SID)**

[www.sinetwork.org/](http://www.sinetwork.org/)

[www.youtube.com/watch?v=6O6Cm0WxEZA](http://www.youtube.com/watch?v=6O6Cm0WxEZA)

**Benign Paroxysmal Positional Vertigo**

[www.mayoclinic.com/health/vertigo/DS00534](http://www.mayoclinic.com/health/vertigo/DS00534)

**Movement Disorders**

[www.movementdisorders.org/education/](http://www.movementdisorders.org/education/)

[www.nlm.nih.gov/medlineplus/movementdisorders.html](http://www.nlm.nih.gov/medlineplus/movementdisorders.html)

[www.wemove.org/](http://www.wemove.org/)

**Other Sensory Impairments Continued**

Disorder	Structure Affected	Physical Findings	Treatment/Nursing Care
Sensory integration disorder or dysfunction (SID)	Inability to integrate certain information received from the body's basic sensory systems	<ul style="list-style-type: none"> <li>Over-sensitivity to touch, movement, sights, or sounds</li> <li>Under-reactivity to touch, movement, sights, or sounds</li> <li>Easily distracted</li> <li>Activity level that is unusually high or unusually low</li> <li>Physical clumsiness or apparent carelessness</li> <li>Impulsivity or lack of self-control</li> <li>Difficulty in making transitions from one situation to another</li> <li>Inability to unwind or calm self</li> </ul>	<ul style="list-style-type: none"> <li>Therapeutic body brushing to override stimulation</li> <li>TENS units</li> <li>Music therapy</li> <li>Biofeedback</li> </ul>
Benign paroxysmal positional vertigo	Inner ear	<ul style="list-style-type: none"> <li>Dizziness</li> <li>Unsteady gait/balance</li> <li>Frequent falls</li> <li>Labyrinth becomes infected or swollen</li> <li>Small calcium stones in the inner ear become displaced</li> <li>Fluid in the inner ear</li> </ul>	<ul style="list-style-type: none"> <li>Teach exercises</li> <li>Assess to determine cause and remove causative agent</li> <li>Administer antibiotics as ordered</li> <li>Assist ambulation as needed</li> </ul>
Movement disorders	Disruption of any portion of nervous system can cause a person to produce undesirable movement	<ul style="list-style-type: none"> <li>Dystonia</li> <li>Tremor</li> <li>Tics</li> <li>Akathisia—restless leg syndrome (a desire to move to relieve uncomfortable sensations)</li> <li>Rigidity</li> <li>Postural instability</li> </ul>	<ul style="list-style-type: none"> <li>Assist with physical therapy as directed</li> <li>Teach medication use</li> <li>Provide perioperative care</li> </ul>

## LEARNING OBJECTIVE

**Objective** Relate diagnostic tests and surgical procedures to the nursing care of patients with sensory disorders.

Various external devices are used for assessment of the eye. They are:

- Slit lamp — diagnosing cataracts- allows better visualization of the opacity of the lens.
- Tonometer — measurement of intraocular pressure
- Ophthalmoscope — retinal detachment by direct visualization

### Sensory Disorder Tests and Surgical Procedures

Test/ Procedure	Purpose	Procedure	Nursing Care
Snellen eye chart	Test visual acuity - ability to see images at a distance	Chart is placed twenty feet away and the individual reads downward as letters decrease in size on each line	Teach patient about the results of testing <ul style="list-style-type: none"> <li>• The results include a fraction, comparing the individual's vision with normal vision (e.g. the results are 20/30 means the individual sees letters at 20 feet as others see at 30 feet)</li> </ul>
Rosenbaum's vision screener	Tests near vision	Holding the chart 14 inches away while patient reads the smallest print possible	Explain purpose and results of test
Cover-uncover test	Used to assess extraocular muscle function	The individual focuses on an object far away and covers one eye The uncovered eye is observed for movement The test is performed on both eyes	



### Snellen Eye Chart

[www.i-see.org/eyecharts.html](http://www.i-see.org/eyecharts.html)

### Online Eye Tests

[www.websightmd.com/id23.html](http://www.websightmd.com/id23.html)

### E-Activity Showing Different Eye Disorders

[www.richmondeye.com/eyemotil.asp](http://www.richmondeye.com/eyemotil.asp)

## CLASSROOM ACTIVITY

- Many of these eye/vision tests are easy to do on each other. Have the students pair up and complete the tests on their partner.



