NC Department of Health and Human Services

NC Nurse Aide I Curriculum

Module H
Body Systems

Objectives

1. Describe cell theory and the organization of the human body
2. Identify the structure and function of the cell, variations of a normal cell, and nurse aide's role when caring for someone with cancer
3. Identify the structure and function of the integumentary, musculoskeletal, nervous, cardiovascular, respiratory, digestive, urinary, reproductive, endocrine, and immune systems

Objectives

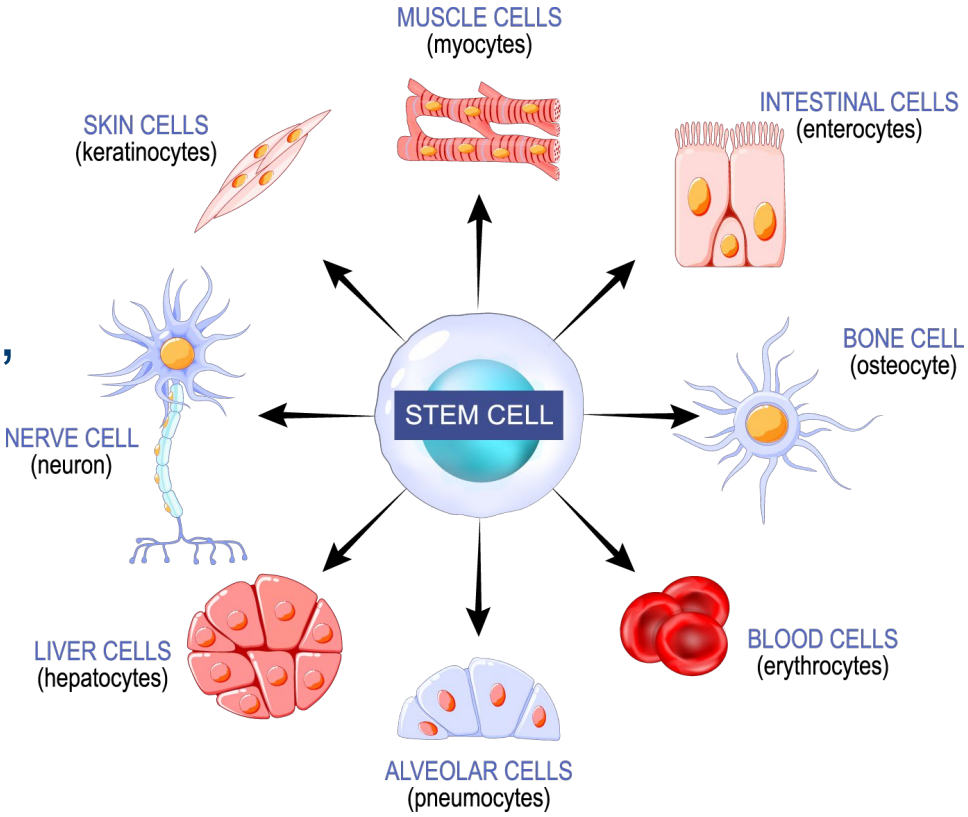
4. Identify changes due to aging of the integumentary, musculoskeletal, nervous, cardiovascular, respiratory, digestive, urinary, reproductive, endocrine, and immune systems
5. Compare and contrast normal findings and variation of normal findings and variation of the integumentary, musculoskeletal, nervous, cardiovascular, respiratory, digestive, urinary, reproductive, endocrine, and immune systems

Objectives

6. Describe common disorders of the integumentary, musculoskeletal, nervous, cardiovascular, respiratory, digestive, urinary, reproductive, endocrine, and immune systems
7. Describe the nurse aide's role related to a resident's integumentary, musculoskeletal, nervous, cardiovascular, respiratory, digestive, urinary, reproductive, endocrine, and immune systems

Cell Theory – Structure and Function

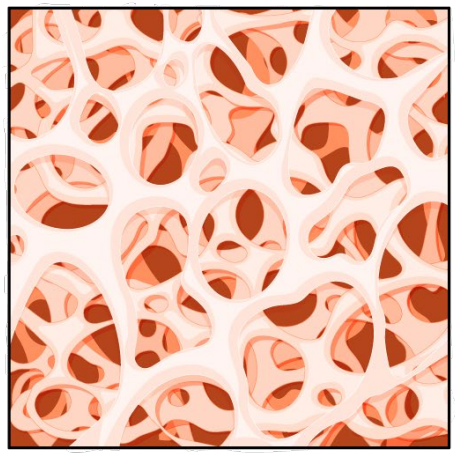
- Basic unit of all living tissues/organisms
- Building blocks of the human body
- Have same basic structure; function, size, and shape may differ
- Need food, water, and oxygen to live and function
- Divide, grow, and die
- Combine to form tissue



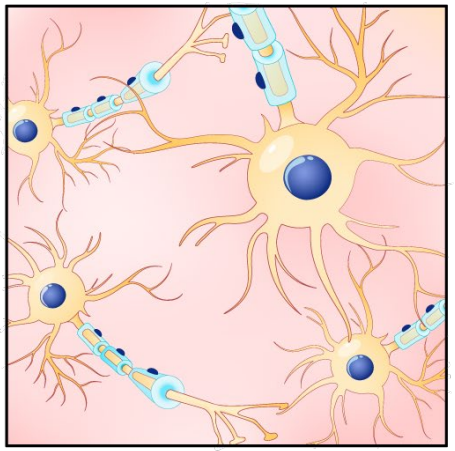
Tissue – Structure and Function

- Carry out a particular activity or function
- Types – epithelial, connective, muscle, nerve (neural)
- Combine to form organs

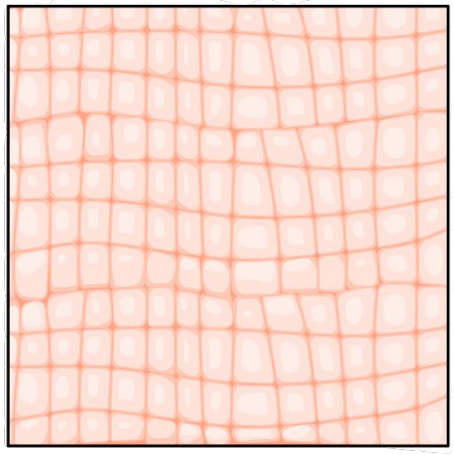
Connective tissue



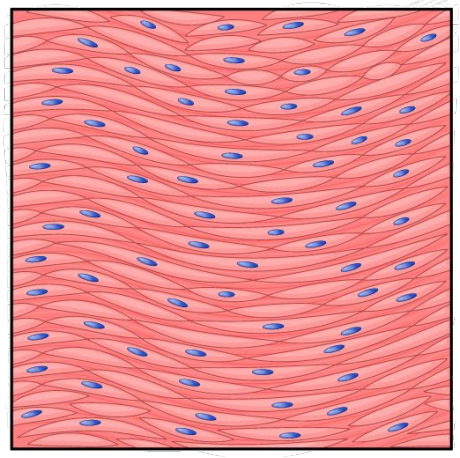
Neural tissue



Epithelial tissue

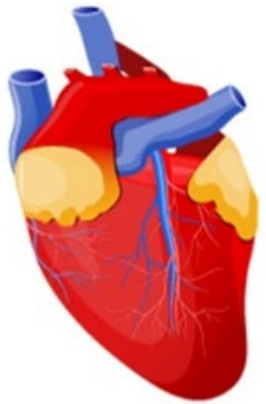


Muscle tissue



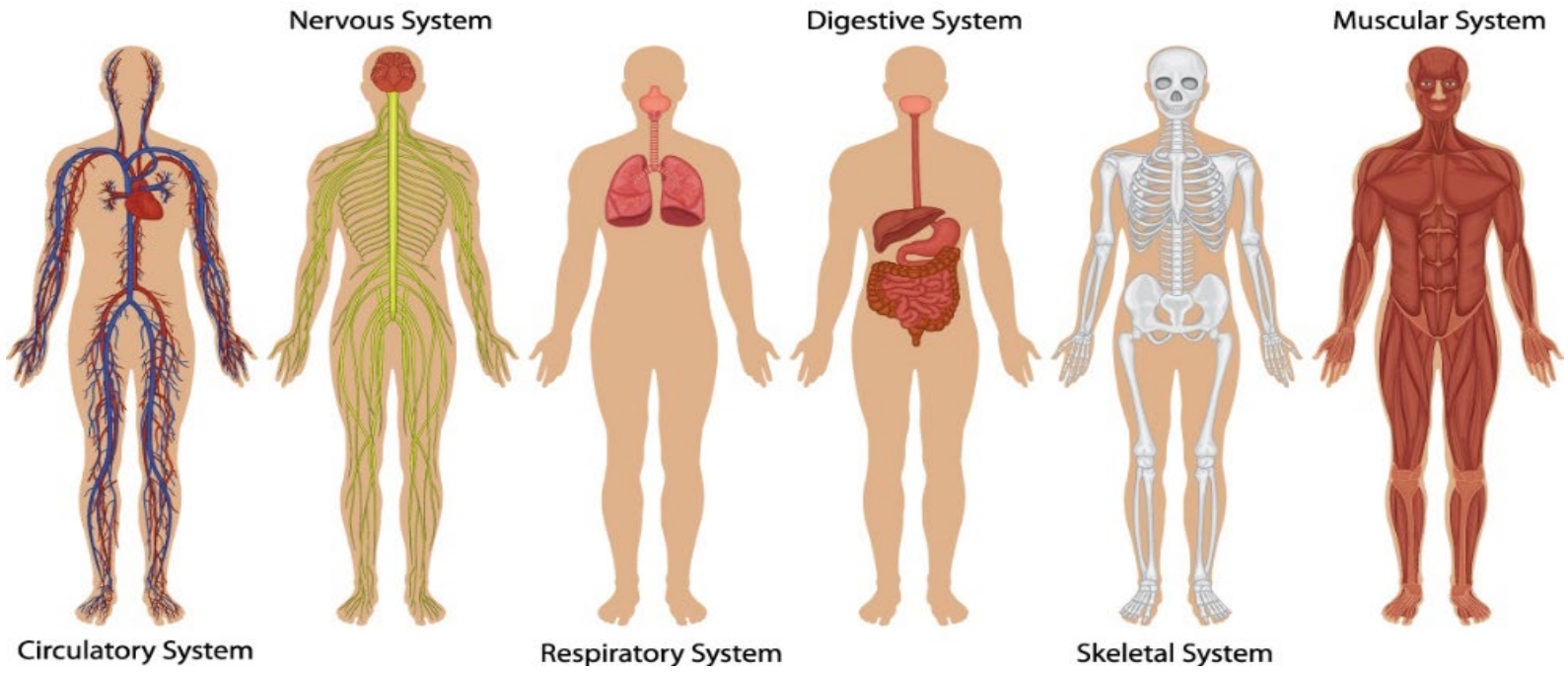
Organ – Structure and Function

- Made of tissue, may be several types of tissues
- Carries on a special function; examples are heart, stomach, bladder
- Some are paired; examples are kidneys, lungs
- Combine to form a system

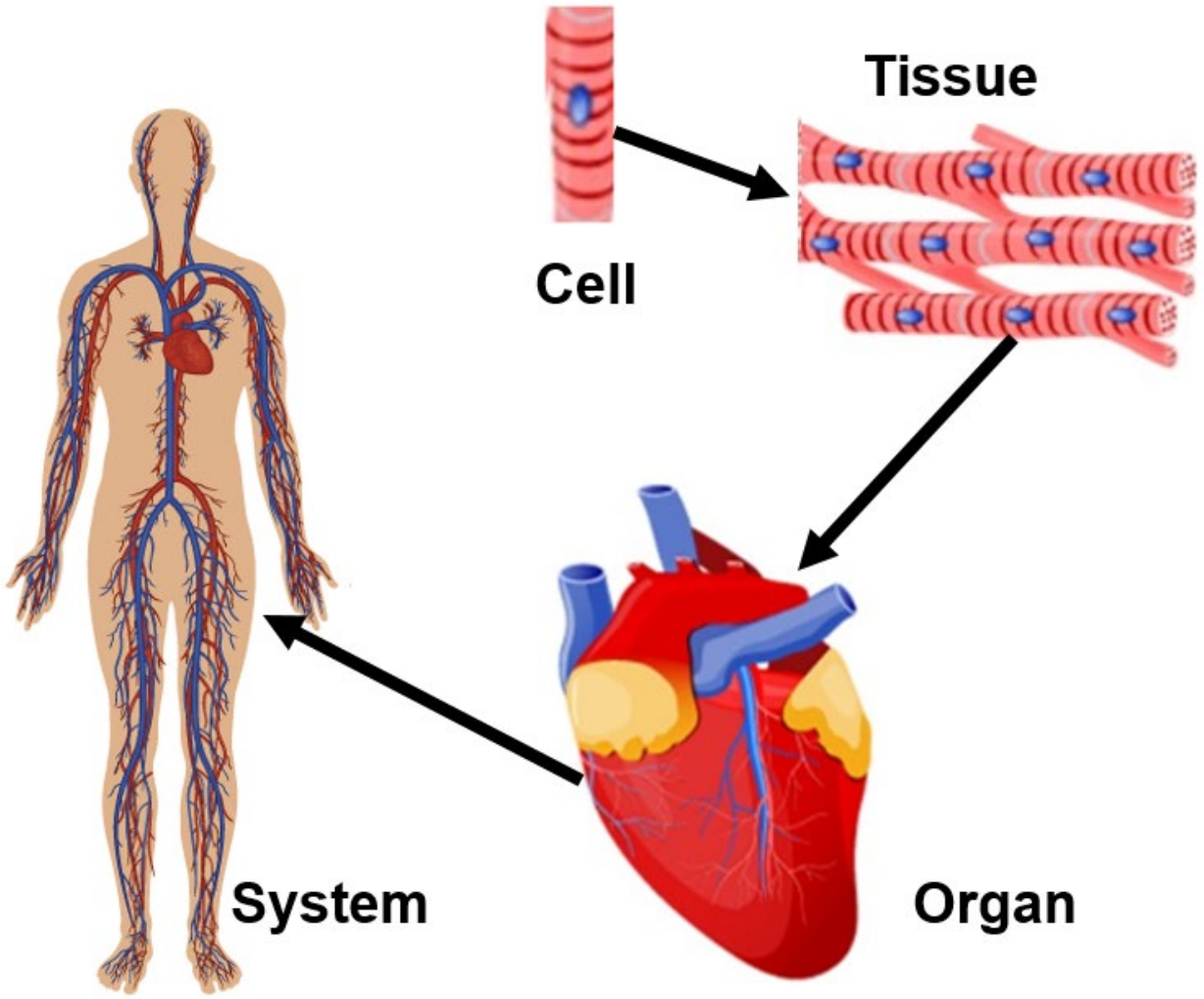


System – Structure and Function

- Made of groups of several organs functioning together for a specific purpose(s)
- Combine to form an organism



Organization of the Body

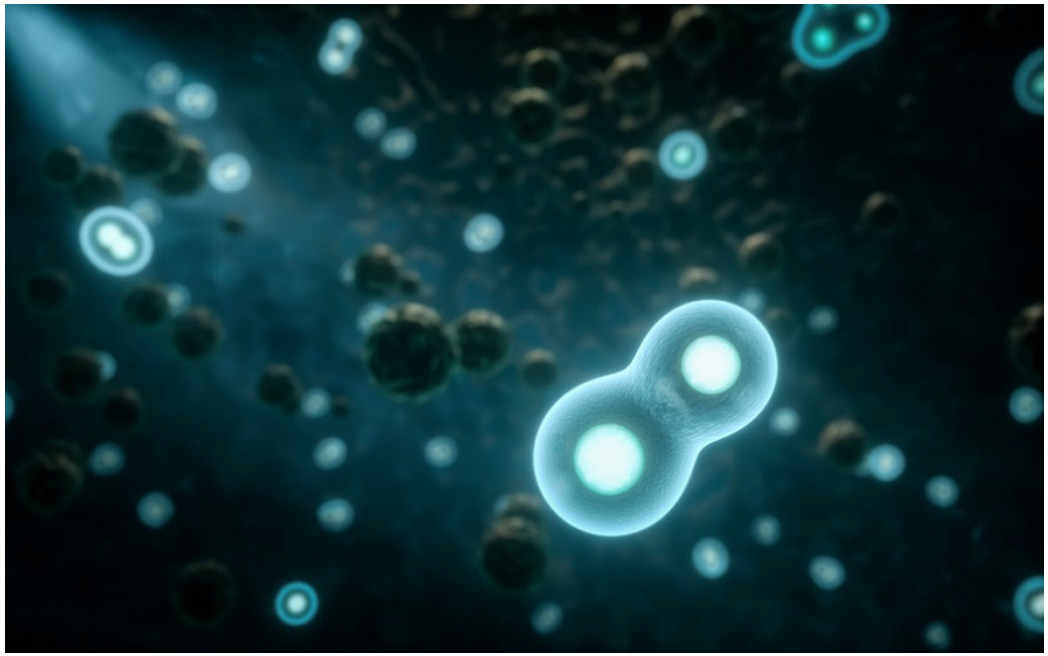


Organism – Structure and Function

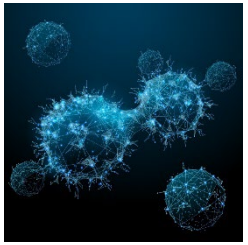
Made up of systems all working together to perform activities of daily living that are needed for continued life

Cells – Normal Findings

Reproduce for tissue growth and repair in a controlled and orderly manner



Cells – Variation of Normal



Cancer (CA)

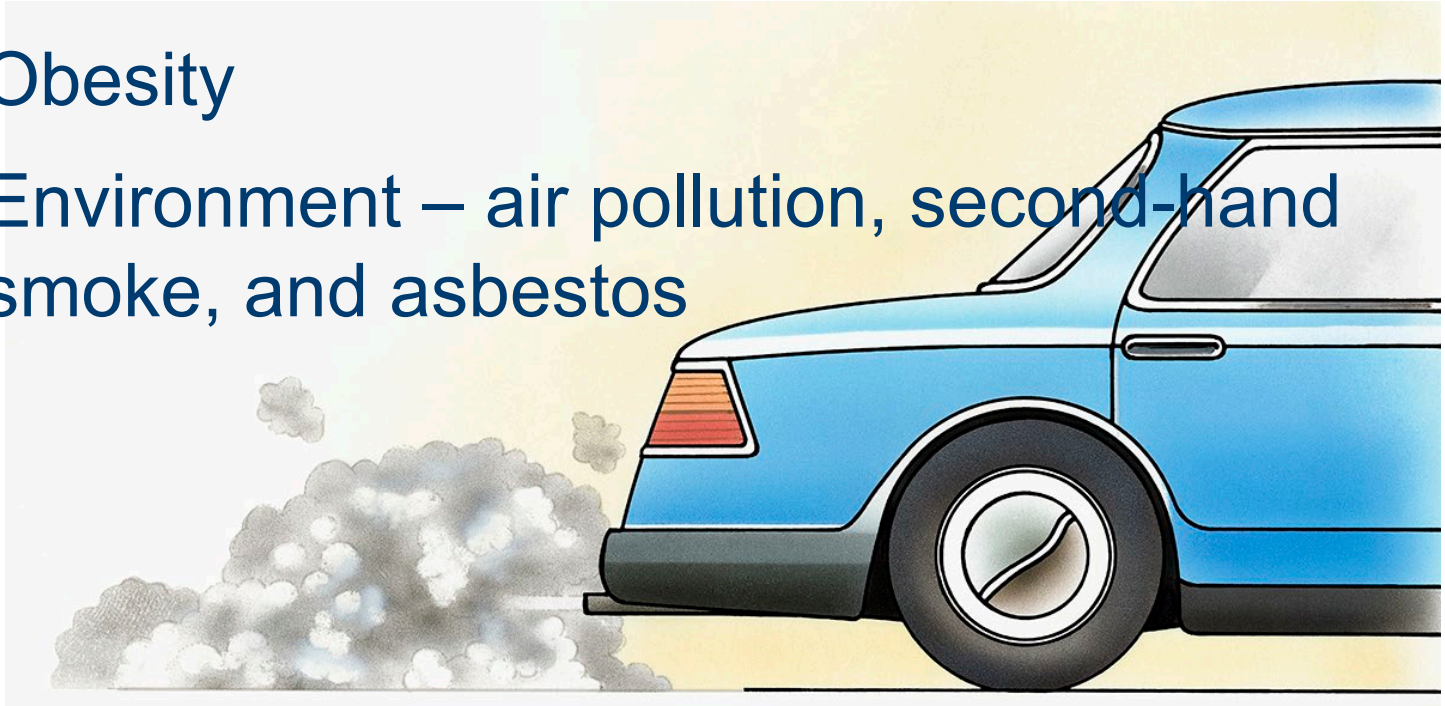
- Abnormal cells grow in uncontrolled manner, invade surrounding tissue; may spread to other areas
- Can occur almost anywhere in or on body; commonly occurs on skin, in lung, colon, breast, prostate, uterus, ovary, bladder, and kidney
- Neoplasia – group of abnormally growing cells; may be benign tumors or malignant tumors

Cancer – Risk Factors

- Age – getting older most important risk factor
- Tobacco – actual use and second-hand
- Radiation – sunlight
- Infections – certain viruses and bacteria
- Second largest cause of death
- Immuno-suppressive drugs

Cancer – Risk factors

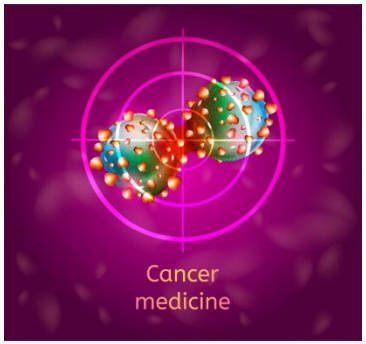
- Alcohol
- Diet – high in fat, protein, calories, and red meat
- Hormones – female hormones
- Obesity
- Environment – air pollution, second-hand smoke, and asbestos



Cancer – Warning Signs (CAUTION)

- Change in bowel or bladder habits
- A sore that does not heal
- Unusual bleeding or discharge from any body opening
- Thickening or lump in breast or elsewhere
- Indigestion or difficulty swallowing
- Obvious change in a wart or mole
- Nagging cough or hoarseness

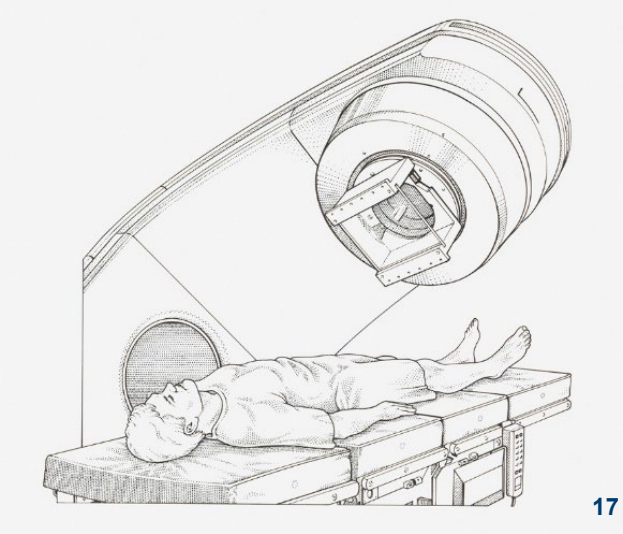
Cancer Treatment



- To cure
- To control the disease
- To reduce signs and symptoms from disease and treatment
- Key is to find cancer early
- Dependent on type, site, size, and if it has spread
- Includes – surgery, radiation, chemotherapy, others (hormone, stem cell transplants, alternative)

Cancer – Radiation Therapy

- Kills cancer cells using X-ray beams aimed at tumor or radioactive material implanted at or near tumor
- Nurse aide care directed at minimizing side effects and providing emotional support
- Side Effects-
  - At site – sore, irritated, redness, blistering
  - Head and neck – dry mouth, sore throat
  - Tiredness
  - Discomfort
  - Nausea & vomiting
  - Diarrhea,
  - Loss of appetite



Cancer – Chemotherapy

- Affects whole body; both cancer cells and normal cells
- Targeted therapy can tell the difference
- May be given orally or intravenously
- Be aware of safety needs handling body fluids

Cancer – Chemotherapy

- Side Effects depend on drug(s) used
  - Hair loss
  - Digestive disturbances
  - Stomatitis
  - Decreased blood cell production
  - Changes in thinking and memory
  - Emotional changes
- Nurse aide care directed at minimizing side effects and providing emotional support

Cancer – Nurse Aide's Role

Resident's needs include:

- Pain relief or control
- Balance of rest and exercise
- Fluids and nutrition
- Prevention of skin breakdown
- Prevention of bowel problems
- Dealing with side effects of treatment
- Psychologic and social needs
- Spiritual needs

Cancer – Nurse Aide's Role

- Every case is different
- Social interaction – listen for what the resident wants
- Proper nutrition – follow care plan
- Pain control – provide comfort measures and watch for signs to notify the nurse
- Assist with comfort and circulation - Reposition at least every 2 hours
- Skin care – watch for signs of pressure injury, keep skin clean and dry
- Mouth care – understand that chemo, nausea, vomiting, mouth infections can cause pain and bad taste in mouth

