

Medical Terminology

lesson 1:

Basic Elements of a Medical Word

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Course outlines

1. Basic Elements of a Medical Word
2. Human body terms
3. Diagnosis and intervention
4. Musculoskeletal System
5. Respiratory System
6. Cardiovascular System
7. Gastrointestinal System
8. Urinary System
9. Reproductive System
10. Nervous System
11. Integumentary System
12. Endocrine System

Define Medical Terminology?

Medical terminology is a special vocabulary used by **health care professionals** for effective and **accurate communication**. Because it is based mainly on Greek and Latin words, medical terminology is consistent and uniform throughout the world.

- ✓ It is the **professional language** of those who are directly or indirectly engaged in the art of healing.
- ✓ Terms dealing with the diagnosis and treatment of diseases and maintenance of health.
- ✓ Our **body organs**(Anatomic structures) are of **Latin** terms, whereas **diseases** that affect these organs are **Greek** origin.

- **Basic Elements of a Medical Word**

1. Word Root
2. Combining Form
3. Suffix
4. Prefix

These four parts of a word are known as **ELEMENTS**.

MEDICAL TERMS BUILT FROM “WORD PARTS”

- **Word Root**
 - Refers to **structure and function** of the body
- **Combining Form**
 - Root plus **vowel**
- **Combining Vowel**
 - **Links** root to next element
 - Usually “o,” but can be “a,” “e,” “i,” or “u”
- **Suffix**
 - Attaches to **end** of roots and combining forms
- **Prefix**
 - Attaches to **beginning** of roots and combining forms

Word Root

- Main part or foundation of a word.
- All words have at least one word root.
- A word root may be used alone or combined with other elements to form a complete word.
IE: SPEAK (word root) + ER (suffix) =
SPEAKER (complete word)
- The word root usually refers to a body part.
 - Some root words are derived from the Latin or Greek language

• **Word Root Examples**

- “dent” means tooth
- “dermat” means skin
- “cardi” means heart
- “gastr” means stomach
- “pancreat” means pancreas

• Combining Forms

- Correct **pronunciation** of medical words is important.
- In order to make the pronunciation of word roots **easier**, sometimes it is necessary to insert a **vowel** after the root.
- The combination of a word root and a vowel is known as a **COMBINING FORM**.

- Combining forms consist of a combining vowel.
 - The combining vowel is usually an “o”, but

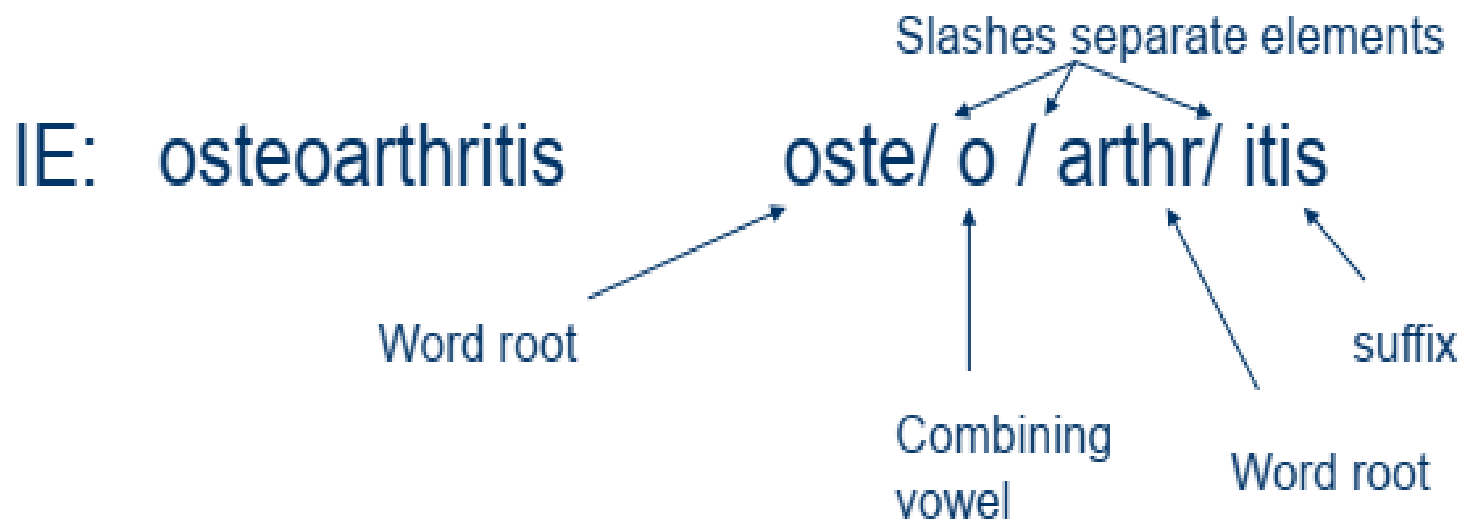
others may be used ‘e’ or ‘l’

IE: gastr / o pronounced GASTRO.

Word root Combining vowel



- When a word has more than one root, a combining vowel is used to link the root to each other.



Example

Leukocytopenia

Word Roots: Leuk / (white)

cyt / (cell)

Combining Vowel / o /

Suffix: / penia (decrease)

Suffixes

- A suffix is added to the END of a word root or combining form to modify its meaning.
- By adding a suffix to the end of a word root, we create a noun or adjective with a different meaning

Suffixes

- A combining vowel is used between a word root and a suffix that begins with a consonant (not a vowel).

- This is to make pronunciation easier.

