

# Medical-Surgical Nursing: An Integrated Approach, 2E

## Chapter 26

NURSING CARE OF THE CLIENT:  
SENSORY SYSTEM

Eliza Rivera-Mitu, RN, MSN  
NVOC 22C

## Sensation, Perception and Cognition

*Sensation* is the ability to receive and process stimuli (external or internal) through the sensory organs.

*Perception* is the ability to experience, recognize, organize, and interpret sensory stimuli.

*Cognition* is the intellectual ability to think.

## Components of Sensation and Perception

The sensory system is a complex network that consists of:

- a. *Afferent nerve pathways* (ascending pathways that transmit sensory impulses to the brain).
- b. *Efferent nerve pathways* (descending pathways that send sensory impulse from the brain).
- c. Spinal cord.
- d. Brainstem.
- e. Cerebrum.

## Components of Cognition

Cognition includes the cerebral functions of:

Memory.

Affect.

Judgment.

Perception.

Language.

In order for these higher functions to occur, consciousness must be present.

## Consciousness

A state of awareness of self, others, and the surrounding environment.

The primary components of consciousness are arousal and awareness.

## Arousal

The degree of arousal (state of wakefulness and alertness) is indicated by a person's general response and reaction to the environment.

## Awareness

The capacity to perceive sensory impressions and react appropriately through thoughts and actions.

An essential element of awareness is *orientation*, the perception of self in relation to the surrounding environment.

## Memory

There are three types of memory:

- a. Immediate (retention of information for a specified and usually short period of time).
- b. Recent (ability to recall events that have occurred over the past 24 hours)
- c. Remote (retention of experiences that occurred during earlier periods of life).

## Affect

The expression of mood or feeling.

An important component of cognition in that variations of mood can affect one's thinking ability.

## Judgment

The ability to compare or evaluate alternatives in order to arrive at an appropriate course of action.

## Perception

Perceptions are considered in the context of the individual's awareness of reality.

Misperceptions of reality can be *illusions* (an inaccurate perception of sensory stimuli) or *hallucinations* (a sensory perception that occurs in the absence of external stimuli and is not based on reality).

## Language

One of the most complex of cognitive functions, involving not only the spoken word but also reading, writing, and comprehension.

Characteristics of speech are *fluency* (ability to talk in a steady manner); *prosody* (melody of speech that conveys meaning through changes in tempo, rhythm, and intonation), and content.

## Rancho Los Amigos scale

### Rancho Los Amigos Scale

- I. No Response - Patient appears to be in a deep sleep and is unresponsive to stimuli.
- II. Generalized Response - Patient reacts inconsistently and nonpurposefully to stimuli in a nonspecific manner. Reflexes are limited and often the same, regardless of stimuli presented.

## Rancho Los Amigos scale

- III. Localized Response - Patient responses are specific but inconsistent, and are directly related to the type of stimulus presented, such as turning head toward a sound or focusing on a presented object. He may follow simple commands in an inconsistent and delayed manner.

## Rancho Los Amigos scale

### IV. Confused-Agitated

- heightened state of activity and severely confused, disoriented, and unaware of present events.
- behavior is frequently bizarre and inappropriate to his immediate environment.
- unable to perform self-care
- may perform automatic motor activities such as sitting, reaching and walking as part of his agitated state, but not necessarily as a purposeful act.

## Rancho Los Amigos scale

### V. Confused-Inappropriate, Non-Agitated –

- appears alert and responds to simple commands. More complex commands, however, produce responses that are nonpurposeful and random.
- may show some agitated behavior in response to external stimuli rather than internal confusion
- highly distractible and generally has difficulty in learning new information.
- can manage self-care activities with assistance.
- memory is impaired and verbalization is often inappropriate

## Rancho Los Amigos scale

### VI. Confused-Appropriate –

- Shows goal-directed behavior, but relies on cueing for direction
- Can relearn old skills such as activities of daily living, but memory problems interfere with new learning.
- has a beginning awareness of self and others.

## Rancho Los Amigos scale

### VII. Automatic-Appropriate –

- goes through daily routine automatically, but is robot-like with appropriate behavior and minimal confusion.
- has shallow recall of activities, and superficial awareness of, but lack of insight to, his condition
- requires at least minimal supervision because judgment, problem solving, and planning skills are impaired.