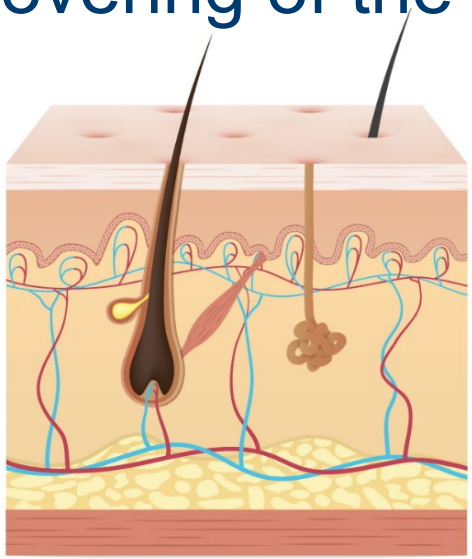
Cancer – Nurse Aide's Role

- Self-image – may be an issue; hair loss common side effect

- Visitors and family – if the visit is positive, do not intrude; watch for and report negative interactions to the nurse during visits

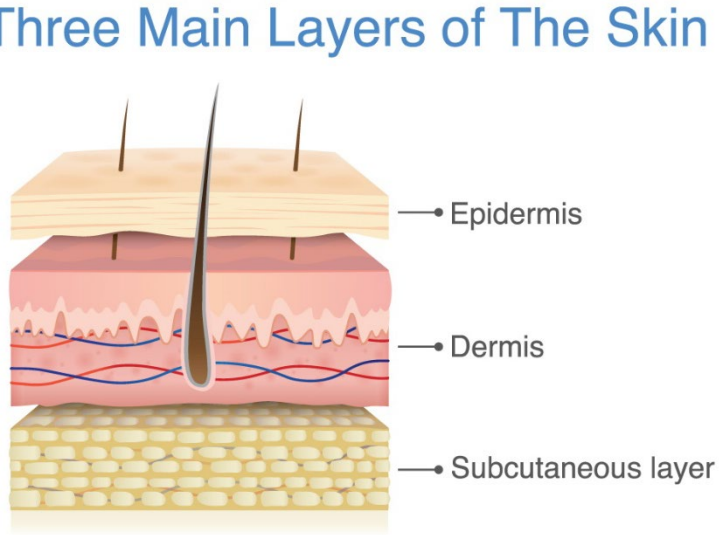
Integumentary – Overview

- The skin
- Largest organ and system in the body
- Has accessory structures – hair and nails
- Responsible for providing a natural protective covering of the body



Integumentary – Structure

- Epidermis
  - Outer layer
  - Living and dead cells
  - No blood vessels, only few nerve cells



- Dermis
  - Inner layer
  - Made up of connective tissue
  - Has blood vessels, nerves, sweat glands, oil glands, and hair roots
- Subcutaneous (fatty) tissue – thick layer of fat and connective tissue

Integumentary – Function

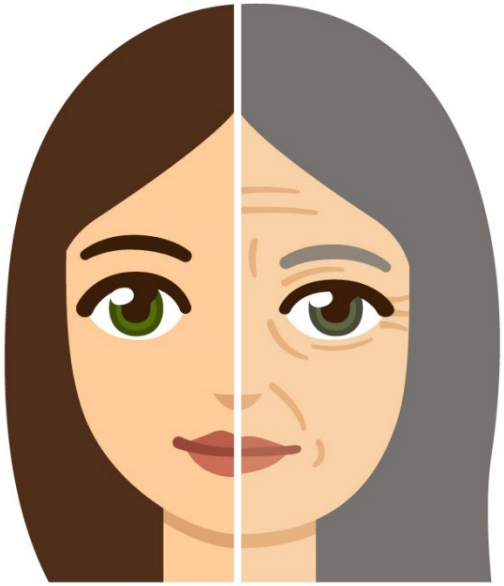
- Protects body from injury and pathogens
- Regulates body temperature
- Eliminates waste
- Contains nerve endings for cold, heat, pain, pressure and pleasure
- Stores fat and vitamins

Integumentary – Normal Findings

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

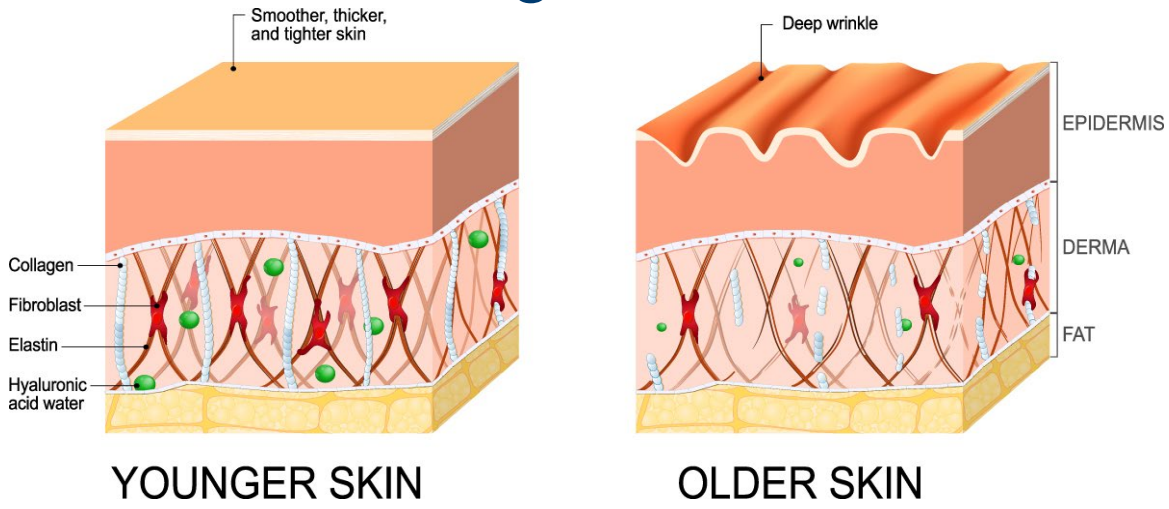
Integumentary – Changes Due to Aging

- Skin is thinner, drier, more fragile
- Loses elasticity
- Fatty layer decreases; person feels colder
- Hair thins and may gray



Integumentary – Changes Due to Aging

- Folds, lines, wrinkles and brown spots may appear
- Nails harden and become more brittle
- Reduced circulation to skin, leading to dryness and itching
- Development of skin tags, warts and moles



Integumentary – Variation of Normal

- Breaks in skin
- Pale, white or reddened areas
- Black and blue areas
- Changes in scalp or hair
- Rash, itching or skin discoloration
- Abnormal temperature
- Swelling

Integumentary – Variation of Normal

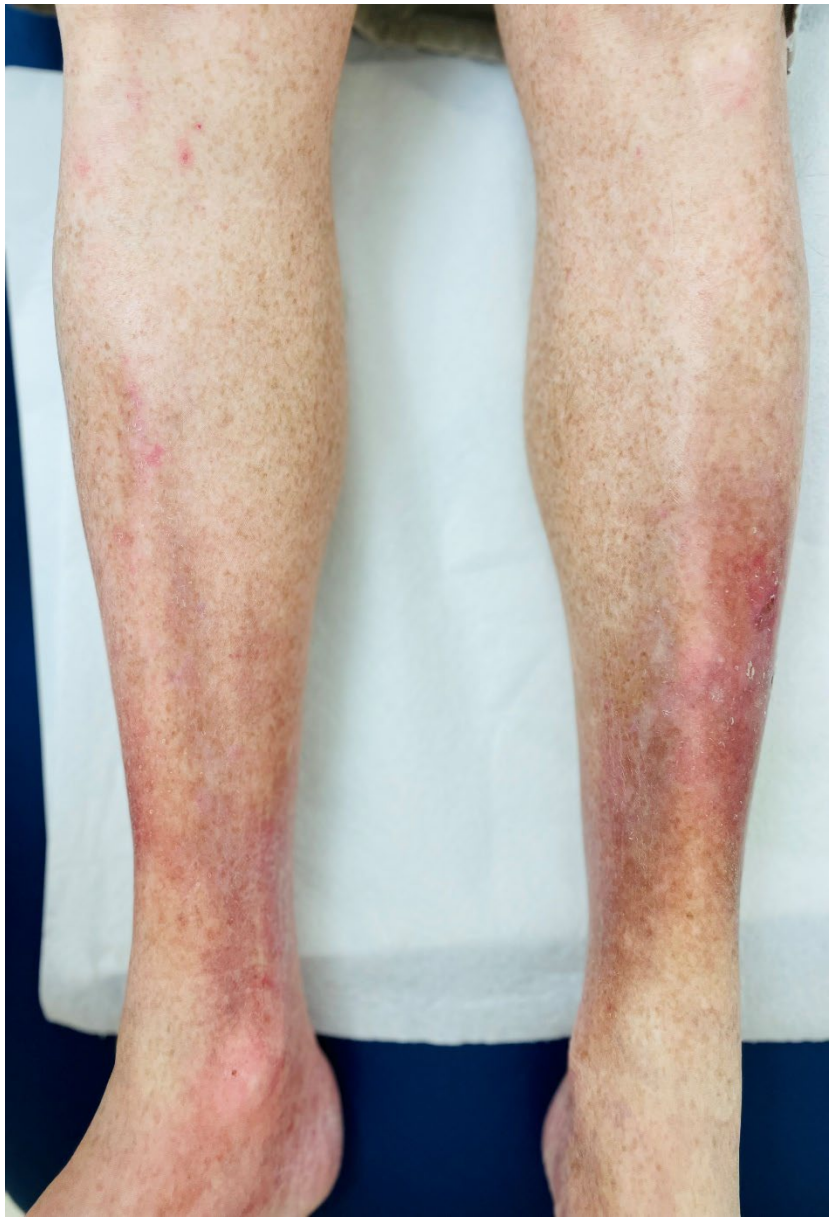
- Ulcers, sores, or lesions
- Swelling
- Dry or flaking skin
- Fluid or bloody drainage

Shingles (Herpes Zoster)

- Caused by virus
- Rash or blisters on one side of body, burning pain, numbness, and itching; lasts about 3 to 5 weeks
- Infectious until lesions are crusty

Stasis Dermatitis

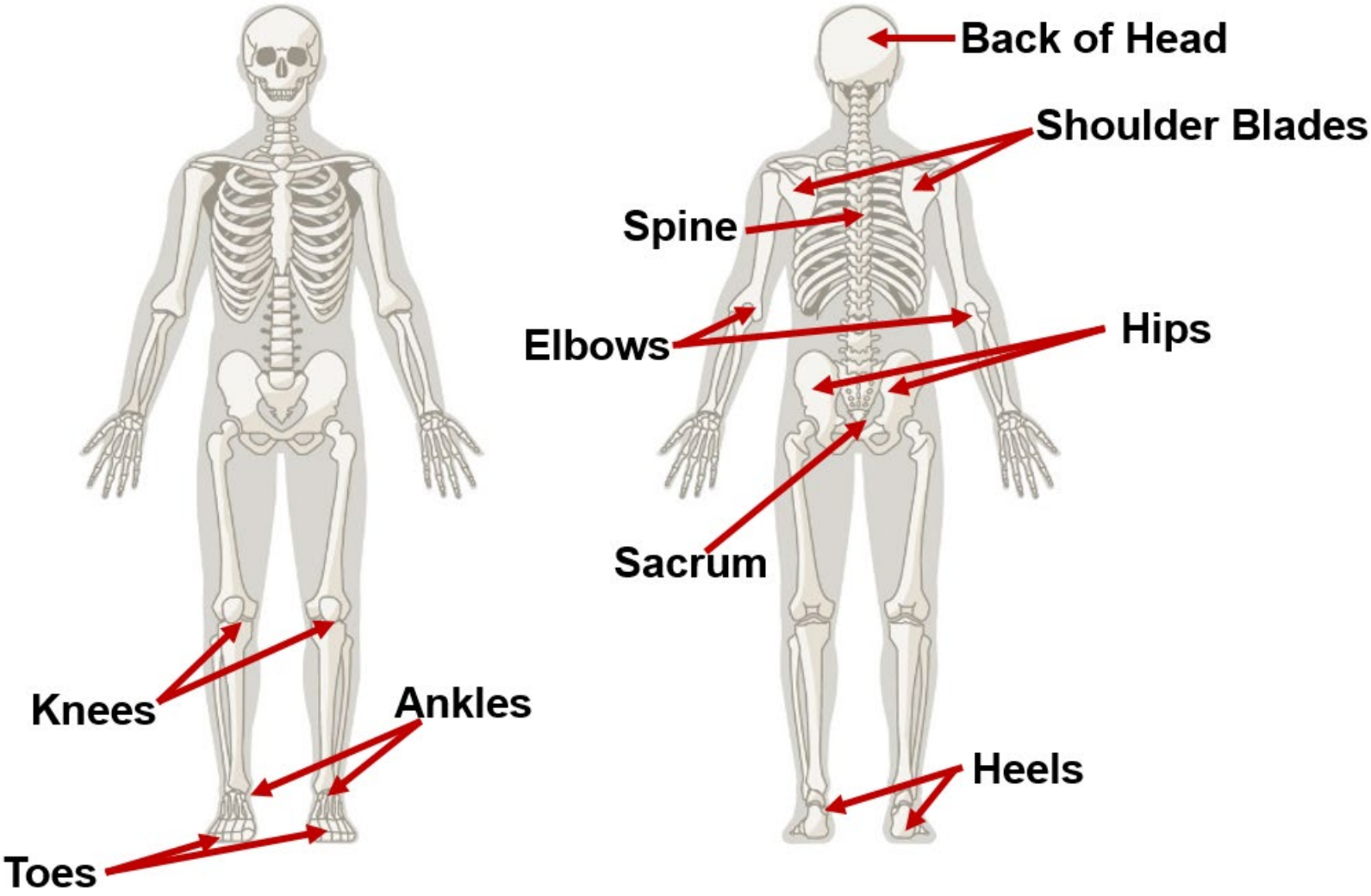
- Skin condition affecting lower legs and ankles
- Occurs from buildup of fluid under skin
- Problems with circulation resulting in fragile skin
- Can lead to open ulcers and wounds



The Pressure Injury

- Any lesion caused by unrelieved pressure that results in damage to underlying tissues; friction and shear are factors
- Many pressure injuries occur within first four weeks of admission to the facility

Bony Prominences



Pressure Injury – Terms

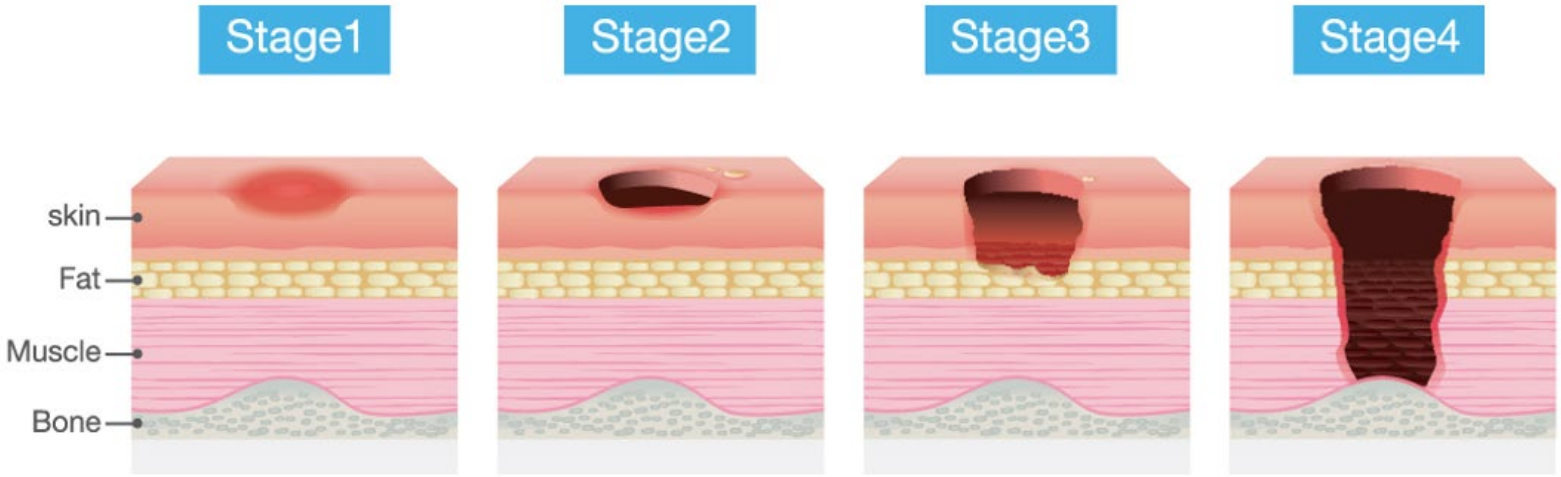
- Shear – when layers of skin rub up against each other; or it could be when skin remains in place, but tissues underneath move and stretch
- Friction – rubbing of one surface against another
- Unavoidable pressure injury – a pressure injury occurs despite efforts to prevent one
- Avoidable pressure injury – one that develops from improper use of best practices

Pressure Injury – At Risk

- Risk factors – immobility, breaks in skin, poor circulation to area, moisture, dry skin, and urine and feces irritation
- Older residents and disabled residents are at risk due to skin changes

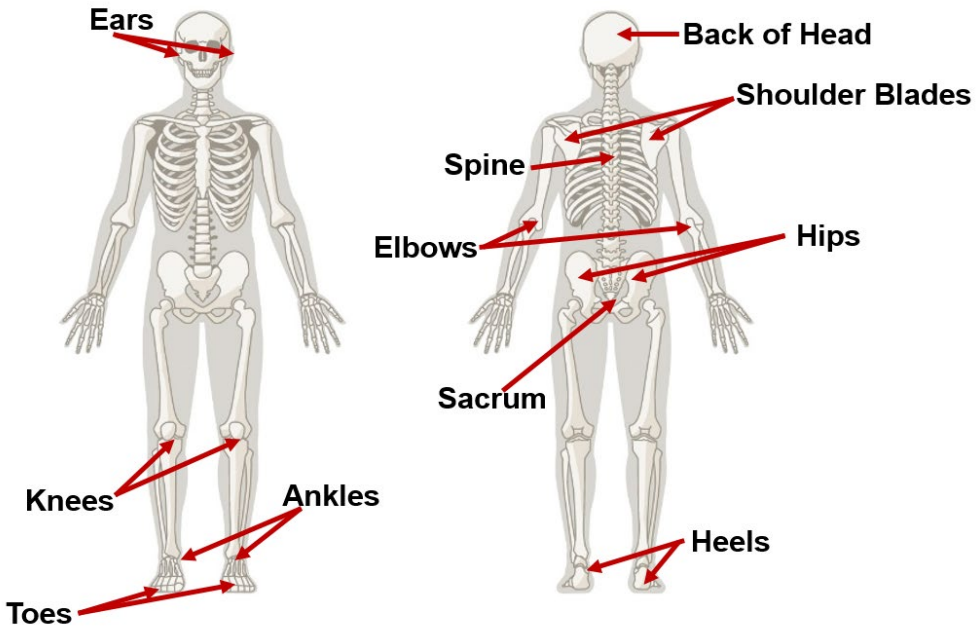
Pressure Injuries – Residents at Risk

Pressure Injury – Stages



Pressure Injury – Pressure Points

- Occur over bony areas
- The sacrum is the most common site



Pressure Injury – Sites

- Objects can contribute to pressure injury – eyeglasses, oxygen tubing, tubes, casts, braces
- Pressure areas can occur where skin is in contact with skin

Pressure Injury Prevention is the Key

- Identify residents at risk
- Use preventive measures when handling, moving, and positioning the resident
- Providing skin care

Handling, Moving, and Positioning

- Follow repositioning schedule
- Use assistive devices (pillows and foam wedges)
- Support feet properly
- Do not position on red area, pressure injury, on tubes or other medical devices
- Prevent bed friction
- Prevent shearing
- Keep feet and heels off bed

The 30° Lateral Position

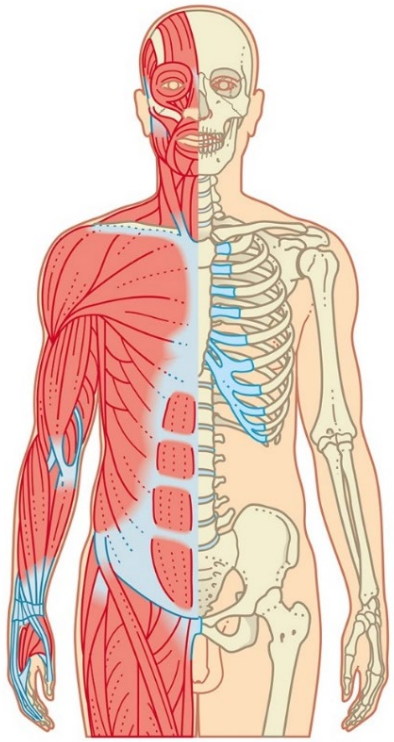
- Bed is not raised more than 30°
- Pillows are placed under head, shoulder, and leg
- Position lifts the hip to avoid pressure on the hip at about a 30° angle
- Person does not lie on hip when in side-lying position

Providing Skin Care to Prevent Pressure Injury

- Inspect skin and check for drainage
- Do not use hot water; use cleansing agent
- Avoid scrubbing vigorously
- Give a back rub when repositioning and apply moisturizer
- Keep linen clean, dry, and free of wrinkles
- No heat directly on pressure injury

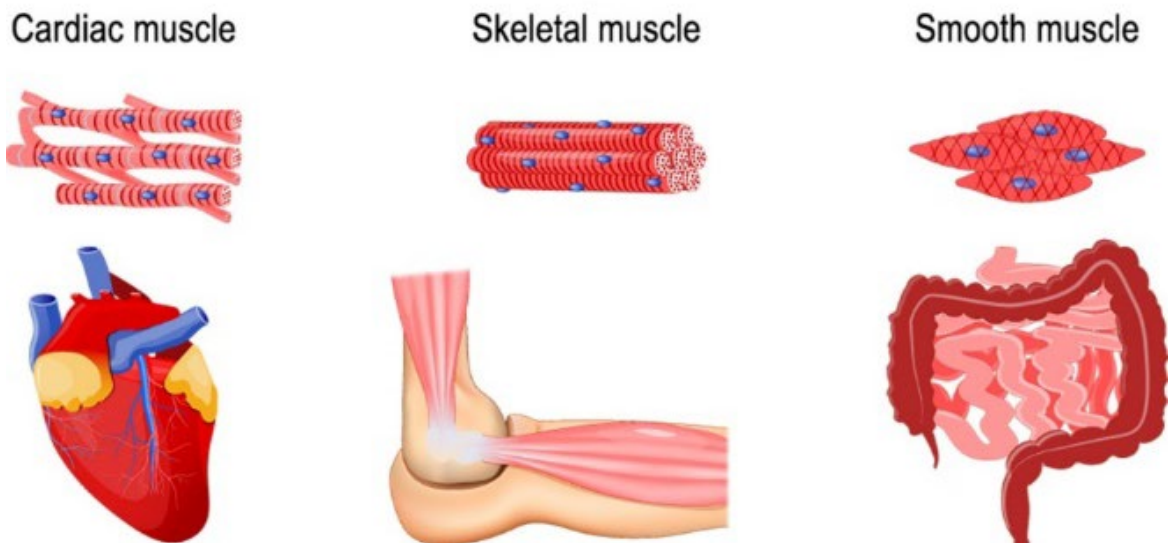
Musculoskeletal – Overview

- Provides structure and movement for the body
- Protects and gives the body shape
- Over 600 muscles made up of elastic tissue
- Some connected to bones by tendons



Muscles – Structure

- Involuntary – cannot be controlled
  - Cardiac – in the heart; striated
  - Smooth – control action of organs; smooth
- Voluntary – can be controlled
  - Skeletal – attached to the bones; arms and legs; striated

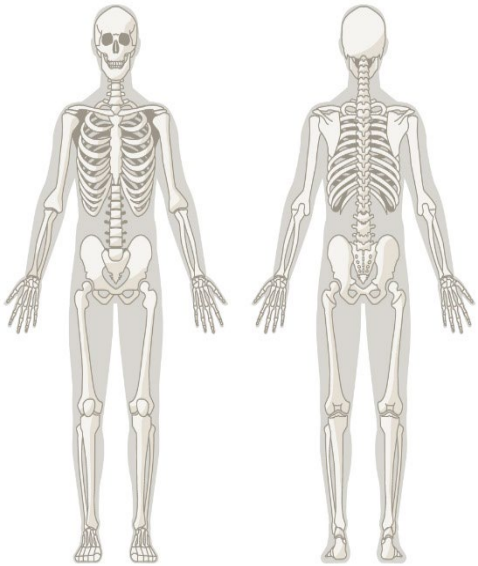


Muscles – Function

- Power movement of the skeleton
- Give body form and posture
- Produce most of body heat, through contraction

Skeleton and Bones – Structure

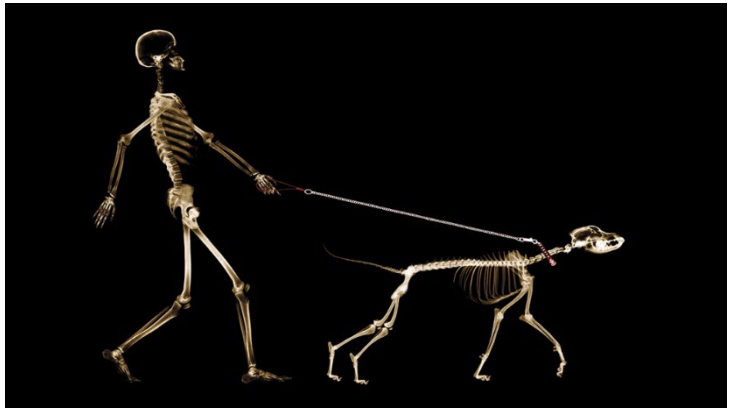
- 206 Bones
- Outside is hard and rigid
- Covered with periosteum
- Bone marrow, located inside; soft and spongy
- Connected to other bones by ligaments
- Connected to muscles by tendons



