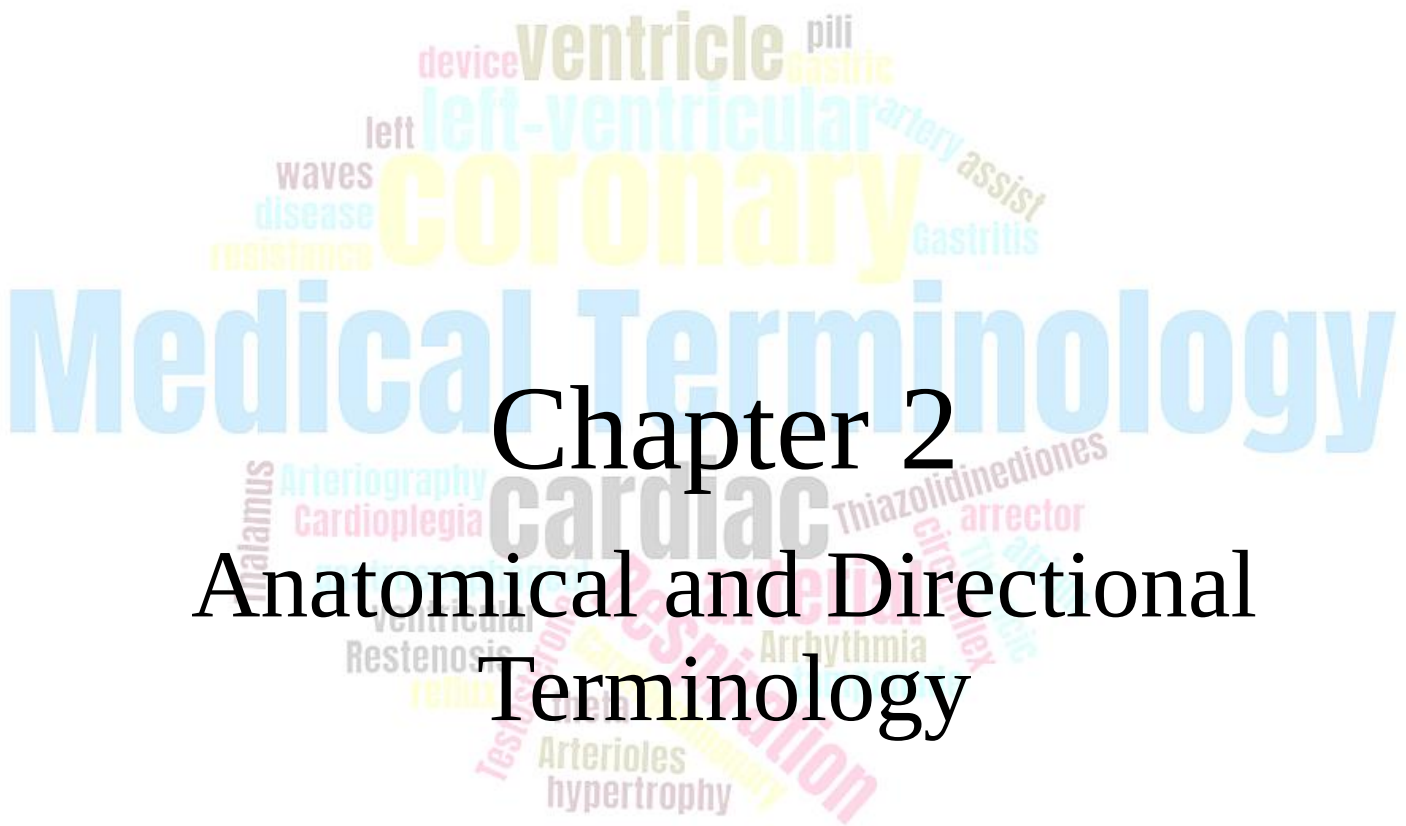
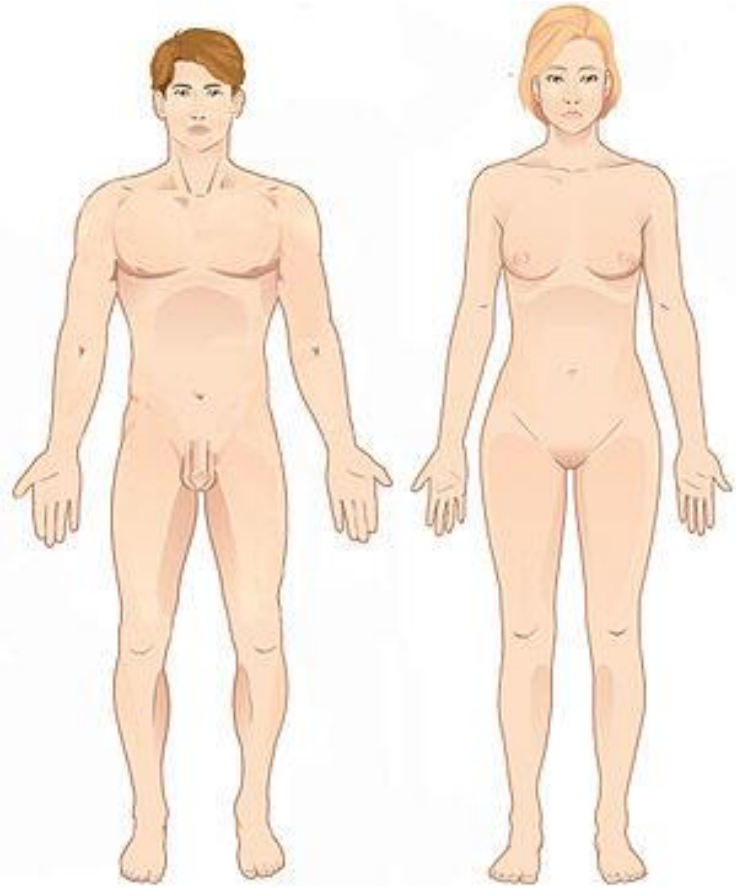


Chapter 2
Anatomical and Directional Terminology

Body Positions

- The body can assume many position and therefore have different orientations.
- To standardize the orientation for the study of anatomy, scientists have developed the anatomical position.
- **The Anatomical Position:** the human being is standing erect, face forward, with feet parallel, arms hanging at the sides, and palms facing forward.

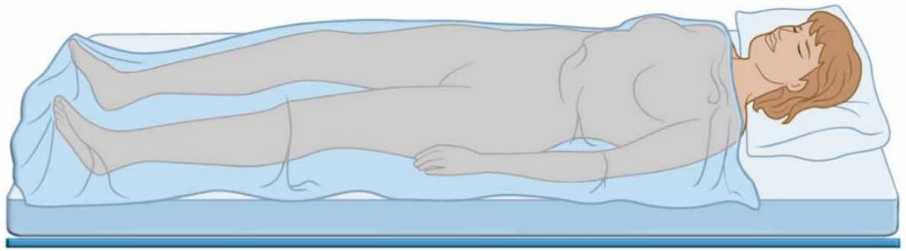


Body Positions

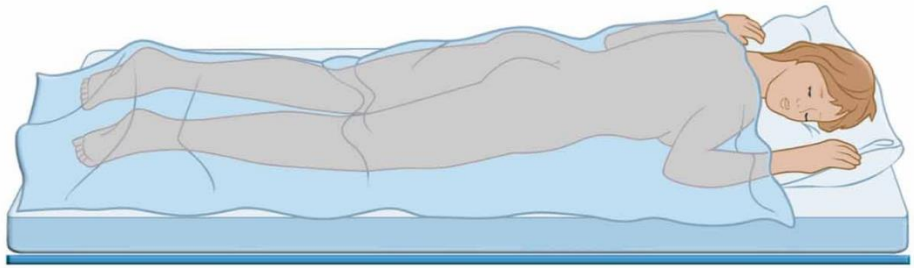
Other important body positions include:

- **The Supine Position**: laying face upward, on your back
- **The Prone Position:** laying face downward, on your stomach