### Cardinal Gaze Test

[www.websightmd.com/id57.html](http://www.websightmd.com/id57.html)

### Ophthalmoscopy

[www.youtube.com/watch?v=leMexvs9HVU](http://www.youtube.com/watch?v=leMexvs9HVU)

### Tonometry

[www.youtube.com/watch?v=TTnLVw6yzB8](http://www.youtube.com/watch?v=TTnLVw6yzB8)

### Amsler Grid

[www.amd.org/living-with-amd/resources-and-tools/31-amsler-grid.html](http://www.amd.org/living-with-amd/resources-and-tools/31-amsler-grid.html)

[www.opt.indiana.edu/riley/HomePage/Amsler\\_Grid/4TEXTamsler\\_grid.html](http://www.opt.indiana.edu/riley/HomePage/Amsler_Grid/4TEXTamsler_grid.html)

### Retinal Angiography

[www.webmd.com/eye-health/eye-angiogram](http://www.webmd.com/eye-health/eye-angiogram)

[www.nlm.nih.gov/medlineplus/ency/article/003846.htm](http://www.nlm.nih.gov/medlineplus/ency/article/003846.htm)

### Preoperative Care for Eye Surgery

<http://eyerepublic.com/cataract-surgery-manila-philippines/preop-instructions.html>

### Postoperative Care for Eye Surgery

[http://nursing411.org/Courses/MD0919\\_Nursing\\_care\\_sensory\\_neurologic/1-22\\_Nursing\\_Care\\_sensory\\_neuro.html](http://nursing411.org/Courses/MD0919_Nursing_care_sensory_neurologic/1-22_Nursing_Care_sensory_neuro.html)

<http://eyerepublic.com/cataract-surgery-manila-philippines/postop-instructions.html>

## Sensory Disorder Tests and Surgical Procedures Continued

Test/ Procedure	Purpose	Procedure	Nursing Care
Cardinal gaze test	Determines eye muscle strength and function of cranial nerves	The individual is asked to focus on an object 12 inches away and the examiner moves the object in six different positions while watching the individual's eye movements  Movement should be smooth in all directions	Explain purpose, procedure and results of test
Ophthalmoscopy	Examination of the interior portion of the eye	Physician uses ophthalmoscope to provide illumination of the eye, allowing for visualization of the inner structures of the eye	
Tonometry	Intraocular pressure	A tonometer is applied directly on the surface of the eye which flattens the surface  Another method includes the use of a noncontact tonometer, which blows a puff of air onto the eye	
Amsler grid	Problems with the macula exist	Grid of identical sized squares with a central point is used, and the individual is asked to stare at the central point and notice if squares are uniform and straight.	
Vascularity	Observation of the eye vessels	Use of <i>retinal angiography</i>  Dye is injected through a vein and special photographs are taken of the dye perfusing through the eye vessels	

Preoperative care for an eye surgery includes administration of stool softeners to prevent straining with stool after surgery, administration of eyedrops if ordered, and patient education.

Postoperative care for an eye surgery includes prevention of anything that may cause straining, such as constipation, vomiting, bending over, etc. Eye patches are often used on affected eye after surgery for protection. Patient education on medications prescribed and follow-up care is very important.

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## NOTE

One of the primary nursing interventions for the postoperative care of the patient having had eye surgery is to take measures to prevent increased intraocular pressure (IOP). Assist the students with identifying common actions to avoid that may increase IOP (i.e. bending over to tie shoes, picking up small children, coughing and sneezing).