Skeleton and Bones – Function

Skeleton

- Provides framework for body
- Protects organs

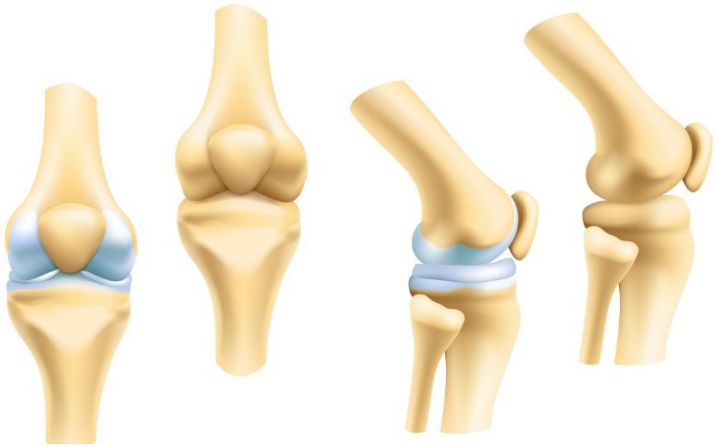


Bones

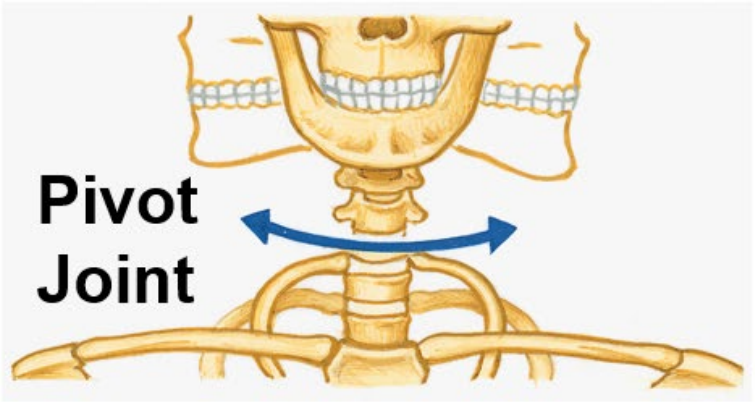
- Allow body to move
- Store calcium
- Make and store blood cells in bone marrow

Joints – Structure

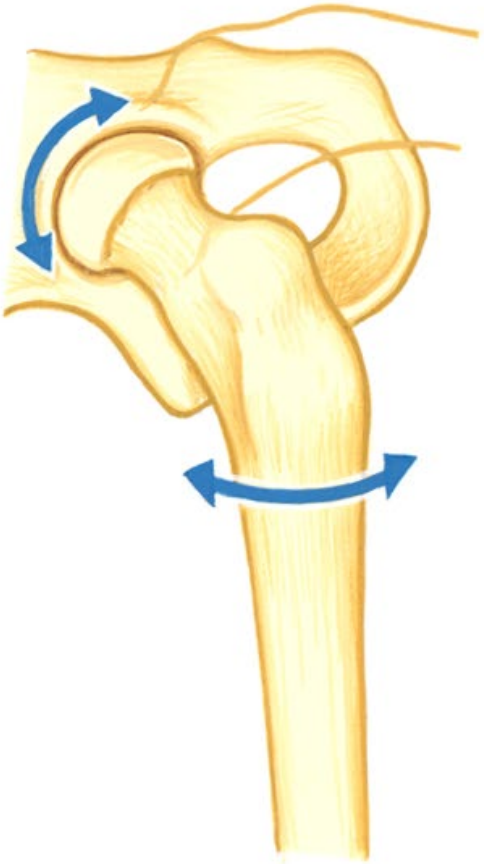
- Point where bones meet; made up of cartilage
- Synovial membrane lines joints
- May be movable, slightly movable, or immovable
- Ligaments hold bones together

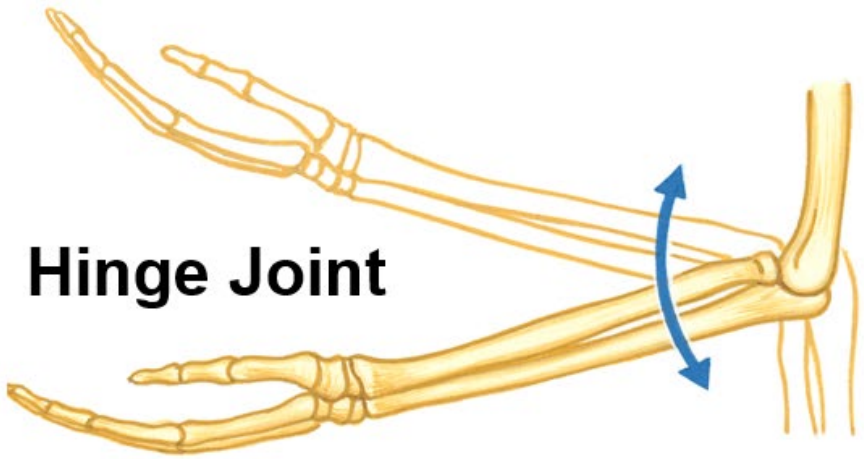


Types of Joints - Function



Ball-and-socket Joint





Musculoskeletal – Normal Findings

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

Musculoskeletal – Normal Findings

Abduction of the arms bilaterally without pain

Musculoskeletal – Normal Findings

Adduction of the arms bilaterally without pain

Musculoskeletal – Normal Findings

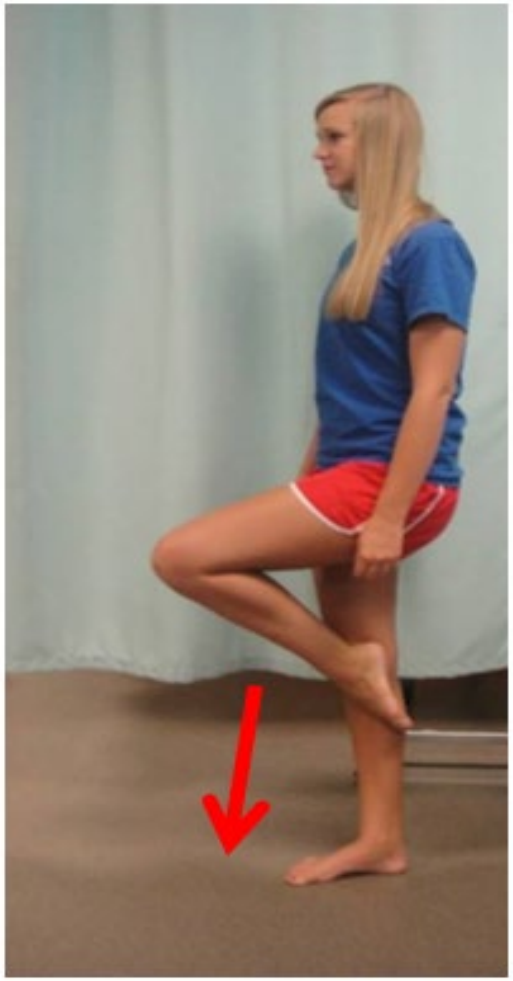
Extension of arm bilaterally without pain

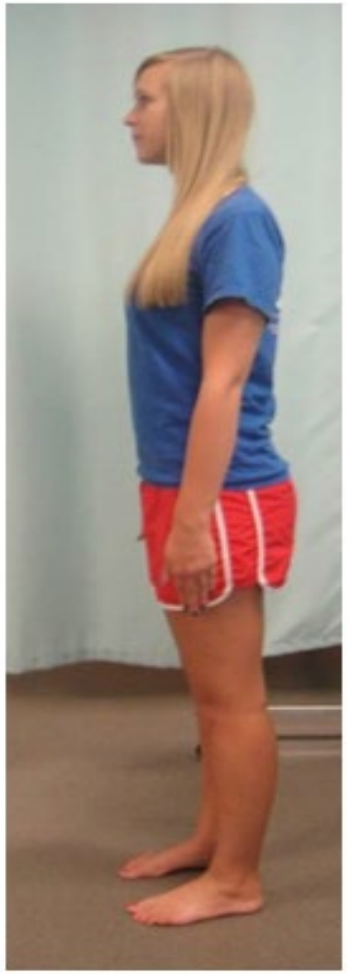
Musculoskeletal – Normal Findings

Flexion of arm bilaterally without pain

Musculoskeletal – Normal Findings

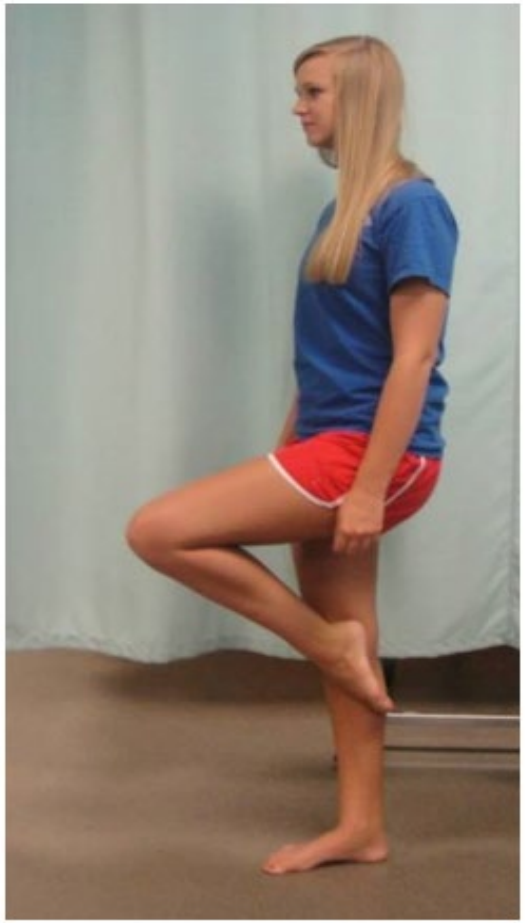
Extension of leg bilaterally without pain





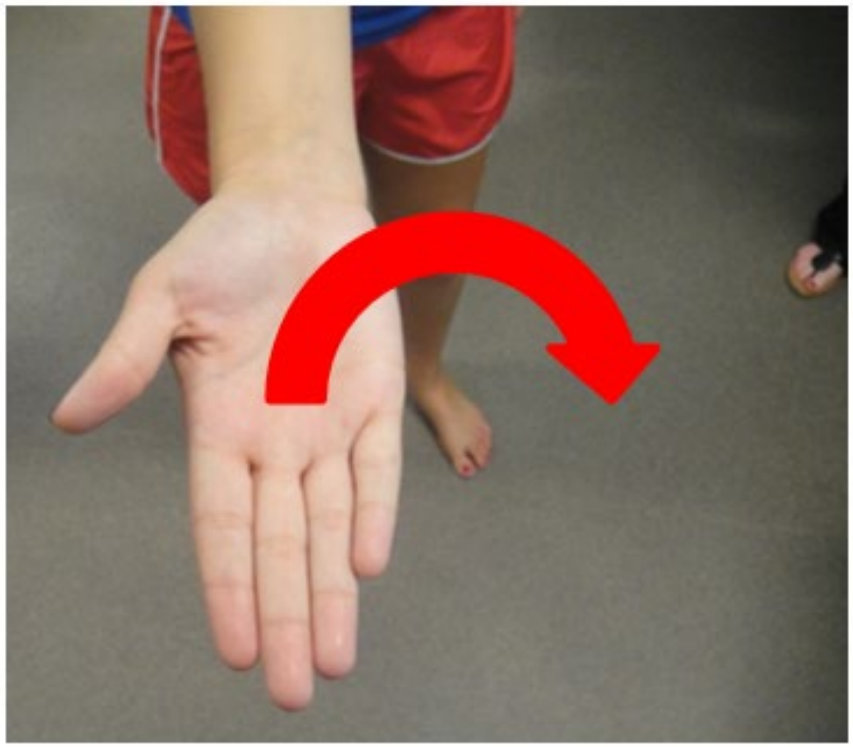
Musculoskeletal – Normal Findings

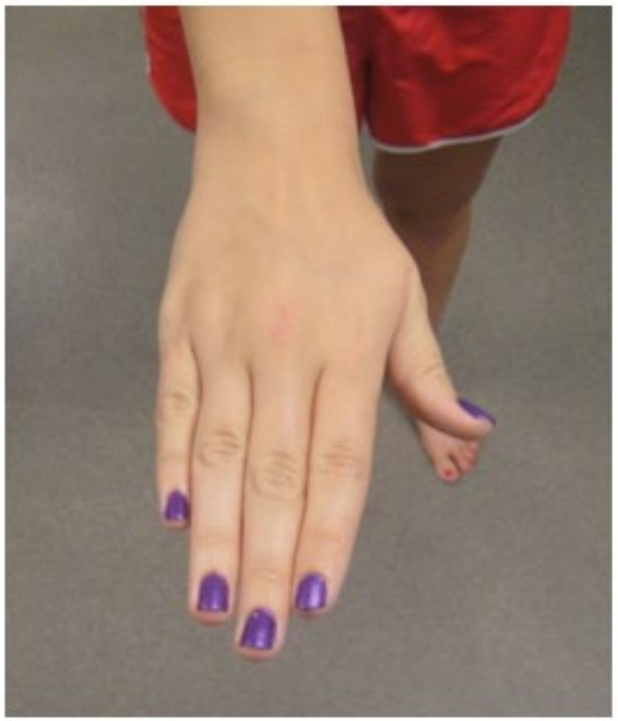
Flexion of leg bilaterally without pain



Musculoskeletal – Normal Findings

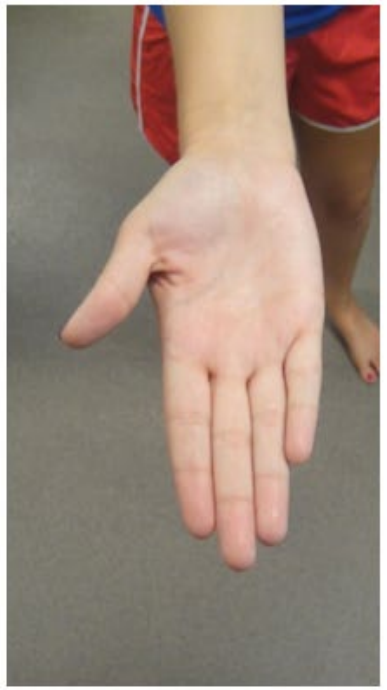
Pronation bilaterally without pain





Musculoskeletal – Normal Findings

Supination bilaterally without pain



Musculoskeletal – Normal Findings

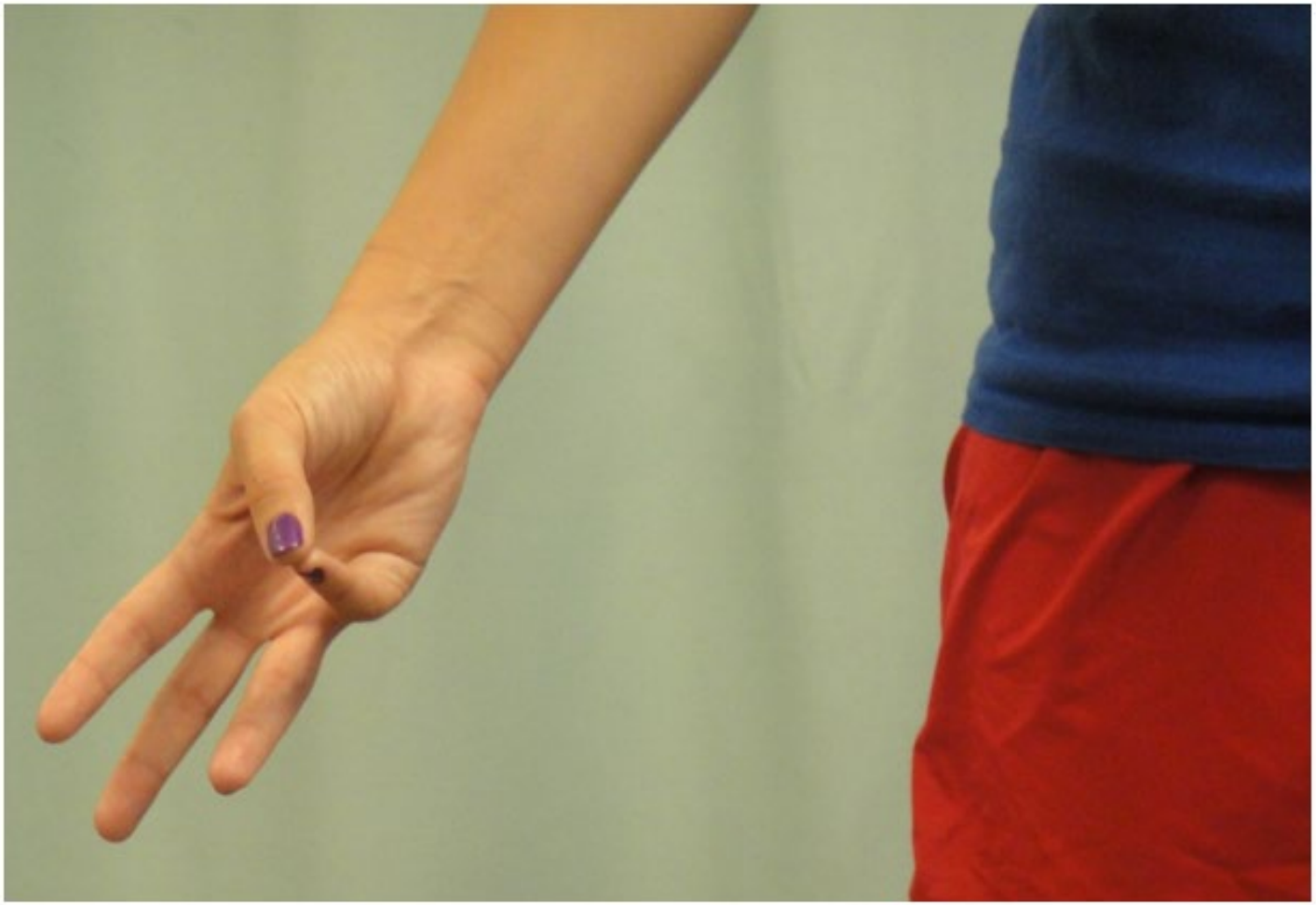
Dorsiflexion bilaterally without pain

Musculoskeletal – Normal Findings

Plantar flexion bilaterally without pain

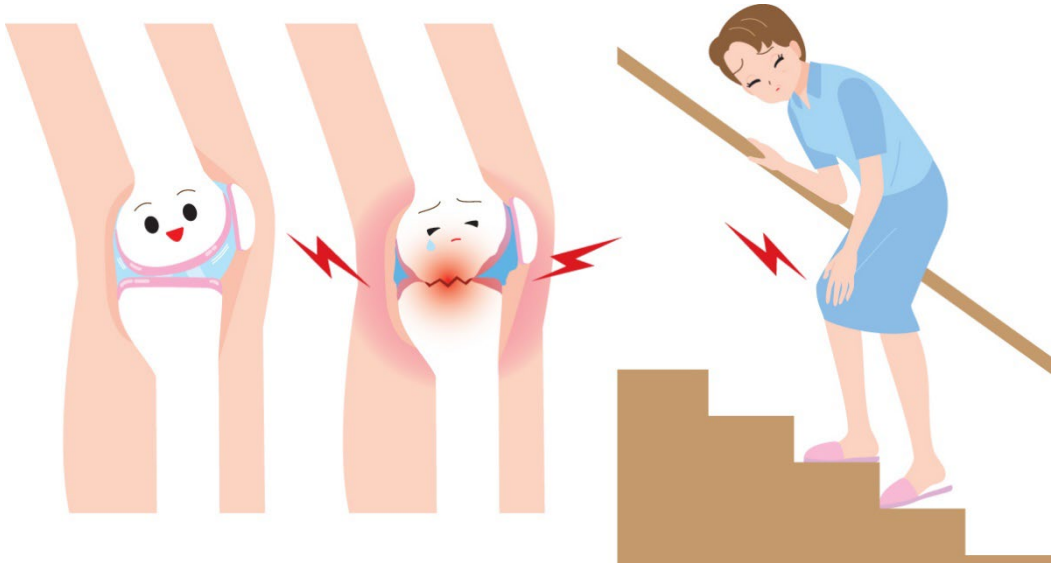
Musculoskeletal – Normal Findings

Opposition bilaterally without pain



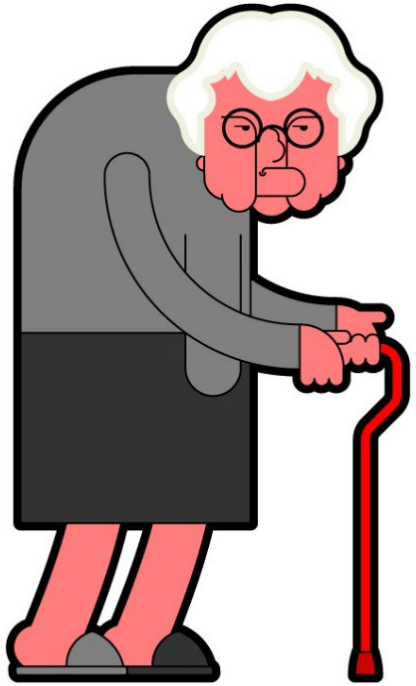
Musculoskeletal – Changes Due to Aging

- Muscles weaken and lose tone
- Bones lose density and become brittle
- Slower muscle and nerve interaction
- Joints stiffen; become less flexible and become painful



Musculoskeletal – Changes Due to Aging

- Height decreases 1 to 2 inches
- Slowed recovery from position changes and sudden movement
- Pain when moving
- Reaction time, movement speed, agility, and endurance decrease
- Poorer response to stimuli



Musculoskeletal – Variation of Normal

- History of falls
- Difficulty with holding or lifting objects
- Loss of muscle strength and tone
- Generalized weakness and tiredness
- Bruising
- Slow and unsteady body movement

Arthritis

Inflammation or swelling of the joints; causes stiffness, pain, and decreased mobility; two common types

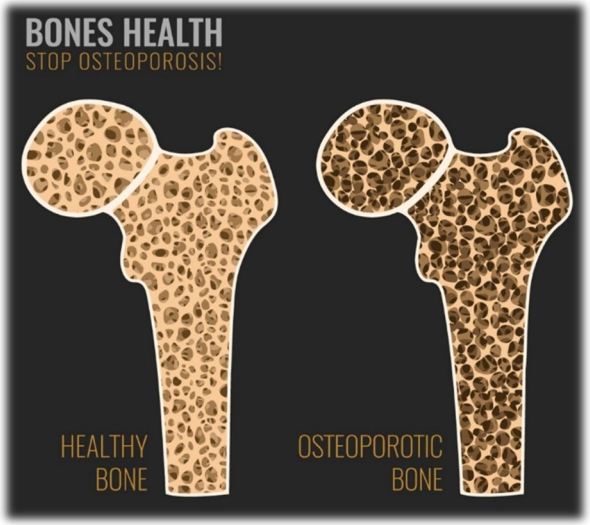
- Osteoarthritis – elderly; may occur with aging or joint injury; usually weight-bearing hips and knees involved
- Rheumatoid arthritis – any age; starting with smaller joints then progressing to larger ones

Arthritis – Nurse Aide's Role

- Encourage activity
- Follow the care plan
- Use of canes and safety rails are helpful
- Encourage independence
- Help maintain self-esteem
- Watch for and report stomach upset and heartburn due to medicines used to treat arthritis

Osteoporosis

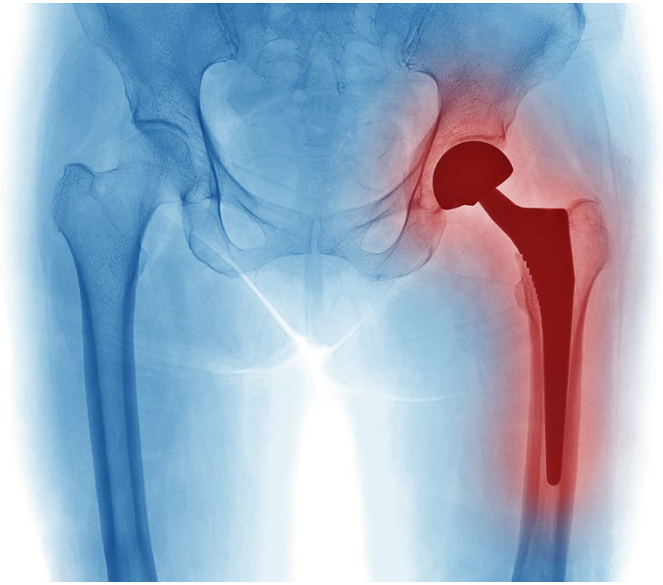
- Bones lose density causing them to become porous and brittle
- Bones break easily
- Low back pain
- Stooped posture
- Becoming shorter
- Potential for broken bones



Fracture

- Broken bone caused by an accident or osteoporosis
- Closed or open break; most common – fractures of arms, wrists, elbows, legs and hips
- The goal is to put bone back in alignment so it can heal; bone tissue grows and fuses area together, but must be allowed to do so by not moving area