Word root: scler / (hardening)

Suffix: / derma (skin)

Term: Scler / o / derma (hardening of the skin)



Combining vowel

Meanings of certain suffixes

-al → pertaining to

dent/al (pertaining to teeth)

-er → one who.....

speak/er (one who speaks)

-able → capable of being.....

playable (capable of being played)

-oma → (tumor)

hematoma (blood tumor)

NOTE: The element that comes before a suffix can either be a word root or combining form

- **The suffixes:**

- scope → (instrument to view)

- rrhexis → (rupture)

- rrhea → (flow or discharge)

- all begin with a **consonant**, therefore a **combining vowel** must be used between the **word root** and the **suffix**.

- **The suffixes:**

- algia → (pain)

- edema → (swelling)

- uria → (urine, urination)

- These suffixes begin with a **vowel**, therefore a **combining vowel** is **NOT** used between the **word root** and the **suffix**.

Prefixes

- A prefix is a **syllable** or syllables placed **BEFORE** a word or word root to alter its meaning or create a new word.

Some prefixes:

- Hyper → (excessive)
- Pre → (before)
- Post → (after)
- Homo → (same)
- Hypo → (under)

Example

- **Hypoinsulinemia**

Hypo / insulin / emia



- **Prefix** **Word root** **suffix**

- **→ LOW INSULIN BLOOD**

- **Notice that there is no combining vowel in this word because the prefix ends with a vowel and the suffix begins with a vowel.**

DECIPHERING MEDICAL TERMS

- **Start from right and work left**
 - Identify meaning of the suffix
 - Identify meaning of the prefix (if there is one)
 - Identify meaning of the root

- **“Last, First, then Middle”**

Example

- **‘Cardiology’:**
- **Suffix → “-ology” means “study of”**
- **Root → “cardi” means “heart”**
- **Prefix → none in this word**
- **Meaning → Study of the heart**

Example

- **‘Polyarthritis’:**
 - **Suffix → “-itis” mean “inflammation”**
 - **Root → “arthr” means “joint”**
 - **Prefix → “poly” means “many, much”**
 - **Meaning → Inflammation of many joints**

Example

- **Pericarditis**

- itis → suffix meaning Inflammation of
- (notice, no combining vowel because suffix started with a vowel)
- Peri → prefix meaning around
- Card → root meaning heart
- → **Inflammation around the heart**
(inflammation of a membrane around the heart)



Thank
you



Medical Terminology

lesson 2: Human body terms





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ORGANIZATION OF THE BODY

- The human body is made up of **structures** that come together to make up a whole.
- These structures start from the **smallest unit**, which is an **atom**, to the largest, **most complex unit**, the human **organism**.
- The body is made up of **many levels** of structural organization.
- cells make up **tissues**, tissues form **organs**, organs form body **systems**, and the body systems make up an **organism**.
- **Organism** refers to an individual being with life.

Organization of Your Body

Organization Structure Diagram

Cell	Tissue	Organ	Organ System
Cardiac Muscle Cell	Cardiac Muscle	Heart	Circulatory System
			

Smallest
Level

Largest
Level



ORGANIZATION OF THE BODY

- The basic unit of life is the *cell*.
- Cells divide until they mature.
- Some cells can divide without limit.
- These are referred to as *stem cells*.
- These specialized cells are ample in a **fetus** and in **newborn cord blood**.
- ***Cytology*** refers to the study of the formation, structure, and function of cells.

- A group of **similar cells that work together and perform a specific function** forms the next level of organization, **tissues**.
- **Histology** is the study of the microscopic structure of tissues.

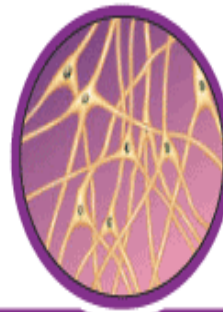
There are **four types of tissues** according to **function**:

- connective,
- epithelial,
- muscular,
- and nervous.

