

N.C. Nurse Aide I Curriculum

MODULE H

Body Systems

Objectives

- Identify the structure and function of the cell and the integumentary, musculoskeletal, neurological, cardiovascular, respiratory, gastrointestinal, urinary, reproductive, endocrine, and immune systems.
- Describe the nurse aide's role in the provision of care for a resident with cancer.
- Discuss changes in the integumentary, musculoskeletal, neurological, cardiovascular, respiratory, gastrointestinal, urinary, reproductive, endocrine, and immune systems due to aging.

Objectives

- Compare and contrast normal findings and variation of normal findings of the integumentary, musculoskeletal, neurological, cardiovascular, respiratory, gastrointestinal, urinary, reproductive, endocrine, and immune systems.
- Describe common disorders of the integumentary, musculoskeletal, neurological, cardiovascular, respiratory, gastrointestinal, urinary, reproductive, endocrine, and immune systems.

Objectives

- Describe the nurse aide's role related to a resident's integumentary, musculoskeletal, neurological, cardiovascular, respiratory, gastrointestinal, urinary, reproductive, endocrine, and immune systems.

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MODULE H

Cell Theory

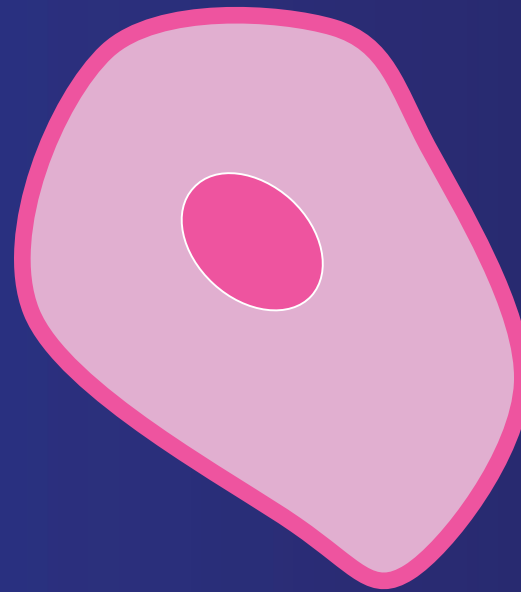
Overview

Basic unit of all living
tissues or organisms

Structure and Function

Cells

- Building blocks of human body
- Microscopic
- Combine to form tissue



Structure and Function

Tissue

- Carry out a particular activity or function
- Grouped together to form organs

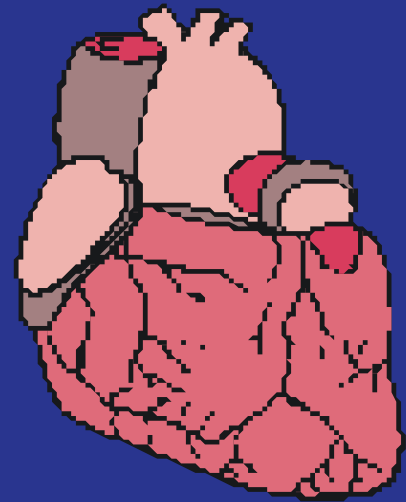


Cell + cell + cell + cell = tissue

Organ

Tissue + tissue + tissue + tissue =

- **Carries out a particular function**
- **Some are single and some are paired**
- **Combine to form a system**



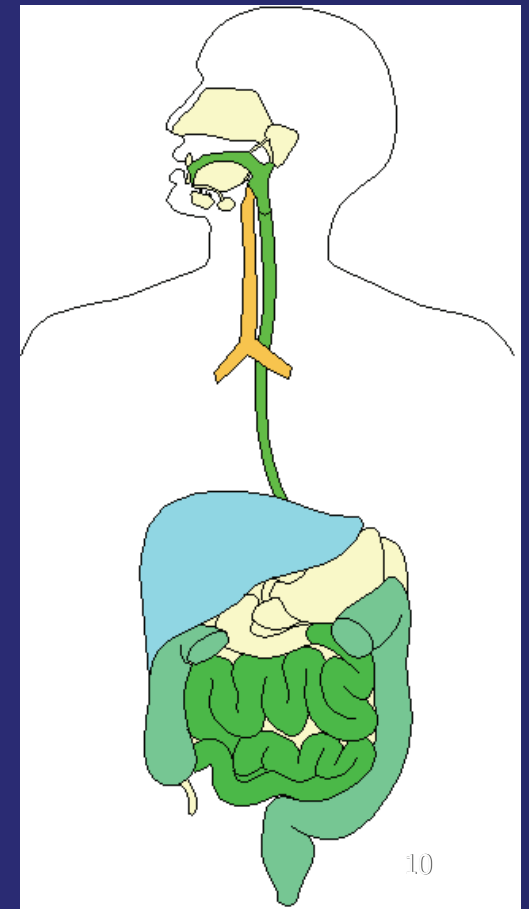
Structure and Function

Structure and Function

System

- Organs function together for a specific purpose or purposes
- Systems of the human body?
- Combine to form an organism

Organ + organ + organ + organ =

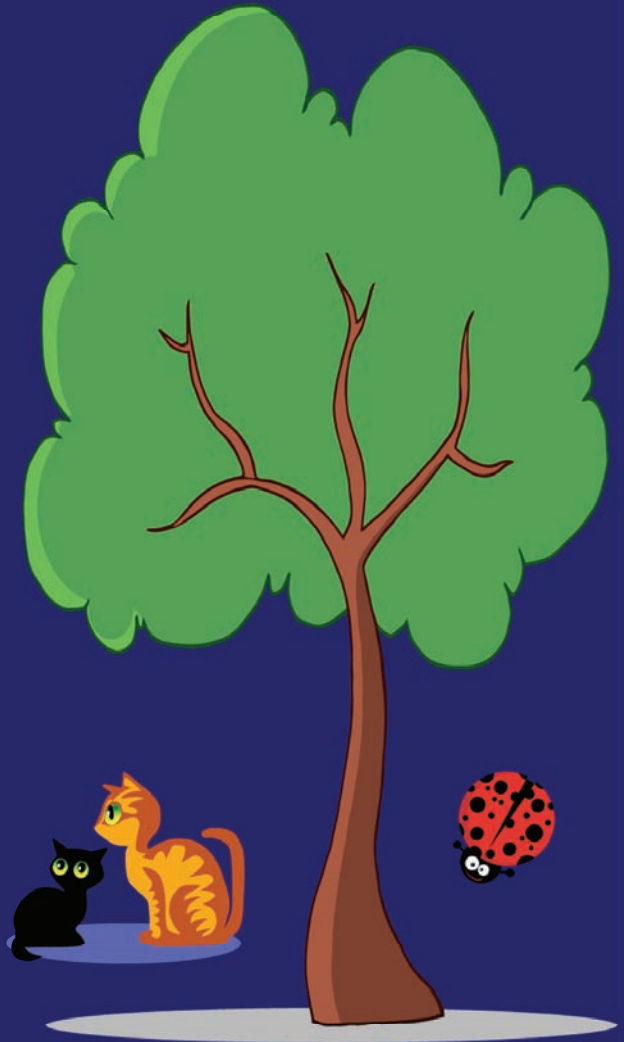




**System + system + system
equal an**

Organism

**Made up of systems
that function
together to perform
activities of daily
living needed for
continued life**



Structure & Function

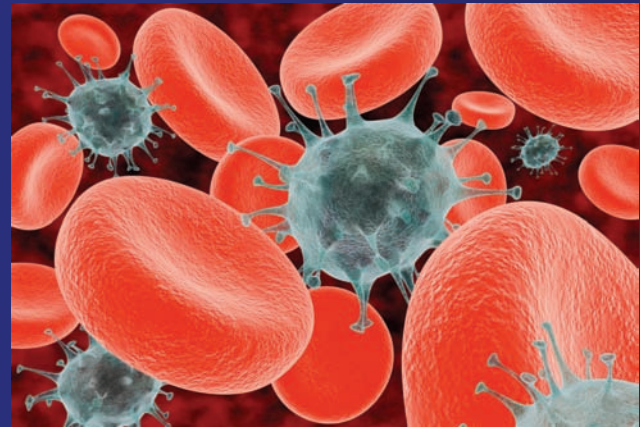
Variation of Normal



Human organisms may have problems at the cellular level, but show signs outside of body. Examples?

Common Disorders

- Tumor – group of abnormally-growing cells; benign or malignant
- Cancer (CA) – abnormal cells grow in an uncontrolled manner, invade surrounding tissue and may spread to other areas of the body



Nurse Aide's Role

- Should understand basic cellular theory
- Assist with care directed toward symptoms of cancer or treatment
- Offer emotional support
- Be aware of warning signs of cancer, **CAUTION**





Change in bowel or bladder habits



A sore that does not heal



Unusual bleeding or discharge



Thickening or lump



Indigestion or difficulty swallowing



Obvious change in wart or mole



Nagging cough or hoarseness

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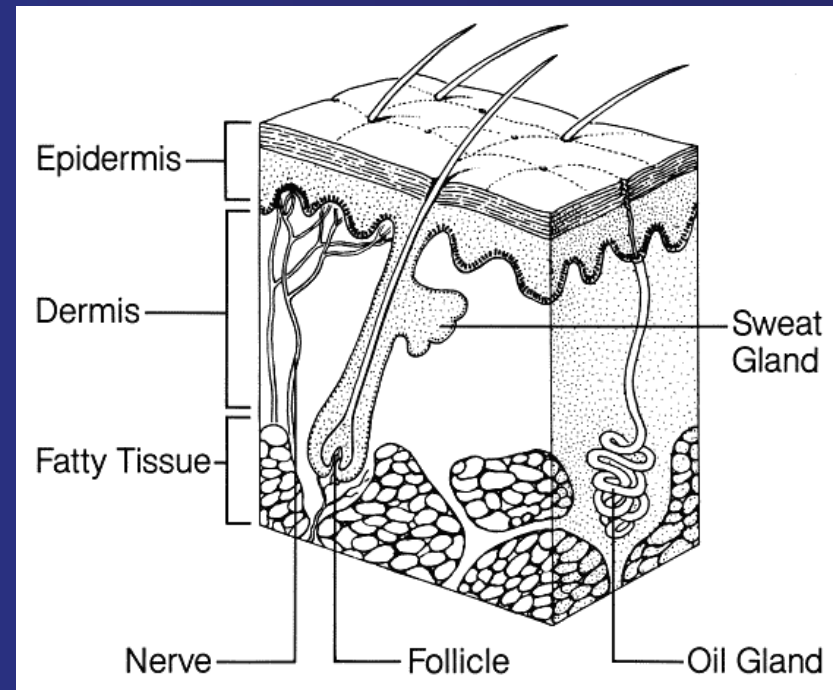
MODULE H **Integumentary**