## EAR EXAMS

Instruments used for ear exams are:

- An otoscope is an instrument used to inspect the tympanic membrane and the external acoustic canal. The normal tympanic membrane should appear pearly gray and transmit light. The normal canal should be smooth.
- A tuning fork is used to perform the Rinne and Weber tests.
  - ▶ In the Rinne test, the tuning fork is struck to produce vibration and placed on the mastoid process until the individual can no longer hear the vibration.
  - ▶ The tuning fork is moved at once to a position lateral to the ear until patient can no longer hear the vibration. Air conduction should be twice as long as bone conduction.
  - ▶ The Weber test is done by striking the tuning fork to produce vibration and placing it midline along the individual's skull.
  - ▶ Sound should be heard equally in both ears. If the sound lateralizes to one ear, hearing loss may be indicated.

Preoperative care of the patient undergoing ear surgery may involve administration of ear drops and cleaning of the surgical site.

Postoperative care for the patient undergoing ear surgery may involve specific positioning in bed, depending on type of surgery and ear affected. The nurse should monitor for signs of damage to the facial nerve, which includes inability to shut eyes, pucker lips, or wrinkle forehead. There may be a dressing in place over the ear. Safety is an important factor as balance may be impaired.

For administration of eye ointments, the steps are the same except for actual administration, where you squeeze a thin line of ointment along the length of the conjunctival sac.

Taste and smell disorders are identified by both subjective and objective data. The physician will use a variety of tools, such as the ones listed below, to confirm a diagnosis of a taste or smell disorder:

- Skull X-ray
- MRI
- CT scan
- Olfactory nerve testing
- Nasal cytology

### Diagnostic Tests for Ear Disorders

Test	Purpose	Procedure	Nursing Care
Romberg test	Checks for balance	The individual is asked to stand with their arms extended to their sides, their feet together, and their eyes closed.  There should not be swaying or loss of balance.	<ul style="list-style-type: none"> <li>• Explain purpose, procedure and results of test</li> <li>• Prevent patient from falling during exam</li> </ul>
Audiometry	Measure hearing acuity	Headset is worn and various intensities of sound are produced through the headset one ear at a time.  The results are based on when the individual is first able to hear sound.	Explain purpose, procedure and results of test

## CLASS DISCUSSION

- At this point, consider asking your students about which nursing diagnoses they think are appropriate for the patient having undergone ear surgery. Then discuss interventions and rationales for each diagnosis.



### Otoscope — Examination of the Ear

[www.youtube.com/watch?v=KfHW3ES0IA4&feature=related](http://www.youtube.com/watch?v=KfHW3ES0IA4&feature=related)

[www.youtube.com/watch?v=iIbaq15t1L0](http://www.youtube.com/watch?v=iIbaq15t1L0)

### Rinne and Weber Test

[www.youtube.com/watch?v=4WzGmDD0Zq8&feature=related](http://www.youtube.com/watch?v=4WzGmDD0Zq8&feature=related)

[www.webster.edu/~davittdc/ear/rinne/rinne.htm](http://www.webster.edu/~davittdc/ear/rinne/rinne.htm)

[www.webster.edu/~davittdc/ear/weber/weber.htm](http://www.webster.edu/~davittdc/ear/weber/weber.htm)

### Romberg Test

[www.neuroexam.com/neuroexam/content.php?p=37](http://www.neuroexam.com/neuroexam/content.php?p=37)

### Audiometry

[www.ncbi.nlm.nih.gov/books/NBK239/](http://www.ncbi.nlm.nih.gov/books/NBK239/) <http://>

[www.nlm.nih.gov/medlineplus/ency/article/003341.htm](http://www.nlm.nih.gov/medlineplus/ency/article/003341.htm)

<http://itunes.apple.com/us/app/audiometry/id298494364?mt=8>

## CLASS DISCUSSION

- This portion of the course provides a good opportunity to review the administration of ophthalmic medications and the application of eye patches/dressings.