Hip Fracture



Total Knee Replacement (TKR)

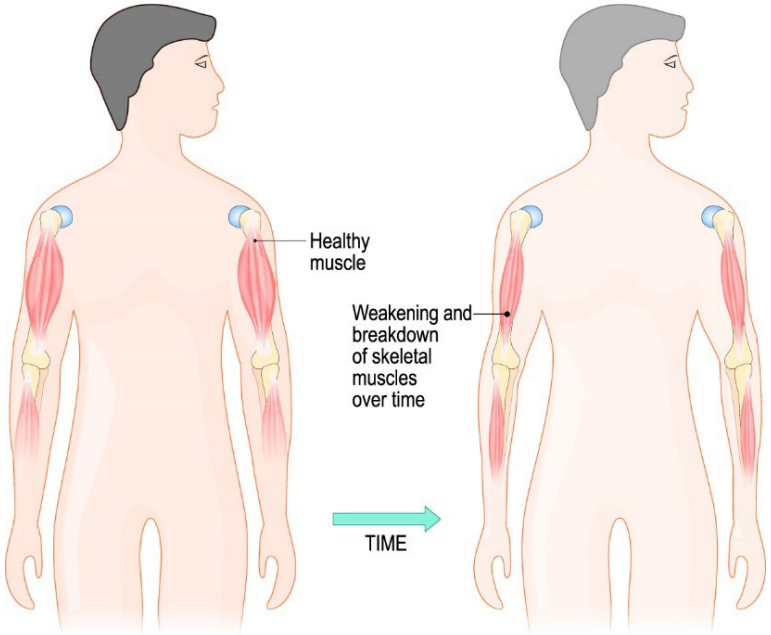
- Replacement of knee with a prosthesis
- Performed to relieve pain and restore mobility damaged by arthritis or injury
- Goals of TKR are to
  - Prevent blood clots by using special stockings and machines as directed care plan and the nurse
  - Speed up recovery
  - Decrease stiffness
  - Increase range of motion

Amputation

- Surgical removal of body part (i.e. arm, hand, leg, foot)
- Disease or accidents are common causes
- Nurse Aide should
  - Assist with activities of daily living
  - Provide support if phantom statements made; do not argue
  - Assist with position changes and range of motion exercises
  - Follow care plan for prosthetic care

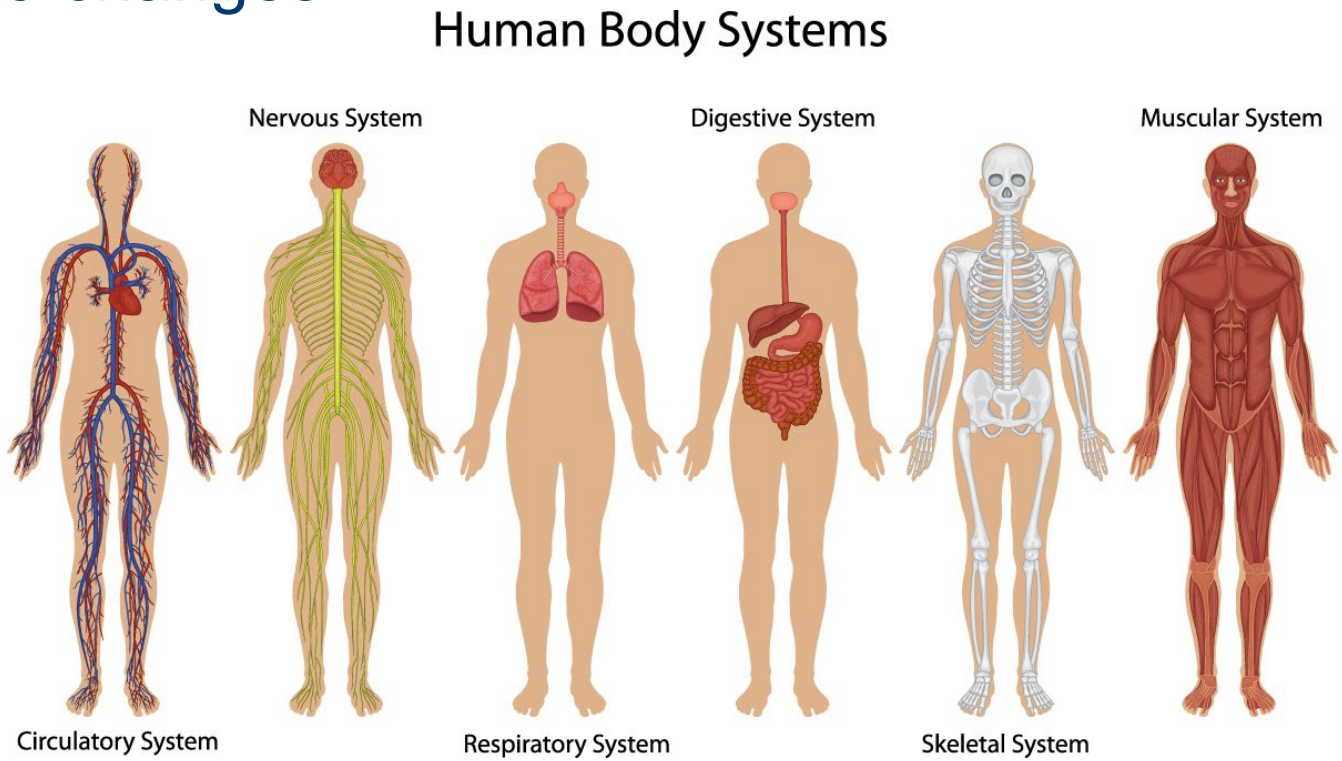
Contracture and Muscle Atrophy

- Contracture – muscle or tendon shortens, freezes, becomes inflexible; permanent disability
- Muscle atrophy – muscle wastes away, decreases in size; becomes weak, from disuse
- Prevention of these two conditions is critical



Nervous System – Overview

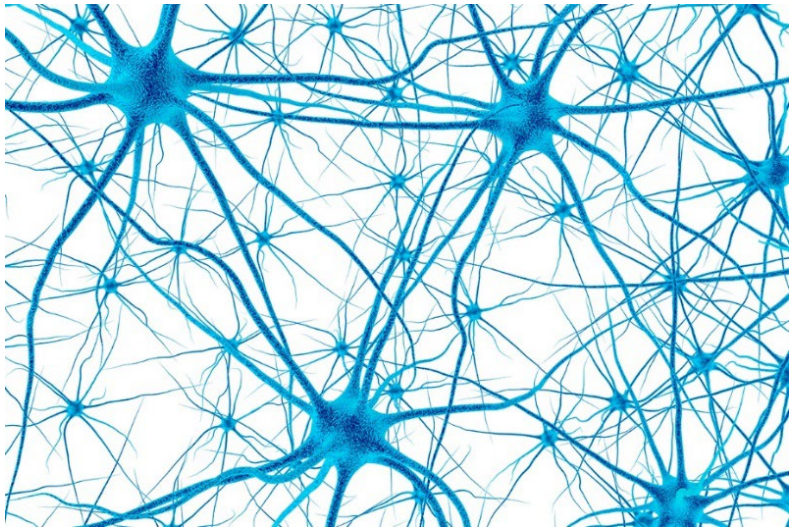
- Controls and coordinates all body functions
- Reflex centers for heartbeat and breathing
- Senses and interprets information and responds to changes



Nervous System

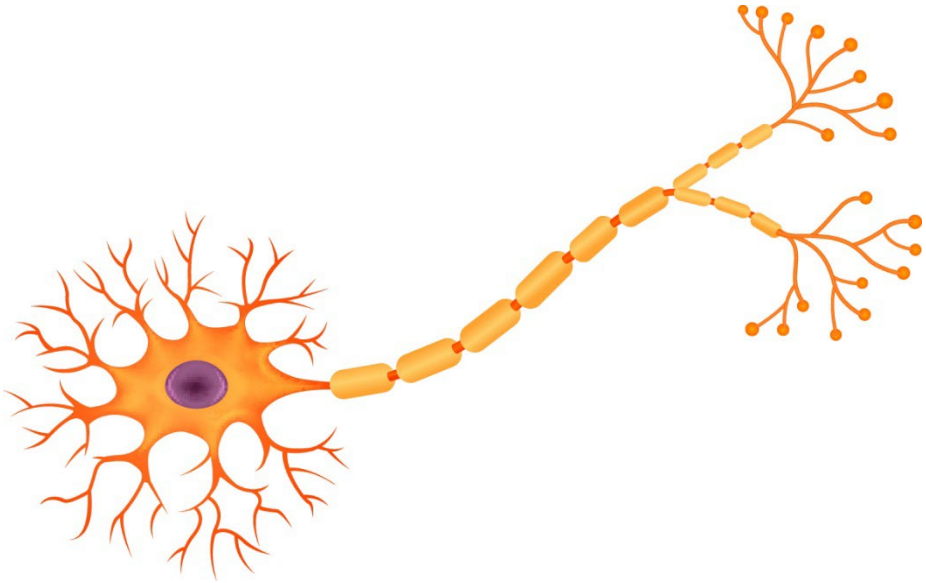
Consists of two main divisions

1. Central nervous system (CNS) – brain and spinal cord
2. Peripheral nervous system – includes nerves that travel throughout the body

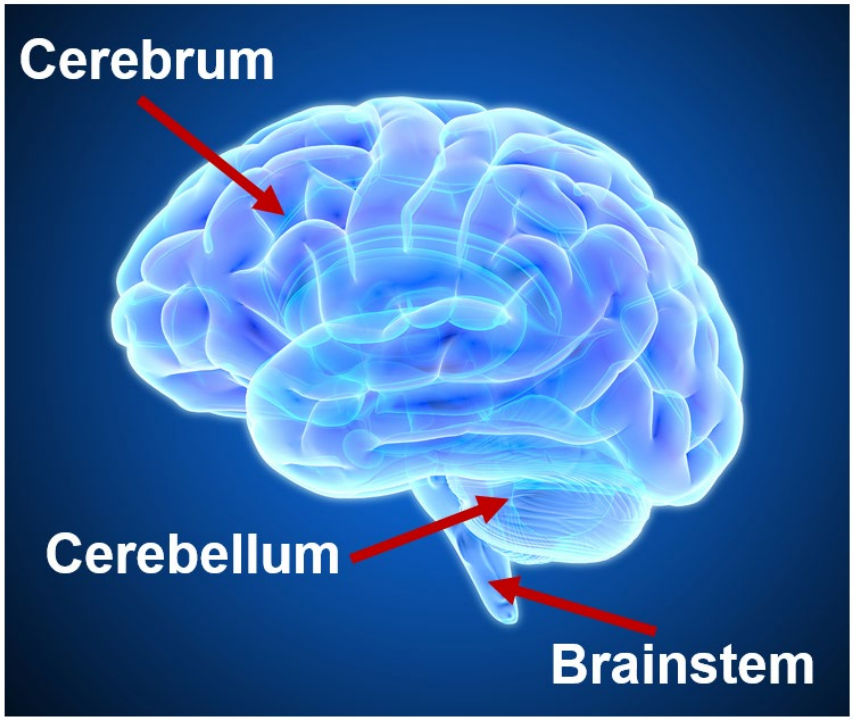


The Neuron (Nerve Cell)

- Basic unit of nerves and the nervous system
- Carries messages or impulses through spinal cord to and from the brain



The Brain – Structure and Function



Brain – The Cerebrum

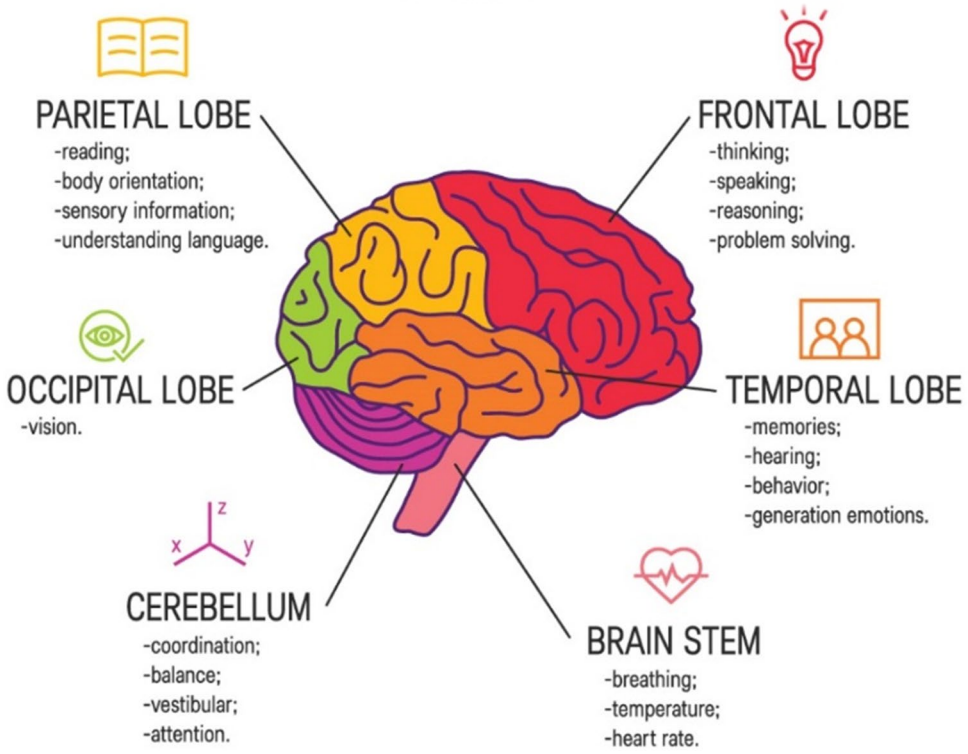
- Divided into right and left hemispheres
  - Right hemisphere controls movement and function of left side
  - Left hemisphere controls movement and function of right side
- Any illness or injury to right hemisphere affects function of left side
- Any illness or injury to left hemisphere affects function of right side

Brain – The Cerebrum

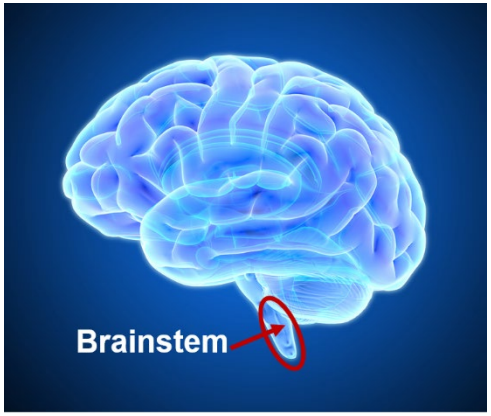
Cerebral cortex – outer layer; ideas, thinking, analysis, judgment, emotions, memory occurs, guides speech, interprets messages from senses, controls voluntary muscle movement

Each side of your brain contains four lobes

- Frontal
- Temporal
- Parietal
- Occipital

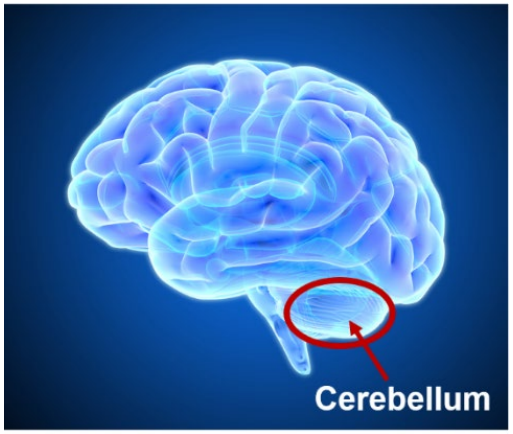


The Brain



Brain Stem

- Regulatory center
- Controls heart rate, breathing, swallowing, opening/closing blood vessels



Cerebellum

- Controls balance and regulates voluntary muscles
- Produces and coordinates smooth movements

Spinal Cord and Sensory Organs

Spinal Cord

- Located within the spine
- Connected to the brain
- Conducts messages between the brain and the body by pathways

Sensory Organs

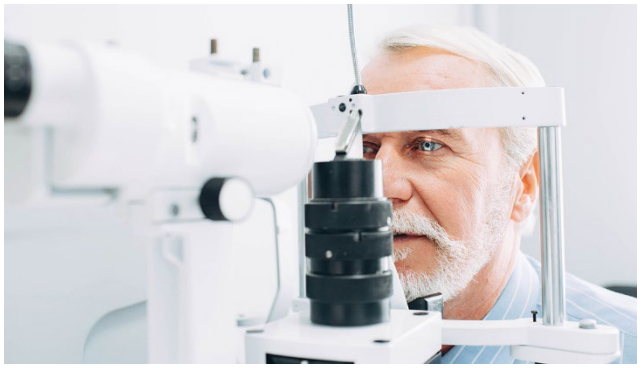
- Include skin, tongue, nose, eyes, and ears
- Receives impulses from environment and relays impulses to brain

Nervous System– Normal Findings

- Alert and oriented, with clear short-term/ long-term memory
- Sensory function intact
- Ability to sense heat, cold, pain
- Straight gait; coordination of limbs
- Reflexes present

Nervous System – Changes Due to Aging

- Some hearing loss
- Appetite decreases
- Less tear production
- Vision decreases



- Problems seeing blue and green
- Pupils less responsive to light
- Changes in memory; most likely with short-term memory

Nervous System– Changes Due to Aging

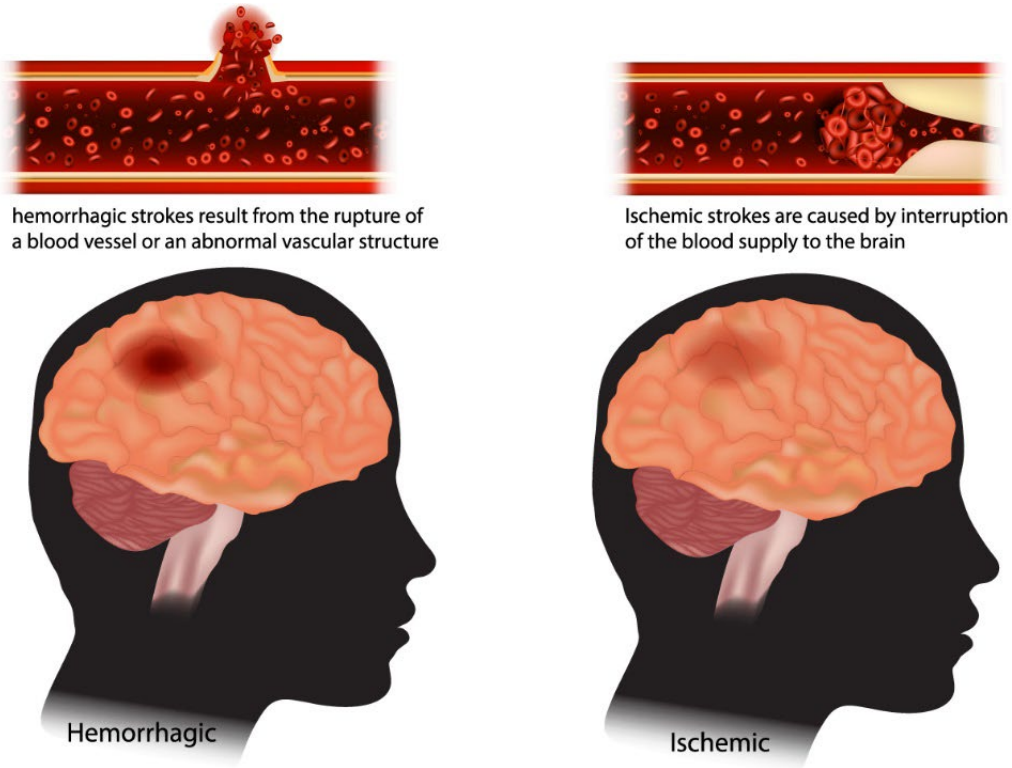
- Loss of nerve/brain cells
- Decreased sensitivity to heat and cold
- Slowed response and reflex time
- Reduced sense of touch
- Reduced sensitivity to pain
- Reduced blood flow to brain
- Forgetfulness
- Decreased function in senses

Nervous System – Variation in Normal

- Changes in speech, vision, or hearing
- Loss of feeling or inability to move one side of body
- Numbness, dizziness, nausea
- Jerking motions or tremors
- Changes in gait or movement
- Paralysis
- Seizures
- Confusion

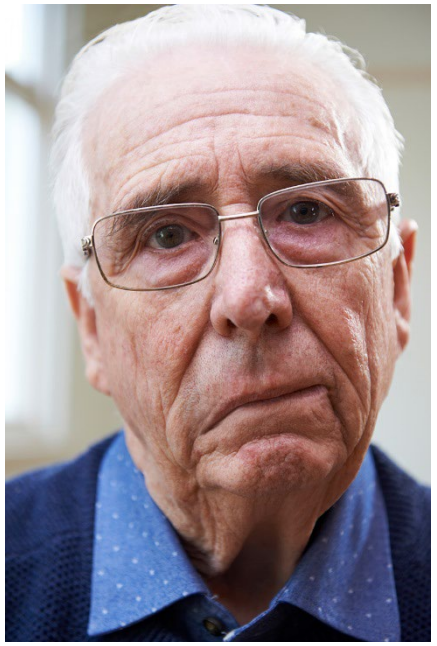
Stroke - Cerebrovascular Accident (CVA)

- A blood vessel leaks or breaks in the brain
- When oxygen to an area is disrupted the blood supply to part of the brain is blocked



Stroke - Cerebrovascular Accident (CVA)

- Severity is impacted by area of brain and size of the area affected
- F.A.S.T.
  - **F** - Face drooping
  - **A** - Arm weakness
  - **S** - Speech difficulty
  - **T** - Time to call nurse/911
- Numbness
- Confusion
- Trouble seeing and/or walking
- Severe headache

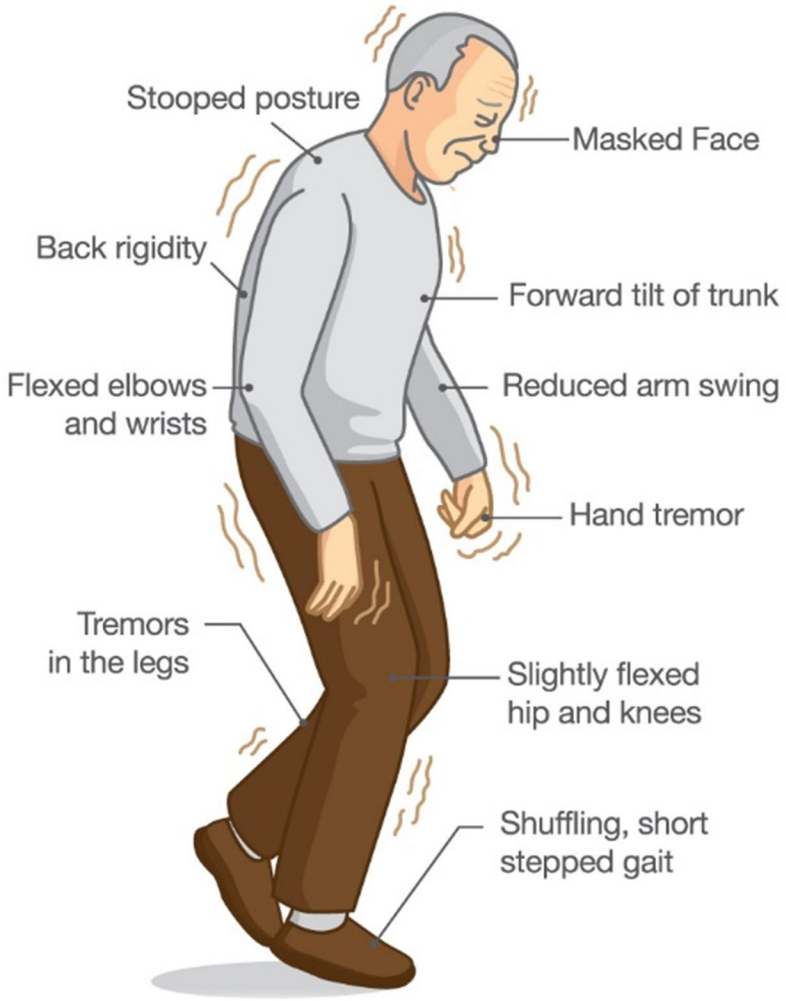


After the Stroke, Resident May Experience

- Hemiplegia
- Hemiparesis
- Expressive aphasia
- Receptive aphasia
- Emotional lability
- Loss of sensations
- Loss of bowel and bladder control
- Cognitive impairment
- Dysphagia

Stroke – Nurse Aide's Role

Parkinson's Disease



Progressive incurable disease that causes a part of the brain to degenerate

Head and Spinal Cord Injuries

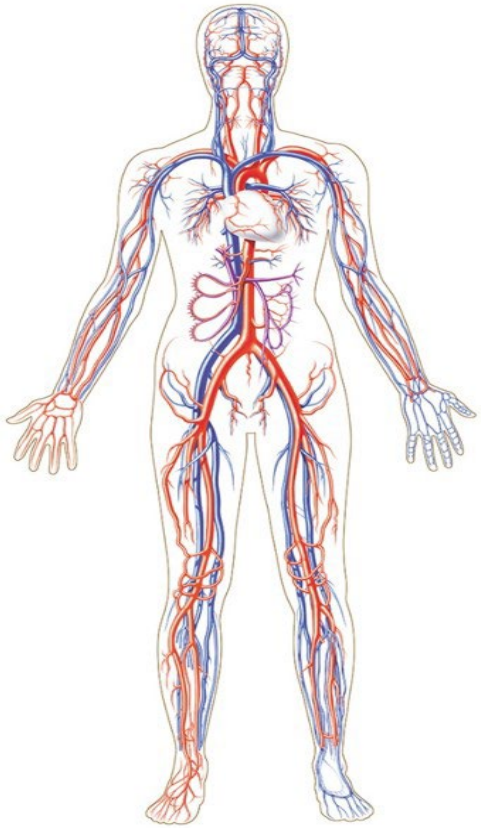
- Causes may include diving accidents, sports injuries, motor vehicle accidents, and war injuries
- Injuries range from mild concussion to coma, paralysis, and death