Overview

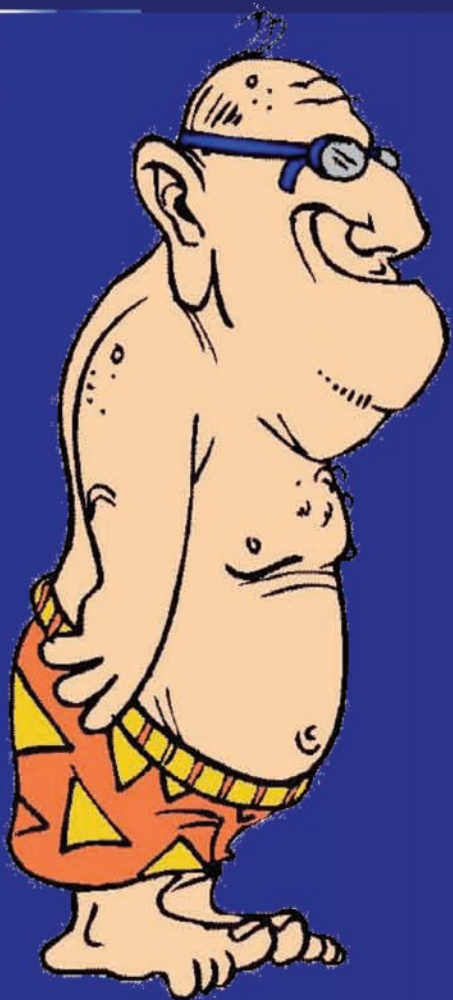
- The skin
- The **LARGEST** organ and system in the body
- Responsible for providing a natural protective covering of the body

Structure

- Three layers – epidermis, dermis, subcutaneous tissue
- Accessory structures



Function



- Protects body
- Regulates temperature
- Eliminates waste
- Contains nerve endings
- Stores fat and vitamins

Normal Findings



- Warm, dry
- Absence of breaks, rash, discoloration, swelling

Changes Due to Aging

- Skin is thinner, drier, more fragile
- Skin loses elasticity
- Fatty layer ↓
- Hair thins and may gray



Changes Due to Aging

- Folds, lines, wrinkles and brown spots
- Nails harden and more brittle
- ↓ circulation to skin
- Development of skin tags, warts and moles

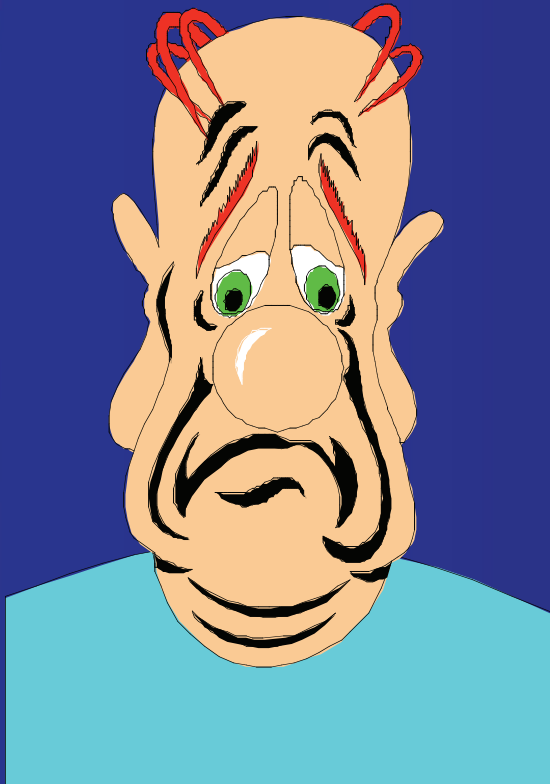


- Breaks in skin
- Rash, itching, or skin discoloration
- Pale, white, or reddened areas
- Blue and black areas



Variation of Normal

Variation of Normal



- Dry or flaking skin
- Ulcers, sores, or lesions
- Swelling
- Drainage
- Abnormal temperature
- Changes in scalp or hair

Common Disorders

- Eczema
- Dermatitis
- Tears and abrasions
- Pressure ulcers

Nurse Aide's Role



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MODULE H

Musculoskeletal

Overview

Provides structure and movement



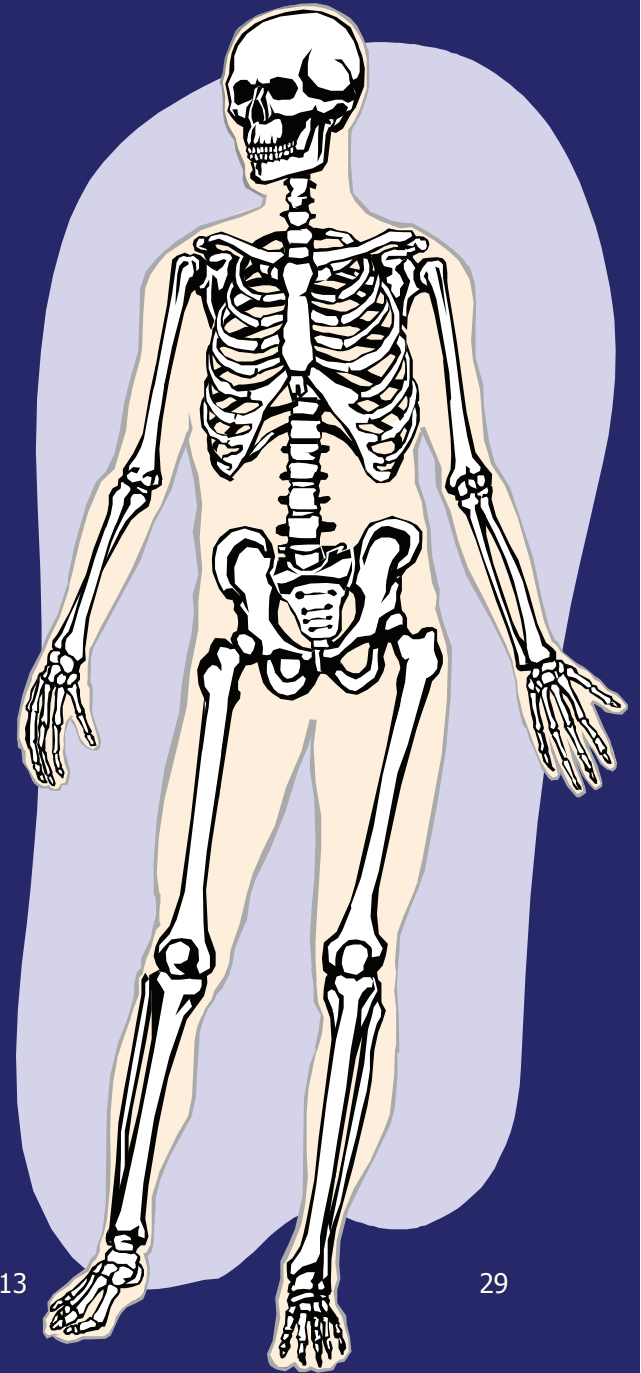
Structure and Function

The Skeleton

- Has 206 bones
- Framework

The Bones

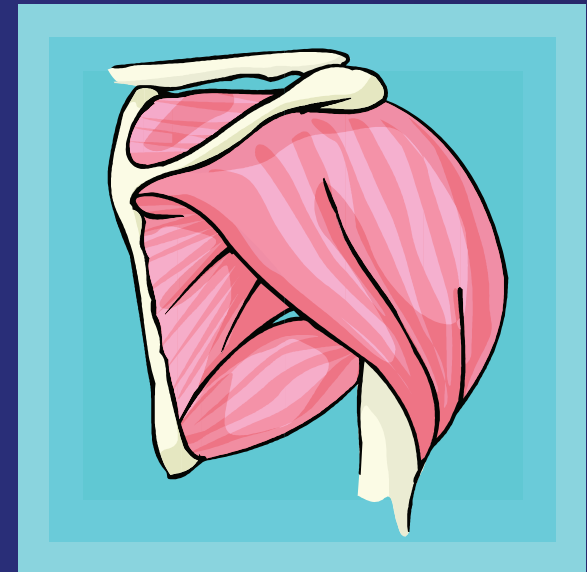
- Hard and rigid outside
- Soft and spongy inside
- Are connected to other bones
- Allows body to move
- Protects organs
- Stores calcium
- Makes and stores blood cells



Structure and Function

Muscles

- Voluntary or involuntarily
- Over 600
- Some connected to bones
- Help body stay erect
- Produce heat
- Give body form
- Movement



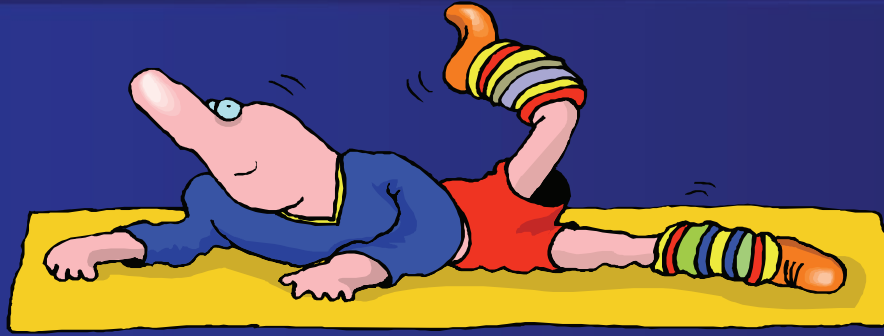
Structure and Function



- Point where bones meet
- Made up of cartilage and connective tissue
- May be movable, slightly movable or immovable
- Allows for movement in the area