Supine position

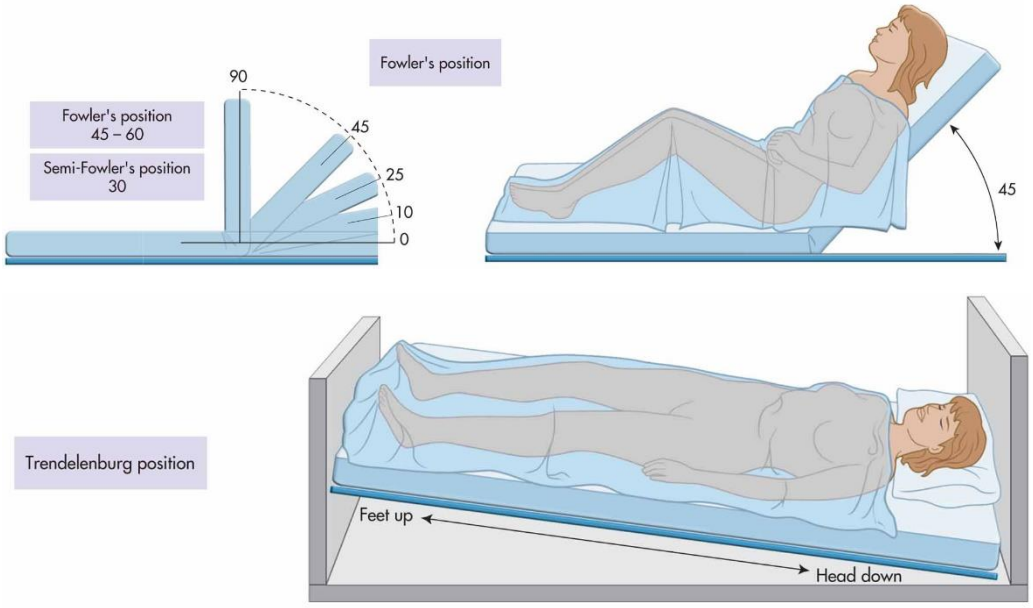


Prone position



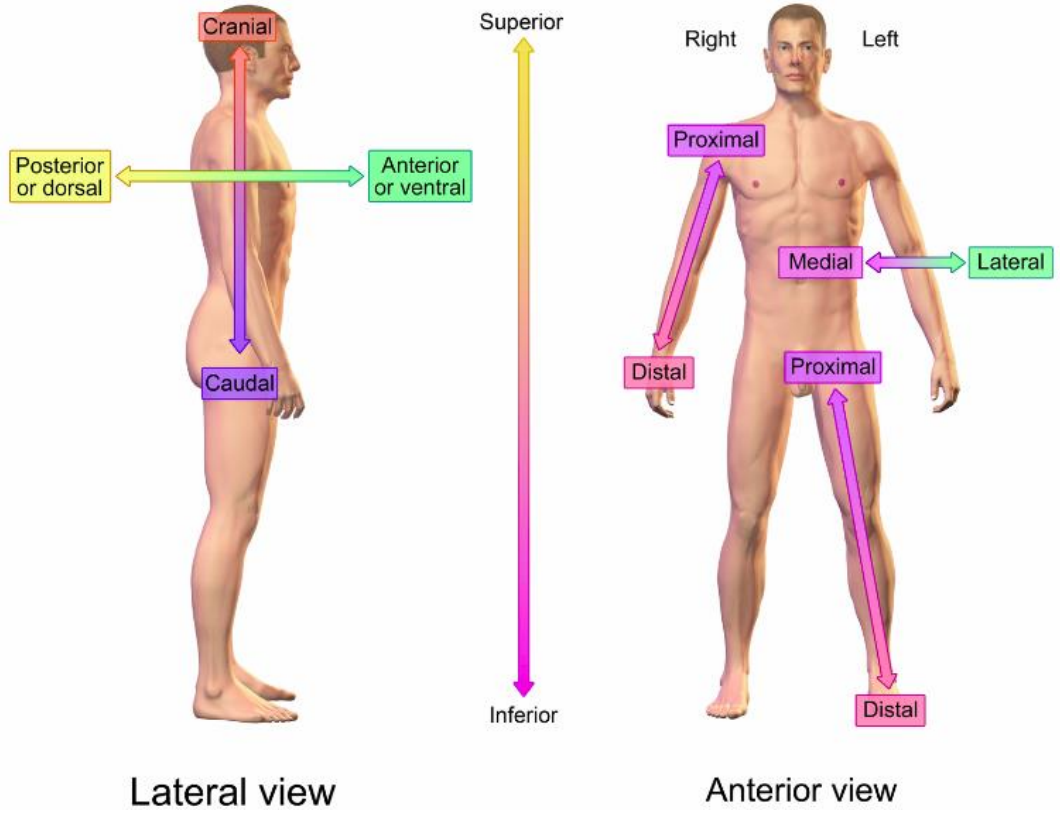
Body Positions

- **Fowler's Position:** Sitting in bed with the head of the bed elevated 45–60 degrees
  - Facilitates breathing and comfort of the bedridden patient
- **Trendelenburg Position:** The head of the bed is lower than the patient's feet



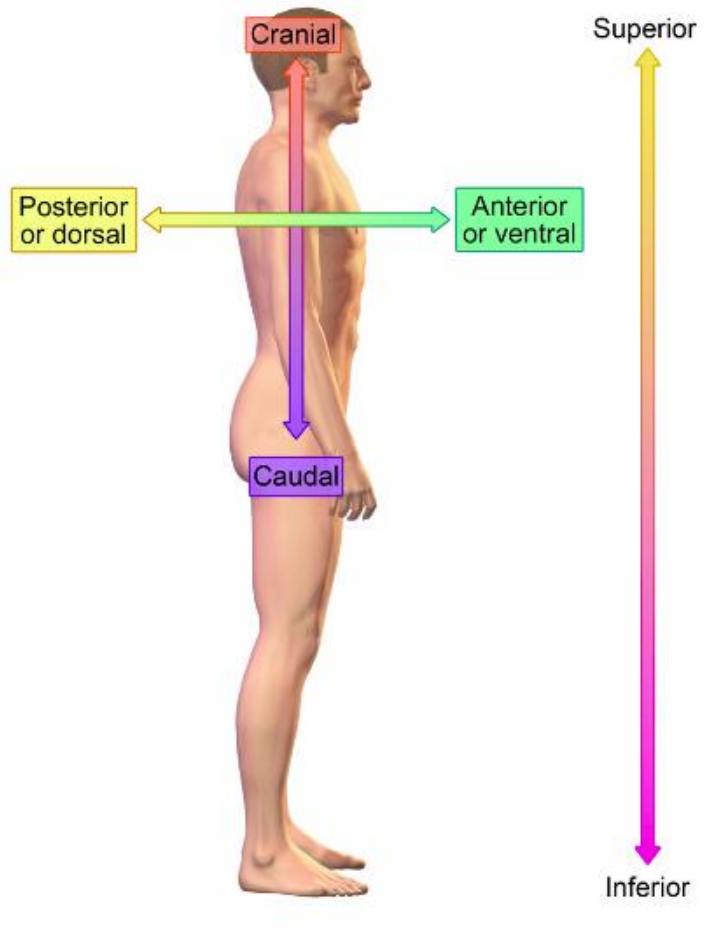
Directional Terms

- Directional terms are used to navigate the body.



Directional Terms

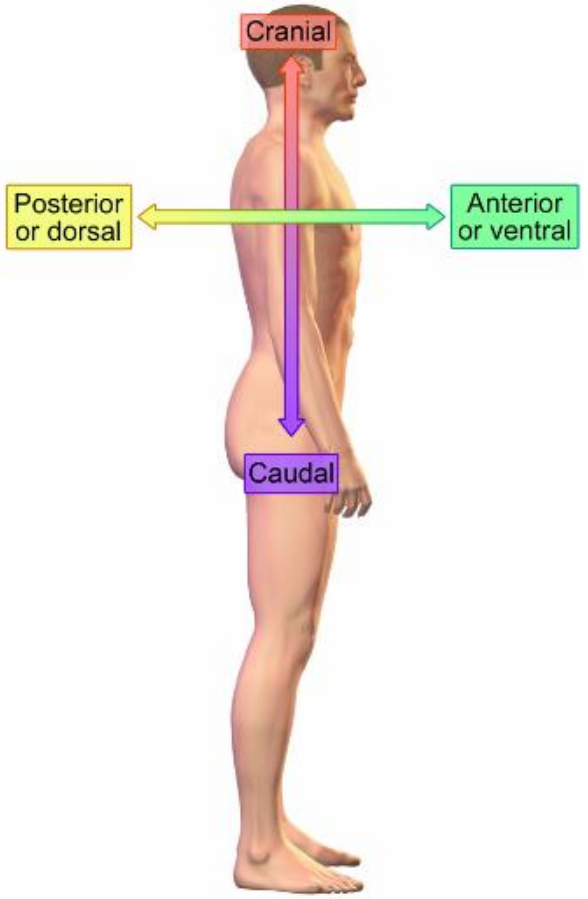
- **Superior** (cranial or cephalic): toward the head or upper body
- **Inferior** (caudal): away from the head or toward the lower part of the body