Head and Spinal Cord Injuries

- Head injuries may cause permanent brain damage
- Disabilities are related to the part of brain injured
- Severity of spinal cord injuries depend on level and force of injury to spinal cord
- Higher the injury, greater the loss of function

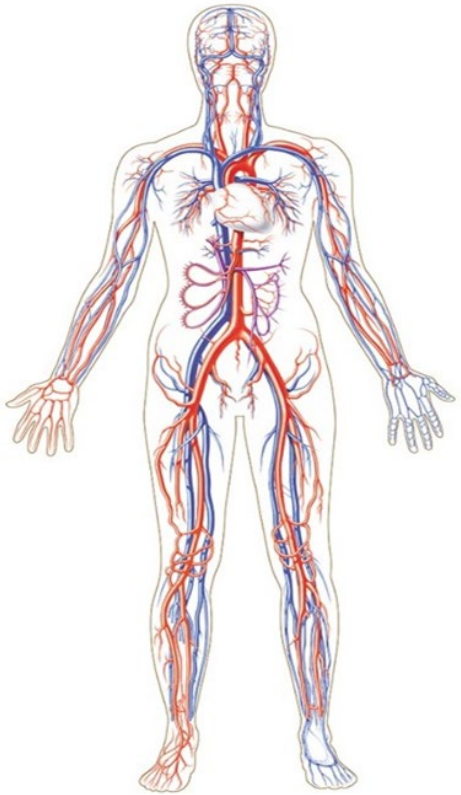
Cardiovascular System

- Also called the circulatory system
- The continuous movement of blood through the body

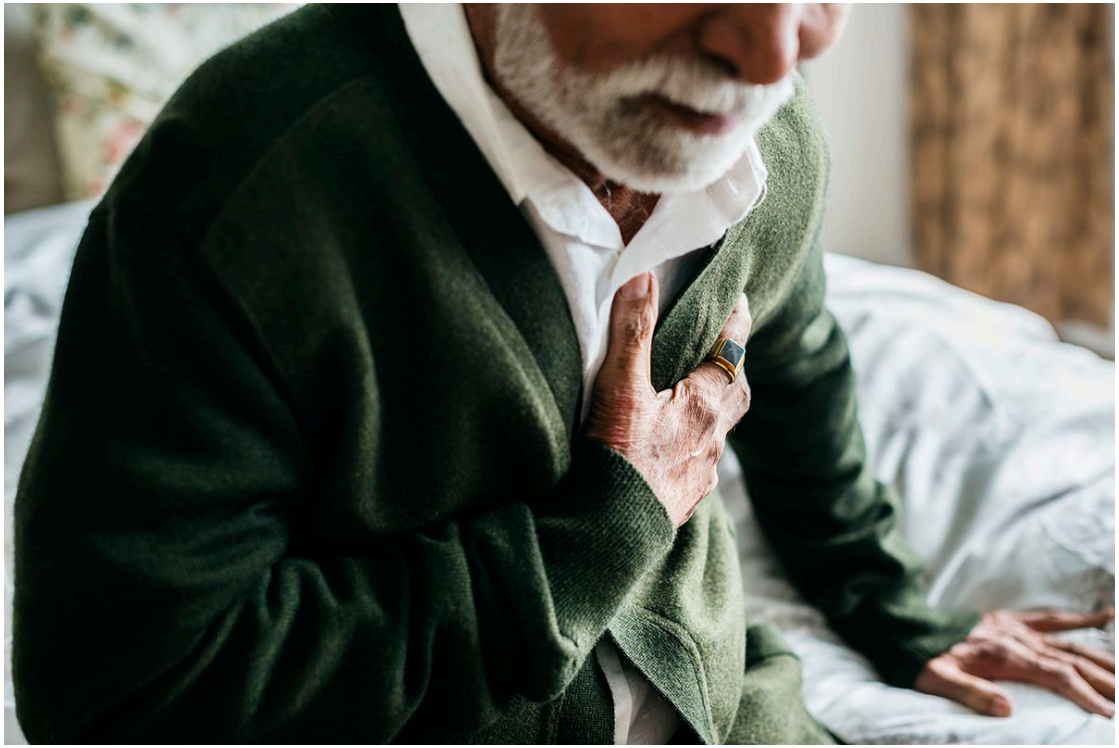


Cardiovascular System-Changes Due to Aging

- Heart muscle less efficient
- Blood pumps with less force
- Arteries lose elasticity and become narrow
- Blood pressure increases



Cardiovascular – Variation of Normal

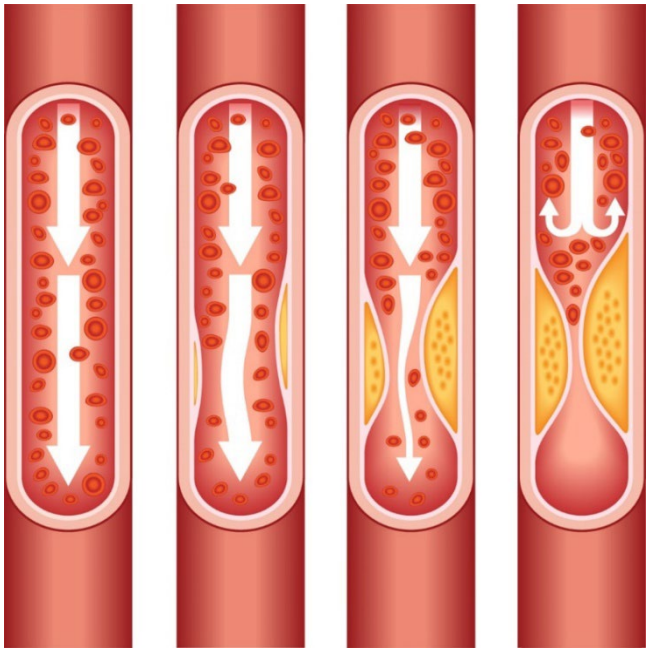


Cardiovascular – Variation of Normal

- Bradycardia – less than 60 beats/minute
- Tachycardia – more than 100 beats/minutes
- Irregular pulse rhythm
- Swelling of hands and feet
- Pale or bluish lips, hands, or feet
- Weakness and tiredness
- Weight gain

Hypertension (High Blood Pressure)

- Major cause is atherosclerosis or “hardening of the arteries”
- Arteries harden due to plaque build-up from fatty deposits
- May complain of headache, blurred vision, and dizziness



Abnormal Blood Pressure Ranges

- Elevated blood pressure
  Systolic – 120 mm Hg to 129 mm Hg AND
  Diastolic – less than 80 mm Hg

- Hypertension
  Systolic – 130 mm Hg or higher OR
  Diastolic – 80 mm Hg or higher

- Hypotension
  Systolic – less than 90 mm Hg
  Diastolic – less than 60 mm Hg

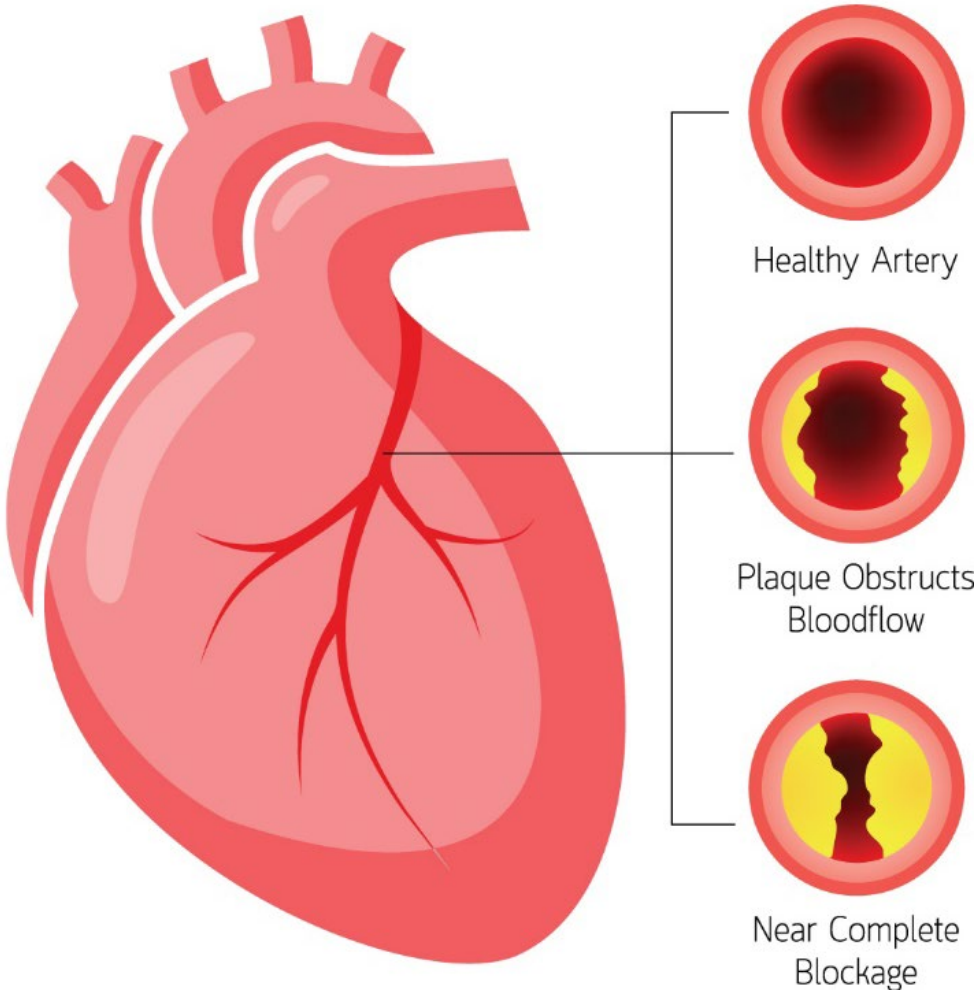
Orthostatic Hypotension

- Abnormal low blood pressure that occurs when resident suddenly stands up; complains of feeling weak, dizzy, faint and seeing spots before the eyes
- May be a complication from being on bed rest

Orthostatic Hypotension – Prevention

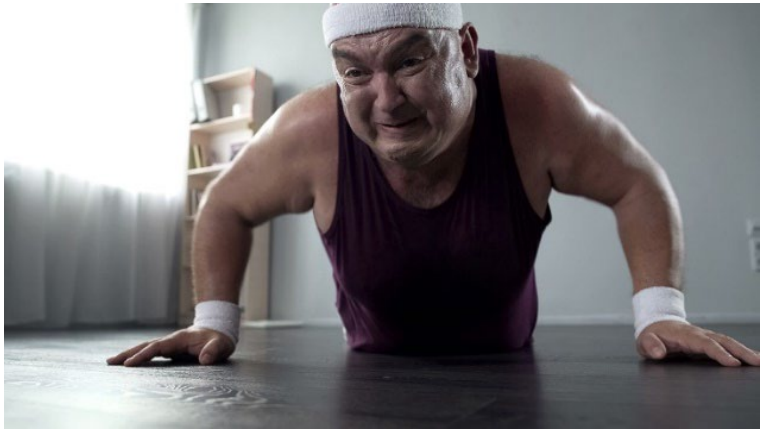
- Per care plan, increase activity in stages
- Before standing, while sitting on side of bed (dangling), have resident cough/deep breathe and move legs back-and-forth in circles, 1 to 5 minutes
- Ask resident to report weakness, dizziness, feeling faint, and seeing spots
- May need 2 people to assist resident with activity

Coronary Artery Disease (CAD)



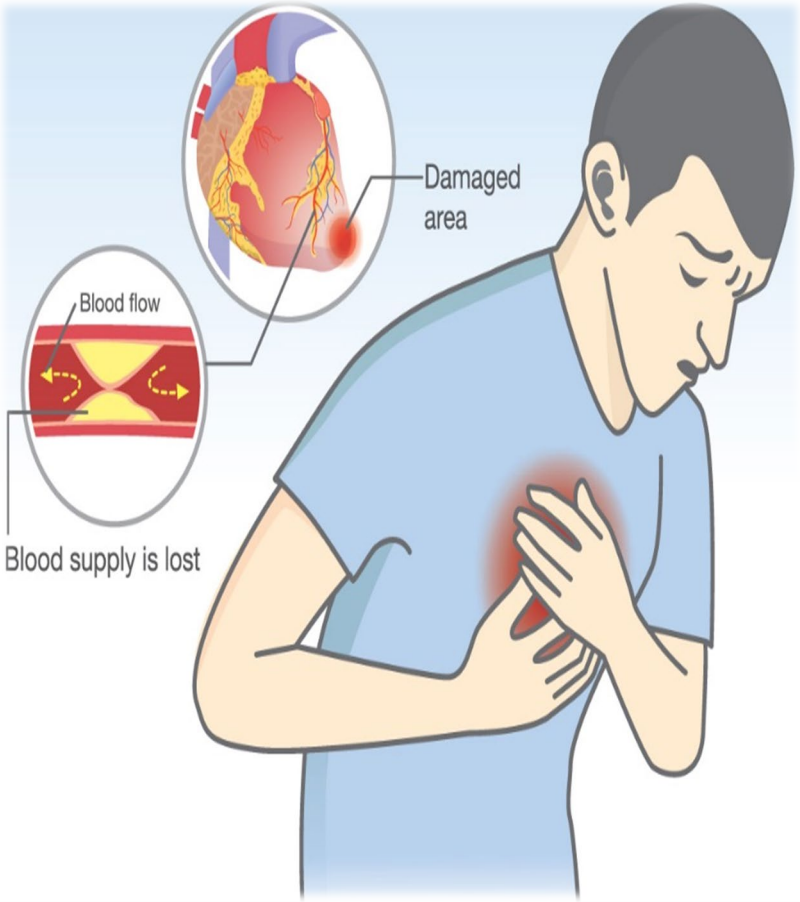
Angina Pectoris (Angina)

- Occurs when heart muscle is not getting enough oxygen
- Chest pain, tightness of chest, pain radiating up the jaw, down the left arm, may perspire and become short of breath
- Exercise, stress, excitement, or digesting a big meal requires additional oxygen



Myocardial Infarction (MI) - Heart Attack

- An emergency when all or part of the blood flow to the heart muscle is blocked
- Oxygen and nutrients cannot reach cells in the area
- Waste products are not removed so muscle cells in the area die
- Area may be small or large



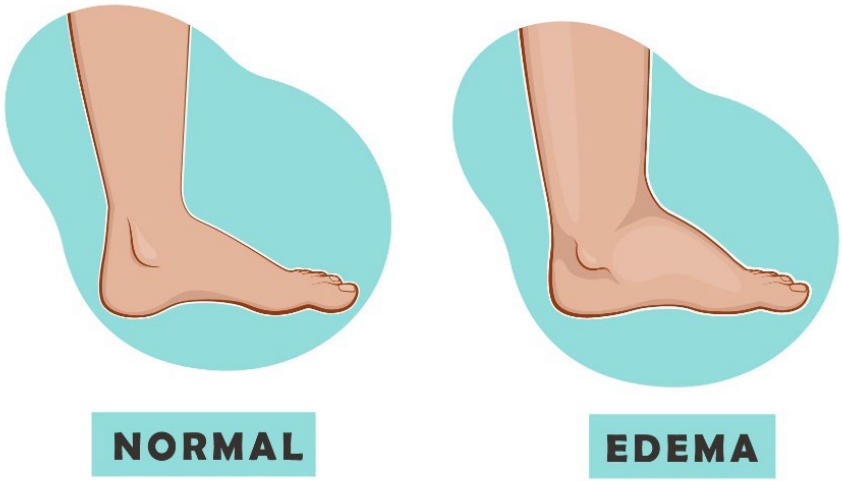
Peripheral Vascular Disease (PVD)

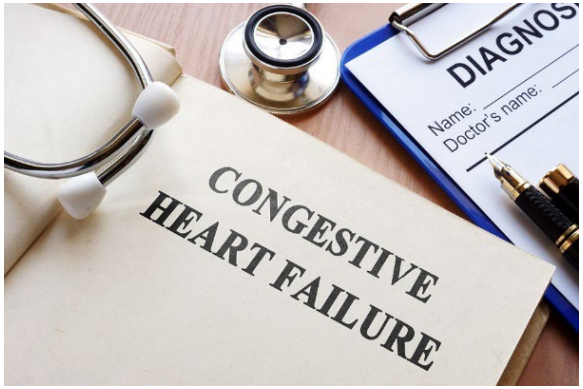
Poor circulation of legs, feet, arms, hands due to fatty deposits that harden in blood vessels

- Signs and Symptoms – nail beds and feet pale or blue, swelling in hands and feet, ulcers of legs and feet, pain while walking
- Follow care plan when using elastic stockings

Congestive Heart Failure (CHF)

- When one or both sides of the heart stops pumping blood effectively
- Can cause severe damage to the heart muscle
- Signs and symptoms may include shortness of breath, fatigue, edema or swelling of feet, ankles, legs, abdomen and neck veins





Edema

- When fluid intake is greater than fluid output, edema occurs causing body tissues to swell with water
- May occur from heart or kidney disease
- Nurse aide's role includes:
  - Obtain accurate weights per order
  - Increase pillows per resident's request
  - Restrict fluids per doctor's order
  - Measure and record I&O accurately, if ordered
  - Observe for and report signs/symptoms to the nurse

Cardiovascular System – Nurse Aide's Role

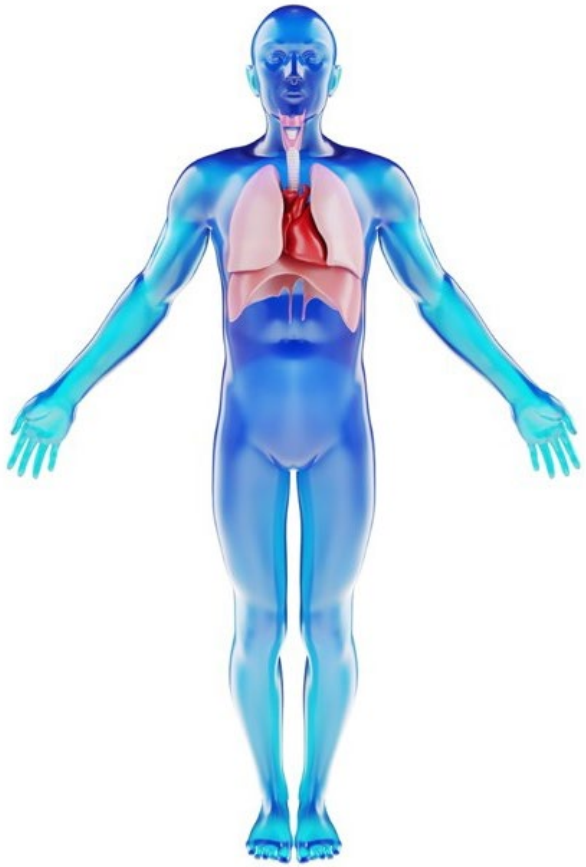
- Monitor vital signs, report abnormal values
- Assist with special diet needs; measure I&O
- Provide rest periods
- Report complaints of chest pain immediately
- Reduce stressful situations

Respiratory – Structure and Function

Involves the breathing in of oxygen (inspiration) and the breathing out of carbon dioxide (expiration)

3 Regions

- Thorax
- Upper Respiratory Tract
- Lower Respiratory Tract



Respiratory – Changes Due to Aging

- Respiratory muscles weaken
- Lung tissue becomes less elastic
- Shortness of breath with exertion
- Lung capacity decreases
- Oxygen in blood decreases
- Muscles of diaphragm become weaker
- Limited expansion of chest

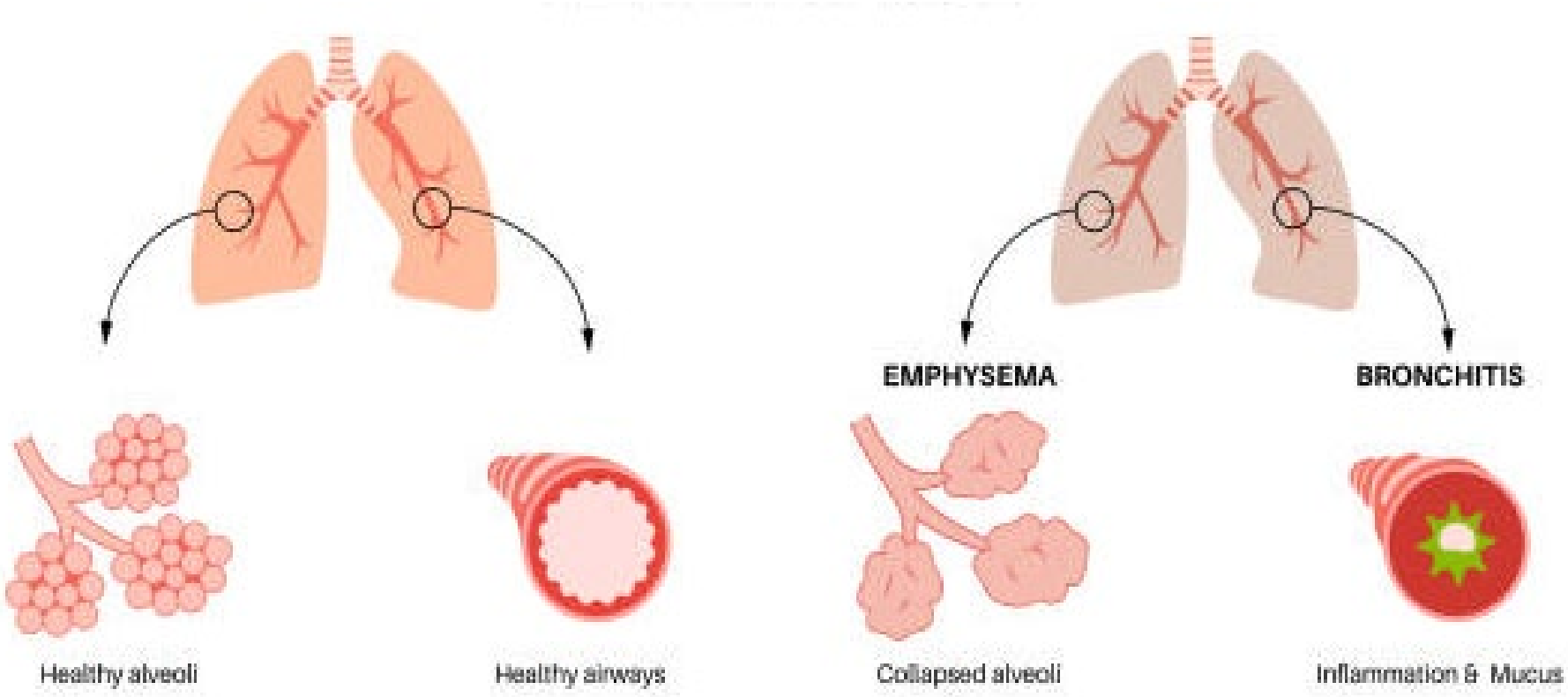
Respiratory – Variation of Normal

- Shallow breathing or breathing through pursed lips
- Coughing or wheezing
- Nasal congestion or discharge
- Productive cough
- Noisy respirations; gasping for breaths
- Too slow or too fast respiratory rate
- Hypoventilation or hyperventilation
- Need to sit after mild exertion

Respiratory – Key Terms

- Dyspnea
- Bradypnea
- Tachypnea
- Apnea
- Cheyne-Stokes
- Cyanosis

Chronic Obstructive Pulmonary Disease (COPD)

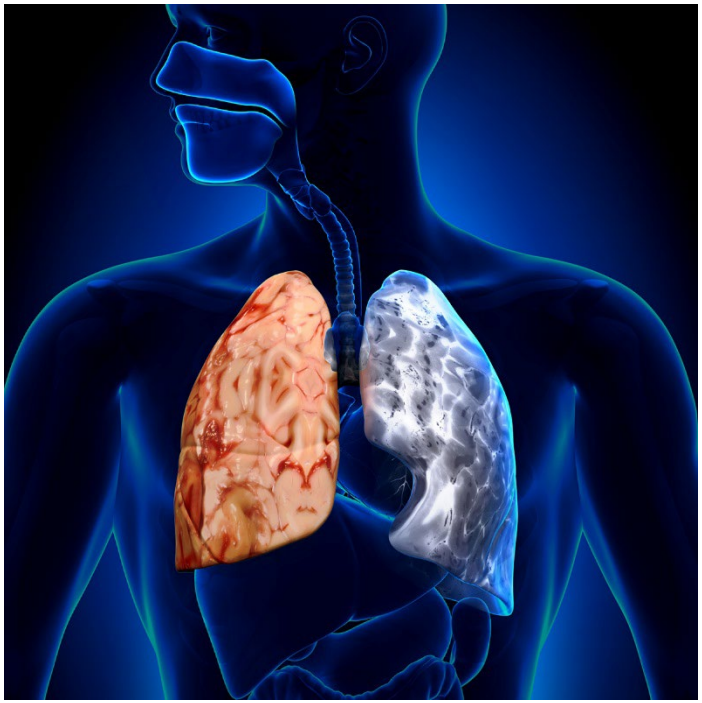


Chronic progressive disease causes trouble breathing and difficulty forcing air out of lungs