JOINTS

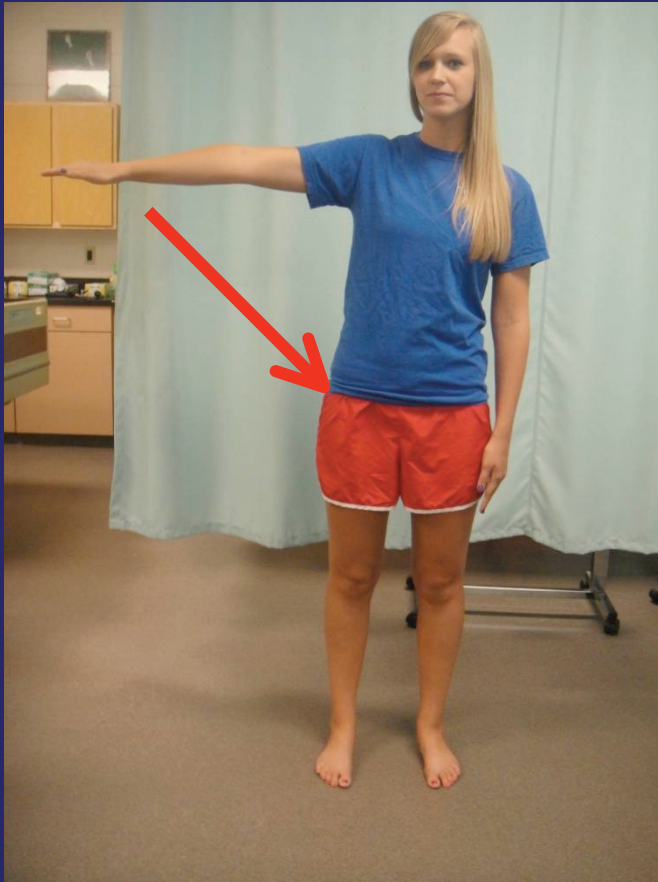
Normal Findings



- Ability to perform routine movements and activities of daily living
- Ability to perform full range of motion exercises bilaterally without pain



Abduction



Adduction



Extension – Arm



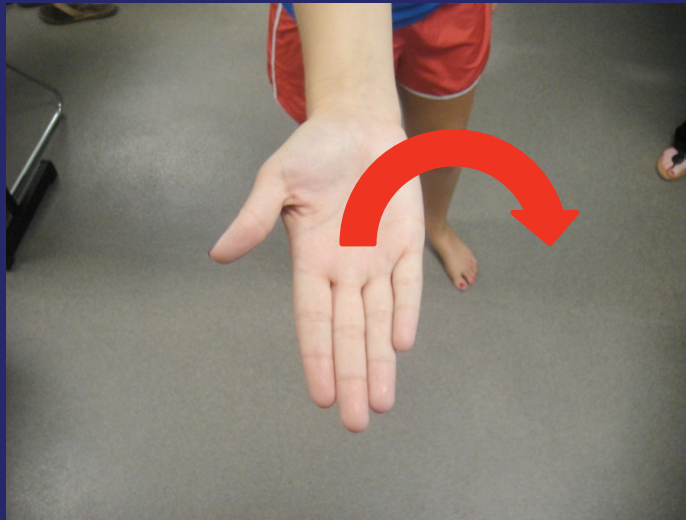
Flexion – Arm



Extension - Leg



Flexion - Leg



Pronation



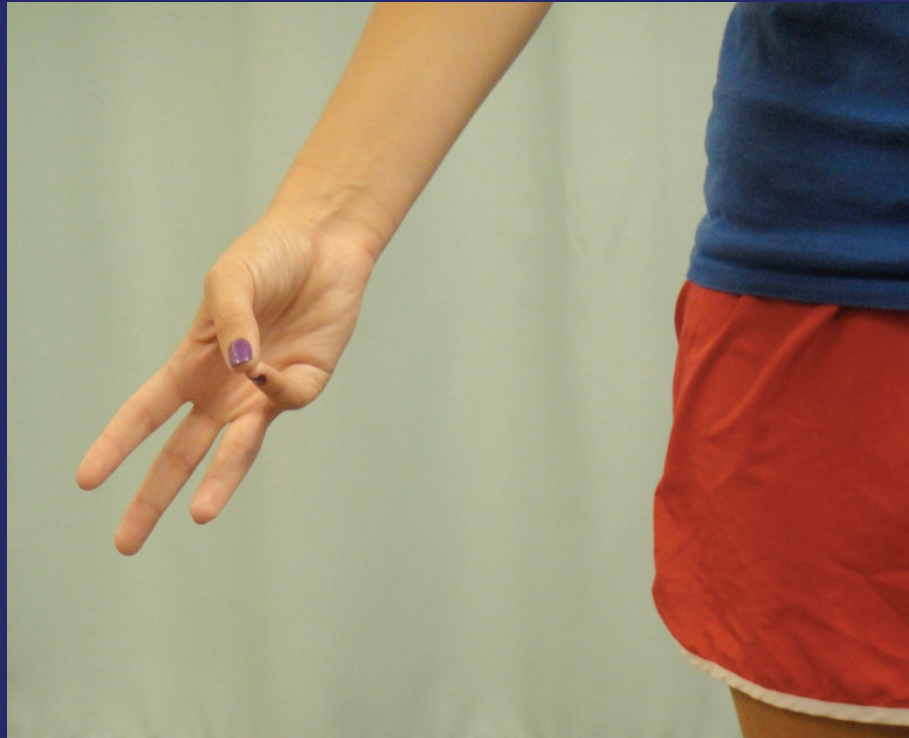
Supination



Dorsiflexion



Plantar Flexion



Opposition

Changes Due to Aging

- Muscles weaken
- Bones lose density
- Joints stiffen, become less flexible and painful
- Height ↓
- Slowed recovery
- “It hurts when I move”
- ↓ reaction time, movement speed, agility and endurance
- Poorer response to stimuli
- ↓ muscle and nerve interaction

Variation of Normal



- History of falls
- Difficulty holding or lifting
- ↓ muscle strength and tone
- Generalized weakness
- Bruising
- White, shiny, red, or warm areas over a joint

Variation of Normal

- Slow and unsteady movement
- "I have pain in my joints"
- "I have pain in my muscles"
- "It hurts when I move"
- Inability to move joints

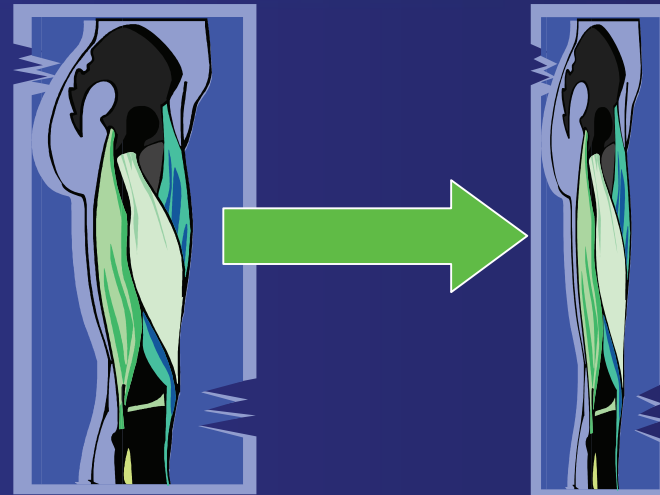


Common Disorders

Muscle atrophy

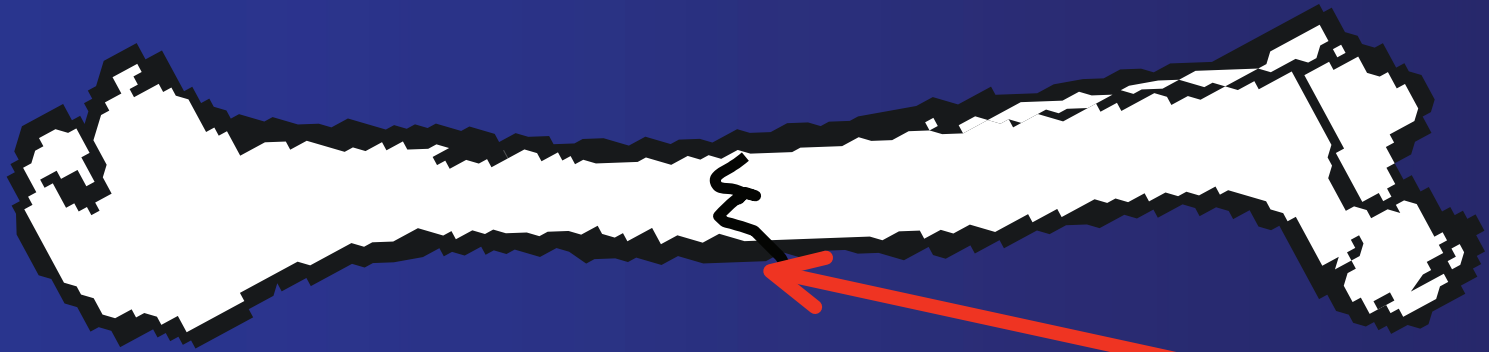
↓ size in muscle mass

- Contracture
- Muscle strain
- Sprain
- Osteoporosis



Common Disorders

- Fracture
- Arthritis (osteoarthritis and rheumatoid arthritis)
- Amputation



Nurse Aide's Role



- Prevent falls
- Encourage regular movement, activity and self-care
- Encourage walking, light exercise and active range of motion