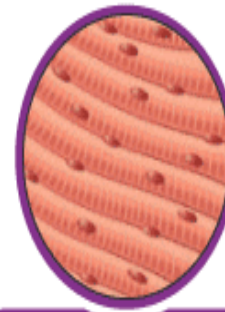
FOUR TYPES OF TISSUES



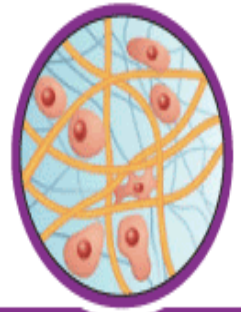
Epithelial tissue



Nervous tissue



Muscle tissue

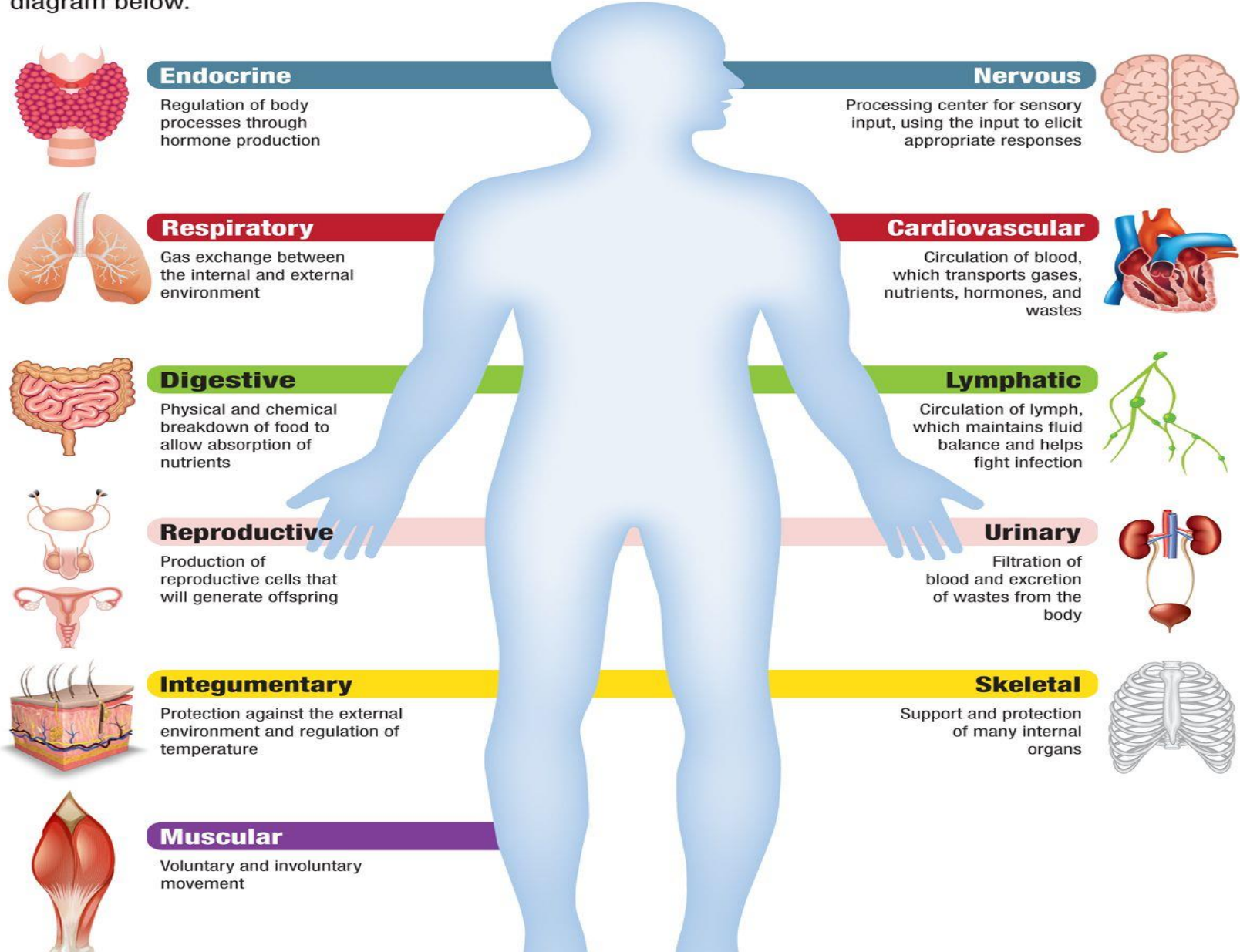


Connective tissue

- **Organs:** formed when two or more tissue types work together to accomplish a particular function.
- Ex; The heart, lungs, and skin.
- **Body system:** a set of organs that have a collective function.

Human Body Systems

There are 11 main systems that keep our bodies functioning. Learn the primary roles of each in the diagram below.



- There are **instances** when tissues or organs are **abnormally formed**.
- The **prefix ana-** and **suffix -plasia** are commonly used to describe these abnormalities.

Word Part	Meaning	Example
a-	without	<i>Aplasia</i> denotes underdeveloped organ or tissue.
-plasia	formation	<i>Dysplasia</i> refers to abnormal development of tissues.
dys-	bad	
hypo-	below normal	The underdevelopment of organ or tissue is known as <i>hypoplasia</i> (a less severe form of aplasia).
hyper-	above normal	An increase in the number of cells is known as <i>hyperplasia</i> .
-trophy	nutrition	An increase in the size of cells is referred to as <i>hypertrophy</i> .