Touch, position and movement conditions are diagnosed using:

- Brain imaging studies
- CT scan
- PET scan
- MRI
- Blood and urine studies, positron emission
- Lumbar puncture

## LEARNING OBJECTIVE

**Objective** Evaluate pharmacological effects of medications used to treat sensory disorders.

### Medications for Sensory Disorders

Category and Examples	Uses	Actions	Side Effects	Nursing Care
Antibiotics <ul style="list-style-type: none"> <li>• Gentamicin sulfate</li> <li>• Neomycin sulfate</li> <li>• Polymyxin B sulfate</li> <li>• Ciprofloxacin</li> </ul>	Used to treat or prevent bacterial infections of the eye	Interferes with protein synthesis of the bacterial cell	<ul style="list-style-type: none"> <li>• Confusion</li> <li>• Seizures</li> <li>• Hypo/hypertension</li> <li>• Oliguria</li> <li>• Hematuria</li> <li>• Renal damage</li> <li>• Rash</li> </ul>	<ul style="list-style-type: none"> <li>• Assess for possible allergic reaction to drug</li> <li>• Observe for signs and symptoms of infection</li> <li>• Get culture and sensitivity before giving first dose of medication</li> <li>• Monitor changes in vital signs</li> </ul>
Mydriatic & cycloplegic <ul style="list-style-type: none"> <li>• Atropine</li> <li>• Scopolamine</li> <li>• Homatropine</li> </ul>	Dilate pupils and paralyze muscles of accommodation	Used for surgical procedures of the eyes  Enhances ability to examine inside of eye and prevents moving of lens	<ul style="list-style-type: none"> <li>• Restlessness</li> <li>• Dry mouth</li> <li>• Abdominal distress</li> <li>• Blurred vision</li> <li>• Rash</li> </ul> Alteration in vital signs: <ul style="list-style-type: none"> <li>• Rapid pulse</li> <li>• Palpitations, hypotension</li> </ul>	<ul style="list-style-type: none"> <li>• Assess for eye pain</li> <li>• Monitor intake and output</li> <li>• Assess for abdominal complications such as constipation</li> <li>• Assess mental status</li> </ul>
Topical anesthetics <ul style="list-style-type: none"> <li>• Alcaine</li> <li>• Pontocaine</li> </ul>	Anesthetize the eye	Block nerve conduction causing anesthetic effect	<ul style="list-style-type: none"> <li>• Pain in the eye</li> <li>• Redness</li> <li>• Eye irritation</li> <li>• Allergic reaction</li> </ul>	<ul style="list-style-type: none"> <li>• Assess for possible allergic reaction to drug</li> <li>• Observe for signs and symptoms of infection</li> </ul>

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## ADDITIONAL LEARNING ACTIVITY

Using 3x5 note cards have your students write the name of a medication/classification on one side of a card. Next write down the uses, actions, side effects and nursing considerations each on their own card. Do this for each of the medications/classifications listed. Have the students mix all of the cards then match them appropriately using the chart to grade their progress. This can be done as a team or individually. If using teams, have each side see who can match the correct cards the fastest.

**Medications for Sensory Disorders Continued**

Category and Examples	Uses	Actions	Side Effects	Nursing Care
Miotics • Cholinergics-pilocarpine hydrochloride • Cholinesterase inhibitors-echothiophate iodide • Beta-adrenergic blockers-timolol maleate	Treatment of glaucoma	Constrict the pupil, which increases flow of aqueous humor and decreases intraocular pressure	<ul style="list-style-type: none"> <li>• Difference in taste</li> <li>• Ocular burning and stinging</li> <li>• Blurred vision</li> <li>• Abdominal pain</li> <li>• Back pain</li> <li>• Cough</li> <li>• Dizziness</li> <li>• Headache</li> <li>• Hypertension</li> <li>• Urinary tract infection</li> </ul>	<ul style="list-style-type: none"> <li>• Assess for possible allergic reaction to drug</li> <li>• Observe for signs and symptoms of infection</li> <li>• Treat symptoms as prescribed by physician</li> </ul>
Sympathomimetics • Epinephrine • Dipivefrin	Decrease intraocular pressure	Aids in outflow of aqueous fluid and decreases the body's production of aqueous fluid	<ul style="list-style-type: none"> <li>• Tachycardia</li> <li>• Arrhythmias</li> <li>• Hypertension</li> <li>• Blurred vision</li> <li>• Headache</li> <li>• Eye pain</li> <li>• Conjunctivitis</li> </ul>	<ul style="list-style-type: none"> <li>• Assess for possible allergic reaction to drug</li> <li>• Observe for signs and symptoms of infection</li> <li>• Treat symptoms as prescribed by physician</li> </ul>
Carbonic anhydrase inhibitors • Azopt	Decrease intraocular pressure	Decrease formation of aqueous humor by decreasing production of carbonic acid	<ul style="list-style-type: none"> <li>• Dry eye</li> <li>• Headache</li> <li>• Ocular discharge</li> <li>• Ocular pain</li> <li>• Chest pain</li> <li>• Eye fatigue</li> <li>• Urticaria</li> <li>• Dry mouth</li> <li>• Dizziness</li> <li>• Eye pain</li> <li>• Conjunctivitis</li> </ul>	<ul style="list-style-type: none"> <li>• Assess for possible allergic reaction to drug</li> <li>• Observe for signs and symptoms of infection</li> <li>• Treat symptoms as prescribed by physician</li> </ul>