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MODULE H

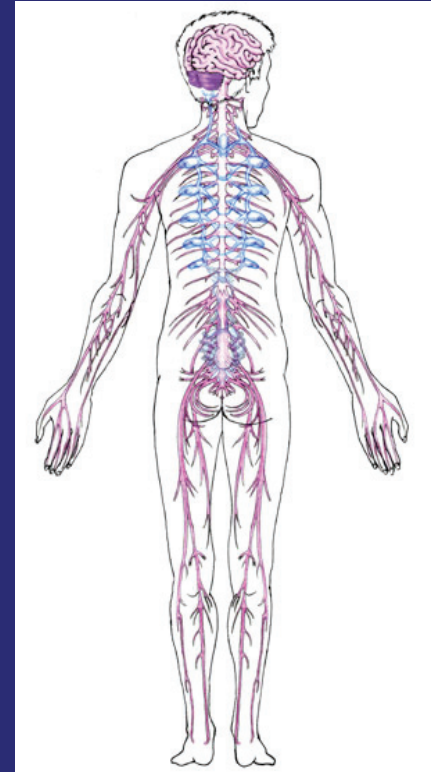
Neurological

Overview

Also called the nervous system

The control and
message center of
the body

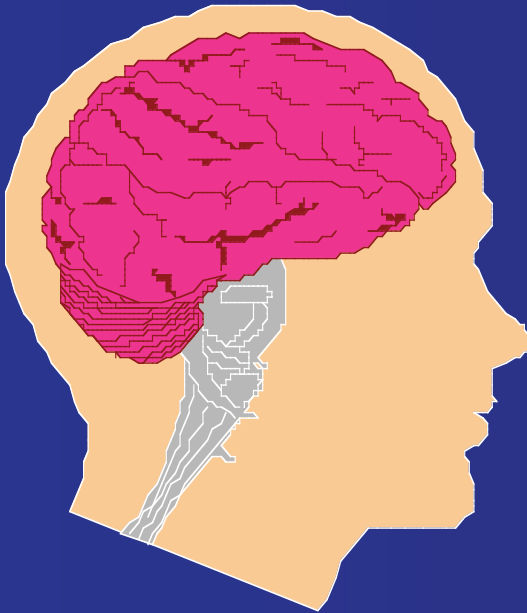
Senses and responds to
changes



Structure and Function

Brain

Located in the skull and consists of three parts



- Cerebrum
- Cerebellum
- Brainstem

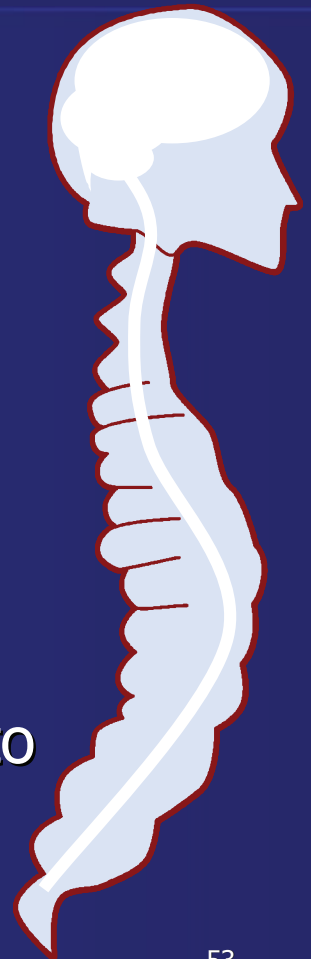
Structure and Function

Spinal Cord

- Located within the spine
- Connected to the brain
- Conducts messages

Nerves

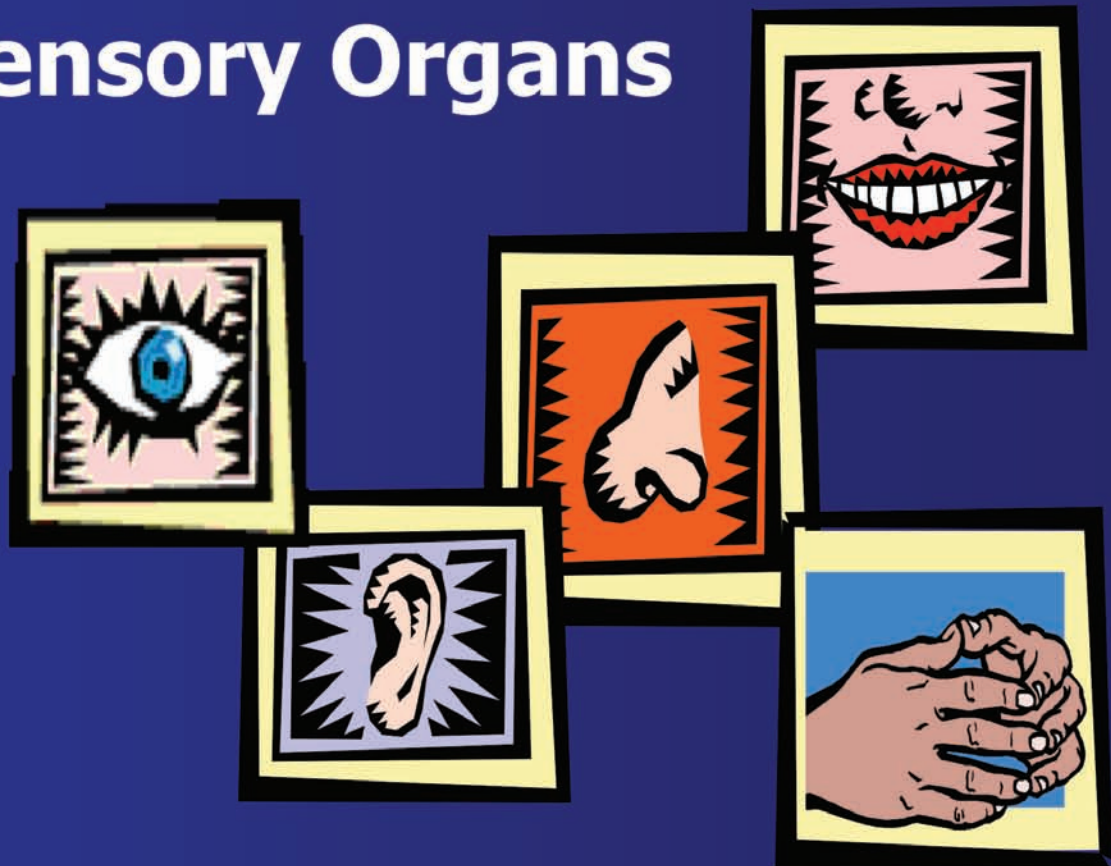
- Are made up of nerve cells
- Carry messages to and from the brain and to and from the rest of the body



Structure and Function

Sensory Organs

Receive
impulses from
environment
and relay to
brain



Normal Findings



**Where did
they say I
was and
how did I
get here?**



Changes Due to Aging

Variation of Normal

- Jerking motions or tremors
- Changes in gait or movement
- Speech, vision, or hearing changes
- "I have numbness and feel dizzy and nauseated"



Variation of Normal

"I am soooooo confused. Why are those 3 stars floating around my head?"



Common Disorders

- CVA (or stroke)
- Head or spinal cord injuries
- Dementia
- Parkinson's disease
- Hearing loss/deafness
- Cataract/glaucoma/blindness
- Otitis media



Nurse Aide's Role

Mrs. Smith, today is Tuesday and you are in Happy View Nursing Home.

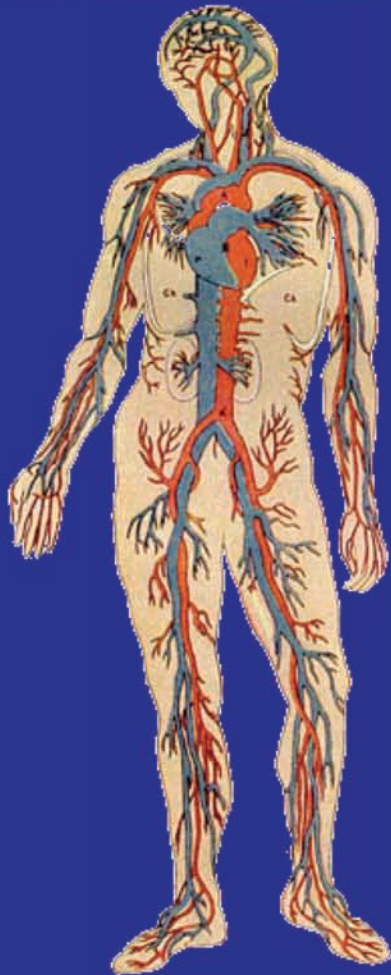


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MODULE H

Cardiovascular

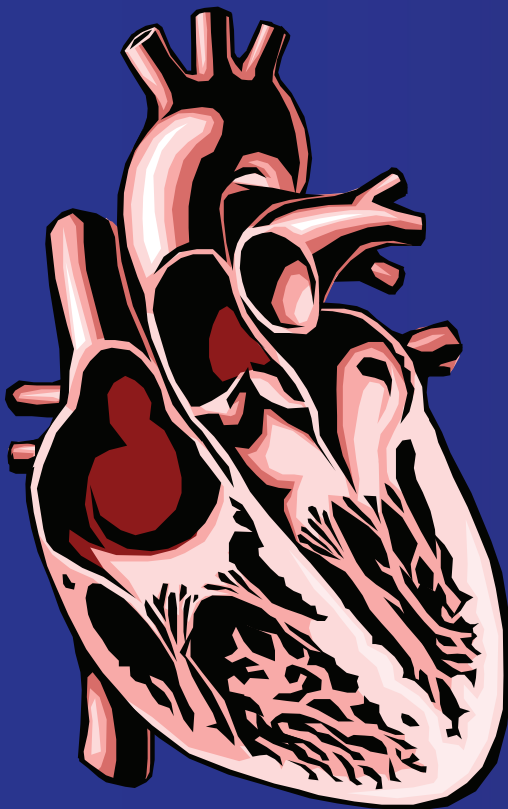
Overview



Also called the
circulatory system
and is the
continuous
movement of blood
through the body

Structure and Function

Heart



- The pump of the cardiovascular system
- About the size of a closed fist
- Consists of 4 chambers
- Has 2 phases
- Pulse is.....