## Rancho Los Amigos scale

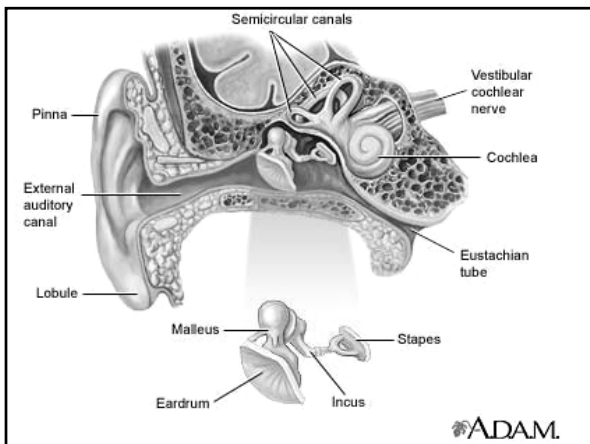
### VIII. Purposeful-Appropriate –

- alert and oriented, and is able to recall and integrate past and recent events.
- can learn new activities and continue in home and living skills, though deficits in stress tolerance, judgment, abstract reasoning, social, emotional, and intellectual capacities may persist.

## The Ear

The human ear can be divided into three main anatomical components:

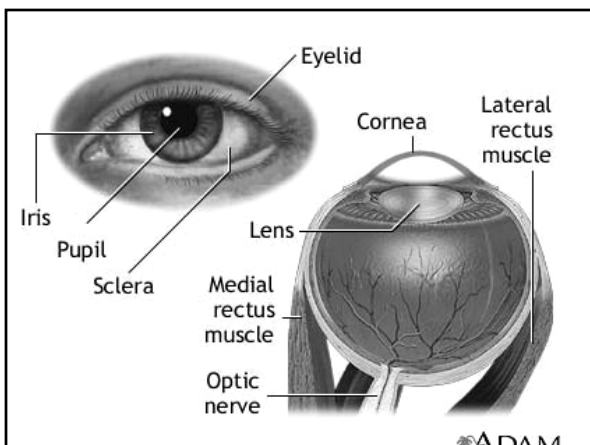
- a. The outer ear (responsible for collecting, conducting, and amplifying sound waves).
- b. The middle ear (functions include pressure equalization and amplification of sound waves).
- c. The inner ear (two main functions are hearing and equilibrium).



## The Eye

Anatomically, the eye can be divided into three separate coats or “tunics”:

- a. Fibrous tunic (the outer coat, composed of the *sclera* and the *cornea*).
- b. Vascular tunic (the middle layer, composed of the *posterior choroid*, the *anterior ciliary body*, and the *iris*).
- c. Nervous tunic (the innermost layer, also known as the *retina*).



## The Eye: External Structure

The eyeball is protected from the external world by the eyelid, which contains a thin protective layer called the *conjunctiva*.

Projecting from the border of each eyelid is a row of eyelashes, which protect the eye from foreign particles.

The lacrimal gland produces a secretion called tears, which contain a lysozyme to destroy pathogens.

## Sensory Deficit

A change in the perception of sensory stimuli.

Examples are vision and hearing losses such as those caused by cataracts, glaucoma, and presbycusis (steady loss of hearing acuity that occurs with aging).

## Sensory Deprivation

A state of reduced sensory input from the internal or external environment.

Individuals can experience sensory deprivation as a result of illness, trauma, or isolation.

## Sensory Overload

A state of excessive and sustained multisensory stimulation manifested by behavior change and perceptual distortion.

Can be caused by pain, invasive procedures, medications that stimulate the CNS, etc.

## Disorders of the Ear: Impaired Hearing

Types of Hearing Loss:

- a. Conductive (an inability of the sound waves to reach the inner ear).
- b. Sensorineural (abnormality or disease of the inner ear or cochlear portion of cranial nerve VIII).

## Disorders of the Ear: Ménière's Disease

A state of hearing loss characterized by tinnitus, vertigo, and unilateral fluctuating hearing loss.

Tx: diuretics, low-sodium, vasodilators, antihistamines, antiemetics

## Disorders of the Ear: Otosclerosis

A conductive hearing loss secondary to a pathologic change of the bones in the middle ear.

S/S: loss of hearing; ringing or buzzing (tinnitus)

Tx: hearing aid; stapedectomy (removal of diseased bone and replacement with a prosthetic implant)

In reviewing postoperative instructions with the client undergoing stapedectomy, which statement by the client indicates the need for further teaching?

- a. "I should wash my outer ear with soap and water."
- b. "I will have to take antibiotics after the surgery."
- c. "I may have problems with vertigo after the surgery."
- d. "I should not drink from a straw for several weeks."
- e. I should tell the doctor immediately if I am unable to close my eyes or pucker my lips

### Disorders of the Ear: Acoustic Neuroma

A slow-growing and usually benign tumor of the vestibular portion of the inner ear.