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## LEARNING OBJECTIVE

**Objective** Contribute to the plan of care for patients experiencing alterations in sensory or perceptual function.

LPNs will be assigned the task of direct patient care and will be responsible for contributing to the patient's plan of care. The following is a partial list of nursing diagnoses that may be associated with patients experiencing sensory impairments.

- Disturbed sensory perception related to (hearing, visual, taste) deficit
- Risk of injury related to (hearing, visual, taste) impairment and inability to (hear, see, taste) potential dangers
- Self-care deficits related to sensory (hearing, visual, taste) deficit
- Fear of inability to sense potential danger or accurately interpret environment
- Grieving related to loss of function

Goals for the patient with a sensory impairment include:

- Successfully adjusting to the impairment
- Verbalizing feelings related to the loss
- Using appropriate coping strategies
- Maintaining safety during daily life
- Performing activities of daily living as independently as possible

## LEARNING OBJECTIVE

**Objective** Distinguish among patient education needs related to self-care for sensory disorders.

The patient should receive teaching that is appropriate for self-care of disorders of the senses. Examples of patient teaching follow.

Patient teaching for glaucoma:

- Always wear ID tab stating "glaucoma"
- Take medications as prescribed
- Do not take over-the-counter medications without consulting physician
- Signs of increased intraocular pressure to report include eye pain, blurry vision, and presence of halos
- Prevention of increased intraocular pressure includes low sodium diet, prevention of constipation

Patient teaching after ear surgery:

- Avoid sneezing, coughing, or blowing nose
- Avoid heavy lifting or bending over for 3 weeks
- Avoid flying until physician permits
- Do not drink from a straw or from plastic bottle for 3 weeks
- Avoid people with illness and loud noises

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## LEARNING ACTIVITY 1

### NAME \_\_\_\_\_

#### Introduction

LPNs will be involved in identifying interventions promoting desired patient outcomes.

#### Activity

List two different nursing interventions for each of the nursing diagnoses listed below. Include rationale, or reasoning, for the intervention.

- Glaucoma
- Ear surgery

Compare and contrast identified interventions with a peer.

#### Application

Present list to the facilitator.

## LEARNING ACTIVITY ANSWERS

Answers will vary.

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## LEARNING ACTIVITY ANSWERS

Answers will vary.

## LEARNING ACTIVITY 2

### NAME \_\_\_\_\_

#### Introduction

It is important for the nurse to be able to answer questions and provide instructions to the patient as their questions arise. Patients with sensory impairment often need reassurance and directions.

#### Activity

Work individually or in groups of three as assigned by the facilitator. Review the following scenario and discuss nursing care and appropriate patient instructions to be given to the patient.

During a routine health physical, a patient reports changes in his vision. He states these changes have become increasingly prevalent during the past 2 to 3 years. The patient is currently 78 years old. He asks questions about what other changes can be anticipated in his visual abilities related to aging. What information should be provided the patient? What recommendations concerning preventive behaviors can be made to the patient at this time?

#### Application

Check the answers with the facilitator.

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## LEARNING ACTIVITY RELATED CONTENT

**Normal Age-Related Vision Loss and Related Services for the Elderly**, by Donia E. Nolan

[www.laurenscharff.com/research/donia/aging\\_visual\\_changes.htm](http://www.laurenscharff.com/research/donia/aging_visual_changes.htm)

## LEARNING ACTIVITY 3

### NAME \_\_\_\_\_

#### Introduction

Patient teaching is important for the patient with sensory impairment.