Structure and Function

Blood Vessels

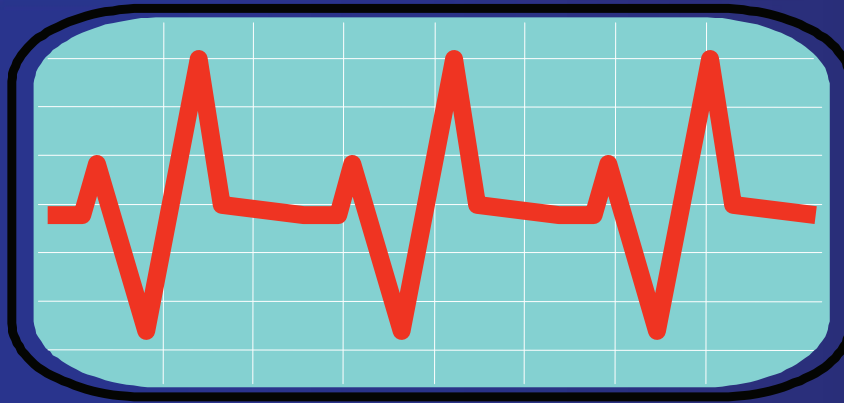
- Arteries carry blood with oxygen and nutrients away from the heart and to the cells
- Veins carry blood with waste products away from the cells and to the heart

Blood

- Adult has 5 to 6 quarts
- What does it consists of?



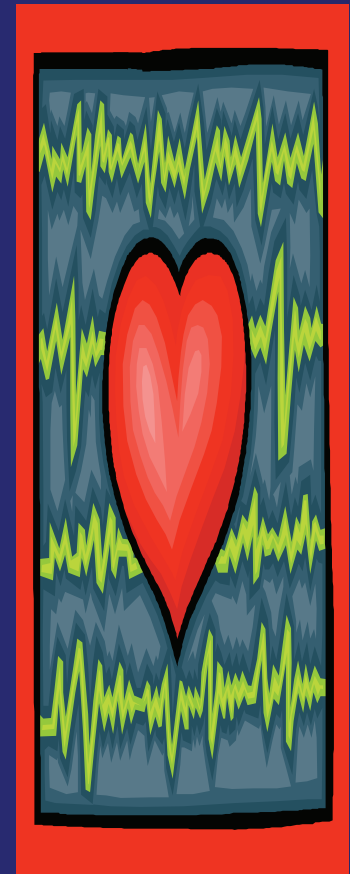
Normal Findings



- Pulse rate of 60 to 100 beats per minute, regular and strong
- Blood pressure of systolic 100 – 139, and diastolic 60 – 89

Changes Due to Aging

- Heart muscle ↓ efficient
- Blood pumps with ↓ force
- Arteries lose elasticity and become narrow
- Blood pressure ↑



Variation of Normal

- Change in pulse rate and rhythm
- Weakness and tiredness
- Loss of ability to perform ADLs
- Swelling of hands and feet
- Pale or bluish lips, hands, or feet
- Weight ↑
- "My chest hurts"
- Shortness of breath, changes in or difficulty breathing

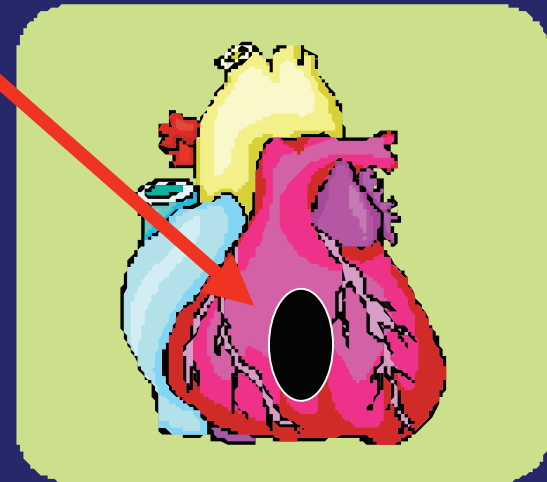


Common Disorders

- Coronary Artery Disease (CAD)
- Congestive Heart Failure (CHF)
- Myocardial Infarction (MI, “heart attack”)
- Anemia
- Varicose veins
- Hypertension

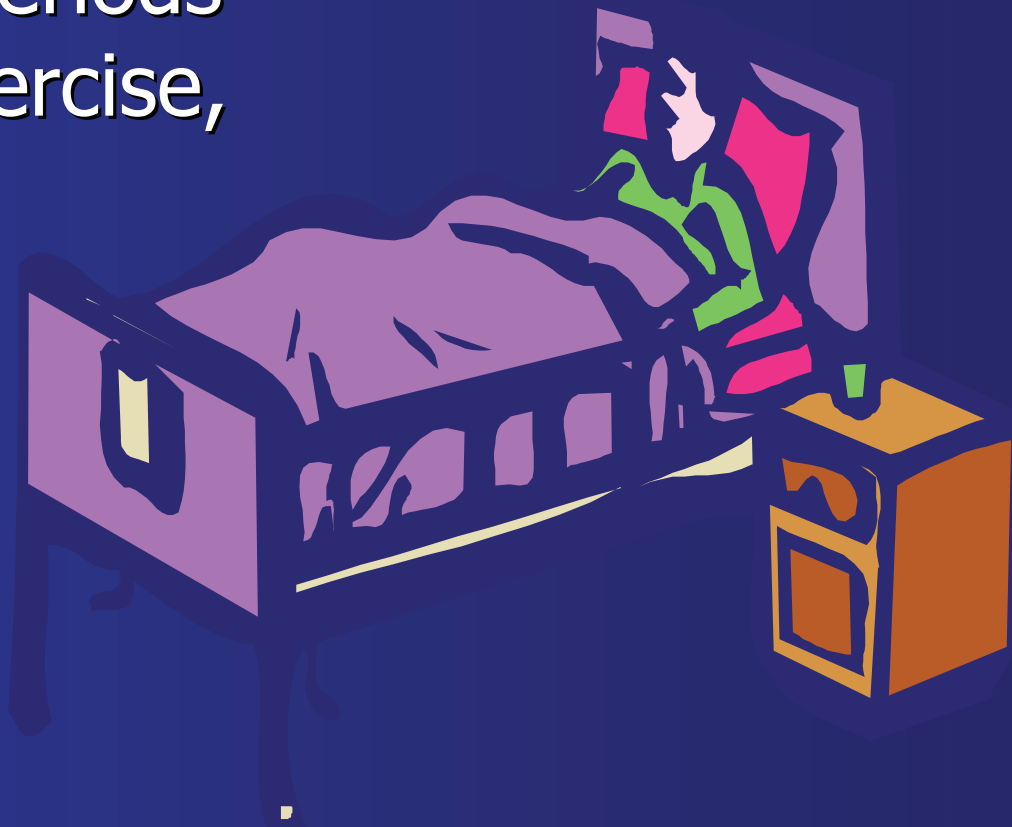
↓
180

110 **!!!!**



Nurse Aide's Role

- Provide rest periods
- Encourage exercise, movement; and range of motion, when inactive
- Prevent tiring
- Layer clothing



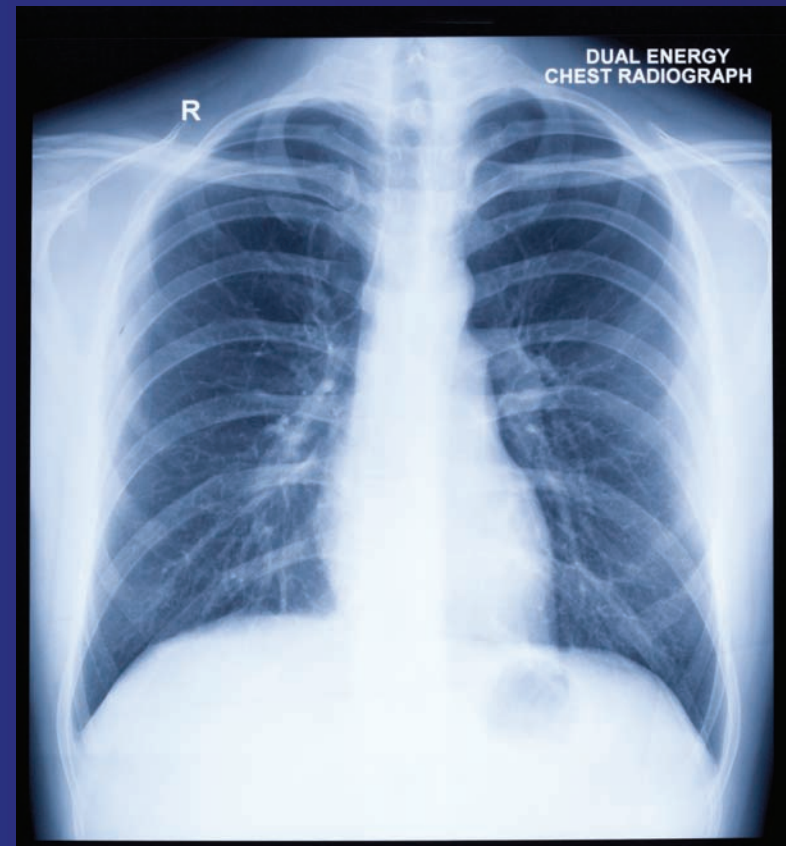
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MODULE H

Respiratory

Overview

- Involves breathing in oxygen and
- Breathing out carbon dioxide



Structure and Function

Thorax

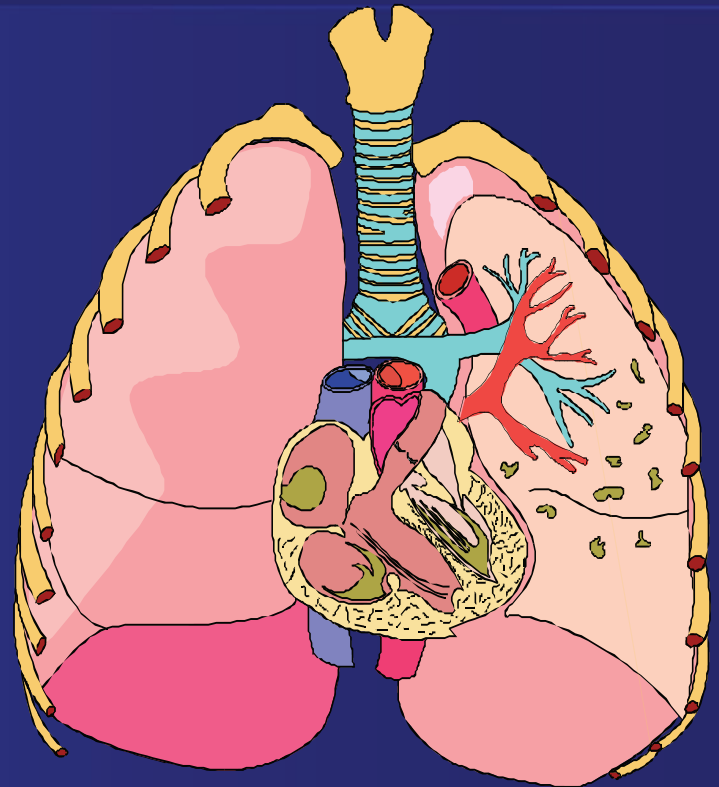
- Closed cavity that contains the structures needed for respiration
- Extends from base of neck to diaphragm