### Disorders of the Ear: Otitis Media

An inflammation of the middle ear and a common cause of conductive hearing loss, though usually temporary.

### Disorders of the Ear: Otitis Externa

"Swimmer's ear."  
Typically involves a bacterial infection of the external ear canal skin.

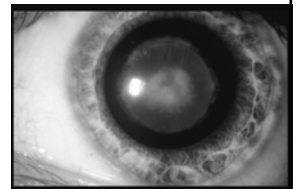
### Disorders of the Ear: Mastoiditis

Inflammation of the mastoid.  
Most often the direct result of chronic or recurrent bacterial otitis media.

### Disorders of the Eye: Cataracts

A disorder that causes the lens or its capsule to lose its transparency and/or become opaque.

Typically associated with aging, but can be congenital or secondary to certain systemic diseases like diabetes.



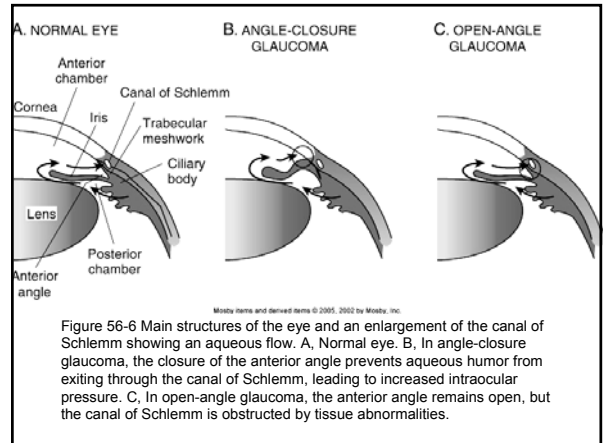
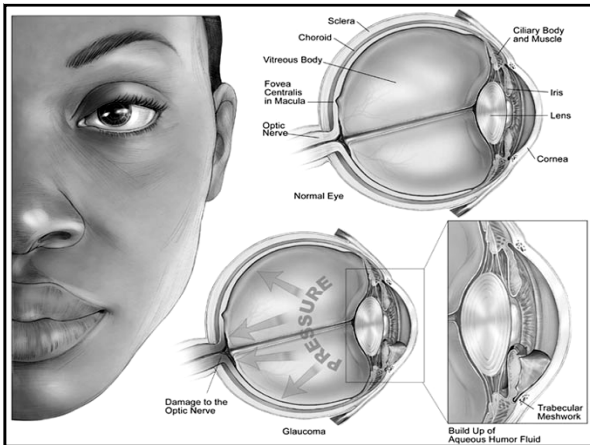
## Cataract

The only treatment is surgical removal of the lens.



## Disorders of the Eye: Glaucoma

A disorder characterized by abnormally high pressure of fluid inside the eyeball.  
Can destroy the neurons and bring on blindness.

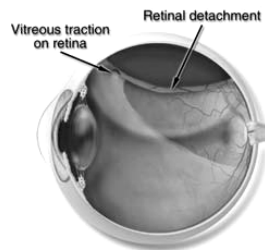


## Disorders of the Eye: Retinal Detachment

An actual separation of the retina from the choroid.

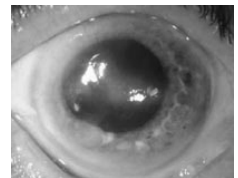
Cause: trauma, intraocular disorders, perforating injuries, or severe myopia

Sx: scleral buckling – reduction of scleral surface



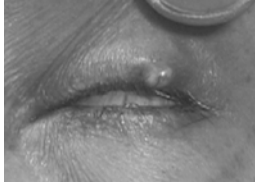
## Disorders of the Eye: Keratitis

An inflammation of the cornea that may be caused by infection, irritation, injury, or allergies.



## Disorders of the Eye: Stye

Also referred to as a *hordeoleum*, it is a pustular inflammation of an eyelash follicle or sebaceous gland on the lid margin commonly caused by staphylococcal organisms.



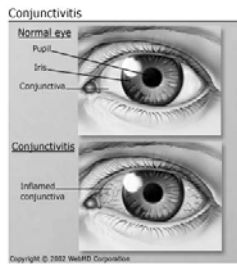
## Disorders of the Eye: Chalazion

A cyst of the meibomian glands, sebaceous glands located at the junction of the conjunctiva and inner eyelid margins.



## Disorders of the Eye: Conjunctivitis

Also known as pink eye, it is an inflammation of the conjunctiva (a membrane that lines the inside of the eyelids and covers the cornea) that results from invasion by bacterial, viral, or rickettsial organisms, allergens, or irritants.