COPD

- Residents with chronic lung disease may live in constant fear of not being able to breathe causing them to sit upright in attempt to improve lung expansion
- Residents feel out of control; fear suffocation

COPD Lung of Smoker



COPD Symptoms

- Chronic cough or wheeze
- Difficulty breathing
- Shortness of breath with exertion
- Pale cyanotic reddish-purple skin
- Confusion
- Weakness
- Difficulty in finishing meal
- Fear and anxiety

COPD – Nurse Aide's Role

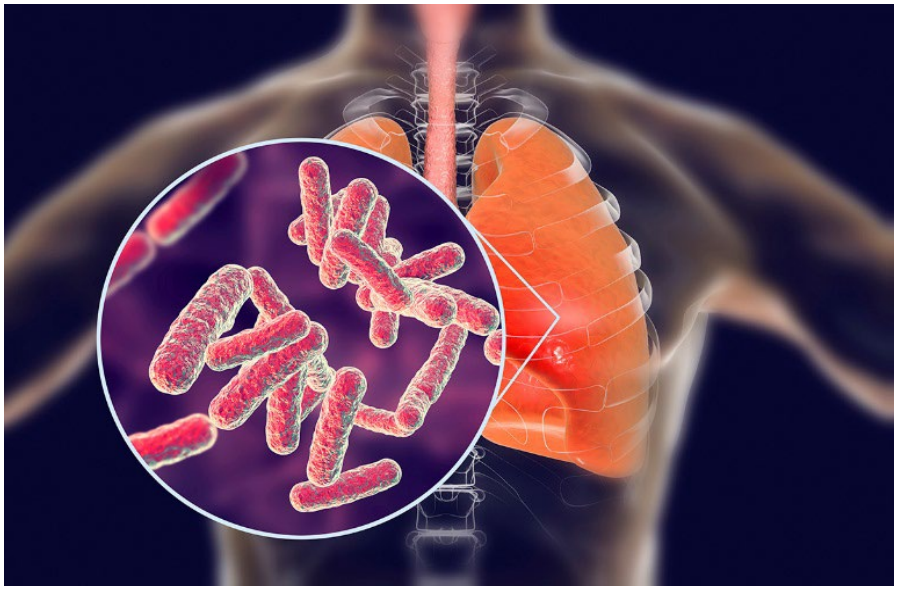
- Help sit up or lean forward supported with pillows
- Offer fluids and small, frequent meals
- Encourage pursed-lip breathing
- Observe oxygen in use (NEVER adjust)
- Be supportive of fears
- Follow infection prevention principles
- Encourage rest periods

What to Report to Nurse of COPD Resident

- Signs/symptoms of colds or illness
- Changes in breathing, lung secretions
- Changes in mental state
- Excessive weight gain
- Increasing dependency on staff and family

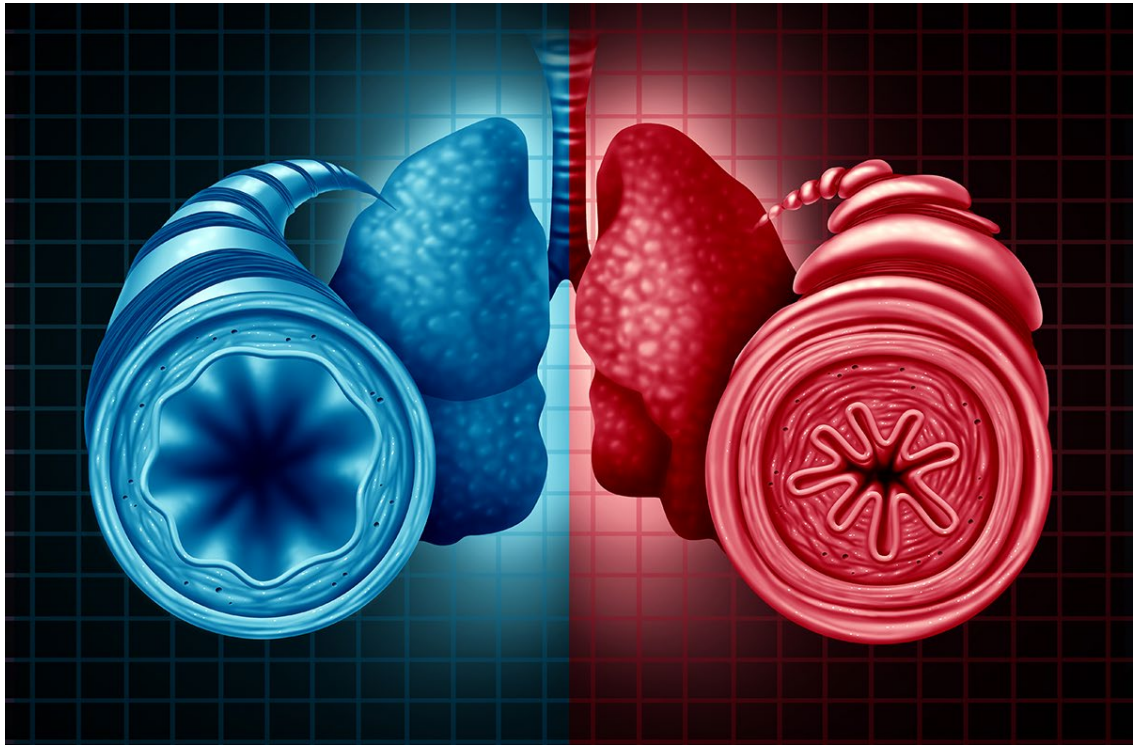
Pneumonia

- Acute infection of lung or lungs caused by bacteria, virus, or fungus
- Resident with COPD is at greater risk for developing pneumonia



A Person with Asthma

Healthy (blue) and unhealthy (red) bronchial tubes; unhealthy bronchial tube results in a constricted breathing problem



Asthma

- Chronic inflammatory disease, occurs when respiratory system is hyperreactive to irritants
- When bronchi become irritated, they constrict, making it difficult to breathe
- In response to irritation and inflammation, mucus membranes produce thick mucus further inhibiting breathing
- Air is trapped in lungs causing coughing and wheezing

Upper Respiratory Infection (Cold)

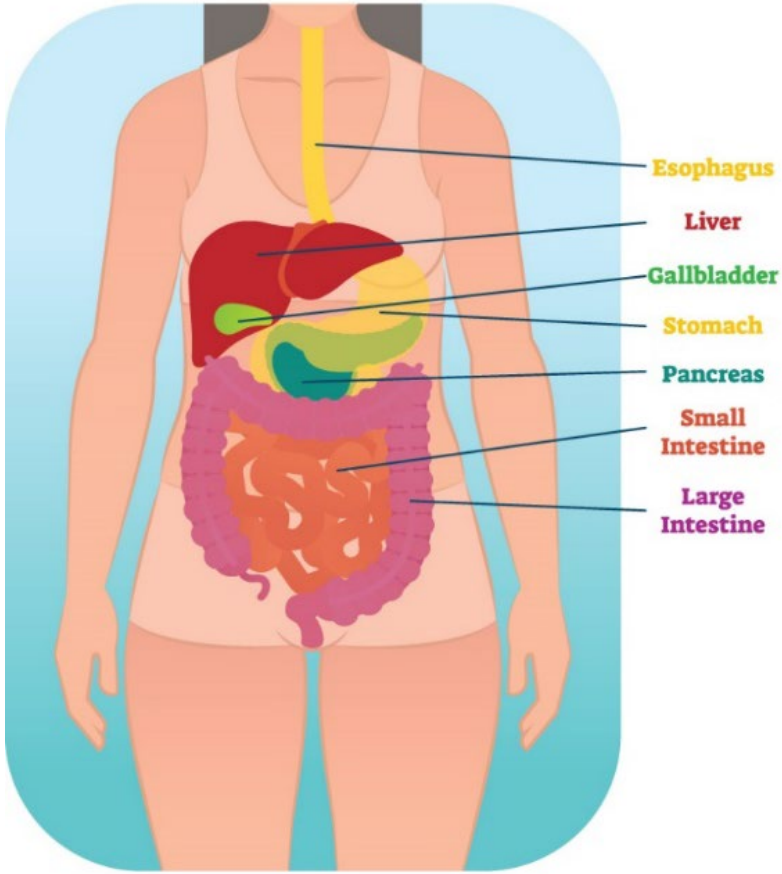
- Viral infection of nostrils, nasal cavity, sinuses, and throat
- Signs – nasal drainage, sneezing, sore throat, fever, and tiredness
- Remedy – body's immune system, fluids, and rest

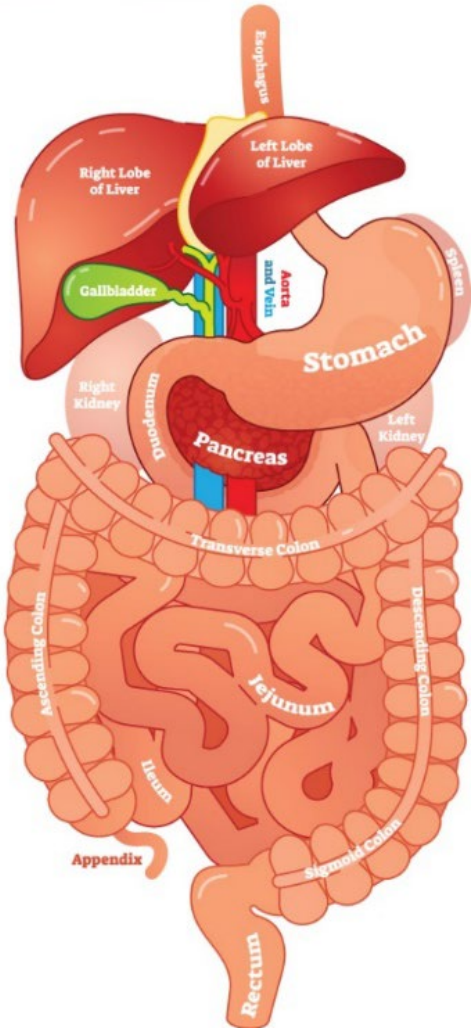
Respiratory System– Nurse Aide's Role

- Provide rest periods at intervals
- Encourage exercise and regular movement
- Assist with deep breathing exercises
- Limit exposure to smoke, polluted air, or noxious odors by residents with respiratory conditions
- Position residents in a manner to maximize lung expansion

Digestive System – Overview

Known as the gastrointestinal (GI) system



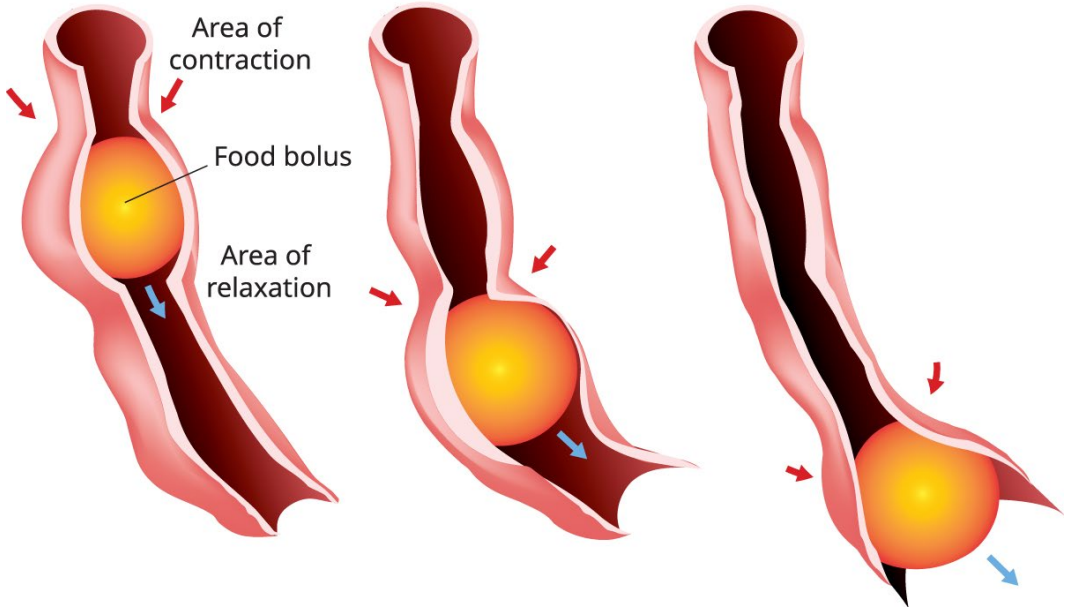


Digestive System – Structure and Function

- Upper GI structures – mouth, pharynx, esophagus and stomach
- Lower GI structures – small intestines and large intestines
- Accessory organs include teeth, tongue, salivary glands, liver, gall bladder, and pancreas
- GI System digests food, absorbs nutrients, and eliminates waste

Peristalsis

Involuntary contractions that move food through digestive system



Bowel Movement (BM)

- Feces or stool
- Involves the movement of feces from the large intestines out of the body through the anus
- Semi-solid material made of water, solid waste, bacteria, and mucus

Digestive System – Normal Findings

- Adequate intake of a well-balanced diet, with fluids
- Passage of a brown, soft, formed, tubular shaped stool (feces) without pain
- Flat abdomen with active bowel sounds

Digestive System – Changes Due to Aging

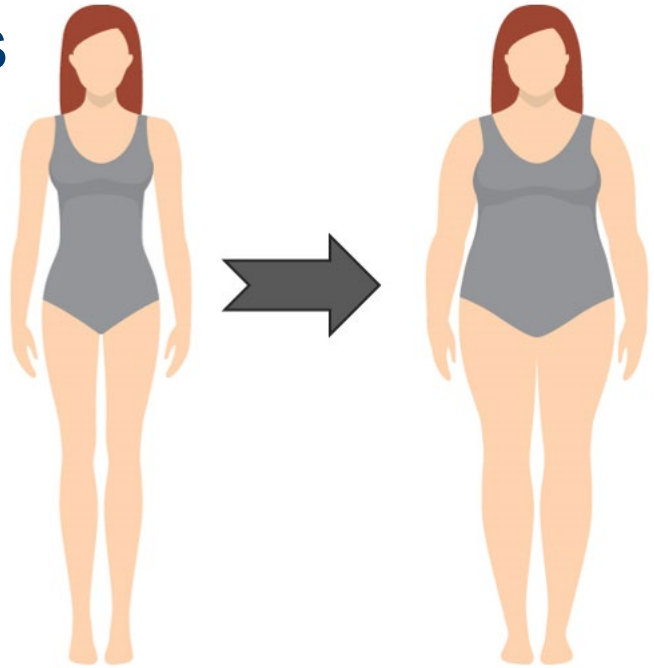
- Decreased taste buds
- Slowing of peristalsis
- Slower absorption of nutrients
- Loss of bowel muscle tone
- Loss of sphincter muscle tone
- Digestion takes longer and less efficient
- Thinning of stomach lining

Digestive System – Changes Due to Aging

- Decrease in saliva
- Decrease in amount of digestive enzymes
- Decrease in appetite
- Loss of teeth
- Altered taste and smell
- Proteins, vitamins, and minerals are not absorbed as well

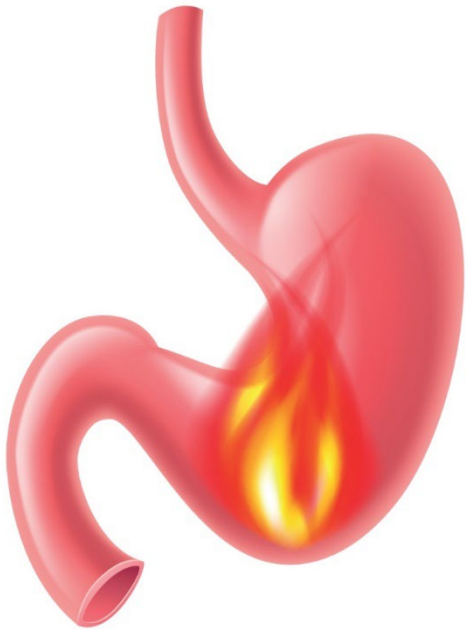
Digestive System– Variation of Normal

- Difficulty swallowing or chewing
- Poor intake of diet and fluids
- Weight gain or loss
- Loss of appetite
- Abdominal pain and cramping
- Blood, pus, mucus, or other discharge in stool



Digestive System – Variation of Normal

- Nausea and vomiting
- Heartburn
- Diarrhea or constipation
- Pain when having a bowel movement
- Whitish, black, red, or clay colored stool
- Incontinence



Gastric Ulcer and Gastritis

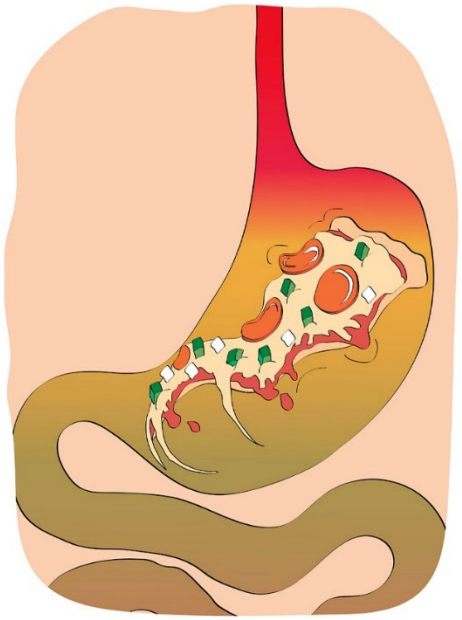
- Gastric (peptic) ulcers – raw sores in the stomach caused by excessive acid secretion that may cause bleeding
- Gastritis – inflammation of the lining of the stomach

Ulcerative Colitis

- Chronic inflammatory disease of large intestine
- Serious condition that can result in a colostomy

Gastroesophageal Reflux Disease (GERD)

- Contents of stomach back up into esophagus and can damage the lining
- Heartburn most common symptom



Constipation

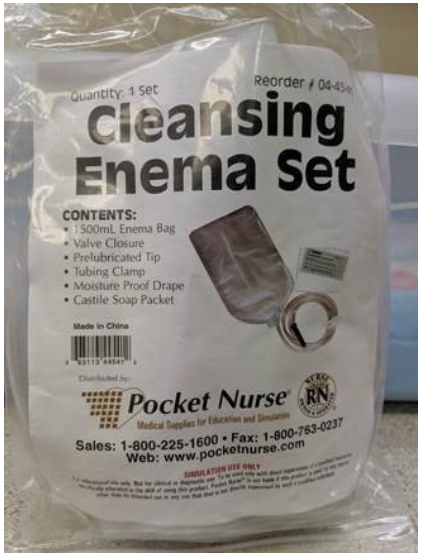
- Occurs when stool moves too slowly through the intestine
- Signs
  - Abdominal swelling
  - Flatus (passing gas)
  - Irritability
  - Verbalizing by resident of no recent bowel movement
- Results from decreased fluid intake, poor diet, inactivity, medications, aging, certain diseases, or not taking the time to have a bowel movement

Fecal Impaction

- Hard stool stuck in the rectum and cannot be expelled, resulting in ongoing constipation
- Signs
  - No stool for several days
  - Oozing of liquid stool
  - Cramping
  - Abdominal distention (swelling)
  - Pain in rectum
- Nurse aides are not allowed to remove fecal impactions

Enema

- Specific amount of water that may or may not have an additive and is inserted into the colon to stimulate passage of stool
- Doctor will write order for type and amount of fluid
- Four different types
  - Tap water
  - Soapsuds
  - Saline
  - Commercially prepared



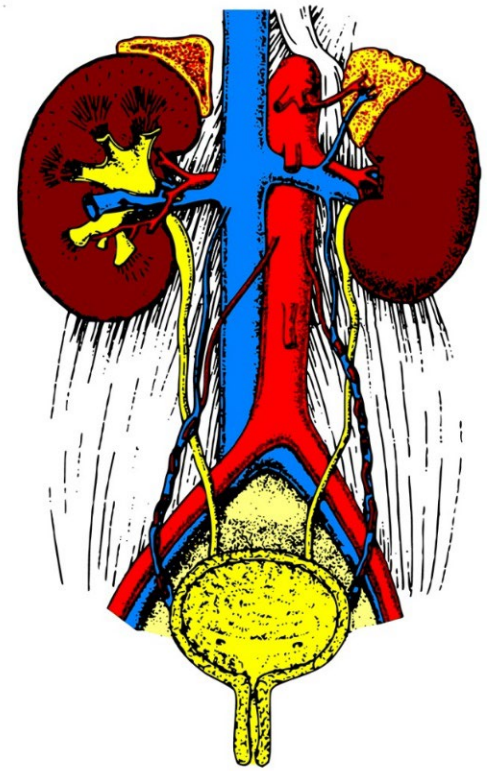
Digestive System – Nurse Aide's Role

- Make sure dentures are in place during meals
- Observe for choking
- Provide fluids with meals
- Keep resident clean and perineal dry
- During elimination provide privacy and do not rush
- Encourage intake of fiber and fluids
- Regular physical activity
- Facilitate ideal position for elimination

Bowel habits for each resident are individual and personal

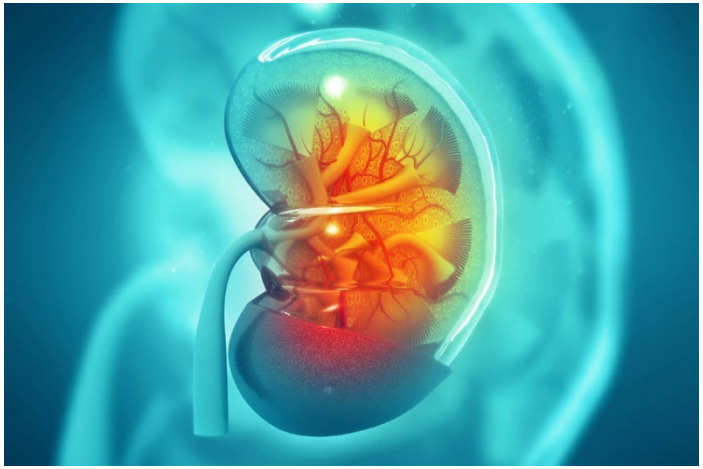
Urinary System– Overview

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



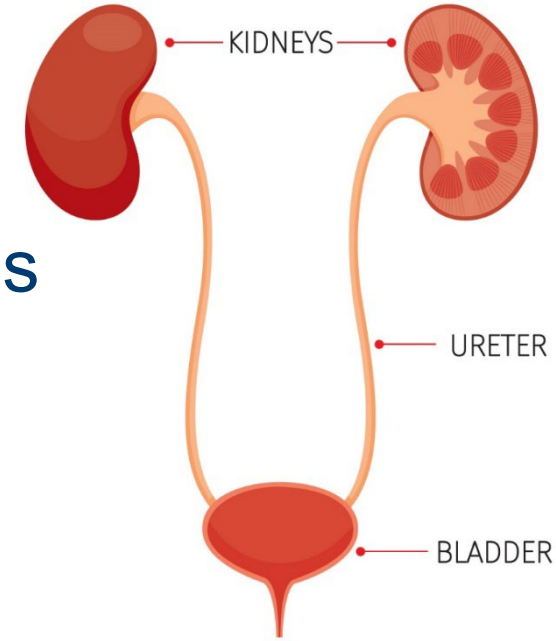
Kidneys – Structure and Function

- Bean-shaped paired organs
- Located at back of abdominal cavity, slightly above waist
- About four or five inches long and one inch thick
- Filter waste and produce urine
- Help maintain water balance and blood pressure
- Regulate electrolytes

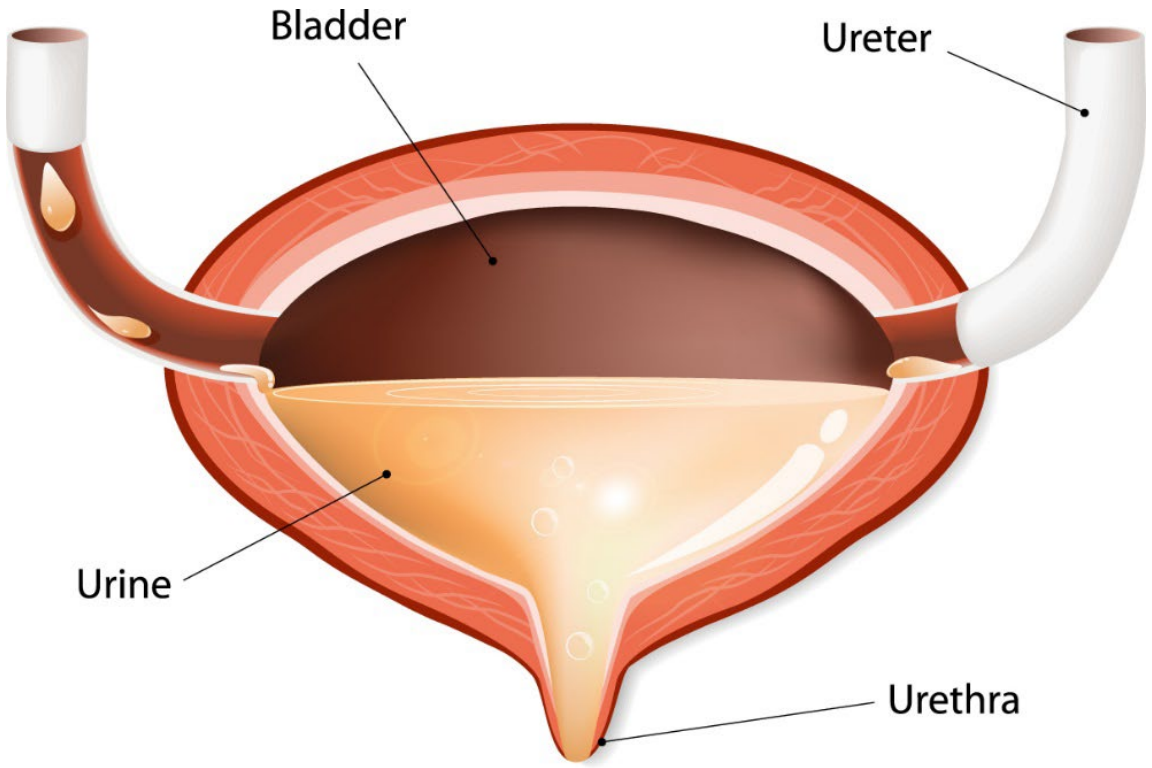


Ureters and Bladder – Structure and Function

- Ureters
  - Narrow tubes
  - Connect kidneys to urinary bladder
  - About a foot (12 inches) long
- Urinary Bladder
  - Muscular sac
  - Stores urine until it passes