Upper Respiratory Tract

- Nose, mouth, sinuses, pharynx, larynx & top of trachea

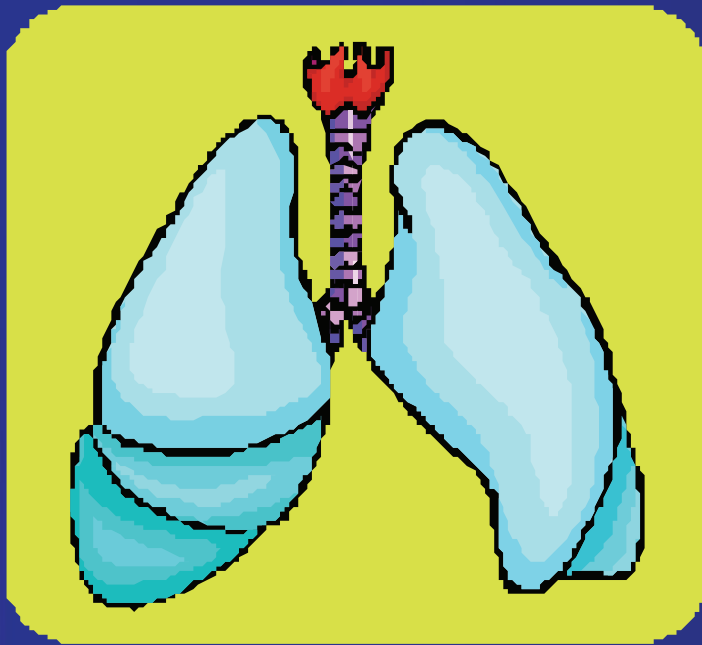
Lower Respiratory Tract

- Lower trachea, bronchi & lungs



Structure and Function

Lungs



- Elastic, spongy, cone-shaped air-filled structures
- Process of breathing in
- Process of breathing out

Normal Findings

- Rate of 12 to 20 breaths per minute
- Character is quiet, even and without effort



Changes Due to Aging

- Weakening in respiratory muscles
- Gradual ↓ elasticity of lung tissue
- Shortness of breath with activity
- ↓ lung capacity
- ↓ oxygen in blood
- Weakening in diaphragm
- Limited expansion of chest



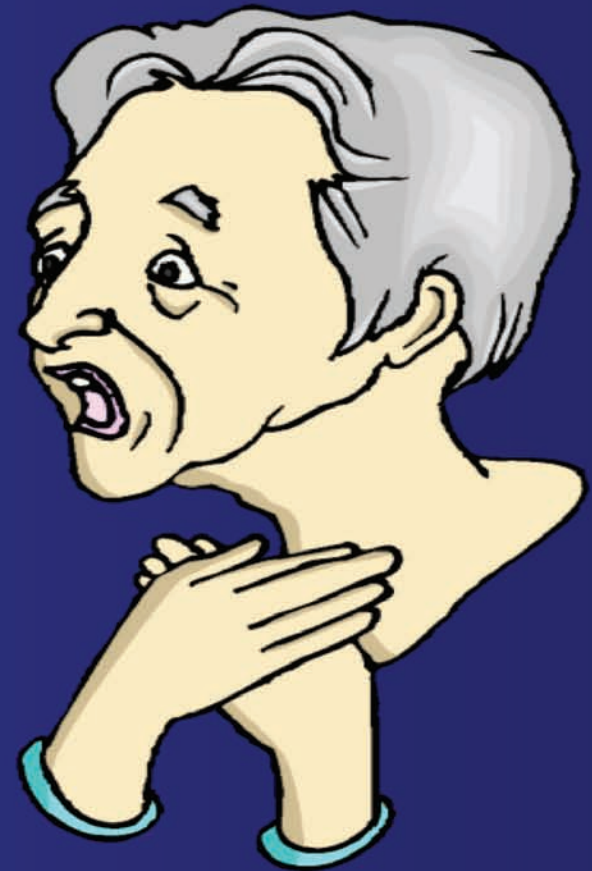
Variation of Normal



- Shallow breathing or through pursed lips
- Coughing or wheezing
- Nasal congestion or discharge, or productive cough
- Noisy respirations
- Gasping

Variation of Normal

- Cyanosis
- Dyspnea
- Changes in rate and rhythm
- Need to sit after mild exertion
- "My chest hurts"



- Chronic Obstructive Pulmonary Disease (COPD)
- Pneumonia
- Emphysema
- Influenza
- Asthma



Common Disorders

Nurse Aide's Role



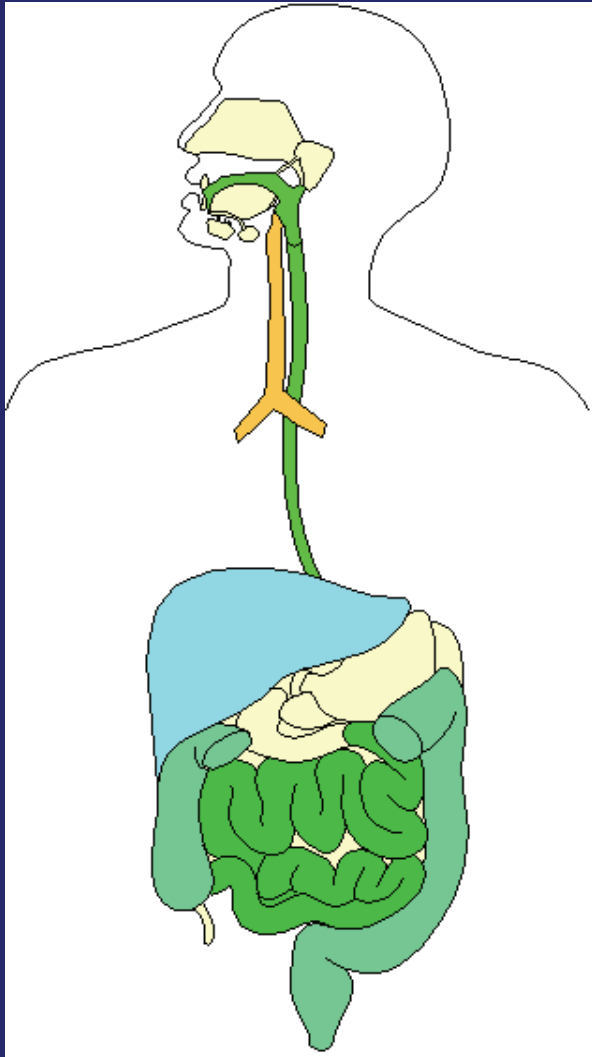
- Provide rest periods
- Encourage exercise and regular movement
- Encourage/assist with deep breathing
- Limit exposure
- Position residents

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MODULE H

Gastrointestinal

Overview

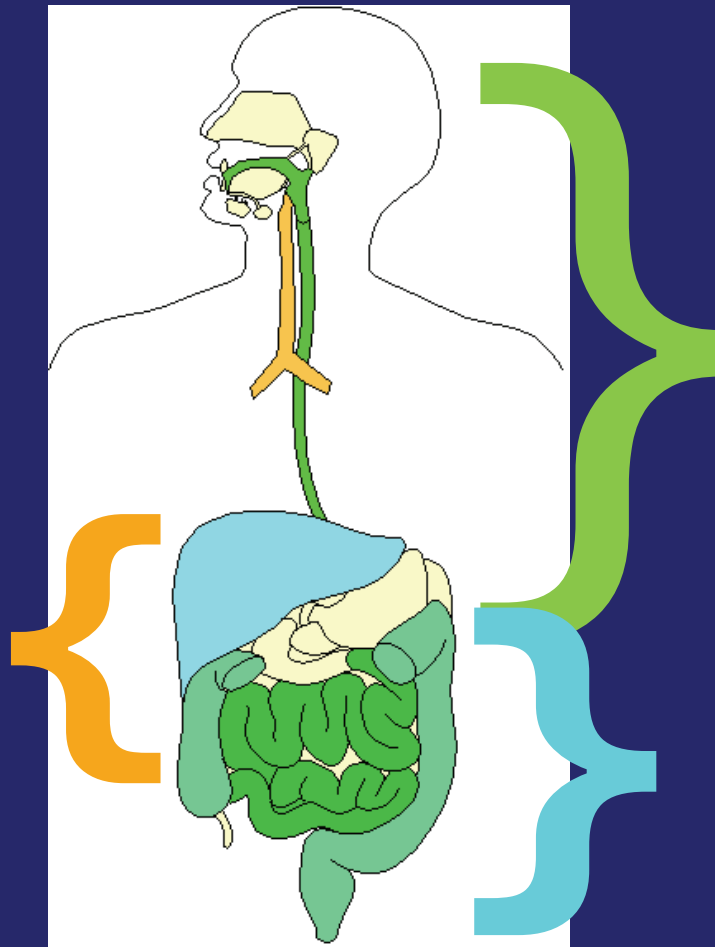


**Also known as the
digestive system and
extends from the
mouth to the anus**

**Has 2 functions:
digestion and
elimination**

**Digests food,
absorbs
nutrients
and
eliminates
waste**

**Accessory
Structures**



**Upper GI
Structures**

**Lower GI
Structures**

Structure and Function

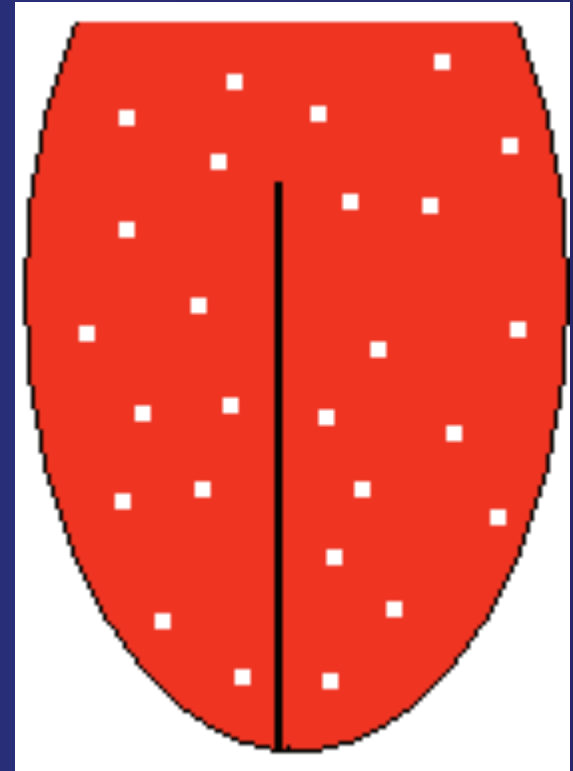
Normal Findings

- Adequate intake
- Passage of a brown, soft, formed, tubular shaped stool, without pain
- Flat abdomen