Directional Terms

- **Anterior** (ventral): body parts towards or on the front of the body

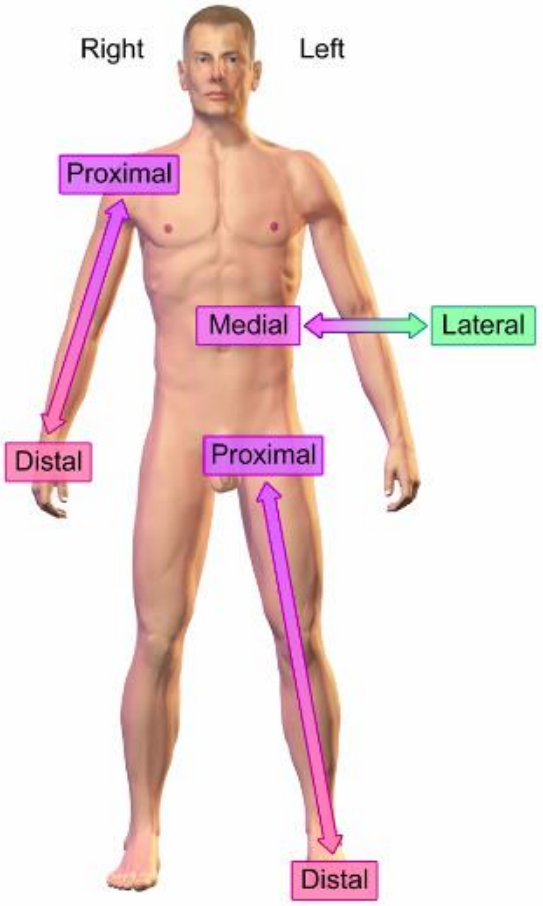
- **Posterior** (dorsal): body parts towards or on the back of the body



Directional Terms

- **Medial**: refers to body parts located near the middle or midline of the body

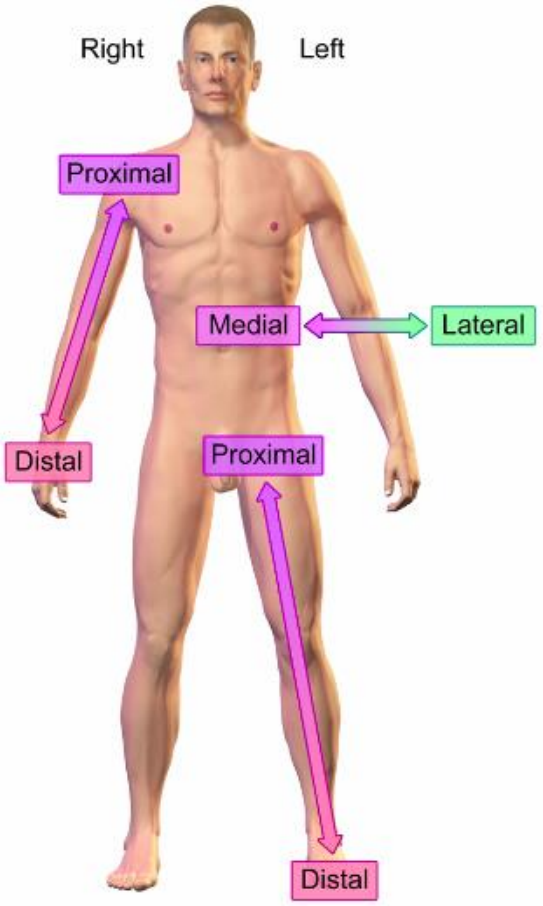
- **Lateral:** refers to body parts located away from midline



Directional Terms

- **Proximal:** refers to body parts close to a point of reference of the body

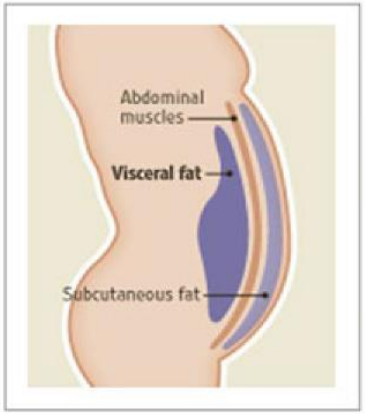
- **Distal:** refers to body parts away from a point of reference

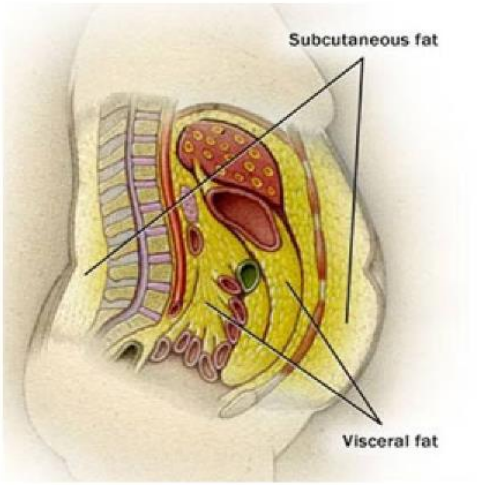


Directional Terms

- **External:** towards the outside
- **Internal**: on the inside

Visceral Fat - is external
Subcutaneous Fat - is internal





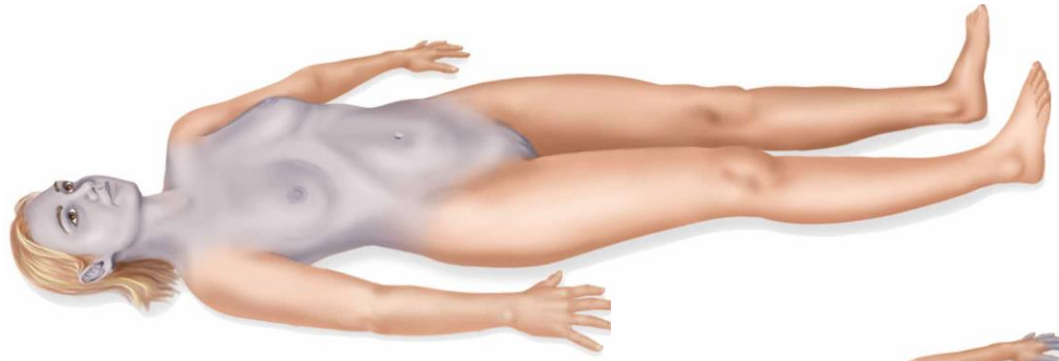
Directional Terms

- **Superficial:** means toward or at the body surface

- **Deep:** means away from the body surface

Directional Terms

- **Central**: refers to locations around the center of the body
- **Peripheral**: refers to the extremities or outer regions