Urethra – Structure and Function

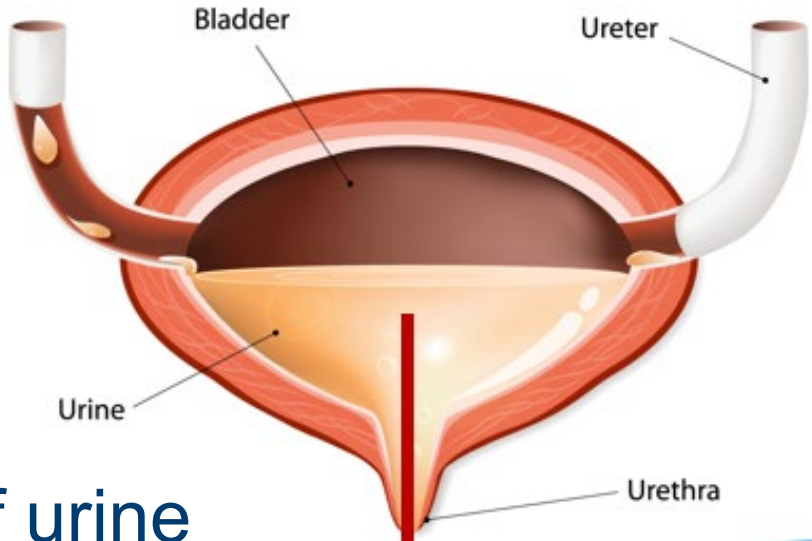


- A tube located between urinary bladder to the outside
- About seven or eight inches long in males
- About one and a half inches long in females

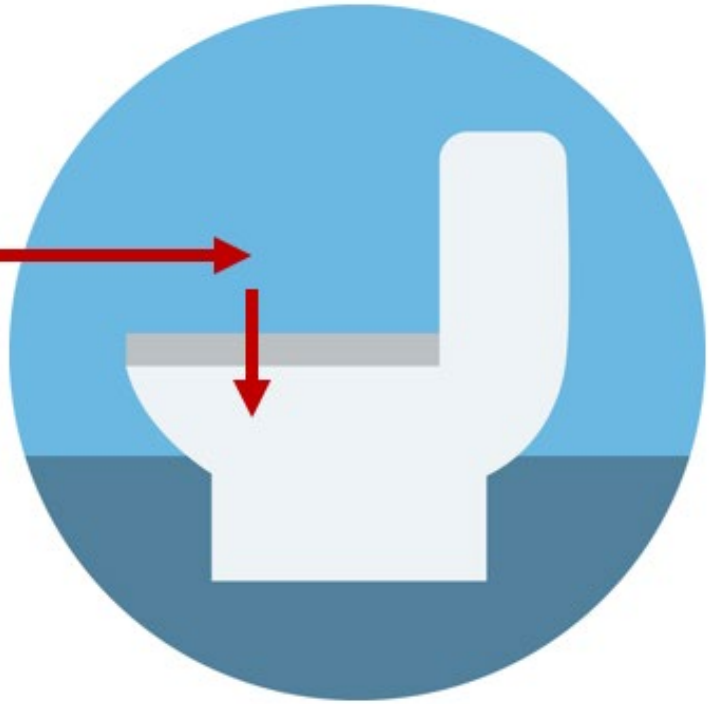
Urethra – Female Versus Male

The female urethra is 1.5 inches versus the male urethra 7- 8 inches

Urination and Urine



The passing of urine from the bladder through the urethra to the outside of the body is called urination, micturition, or voiding

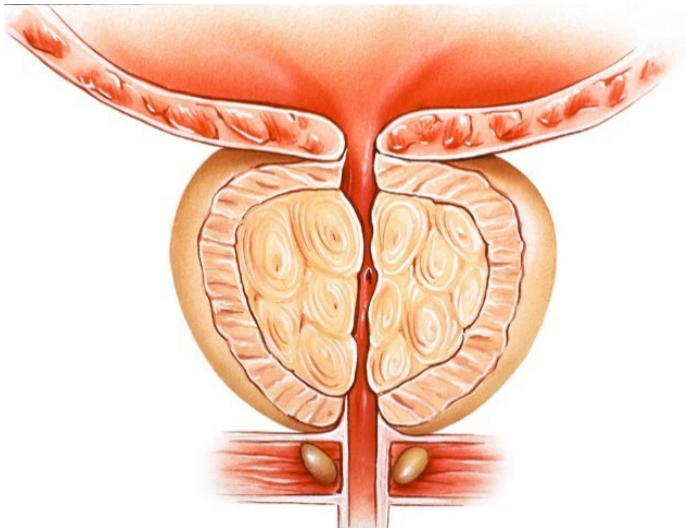


Urine – Normal Findings

- Clear or light yellow to amber in color
- About 1000 to 1500 milliliters per day

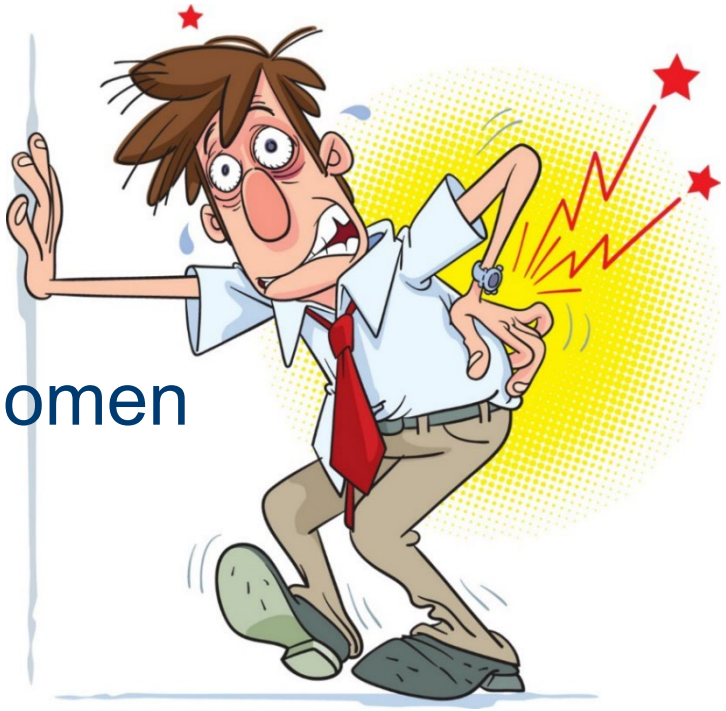
Urinary System– Changes Due to Aging

- Decreased
  - Kidney size and ability to filter blood
  - Capacity, elasticity, muscular tone of bladder
  - Ability to concentrate urine
- Difficulty or incomplete emptying of urinary bladder
- Enlargement of prostate in males



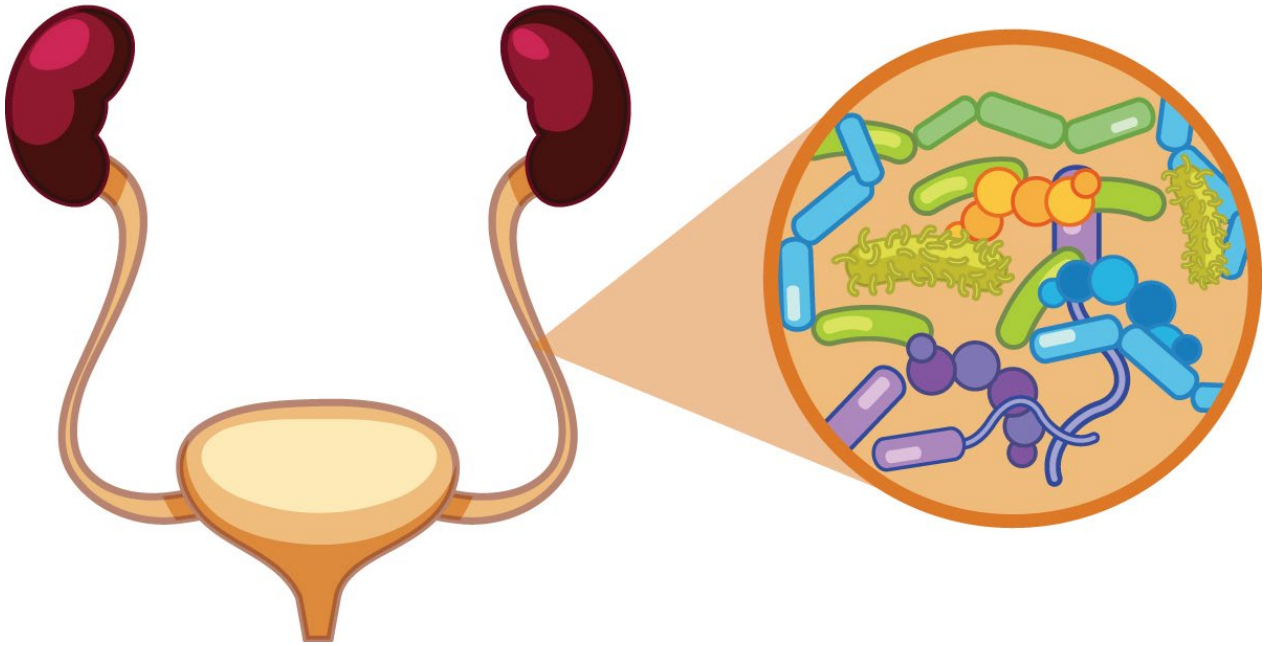
Urinary System – Variation of Normal

- Changes in urine
- Weight loss or gain
- Swelling in arms or legs
- Dysuria
- Swelling in bladder or abdomen
- Pain in kidney or back
- Incontinence
- Fever



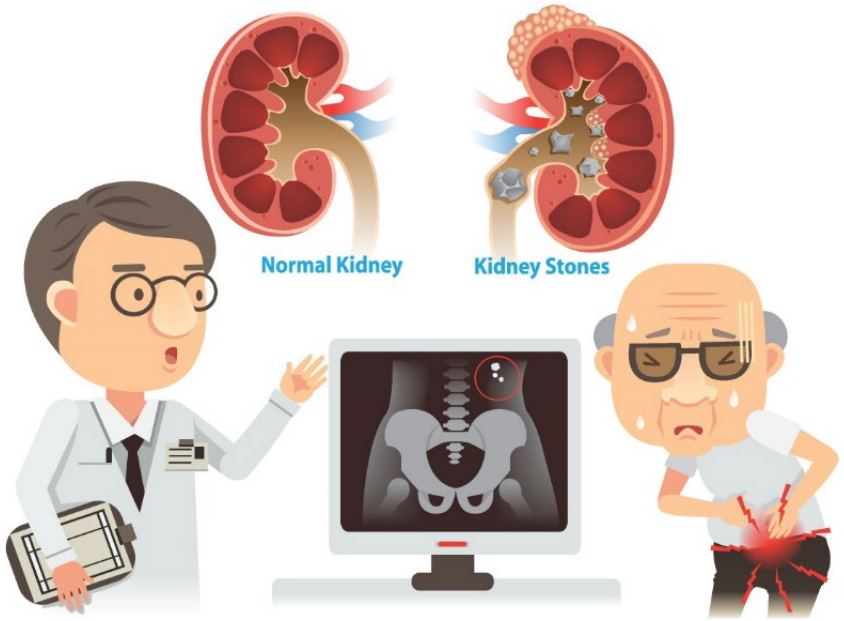
Urinary Tract Infection (UTI)

- An infection of urethra, bladder, ureter, or kidney commonly caused by a bacteria found in the digestive system (E. Coli)
- More common in females



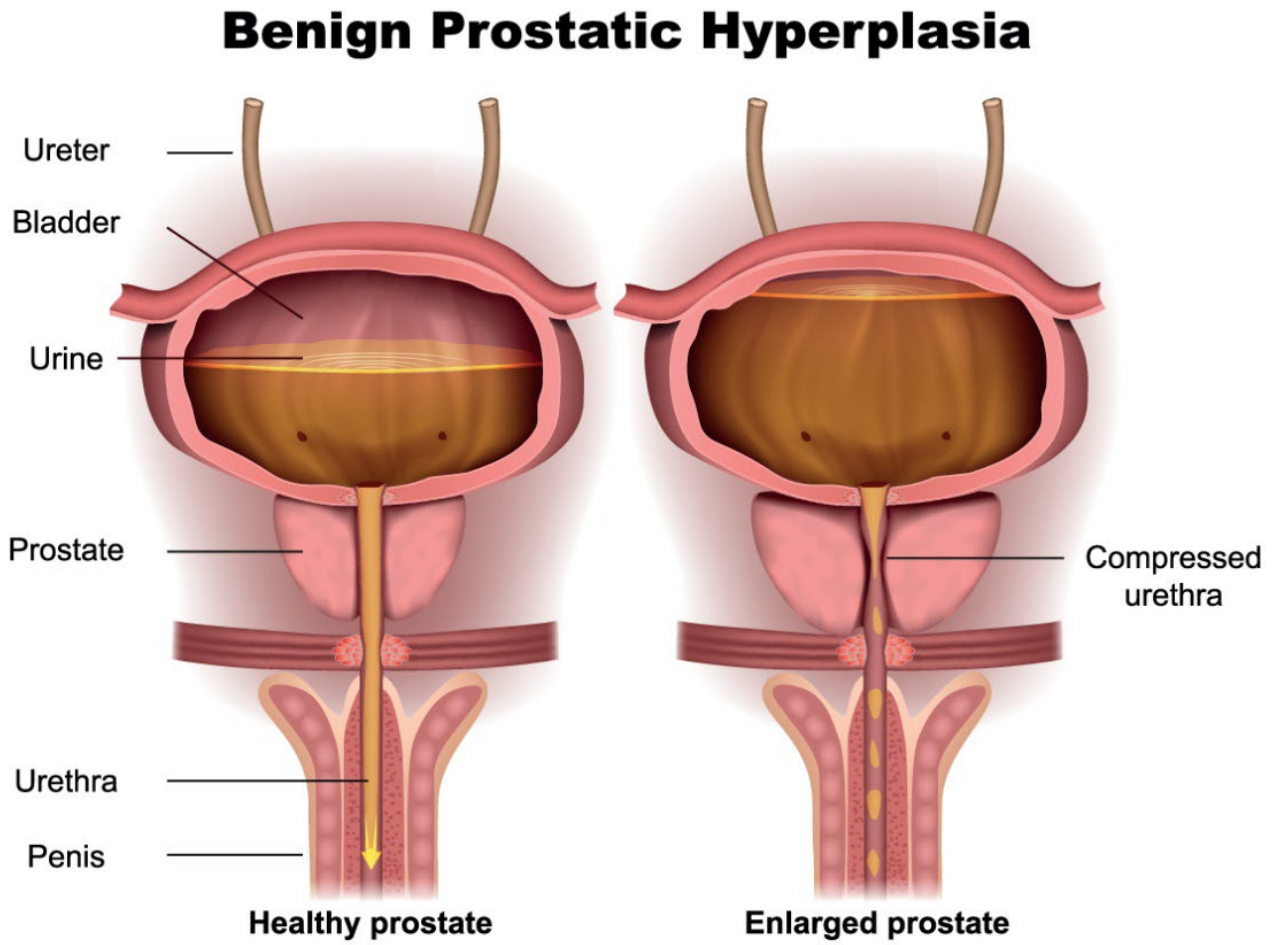
Kidney Stones (Renal Calculi)

- Formed when urine crystallizes in kidneys
- Can block kidneys and ureters causing severe pain
- Abdominal or back pain, painful urination, frequent urination, blood in urine, nausea, vomiting, chills, fever



Benign Prostatic Hypertrophy (BPH)

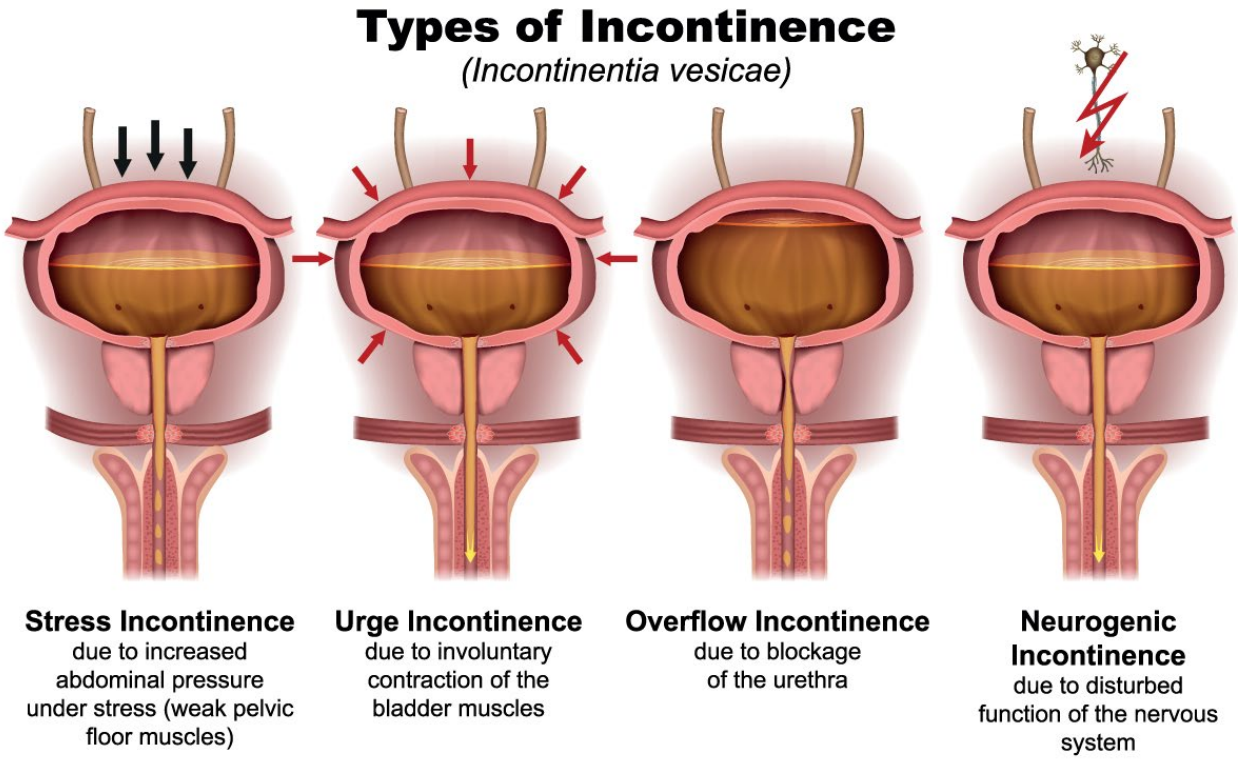
Common in males over the age of 60



Chronic Kidney Disease (CKD)

- Damage of kidneys that worsens gradually
- Five stages with the latter stage resulting in the need for dialysis
- Can be prevented if identified early
- Dialysis machine

Urinary Incontinence

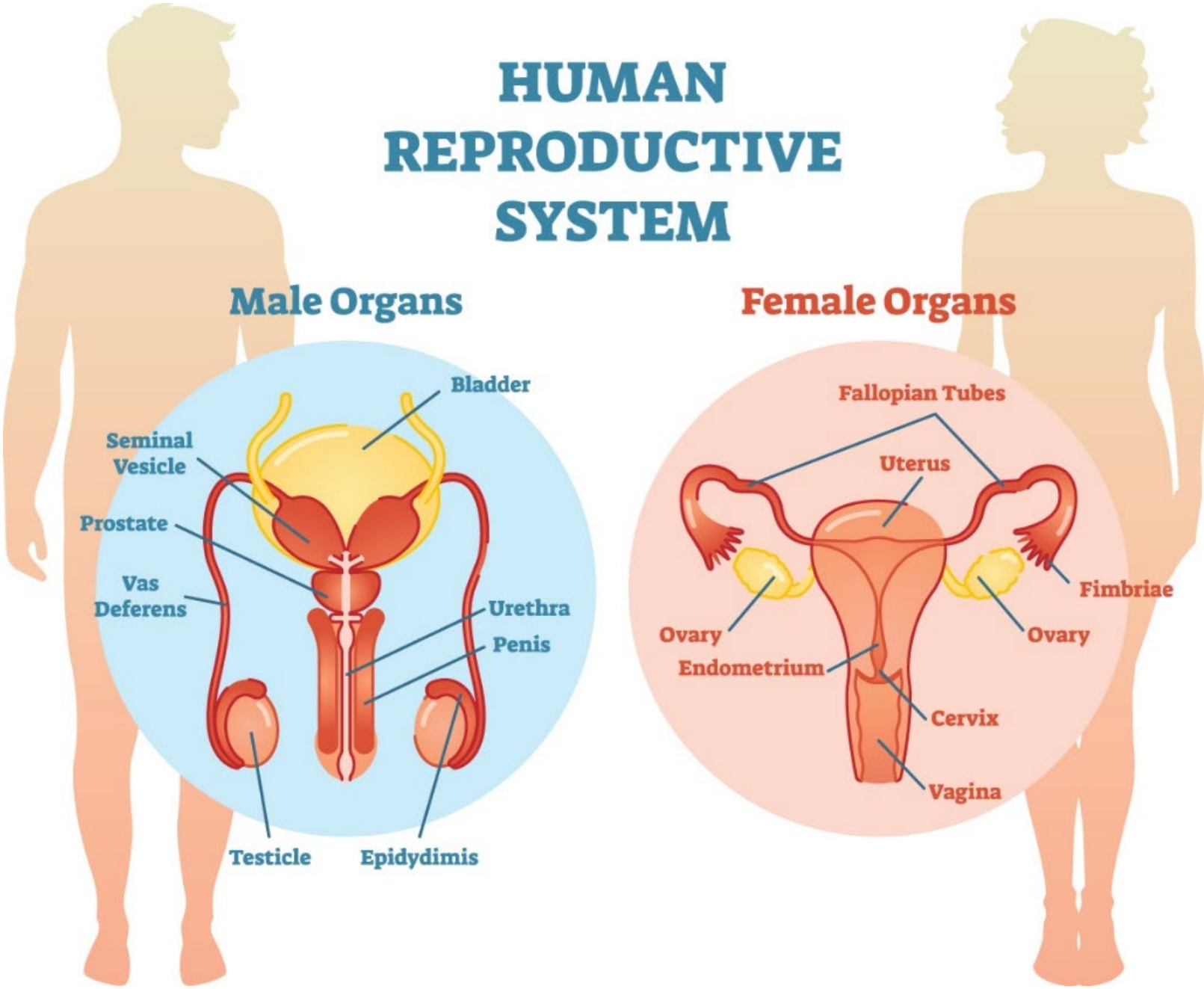


- Involuntary loss of urine
- Not a normal part of aging

Urination – Nurse Aide's Role

- Residents with incontinence must be kept clean and dry
- Provide privacy
- Should not be rushed or interrupted while urinating
- Encourage residents to drink fluids often
- Ideal position for urination for men is standing
- Ideal position for women is sitting