Changes Due to Aging

- ↓ number of taste buds
- ↓ of peristalsis
- ↓ absorption of nutrients
- Loss of bowel muscle tone
- Loss of sphincter muscle tone

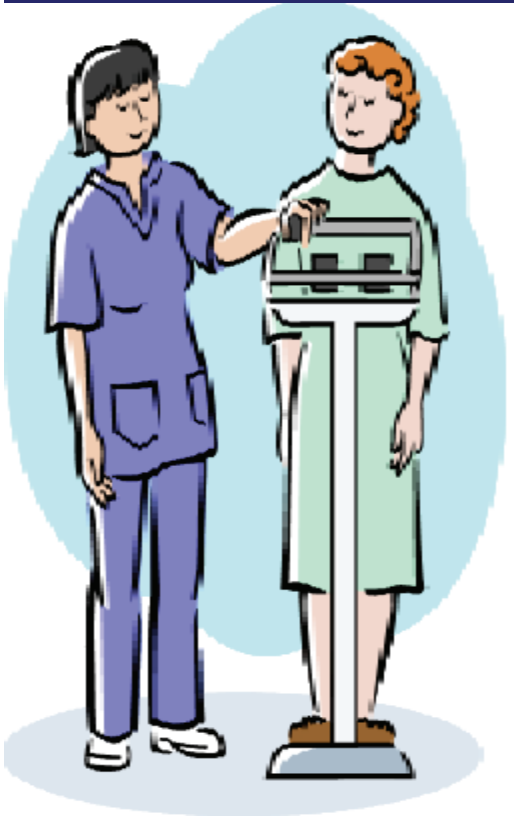


Changes Due to Aging

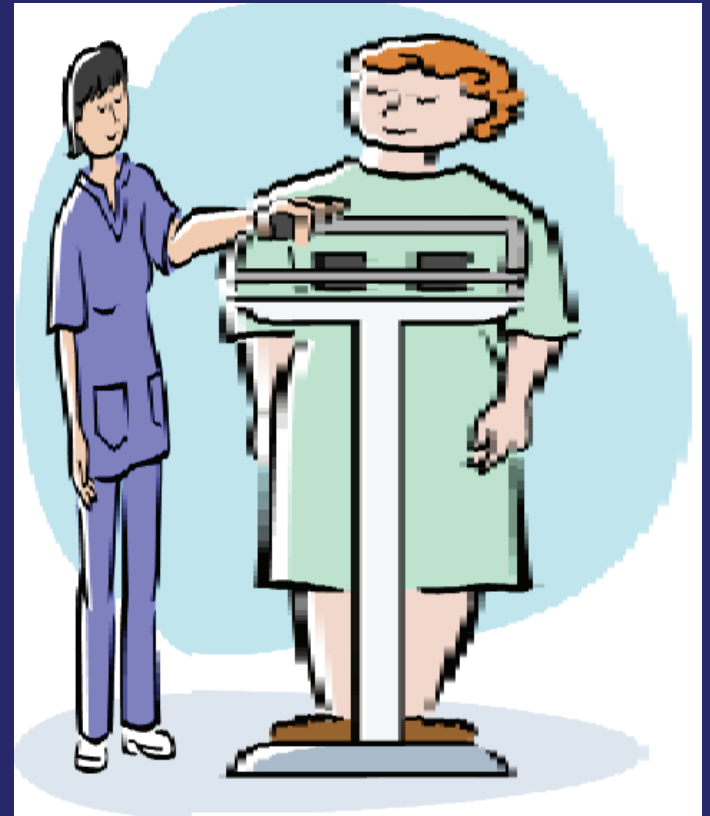
- ↓ in saliva
- ↓ in digestive enzymes and saliva
- ↓ appetite
- Loss of teeth
- Altered taste and smell



Variation of Normal



- Difficulty swallowing or chewing
- Poor intake of diet and fluids
- Weight ↑ or ↓
- Loss of appetite



Variation of Normal

- “My abdomen hurts”
- Cramping
- Nausea and vomiting
- Heartburn
- Diarrhea
- Constipation



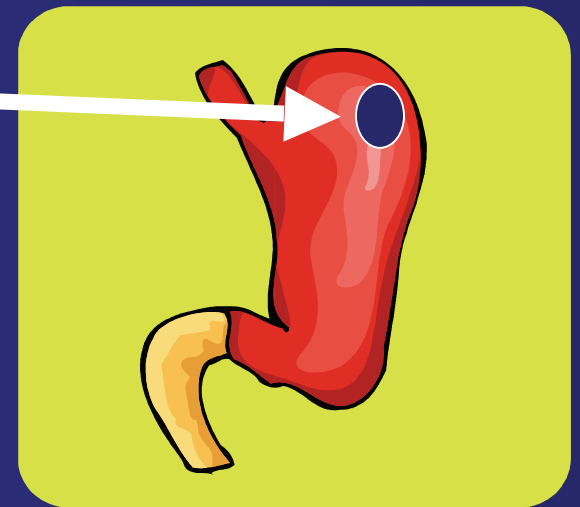
Variation of Normal



- "It hurts when I have a bowel movement"
- Whitish, black, or red colored stool
- Blood, pus, mucus, or other discharge
- Incontinence

Common Disorders

- Ulcer
- Hemorrhoids
- Constipation
- Diarrhea
- Gastroenteritis



Nurse Aide's Role



- Encourage intake of fluids and nutritional meals
- Make mealtime enjoyable and allow time to eat
- Provide oral care before and after meals

**HEY..... PUT ME IN SO
MY OWNER CAN EAT HIS
DINNER!!!!**



Nurse Aide's Role

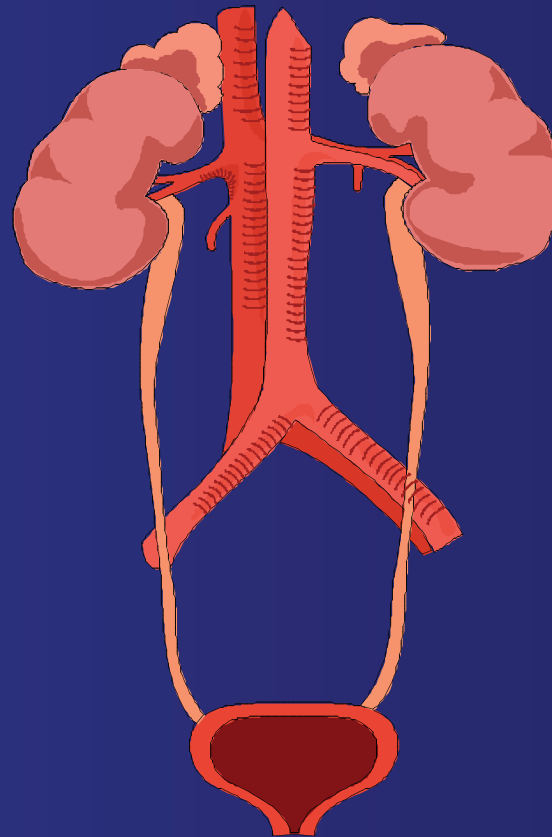
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MODULE H

Urinary

Overview

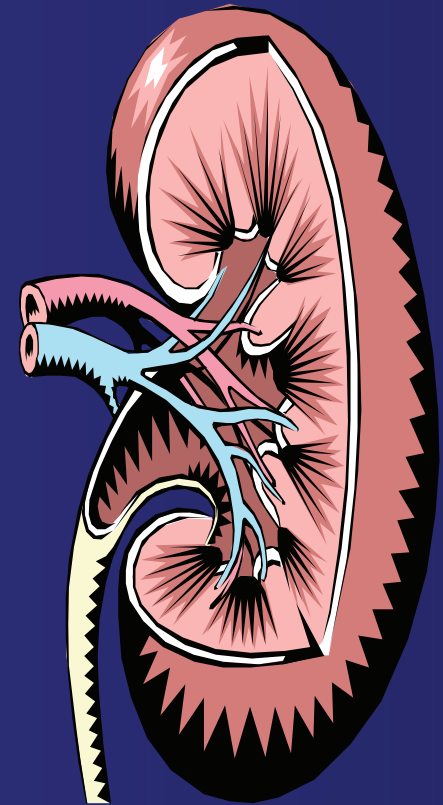
- Filtering system of the body
- Responsible for ridding body of waste products from blood