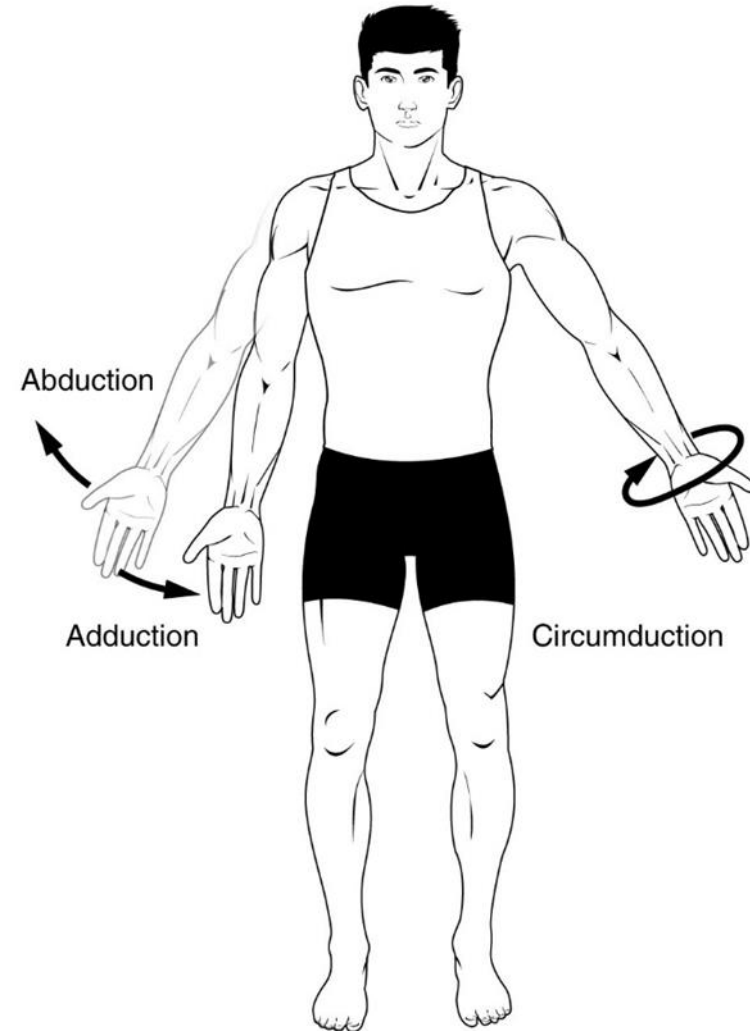
Anatomical position

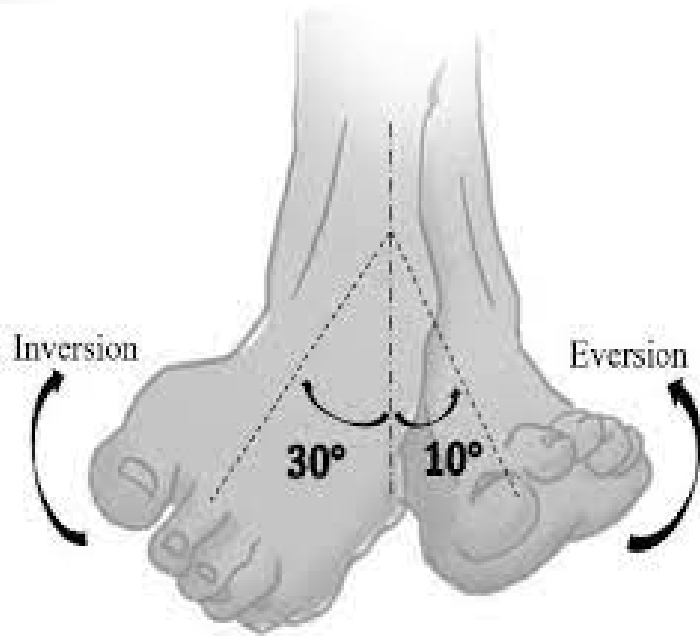
- The body standing erect, eyes directed forward, hands at the side, palms turned outward, and lower limbs parallel with the toes pointing forward.
- Directional terms and planes are used to depict the position and direction of different body structures relative to the *anatomic position*.



Directional Terms

- **Abduction:** movement of body parts **away** from the midline
- **Adduction:** movement of body parts **toward** the midline
- **Inversion:** turning **inward**
- **Eversion:** turning **outward**
- **Palmar:** pertains to the **palm** of the hand
- **Plantar:** pertains to the **sole** of the foot
- **Supination:** turning **upward**
- **Pronation:** turning **downward**





Palmar –
palm of hand



Plantar –
bottom of
foot

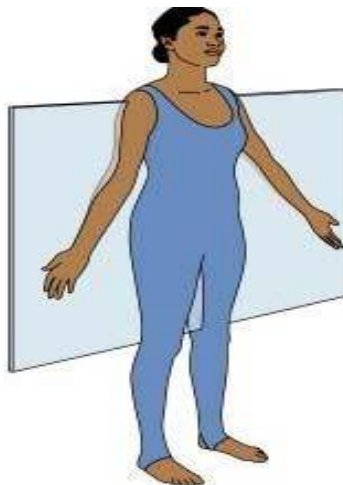
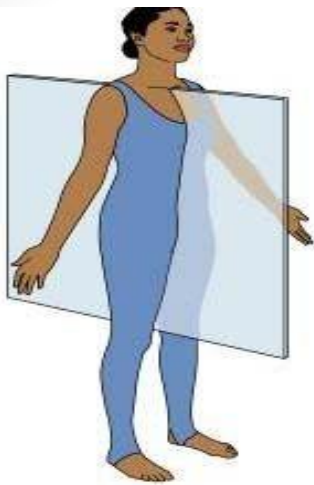


Planes

- Reference planes are **imaginary** flat surfaces that divide the body into portions or sides.

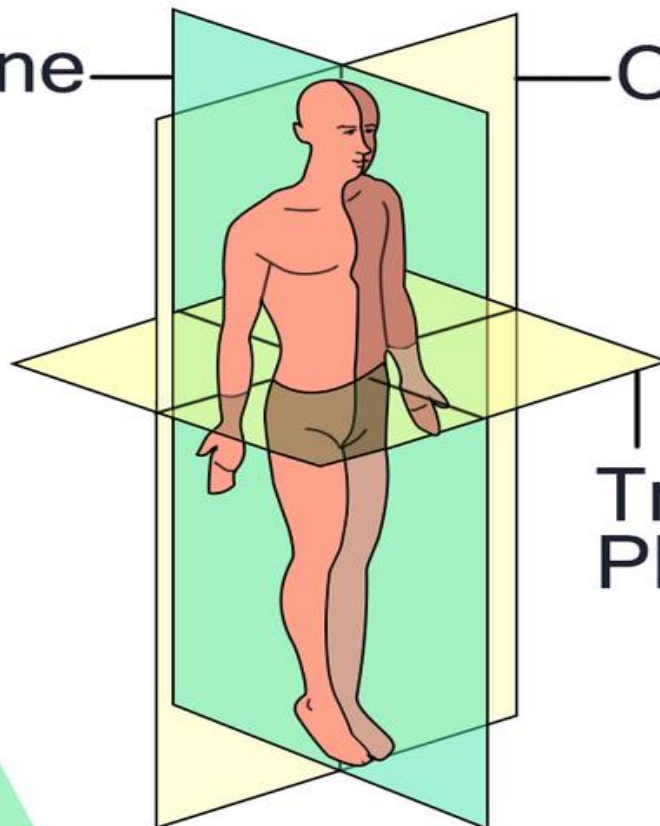
The three reference planes are:

- ***Frontal/coronal plane***: splits the body into front and back portions
- ***Transverse plane***: splits the body into upper and lower portions
- ***Sagittal plane***: splits the body into right and left sides



Sagittal Plane

Coronal Plane

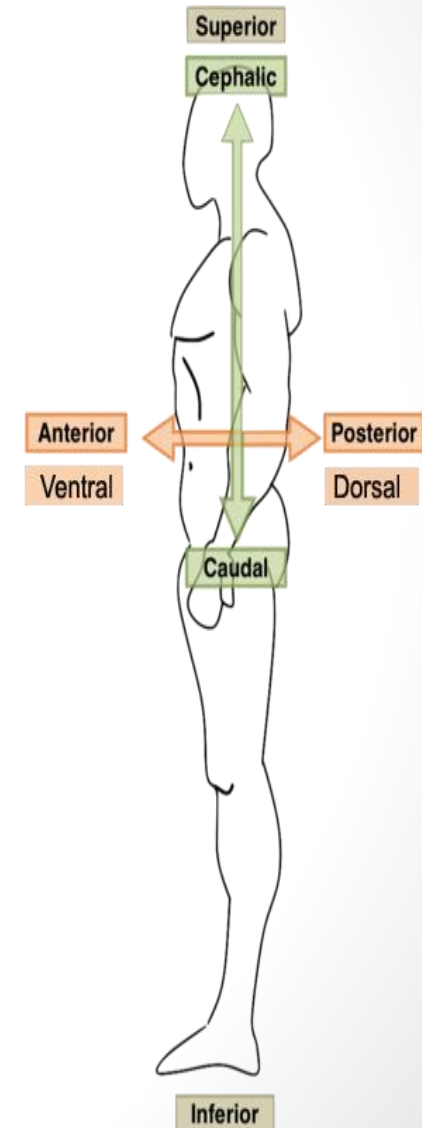
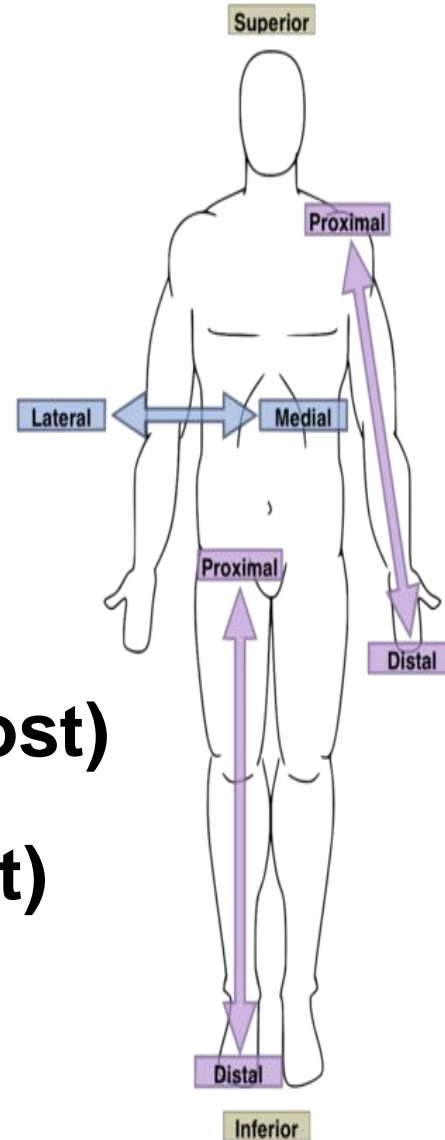