#### Activity

A 78-year-old Native American patient with hearing loss who has had retinal reattachment surgery is assigned. The physician has explained surgical options to the patient, but the patient is still unsure of the difference between the various procedures.

Using the teaching plan developed by the RN and the information provided by the physician, determine specific modifications to the teaching plan for the patient.

#### Application

Perform the patient teaching with a student or facilitator.

## LEARNING ACTIVITY ANSWERS

Answers will vary.

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## LEARNING ACTIVITY ANSWERS

Answers will vary.

## LEARNING ACTIVITY 4

### NAME \_\_\_\_\_

#### Introduction

Patient teaching and safety are important for the patient with sensory impairment.

#### Activity

Prepare a list of safety instructions for a patient who has recently experienced severely impaired touch, taste, and smell.

#### Application

Perform patient teaching to a student or the facilitator.

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## TEACHING SUGGESTION

- Have students search for online resources related to this patient's condition/situation. Guide students in developing a teaching plan. Have the students blindfold themselves, wear ear plugs and role-play how they would present the information to a patient with similar impairments. Discuss the challenges of this activity and whether options exist to address them.

## KEY SUMMARY

- The senses provide individuals with interactions with their environment, interactions with other individuals, and contribute to their safety within their environment.
- Treatment for sensory disorders may include corrective lenses, medications, and/or surgery. There are numerous disorders which may affect an individual's hearing. Some of these include otitis media, otosclerosis, and Meniere's disease.
- There are two different types of hearing loss attributed to problems with the ear. Sensorineural hearing loss is due to dysfunction of the auditory nerve. When the hearing loss is caused by problems with sound transmission through the ear it is conductive hearing loss.
- The sense of touch, position and movement assist in ambulation and mobility. If the patient is unable to move or moves uncontrollably, optimum wellness may not be possible.
- Taste and smell disorders are identified by both subjective and objective data.
- Disorders that affect the senses provide unique challenges because they have significant impact on the patient's ability to interact with others and their ability to maintain safety.

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## HOSA SPOTLIGHT

**Health Education Competitive Event** [www.hosa.org/natorg/sectb/cat-iv/he.pdf](http://www.hosa.org/natorg/sectb/cat-iv/he.pdf)

- A teamwork event for 2-4 members. One of the sensory disorders/diseases could be selected. A lesson is prepared on the topic, instruction presented to a class of students, and results evaluated. This event includes the use of multimedia presentation tools.

## GLOSSARY

**Blepharitis:** An inflammation of the lid margins of the eye.

**Cataract:** Opacity of the lens of the eye.

**Conjunctivitis:** An inflammation of conjunctiva.

**Endolymph sac:** A pouch in the inner ear which contains endolymph.

**Hordeolum:** An infection causing inflammation of an oil gland located on margin of eyelid (also referred to as a sty).

**Intraocular pressure:** The amount of pressure in the eye, determined by amount of aqueous humor present.

**Keratitis:** An inflammation of the cornea.

**Macular degeneration:** A condition in which macula is damaged or destroyed.

**Narrow angle glaucoma:** Also known as angle-closure glaucoma, this occurs due to a narrow angle present where iris and cornea meet, causing susceptibility to angle closure; requires immediate treatment.

**Open angle glaucoma:** This occurs when methods of drainage of aqueous humor are blocked and intraocular pressure increases. It occurs gradually.

**Photophobia:** Sensitivity to light.

**Retinal angiography:** A procedure in which dye is injected into a peripheral vein and a camera records the blood flow through the retinal vessels.

**Retinal detachment:** A condition in which the sensory layer and the pigmented layer of the retina become separated.

**Retinopathy:** A condition in which vessels of the retina are destroyed.

**Sensorineural hearing loss:** Hearing loss caused by nerve damage.

**Stapedectomy:** A procedure in which the stapes or portion of the stapes is removed surgically and replaced with prosthesis for improvement of hearing.

**Tympanoplasty:** A procedure in which the tympanic membrane is repaired following perforation.

## RESOURCE BIBLIOGRAPHY

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