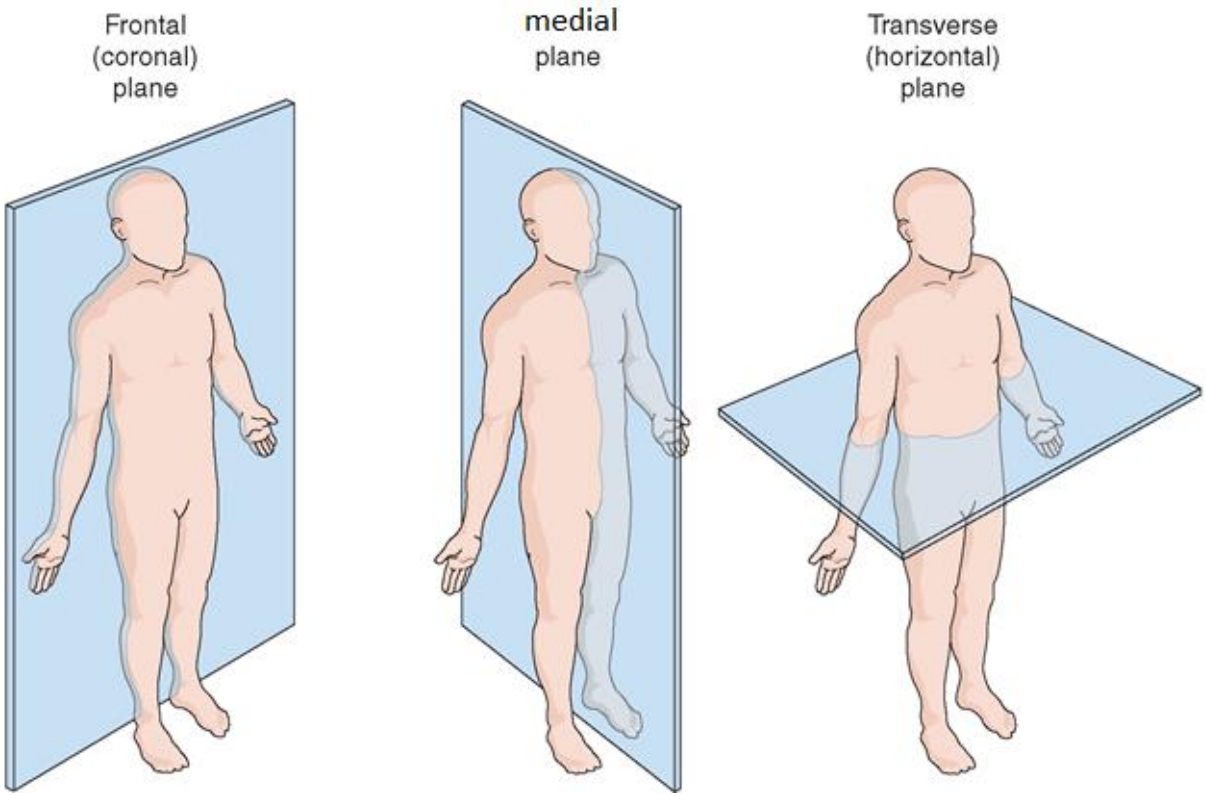
CENTRAL CYANOSIS

PERIPHERAL CYANOSIS

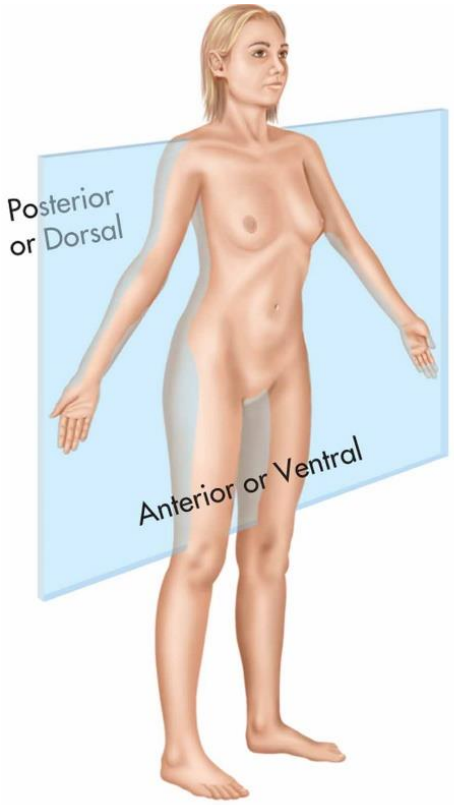
Using Directional Terms

DIRECTIONAL TERM	MEANING	USE IN A SENTENCE
anterior	toward the front	The belly button is on the *anterior* surface of the body.
posterior	toward the back	The patient had a bump on the *posterior* part of her head.
medial	toward the middle	The nose is *medial* to the eyes.
lateral	toward the side	The eyes are *lateral* to the nose.
superior	toward the top	The nose is *superior* to the mouth.
inferior	toward the bottom	The mouth is *inferior* to the nose.
proximal	near point of reference	The wrist is *proximal* to the fingers.
distal	away from point of reference	The fingers are *distal* to the shoulder.
external	on the outside	The *external* defibrillator is used on the outside of the chest.
internal	on the inside	He received *internal* injuries from the accident.
superficial	at the body surface	The cut was only *superficial.*
deep	under the body surface	The patient had *deep* wounds from the chainsaw.
central	locations around center of body	The patient had *central* chest pain.
peripheral	surrounding or outer regions	The patient had *peripheral* swelling in the feet.