## Disorders of the Eye: Refractive Errors

*Myopia*  
(nearsightedness).

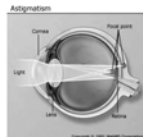


*Hyperopia*  
(farsightedness).



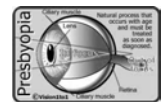
## Disorders of the Eye: Refractive Errors

*Astigmatism*  
(asymmetric focus of light rays on the retina).



## Disorders of the Eye: Refractive Errors

*Presbyopia* (inability of the lens to change curvature in order to focus on near objects).



*Strabismus* (inability of the eyes to focus in the same direction).



## Injuries to the Eye

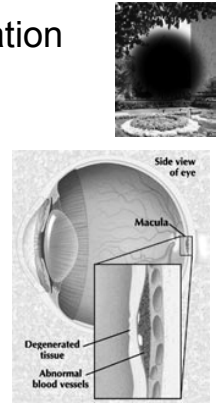
Commonly include foreign bodies and chemical burns.

## Macular Degeneration

Atrophy or deterioration of the *macula*, the point on the retina where light rays meet as they are focused by the cornea and lens of the eye.

The person loses central vision, but maintains peripheral vision.

Commonly associated with aging process.



## Drugs That Affect the Eye

### Mydriatics

- a. Dilate the pupil

### Miotics

- a. Constrict the pupil

### Cycloplegics

- a. Paralyze the ciliary body, and have mydriatic properties
- b. Cycloplegia: paralysis of accommodation

A client who works in carpentry is complaining of severe right eye pain with a gritty sensation. When obtaining a history from this client, which question has the lowest priority?

- a. "Are you seeing halos around the lights at present?"
- b. "What were you working with at the time the manifestations occurred?"
- c. "Were you wearing goggles or glasses at your job?"
- d. "Do you have a previous history of any eye diseases?"

A newly diagnosed diabetic client with glaucoma is admitted for regulation of blood sugar. The client receives pilocarpine (Pilocar) 2% one drop four times a day. While instilling this drug, the appropriate nursing action would be to:

- a. Place the medication in the conjunctival sac.
- b. Ask the client to look straight ahead.
- c. Instruct the client to squeeze the eye shut after instillation.
- d. First, cleanse the eye, wiping from the outer to the inner canthus.

In providing teaching to a client with increased intraocular pressure, the nurse advises the client to avoid:

- a. Sitting with legs elevated
- b. Bending over to tie shoes
- c. Use of oil-based facial products
- d. Sleeping on more than two pillows

The nurse assesses for which of the following clinical manifestations in the client with acute angle-closure glaucoma? (Choose all that apply.)

- a. Sharp eye pain
- b. Increased visualization of corneal blood vessels
- c. Painless loss of vision
- d. Nausea and vomiting
- e. Seeing colored halos around lights
- f. Decreased ability to differentiate colors

A client with acute primary angle-closure glaucoma is to undergo a peripheral iridectomy via laser surgery. Which comment made by the client indicates the need for further teaching?

- a. "My vision should be blurred for about one hour after surgery."
- b. "Just think - surgery with no pain afterwards!"
- c. "I'm glad I won't have to have a general anesthetic."
- d. "I know I'll have to sit very still during the surgery."

In reviewing postoperative care with the client after corneal transplantation, which statement by the client indicates the need for further teaching?

- a. "I should be able to see better as soon as the surgery is over."
- b. "I will have to use corticosteroids in my eyes."
- c. "I will need to wear an eye patch right after the surgery."
- d. "I will need to need lie on the nonoperative side."

Your client is a 68-year-old woman who has just undergone cataract surgery. She has never been hospitalized and expresses concern about how to use her medication and what she should expect from her medication. Your client is ordered tobramycin with dexamethasone (TobraDex). Which of the following indicate the appropriate way to instill ophthalmic ointment? Select all that apply:

- a. Gently touch the tip of the tube to the conjunctiva and squeeze a small amount of ointment
- b. Wear gloves.
- c. Wash your hands
- d. Pull the client's lower lid downward to create a pocket

The nurse teaches the client with diabetes mellitus that which of the following increases the risk of retinopathy?

- a. Exogenous insulin
- b. Frequent bacterial eye infections
- c. Sustained hyperglycemia
- d. Hypoglycemic episodes

The nurse teaches the client to immediately notify the physician if which of the following occurs after cataract surgery?

- a. Crusty drainage on eyelashes
- b. Sudden sharp pain
- c. Increased tearing
- d. Itching of eye

## Other Senses

Includes taste, smell, and touch.

These senses are essential to our enjoyment of life and serve to protect us from danger or harm.