Transverse Plane

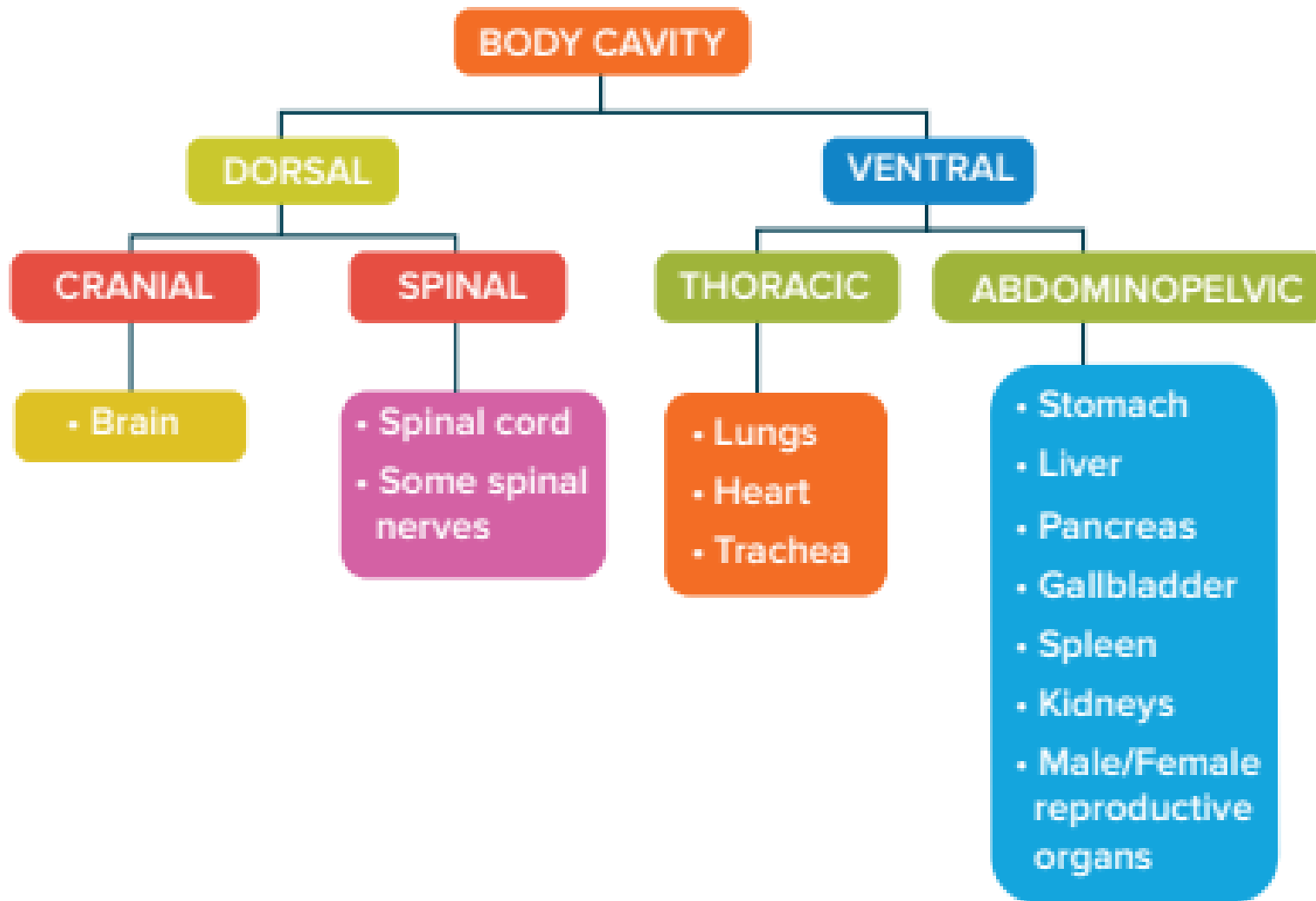
Body Planes

Body directional terms:

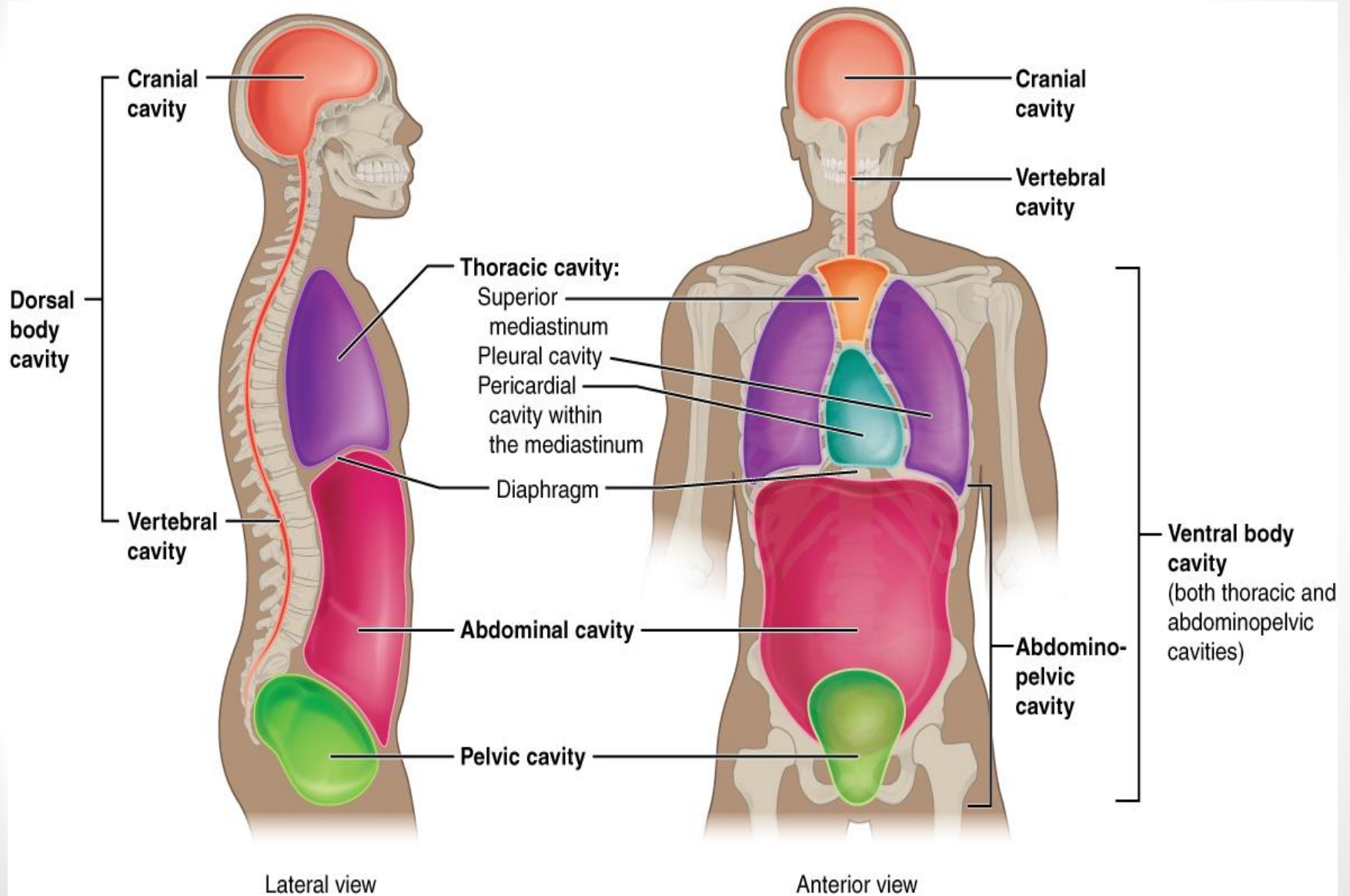
- ✓ ***Anterior*** (front)
- ✓ ***Posterior*** (behind)
- ✓ ***Lateral*** (side)
- ✓ ***Medial*** (middle)
- ✓ ***Superior*** (uppermost)
- ✓ ***Inferior*** (lowermost)