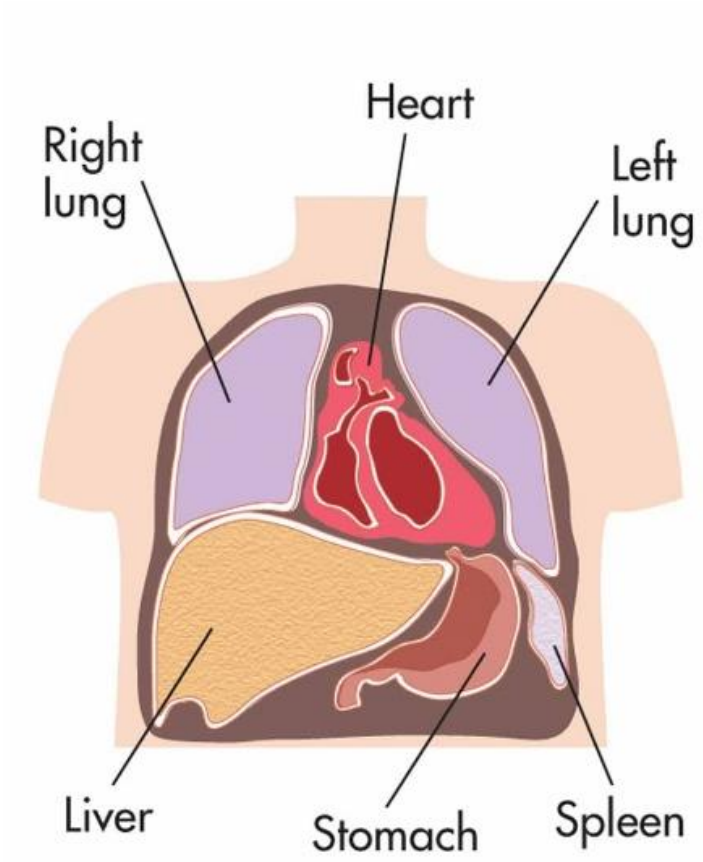
Body Planes


Frontal
(coronal)
plane
medial
plane
Transverse
(horizontal)
plane

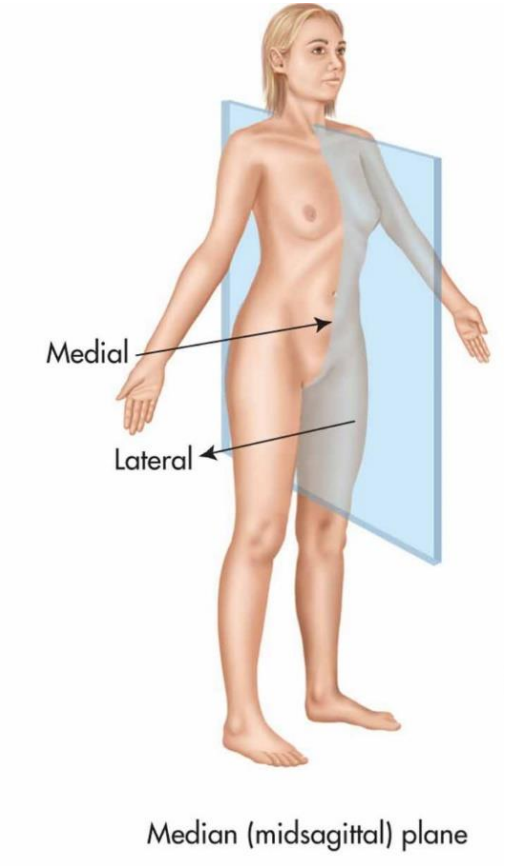
Body Planes - Frontal

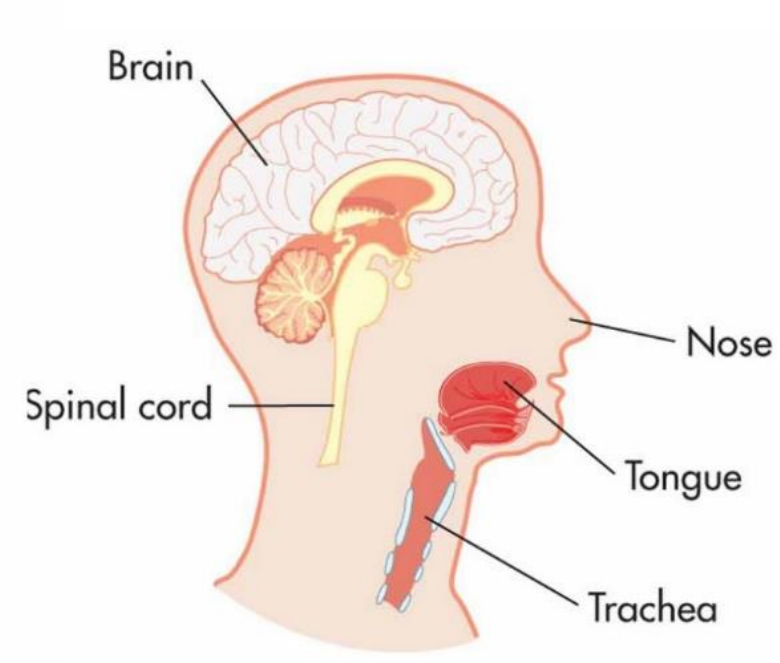


Frontal (coronal) plane

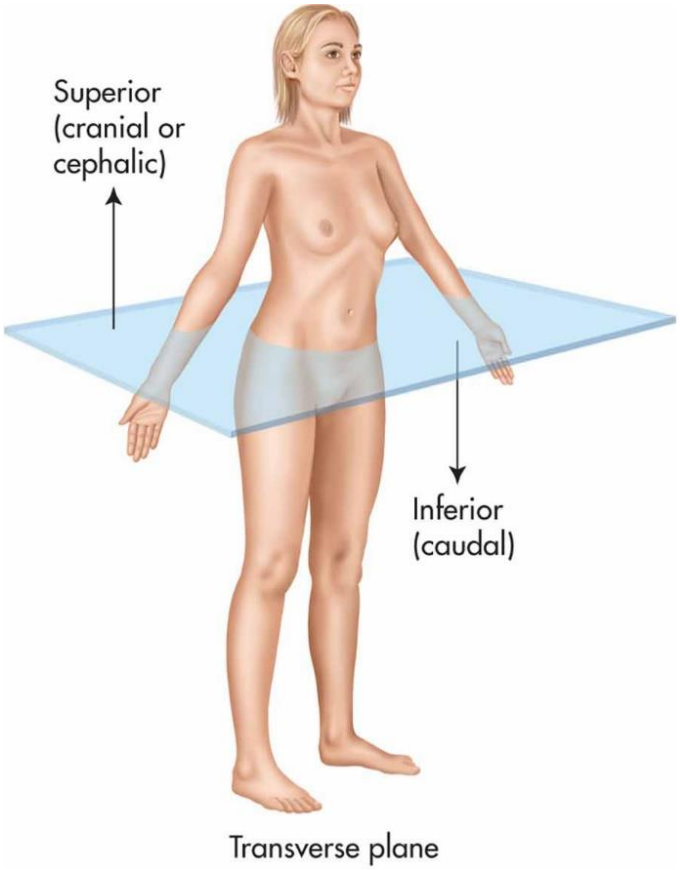


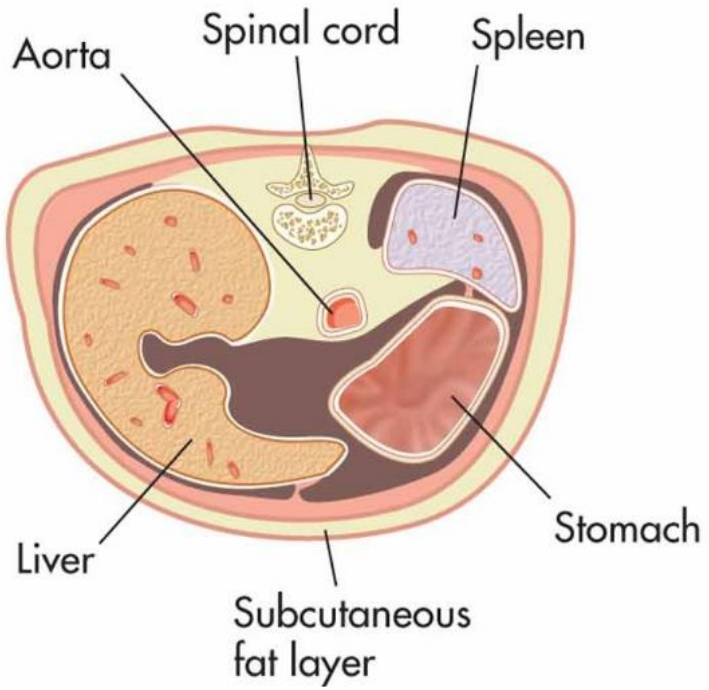
Body Planes - Medial





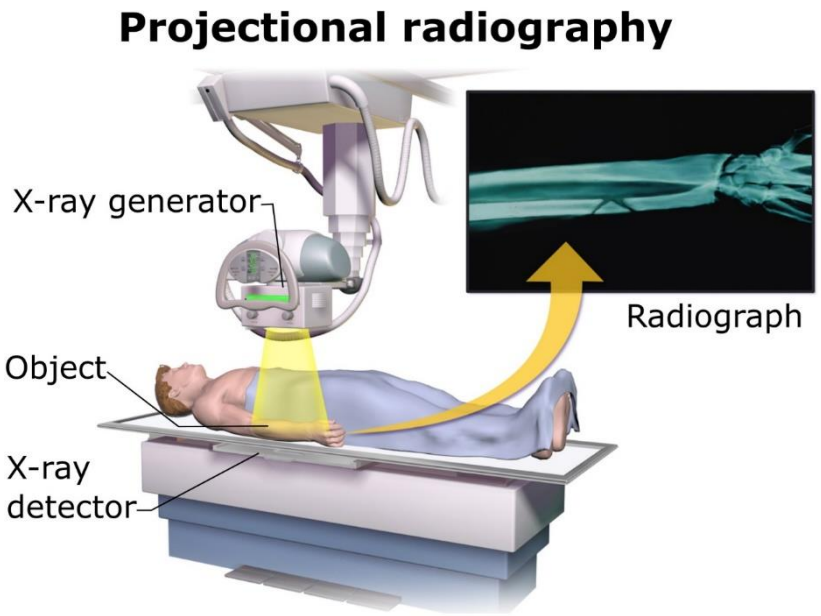
Body Planes - Transverse





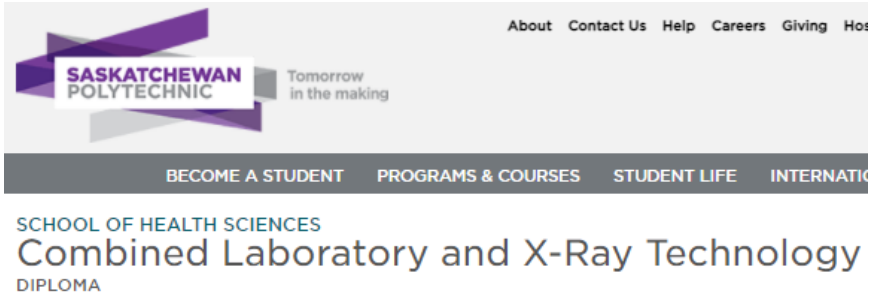
Medical Imagery: X-Rays

- **X-rays** (Radiology) are beams of high energy radiation that penetrate the body and give a 2-dimensional view of bones, air, and tissues



X-Rays (Radiology)

- How X-rays See Through Your Skin (4 min)
- SPT Medical Radiologic Technology
- SPT Combined Laboratory and X-Ray Technology



Accession: DX-23-0157369

*****

Medical Imaging *****

Exam	Exam
Date/Time	Ordering Physician
DX Foot/Ankle Right	07-May-23
16:49 CST	Meena, Deiter

Reason For Exam
(DX Foot/Ankle Right) ? # Foot/ankle

Report
PROCEDURE: DX Foot/Ankle Right

CLINICAL INDICATION: ? # Foot/ankle

FINDINGS: The corticated bony ossicle at the proximal tip of the fifth metatarsal may be due to
nonunion of the apophysis or an old fracture with nonunion. It is unchanged since September 15, 2022.

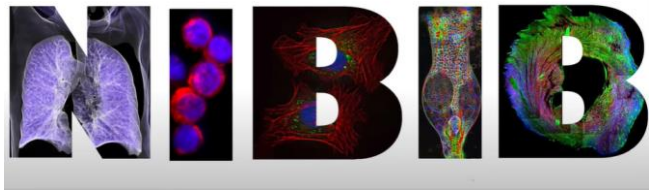
No recent fracture or dislocation is seen.
***** FINAL REPORT *****

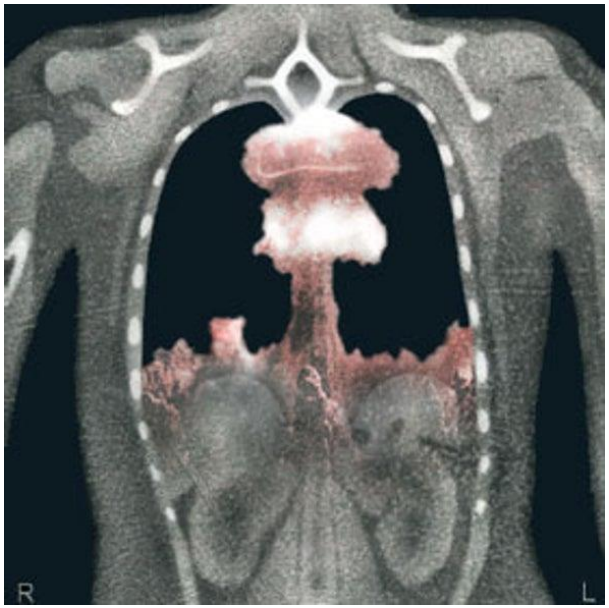
Medical Imagery: CT or CAT Scan

- **CT** (computerized tomography) scan or **CAT Scan:** Enhancing an X-ray with computers gives much better detail, contrast, and a 3D view

