



المرحلة الثانية 2023-2024

Medical Terminology



Lecture :5th

Medical Terminology prefixes Denotes Size, Number, time and place

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PREFIXES FOR NUMBERS

Prefixes that denote numbers tell you whether something is one-half, one, two, three, or more; whether it is single or multiple; and whether it involves one side, two sides, or more.

Prefix	Definition	Word Example	Pronunciation	Definition
uni- (mono-)	one	uni lateral	u'-ni-lat-er-al	affecting only one side
bi- (diplo-)	two (double), twice	bi lateral	bi-lat-er-al	having two sides; pertaining to both sides
		bi cuspid	bi-kus-pid	having two points or cusps, e.g., bicuspid (mitral) valve; a bicuspid (premolar) tooth
gemin-	double, pair	gemi ni	jim-in'-eh	twins
tri-	three	tri cuspid	tri-kus-pid	having three points or cusps, as a valve of the heart; the valve that guards the opening between the right atrium and right ventricle
		tri ceps	tri-seps	a muscle of the upper arm having three heads
quadri-	four	quadri plegic	kwod'-ri-ple-jic	paralysis of all four limbs
tetra-	four	tetra somic	tet-rah-some-ik	having four chromosomes where there should be only two
quint-	five	quint ipara	kwin-tip-ah-rah	a woman who has had five pregnancies that resulted in viable offspring (Para V)
sext-, sexti-	six	sext uplet	sexs-tu-plit	any one of six offspring produced at the same birth
sept-, septi-	seven	sept uplet	sep-tu-plit	one of seven offspring produced at the same birth

octa- (octo-)	eight	octa hedron	ok-ta-he-dron	an eight-sided solid figure
nona-	nine	nona n	no-nan	having symptoms that increase or reappear every ninth day; malarial symptoms are an example
deca-	ten	deca gram	dek-a-gram	a weight of 10 grams
multi-	many (more than one)	multi cellular	mul´-ti-sel-u-lar	composed of many cells
primi-	first	primi gravida	pri-mi-grav-i-dah	a woman pregnant for the first time
semi-	half (partially)	semi circular	sem´-i-ser-ku-lar	shaped like a half circle
hemi-	half, also one-sided	hemi anopsia	hem´-e-ah-nop-se-ah	defective vision or blindness in half of the visual field
ambi-	both or both sides	ambi dextrous	am´-bi-deks-trus	able to use either hand with equal dexterity
		ambi valence	am-biv-ah-lens	simultaneous existence of conflicting emotional attitudes toward a goal, object, or person
null-	None	null ipara	null-eh-pair-ah	a woman with no children
pan-	all	pan cytopenia	pan-site-oh-peen´-ee-ah	decreased number of all blood cells

Prefixes of size in the real world

A prefix is a word element attached to the beginning of a word or word root.

However, not all medical terms have a prefix.

Adding or changing a prefix changes the meaning of the word.

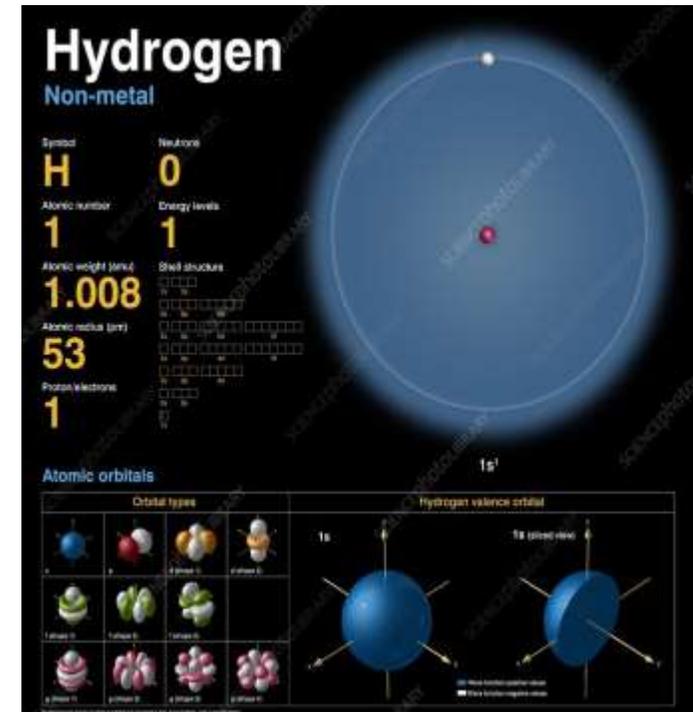
Prefixes usually indicate

a number, time, position, direction, or negation.