BODY CAVITIES



BODY CAVITIES



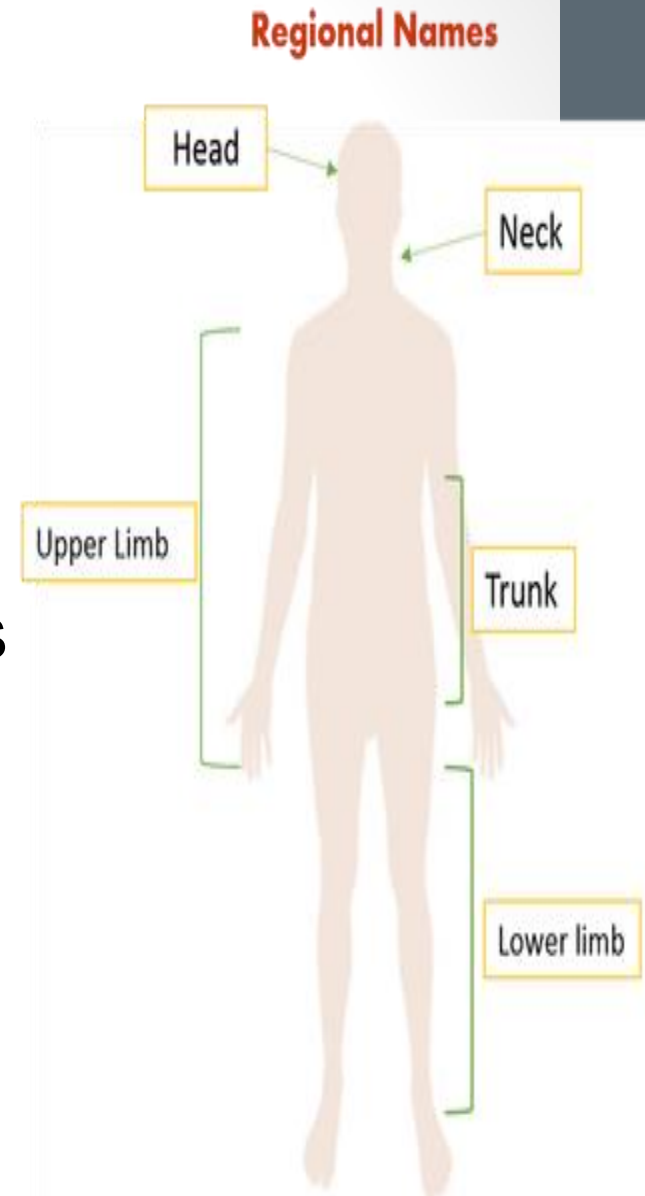
BODY REGIONS

The body is divided into four major regions:

- **Head:** brain and the special sense organs
- **Neck**
- **Torso:** chest, abdomen, pelvis
- **Extremities**

Upper: arms, wrists, hands, fingers

Lower: thighs, knees, legs, ankles, feet, toes



BODY FLUIDS

- Approximately **60%** of an average adult's weight is **fluids**.
- Fluids are needed by the body for **transport** of nutrients and **removal** of wastes.
- The two primary body fluids are **blood** and **lymph**.
- Most body fluid is *Intracellular* (found within the cell), but some is *extracellular* (out side the cell).
- The two types of extracellular fluid are *Interstitial* fluid (fluid found between the cells of the body) and *plasma* (fluid part of the blood).

BODY FLUIDS

Combining Form/ Word Part	Meaning	Word Association
-crine	secrete	endocrine
lacrim/o	tear, tearing, crying	lacrimation
-emia	condition of the blood	anemia
hem/o	blood	hemoglobin
lymph/o	lymph	lymphatic
muc/o	mucus	mucolytic
-poiesis	production	erythropoiesis
-poietin	substance that causes production	erythropoietin
py/o	pus	pyorrhea
sial/o	saliva	sialography
ur/o	urine	urinary

BLOOD

- Blood carries oxygen, nutrients, vitamins, antibodies, and other substances to different parts of the body. It also helps carry carbon dioxide and other wastes away.