Structure and Function

Kidneys

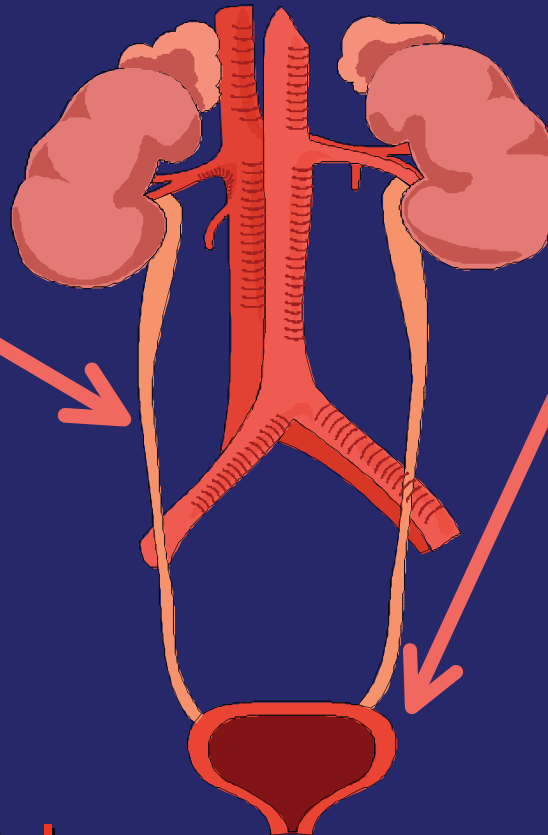
- Bean-shaped, paired organs
- Located at back or abdominal cavity, slightly above waist
- About 4 or 5 inches long and 1 inch thick
- Filter waste products and produces urine
- Help maintain water balance and blood pressure
- Regulate electrolytes



Structure and Function

Ureters

- Narrow tubes
- Connect kidneys to bladder
- About 1 foot long



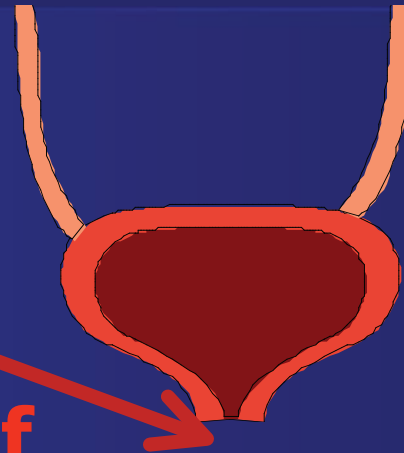
Urinary Bladder

- Muscular sac
- Stores urine until it passes from body

Structure and Function

Urethra

- A tube
- Located between bladder and outside of body
- About 7 or 8 inches long in males and about 1.5 inches long in females



Structure and Function

Urine

- Made up of water, salt & waste



Normal Findings of Urine

- Pale yellow to amber in color
- Clear



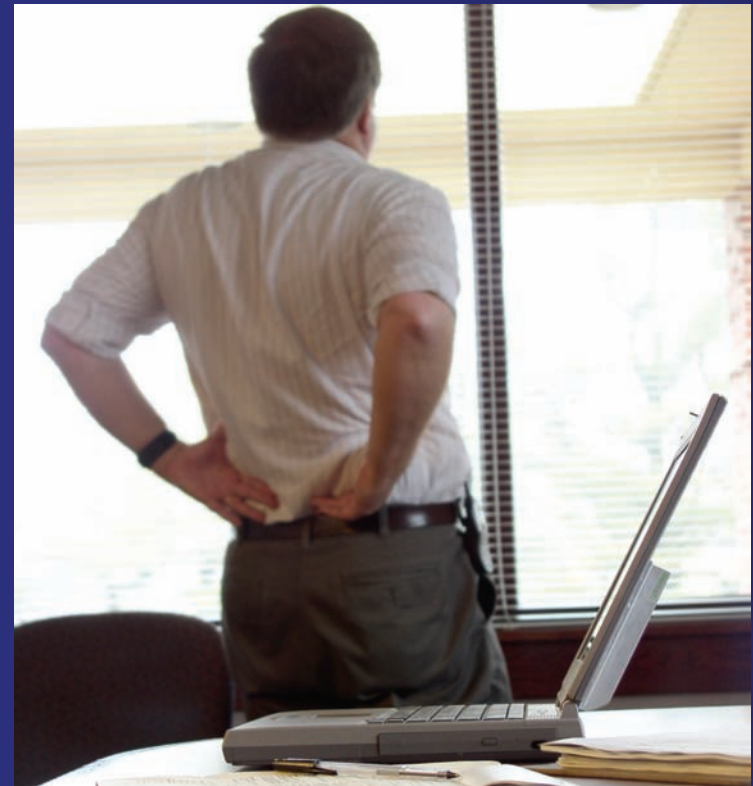
About 1000 to 1500 milliliters per day

Changes Due to Aging

- ↓ kidney size and ability to filter
- ↓ ability to concentrate urine
- ↓ capacity, elasticity, muscle tone of bladder
- Difficulty or incomplete emptying of bladder
- ↑ prostate in males

Variation of Normal

- Changes in urine
- Weight ↑ or ↓
- Swelling in arms or legs
- Pain or burning during urination
- Swelling in bladder or abdomen
- Pain in kidney or back
- Incontinence
- Fever



Common Disorders

- Nephritis
- Cystitis
- Calculi
- Kidney failure
- Urinary incontinence
- UTI
- Retention
- Hematuria
- Dysuria



Urinary System – Nurse Aide's Role



- Encourage fluids, unless restricted
- Offer assistance to bathroom
- Keep residents clean and dry



NC Nurse Aide I Curriculum

MODULE H **Reproductive**

Overview



Allows human beings to
create a new human
life

-  The female
reproductive system
-  The male reproductive
system

Structure & Function



Male reproductive structures

Female reproductive structures



Responsible for production of reproductive cells, produce hormones responsible for sex characteristics and reproduction

Normal Findings

- Absence of bleeding and discharge
- Absence of pain and itching
- Absence of enlargement of prostate

Changes Due to Aging

- ↓ size and function of reproductive structures
- ↑ of prostate
- Sagging breasts
- Loss of hair in vulva area



Variation of Normal

- Bleeding
- Pain
- Discharge
- Itching

Common Disorders

- Cystocele

- Prostatic hypertrophy



Nurse Aide's Role



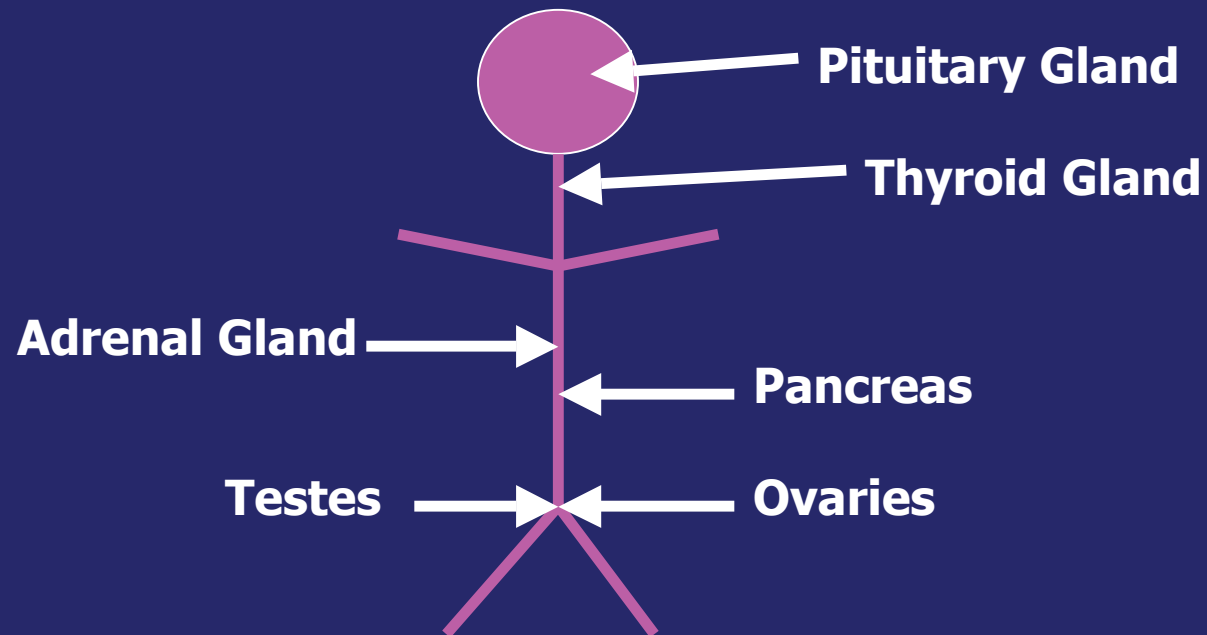
- Encourage proper nutrition and fluid intake
- Try to minimize stressors

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MODULE H

Endocrine

Overview



Is a system of glands that secrete chemicals directly into the bloodstream to regulate body functions

Structure and Function

- Structure – glands located throughout the body
- Function
 - Maintains homeostasis
 - Influences growth and development
 - Regulates sugar in the blood and calcium in the bones
 - Regulates reproduction
 - Regulates how fast cells burn food

Endocrine System – Normal Findings

- Skin warm/dry
- No variation of weight, appetite, urination from typical
- Awake, alert, oriented



Changes Due to Aging



- ↓ levels of hormones
- ↓ insulin production
- Body less capable to deal with stress

Variation of Normal

- Headache, blurred vision, dizziness
- Weakness
- Hunger
- Irritability
- Sweating
- Dry skin



Endocrine System – Variation of Normal



- Confusion
- ↑ or ↓ weight
- ↑ or ↓ appetite
- Tiredness
- ↑ thirst
- ↑ urination

Common Disorders

- Diabetes Mellitus
- Hyper- and hypothyroidism

Nurse Aide's Role

- Encourage proper nutrition and fluid intake
- Try to ↓ stressors



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MODULE H

Immune System

Immune System

- Overview – defends the body
- Structure and function – antibodies and white blood cells that protect the body and provides immunity
- Normal findings – body can fight infection
- Changes due to aging – immune system weakens or may attack self

Immune System

- Variation of normal – signs of infection, anxiety, nausea and vomiting, stiff/swollen/painful joints
- Common disorders – AIDS, lupus, graves disease
- Nurse aide's role – observe and report, plus.....

The End