CT Scan (CAT Scan)

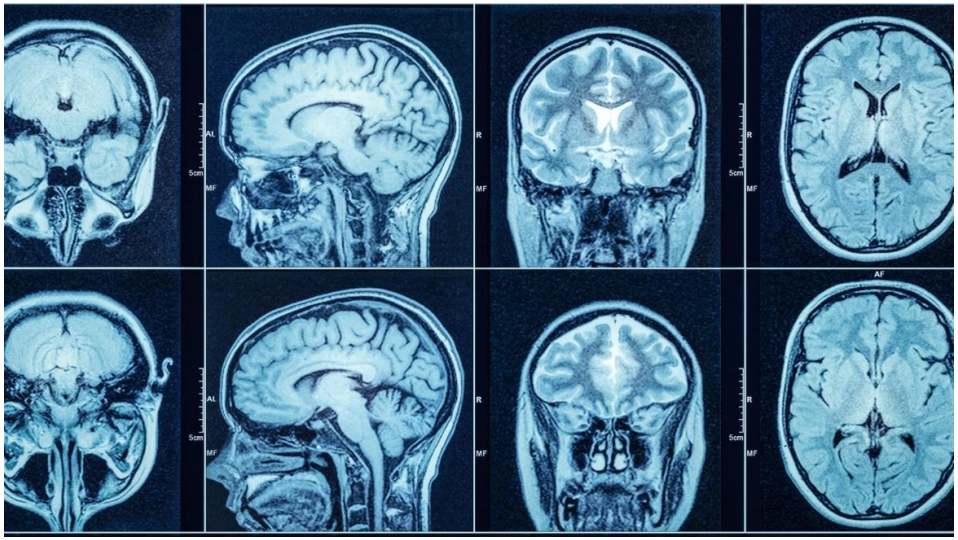
- How a CT Scan Works (2 mins)





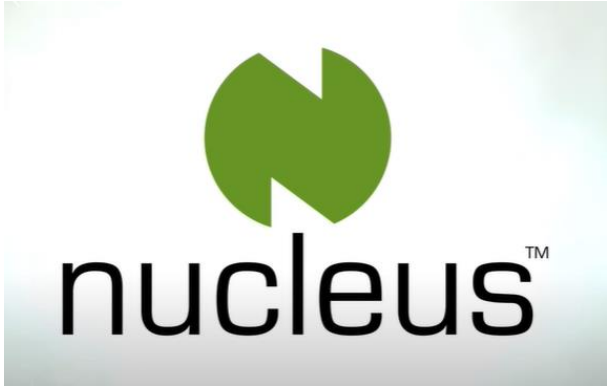
Medical Imagery: MRI

- **MRI** (Magnetic Resonance Imager): gives even greater detail of tissue structures, even down to individual nerve bundles, with no radiation exposure



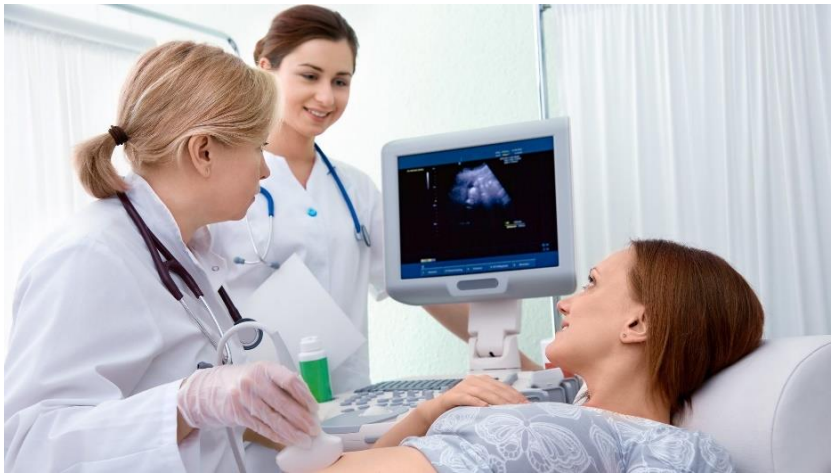
MRI (Magnetic Resonance Imager)

- MRI Explained (3 mins)
- How Does an MRI Work (3 mins)
- MRI pre-scan from patient POV (4 mins)



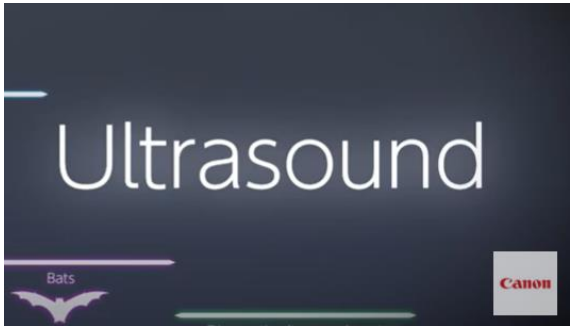
Medical Imagery: Ultrasound

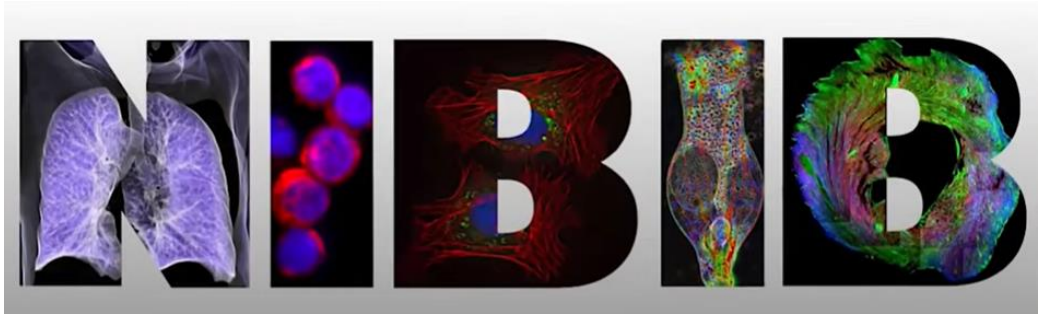
- **Ultrasound Scans** (Sonographer) uses high-frequency sounds waves to capture live images from inside the body. Similar to sonar radar used by bats and military.
  - Uses include scanning: pregnancy, bladder, brain, eyes, gallbladder, kidneys, liver, ovaries, pancreas, spleen, thyroid, testicles, uterus, blood vessels



Ultrasound (Sonographer)

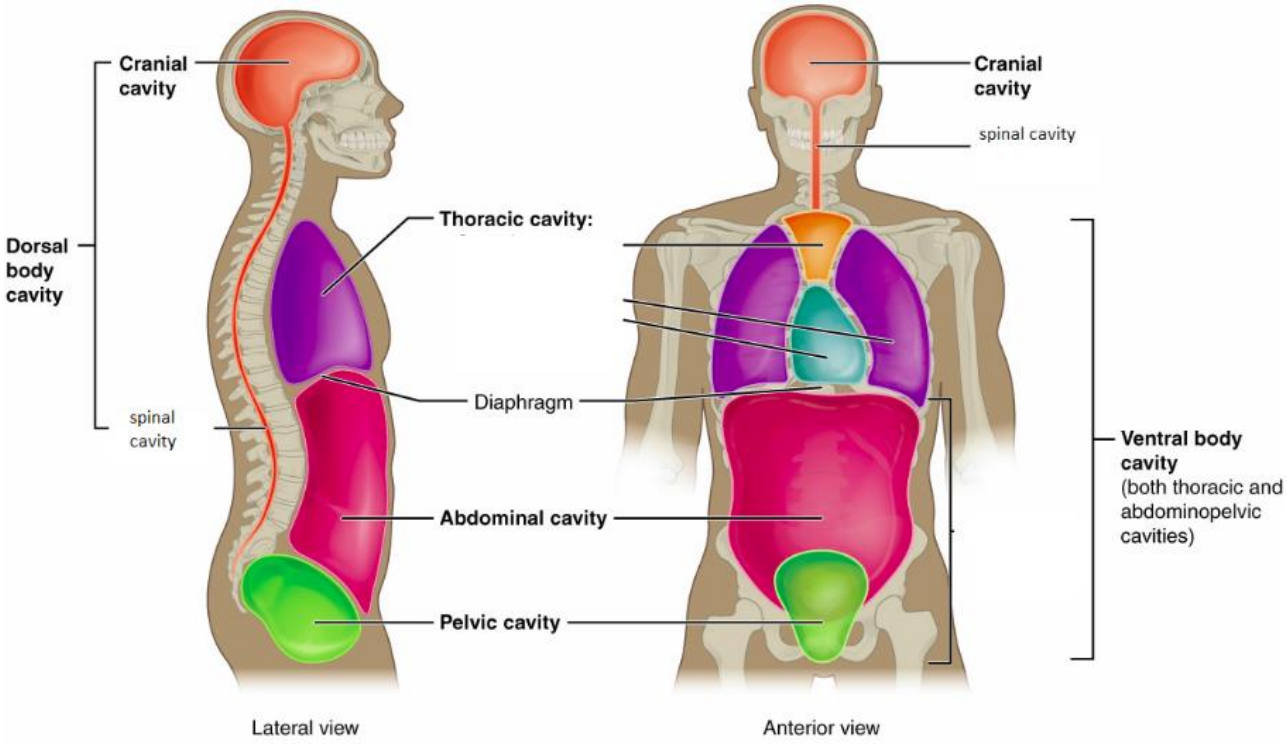
- How Diagnostic Ultrasound Systems Works (3 mins)
- How Ultrasound Imagery Works (2 mins)