<i>Suffix</i>		
-cyte	cell	cytology
-osis	increased or abnormal	leukocytosis
-penia	deficiency	leukopenia
-poiesis	production	hematopoiesis

BLOOD

Combining Form	Meaning	Word Association
coagul/o	coagulation	coagulopathy
cyt/o	cell	cytology
erythr/o	red	erythrocyte
hem/a, hemat/o	blood	hematology
immun/o	immune	immunization
leuk/o	white	leukocyte
thromb/o	clot (thrombus)	thrombocyte

BODY DEFENSES AND IMMUNITY



- *Susceptibility* and *resistance* are two essential terms related to body defenses.
- Vulnerability to a disease or disorder is known as susceptibility, while resistance refers to the body's natural ability to fight microorganisms or toxins.
- The body has two defense mechanisms, *non specific resistance* and *specific* (selective) *resistance*, otherwise known as *immunity*.

BODY DEFENSES AND IMMUNITY



- Nonspecific resistance is the body's first-line of defense and is directed against all pathogens.
- Several body systems are involved in protecting the body.
- Immunity, on the other hand, works - against infectious microorganisms and can be classified into four categories.

BODY DEFENSES AND IMMUNITY

BODY DEFENSES

Nonspecific Defenses

- Intact skin
- Tearing of the eyes
- Urinary system
- Mucous membranes
- Digestive system
- Respiratory system
- Lymphatic system

Specific Defenses (Immunity)

Natural

- Active (*contracting a disease*)
- Passive (*maternal antibodies*)

Artificial

- Active (*antigens*)
- Passive (*antibodies*)

Defense Mechanism

Non-specific

Barriers

- Physical skin, mucosa
- Chemical:
gastric acid,
skin secretions,
digestive enzymes

Complement

- Plasmaproteins

Phagocytosis

Specific

Natural

Artificial

Antibody-Mediated

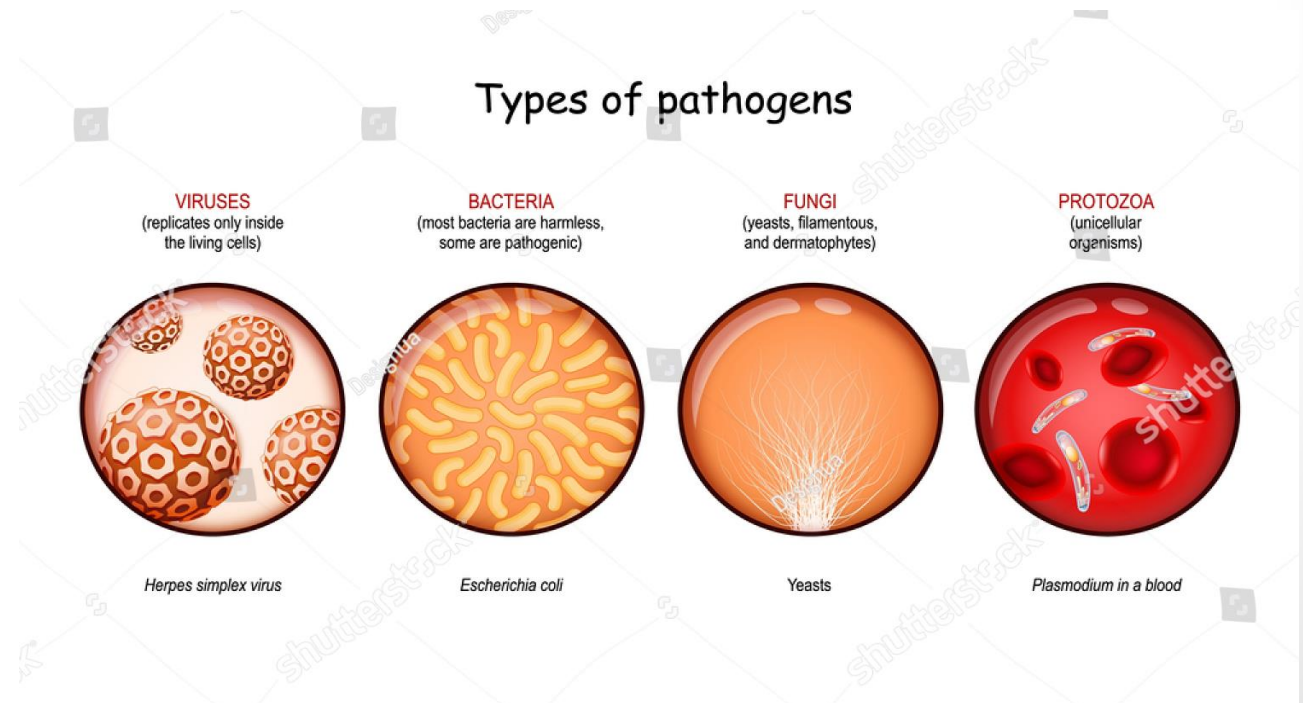
- B lymphocytes;
- plasmocells and their

Cell-Mediated

- T lymphocytes and
macrophages and their

PATHOGENS

- Any microorganism capable of producing a disease is known as a *pathogen*.
- Generally, there are four types of *pathogenic* (the ability to produce disease) microorganisms:
- Virus
- Bacteria
- Fungi
- Protozoa



Weapons of mass destruction (WMD)

- Acts of **terrorism** have been a growing concern worldwide.
- Terrorists make use of various forms of **weapons of mass destruction** (WMD).
- The following categories have been identified by several government agencies:

B	Biological
N	Nuclear
I	Incendiary
C	Chemical
E	Explosive



Weapons of mass destruction (WMD)

- Using pathogenic biological agents to cause panic, fear, and terror in a population is *bioterrorism*.
- **Microorganisms** are used as weapons of **mass destruction** because they can **easily be transmitted**, have high chances of causing **death**, may lead to **panic**, and lastly, would require **extraordinary attention**.

*Thank
you*