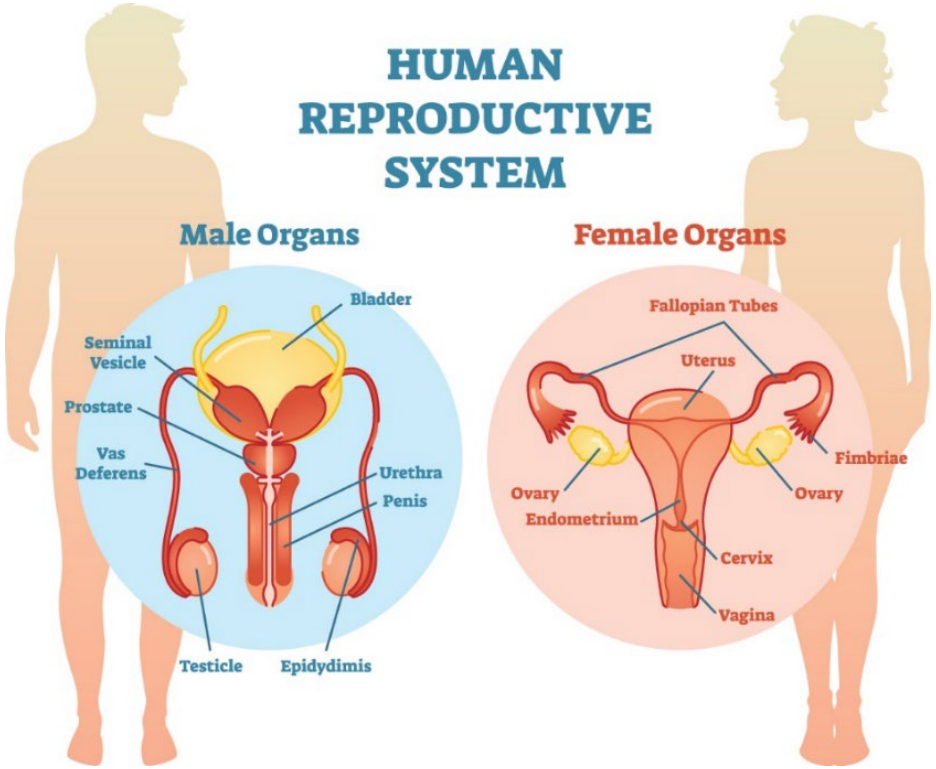
HUMAN REPRODUCTIVE SYSTEM



Reproductive – Overview

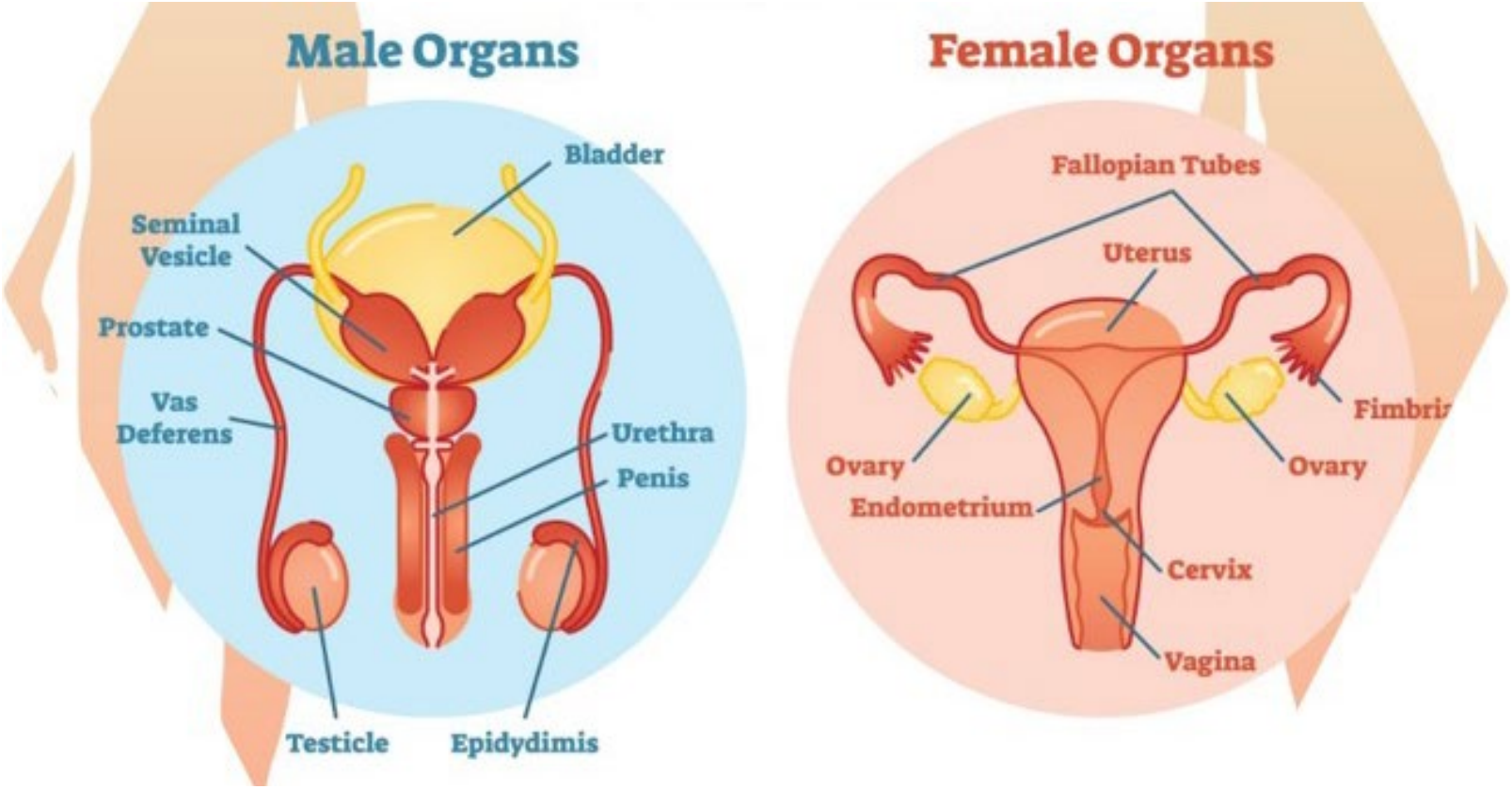
Subdivided into two categories

- Female reproductive system
- Male reproductive system



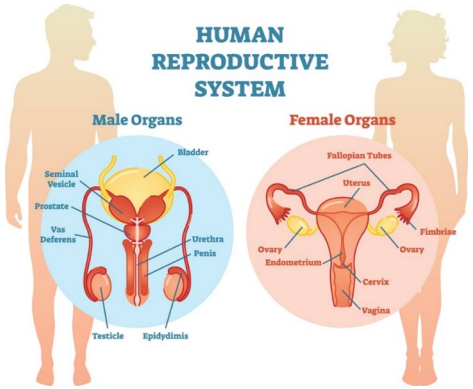
Reproductive System – Structure and Function

Responsible for production of reproductive cells



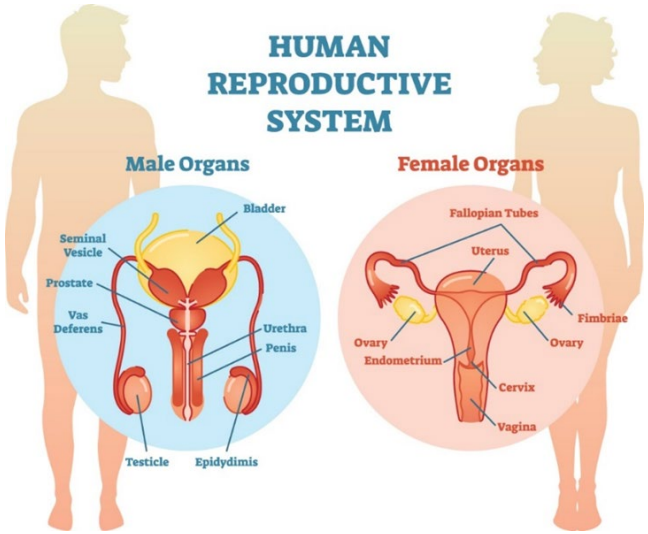
Reproductive System – Normal Findings

- Absence of bleeding (other than menses) and vaginal discharge/penile discharge
- Absence of pain and itching
- Absence of enlarged prostate gland



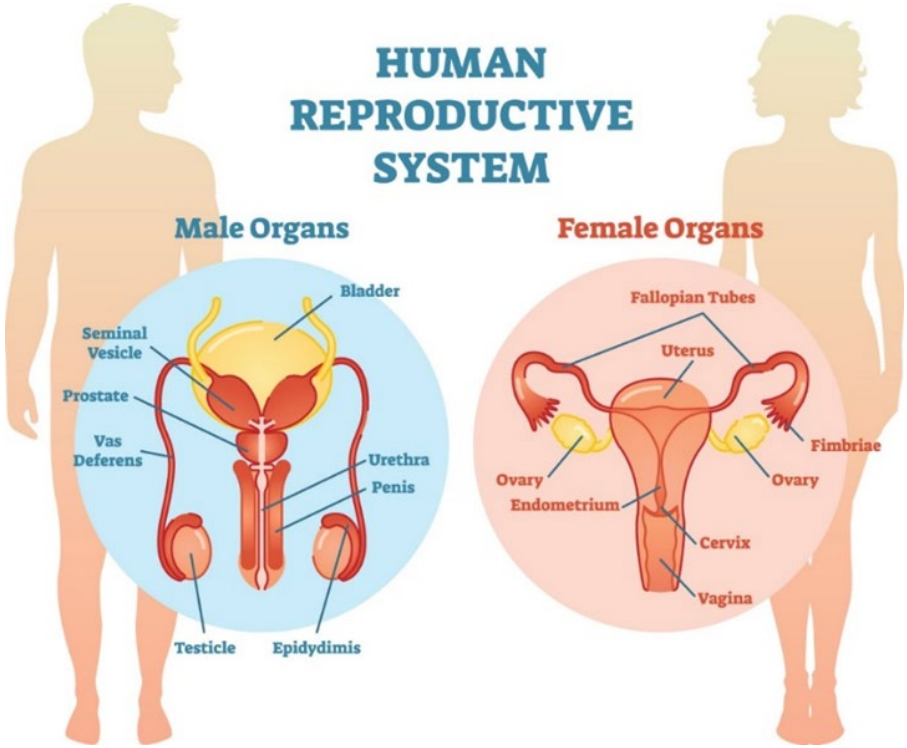
Reproductive System – Changes Due to Aging

- Decreased size and function of reproductive structures
- Enlargement of prostate
- Flaccid breasts
- Loss of hair in perineal area
- Weakened muscles that hold female reproductive organs in place

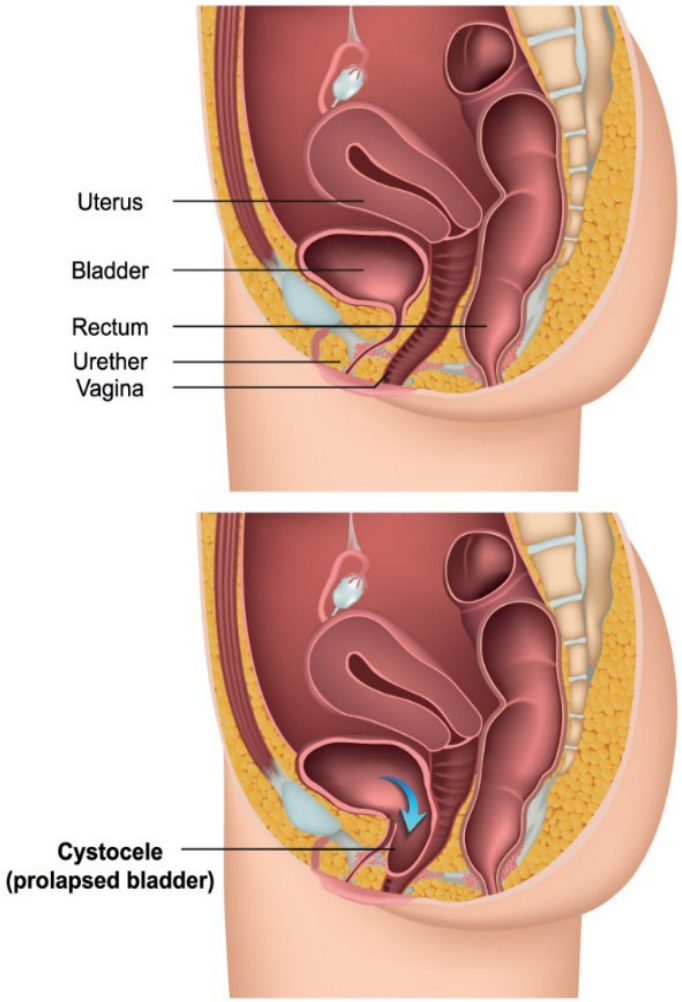


Reproductive – Variation of Normal

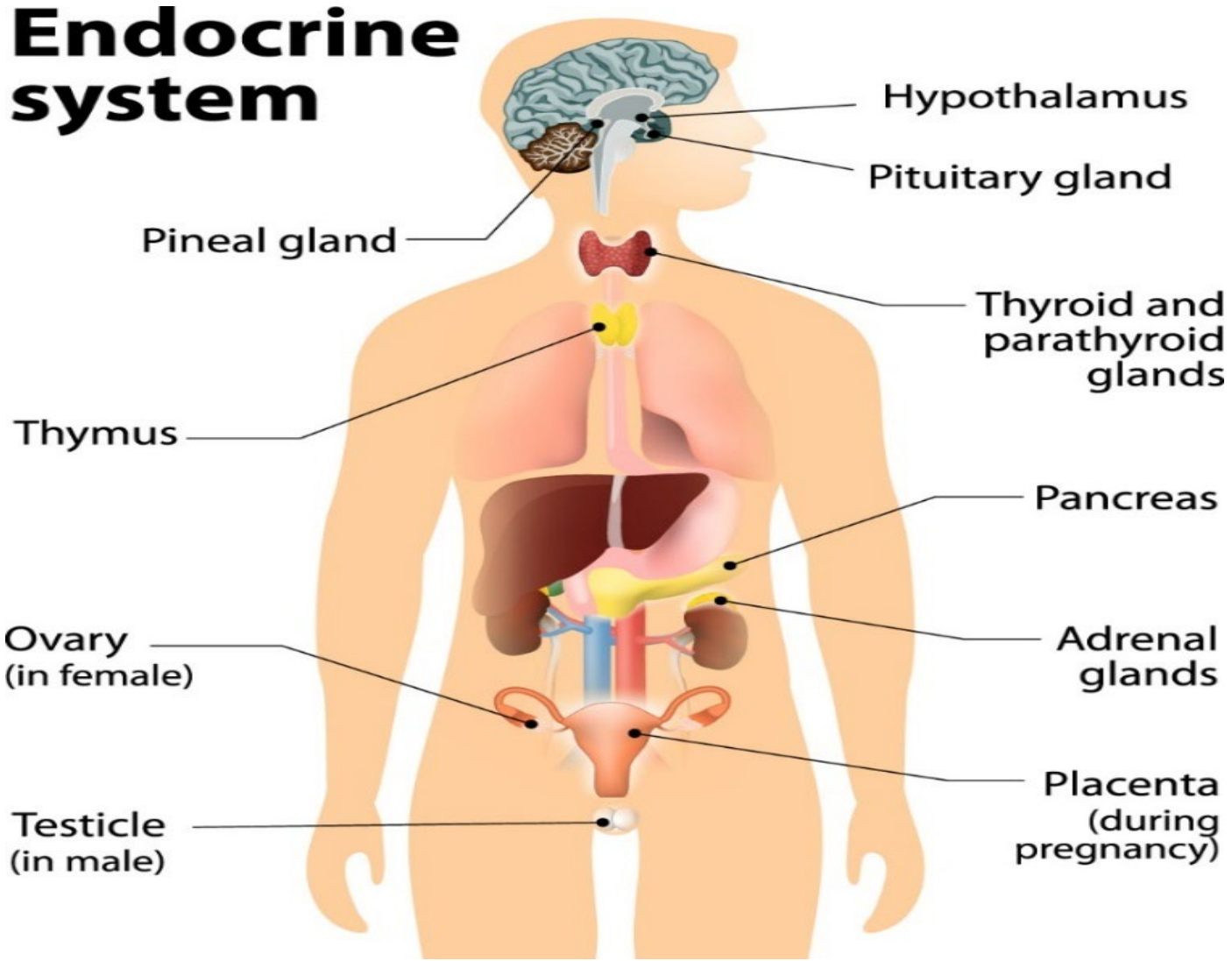
- Bleeding other than menses
- Pain
- Vaginal/penile discharge
- Itching



Pelvic Organ Prolapse



- Female reproductive organs are held in place by muscles and connective tissue
- Pelvic organs may drop down (prolapse) into vaginal canal
- Cystocele – when bladder drops down (pictured)
- Incontinence may occur



System of glands that secrete chemicals directly into the bloodstream to regulate body functions

Endocrine System – Structure and Function

- Glands located throughout the body that secrete hormones
- Maintains homeostasis (balance)
- Influences growth and development
- Regulates glucose in the blood and calcium in the bones
- Regulates reproduction
- Regulates how fast cells burn food

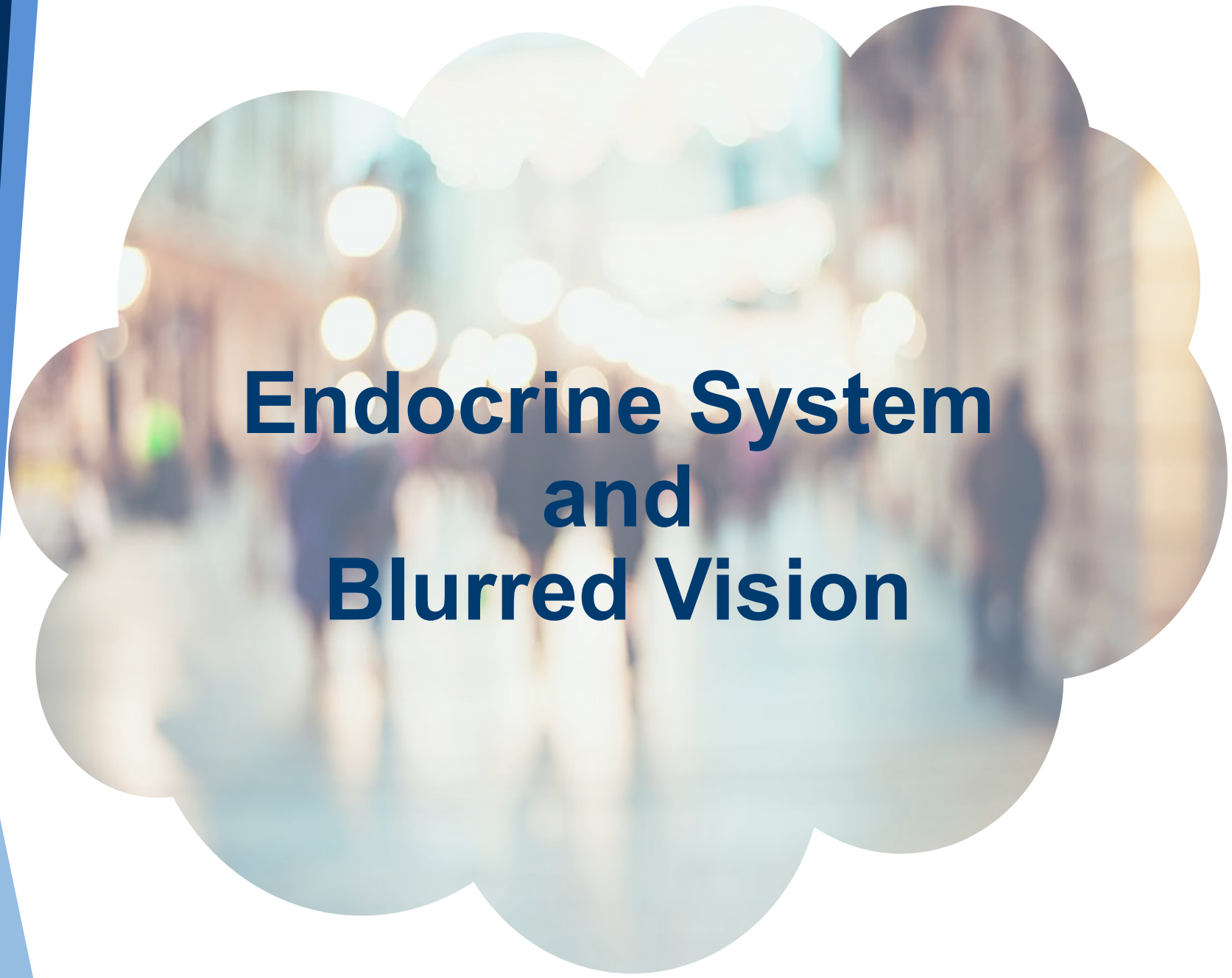
Endocrine System

Normal Findings

- Skin warm and dry
- Awake, alert, and oriented
- No differences in weight, appetite, and urination

Changes Due to Aging

- Levels of hormones decrease
- Insulin production decreases
- Body is less capable to deal with stress



Endocrine System and Blurred Vision

Endocrine System – Variation of Normal

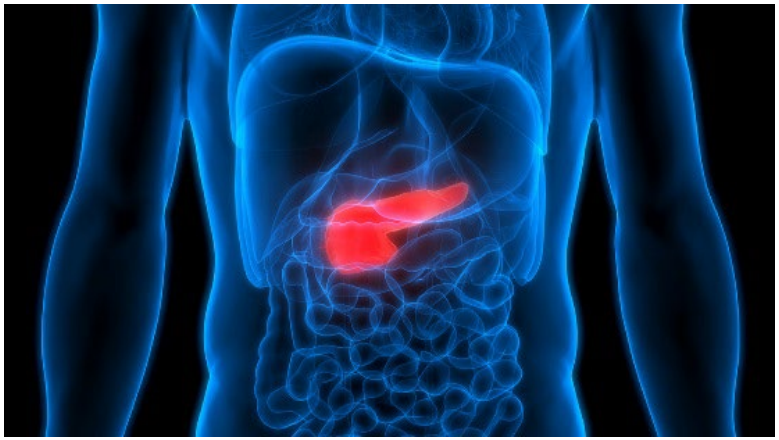
- Headache
- Blurred vision
- Dizziness
- Weakness
- Hunger
- Irritability
- Sweating
- Dry skin

Endocrine System – Variation of Normal

- Confusion
- Weight gain and loss
- Appetite increase and decrease
- Tiredness
- Increase thirst
- Increase urination

Diabetes Mellitus (Diabetes)

- Most common disorder of endocrine system
- Occurs when pancreas produces too little insulin or does not use insulin properly
- Insulin needed for glucose to move from blood into cells
- Without enough insulin, glucose builds up in blood, causing blood glucose levels to rise



Diabetes – Three Types

- Type 1 is the onset typically during childhood and early adulthood
  - The pancreas does not produce insulin
- Type 2 develops after about age 35
  - The pancreas secretes insulin, but does not use it well
- Type 3 is gestational diabetes
  - Only occurs during pregnancy

Diabetes – Nurse Aide's Role

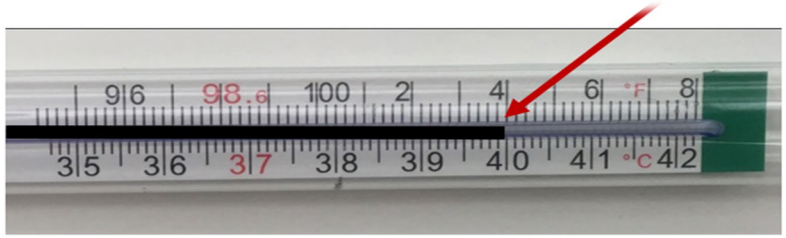
- Ensure meals are served and resident eats his diet
- Report to nurse if resident refuses meal and document intake of meal
- Encourage resident to follow exercise program
- Observe for signs of low blood sugar (hypoglycemia) and high blood sugar (hyperglycemia)
  - Report immediately to the nurse and document
- Provide foot care as directed and monitor for irritation or sores
  - Report immediately to the nurse and document

Immune System

- Protects the body both inside and outside
- Structure
  - Antibodies
  - White blood cells
- Function
  - Protects body from harmful infection-causing germs
  - Provides immunity from certain diseases
- Changes due to aging
  - Immune system weakens and becomes more prone to getting infections
  - May attack itself causing disease

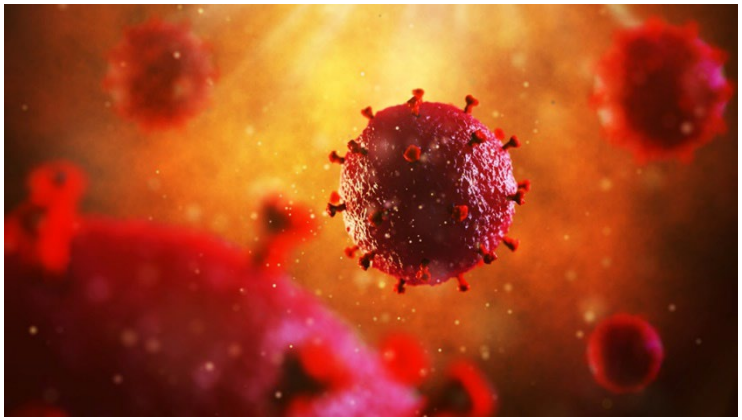
Immune System – Variation of Normal

- Anxiety
- Nausea and vomiting
- Stiff, swollen, and painful joints
- Signs of infection
  - Fever
  - Redness
  - Swelling



Acquired Immune Deficiency Syndrome (AIDS)

- Disease caused by Human Immunodeficiency Virus (HIV)
- Attacks the immune system
- HIV is spread through bodily fluids including blood, semen, vaginal secretions, and breast milk
- HIV Screening is vital knowledge



Immune System – Nurse Aide's Role

- Follow Standard Precautions and Blood Borne Pathogen Standards
- Assist with activities of daily living as needed
- Provide fluids as ordered
- Measure and record I&O and obtain weights
- Encourage deep-breathing and coughing exercises as directed
- Encourage self-care as tolerated
- Monitor and report signs of infection
- Provide emotional support

Immune System
Other Common Disorders

- Lupus occurs when the immune system attacks tissues causing redness, pain, swelling, and damage
- Graves Disease results when the immune system attacks the thyroid gland causing it to secrete more thyroid hormone
- Multiple Sclerosis develops when the immune system destroys the protective covering of the nerves resulting in decreased communication between the brain and body

The End