Body Cavities

- **Body Cavities**: The body has two large open spaces called cavities that house and protect organs.



Body Cavities

The Dorsal (Posterior) Cavity is located on the back of the body consists of two cavities.

- The cranial cavity houses the brain.
- The spinal (vertebral) cavity contains the spinal cord.

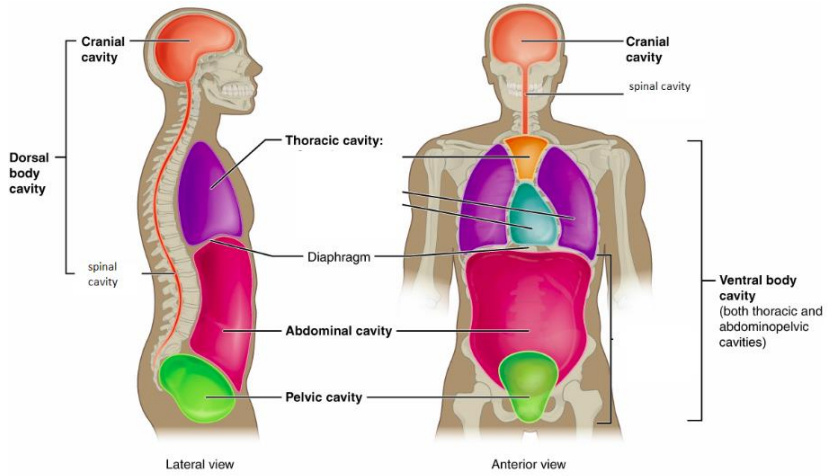
The Ventral (Anterior) Cavity is larger and located on the front of the body.

- Divided into two smaller cavities called the thoracic and abdominopelvic cavities. These two smaller cavities are divided by the diaphragm that is used for breathing.
- The abdominopelvic cavity can be further divided into the abdominal and pelvic cavities.

Body Cavities

The Thoracic Cavity contains:

- The heart
- The lungs
- Large blood vessels



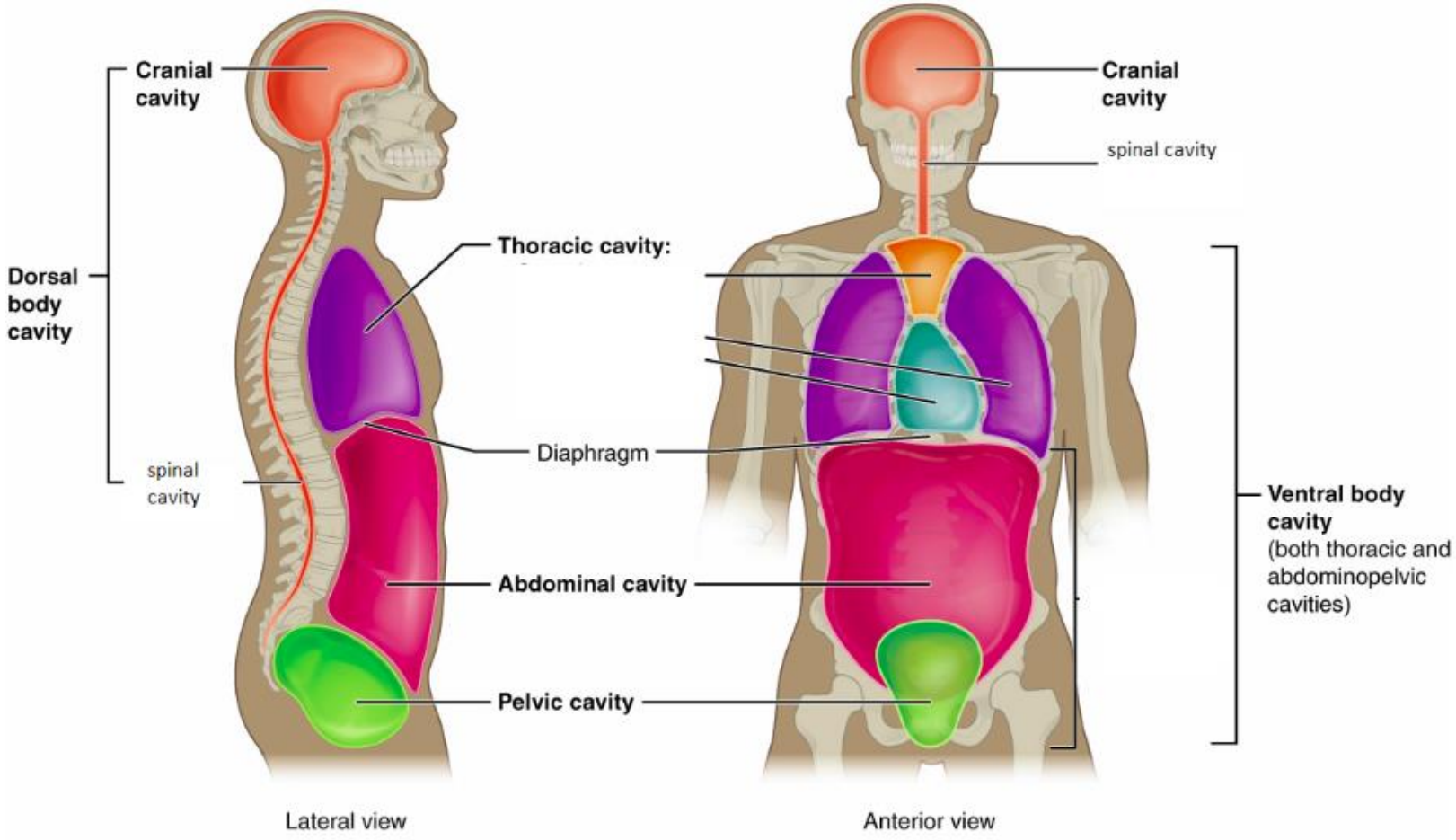
The Abdominal Cavity contains the digestive organs such as the:

- Stomach
- Intestines
- Liver
- Gallbladder
- Pancreas
- Spleen

Body Cavities

The lower portion of the **Abdominopelvic Cavity** contains the:

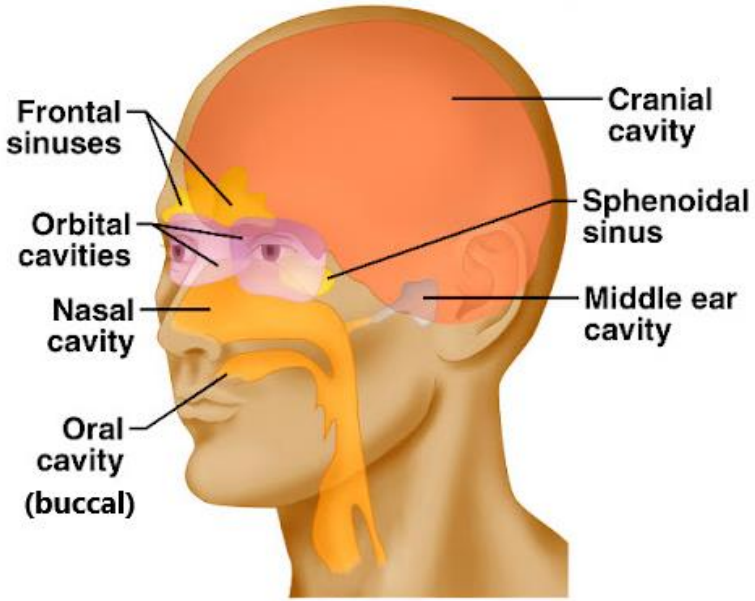
- Urinary organs
- Reproductive organs
- Large part of the large intestine



Smaller Body Cavities

There are many smaller cavities that designate specific areas.

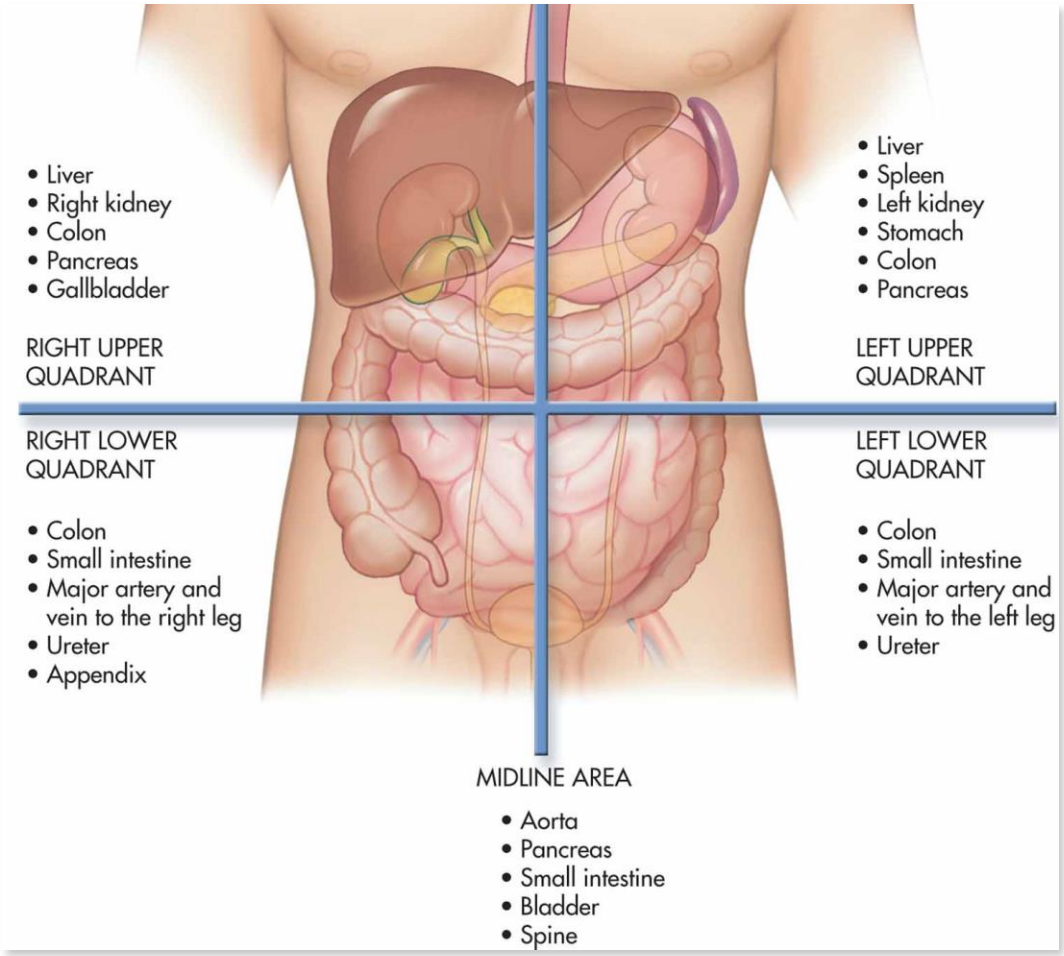
- **The Nasal Cavity** is the space behind the nose.
- **The Buccal Cavity** is the space within the mouth.
- **The Orbital Cavity** houses the eyes.



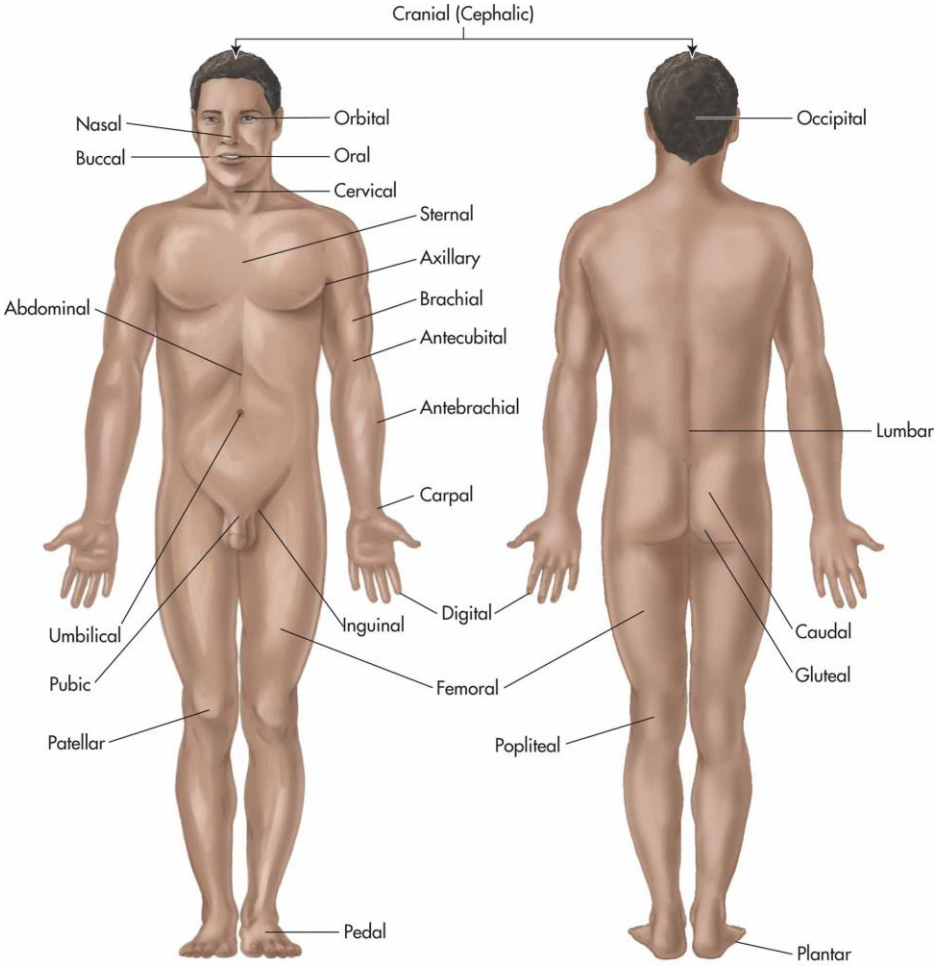
Abdominal Quadrants

- The abdomen can be separated into four quadrants
- Knowing the organs located in the quadrant where the pain is arising can give you a clue as to what type of problem the patient has.
  - RLQ (right lower quadrant) pain – appendicitis
  - RUQ (right upper quadrant) pain – liver or gallbladder problems

Abdominal Quadrants



Common Body Regions



Body Regions and Their Location

BODY REGION	LOCATION	MEDICAL EXAMPLE
antebrachial	forearm	between the wrist and elbow
antecubital	depressed area in front of elbow	area used to draw blood or start an IV
axillary	armpit	can be used to take temperature
brachial	upper arm	area where blood pressure is taken
buccal	cheek	checked for central cyanosis
carpal	wrist	carpal tunnel syndrome
cervical	neck	cervical collar needed for neck injuries
digital	fingers	digital oxygen sensors
femoral	thigh	femoral pulse checked for effective CPR

Body Regions and Their Location

BODY REGION	LOCATION	MEDICAL EXAMPLE
gluteal	buttocks	an injection site
lumbar	lower back	lumbar pain often occurs on long car trips
nasal	nose	medications can be given by nasal spray
oral	mouth	oral route is most common route for medications
orbital	eye area	orbital injury can cause damage to sight
patellar	knee	patellar injuries are very common in sports
pedal	foot	people with heart problems may have pedal edema (swelling)
plantar	sole of foot	plantar warts can be painful
pubic	genital region	the pubic region is often checked for body lice
sternal	breastbone area	the sternal area is used for CPR
thoracic	chest	the thoracic area is used to listen to heart and lung sounds