Many of the same prefixes used in medical terminology are also used in the English language

Prefixes of size in science

- Scientists use prefixes of size to measure the size of atoms and molecules.
- For example, an atom of hydrogen is about 1 picometer in diameter. A picometer is one trillionth of a meter.
- Scientists also use prefixes of size to measure the distance between galaxies.
- For example, the Andromeda Galaxy is about 2.5 million light-years from Earth.
- A light-year is the distance that light travels in one year, which is about 9.4 trillion kilometers.



Introduction

- Prefixes of size are used to indicate the size of something.
- They can be used to describe the size of an object, a number, or a unit of measurement.

Examples of prefixes of size

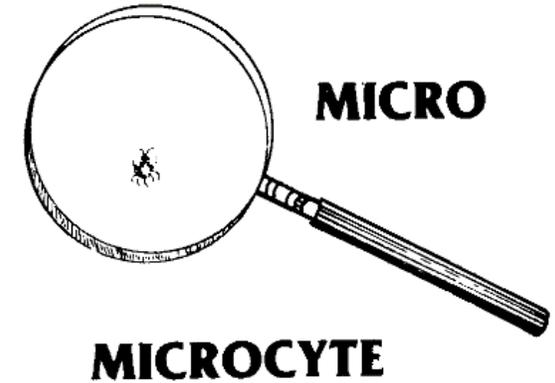
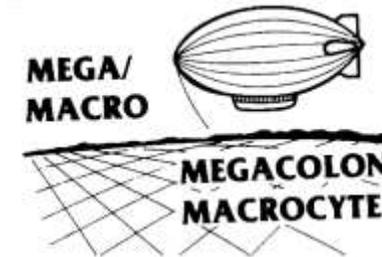
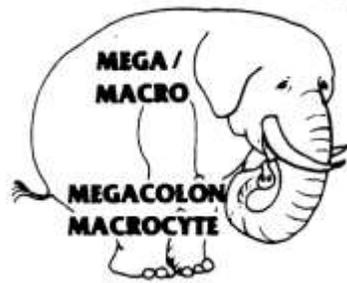
- pico (one trillionth)
- femto (one quadrillionth)
- atto (one quintillionth)
- zepto (one sextillionth)
- yocto (one septillionth)

Prefix	Symbol	Value
atto	a	10^{-18}
femto	f	10^{-15}
Pico	p	10^{-12}
Nano	n	10^{-9}
Micro	μ	10^{-6}
Milli	m	10^{-3}

Examples of prefixes of size

- Some common prefixes of size include:
 - o micro- (very small)
 - o milli- (thousandth)
 - o centi- (hundredth)
 - o deci- (tenth)
 - o deci- (tenth)
 - o hecta- (hundred)
 - o kilo- (thousand)
 - o mega- (million)
 - o giga- (billion)
 - o tera- (trillion)
 - o peta- (quadrillion)
 - o exa- (quintillion)

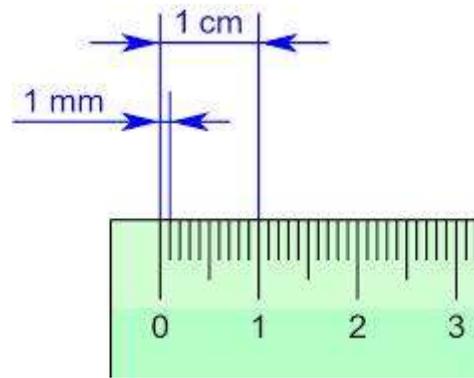
- Micro-
 - o Microorganism
 - o Microchip
 - o Microscope



- Micro- is a prefix meaning small. A cyte is a stem meaning cell. A microcyte, therefore, is a very ___ cell.
- Macro- is a prefix which means the opposite of micro. Macro- is used in words to mean _____.
- Things that are macroscopic can be seen with the naked eye. Very large cells are called _____cytes.
- Mega- is also a prefix which means large. A megacolon is an abnormally _____ colon.

➤ Milli-

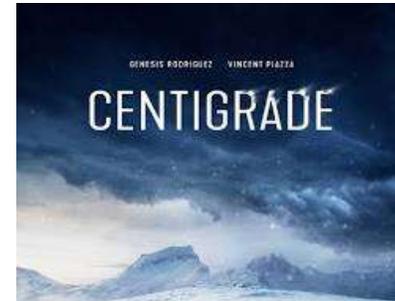
- Millimeter
- Milligram
- Milliliter



Examples of prefixes of size

• Centi-

- Centimeter
- Centimeter
- Centigrade



	LENGTH	MULTIPLE POWER OF 10
	Meter (m)	1
)	Kilometer (km)	1000
)	Decimeter (dm)	1/10
)	Centimeter (cm)	1/100
L)	Millimeter (mm)	1/1000
l)	Micrometer (µm)	1/1,000,000
L)	Nanometer (nm)	1/1,000,000,000
)	Picometer (pm)	1/1,000,000,000,000

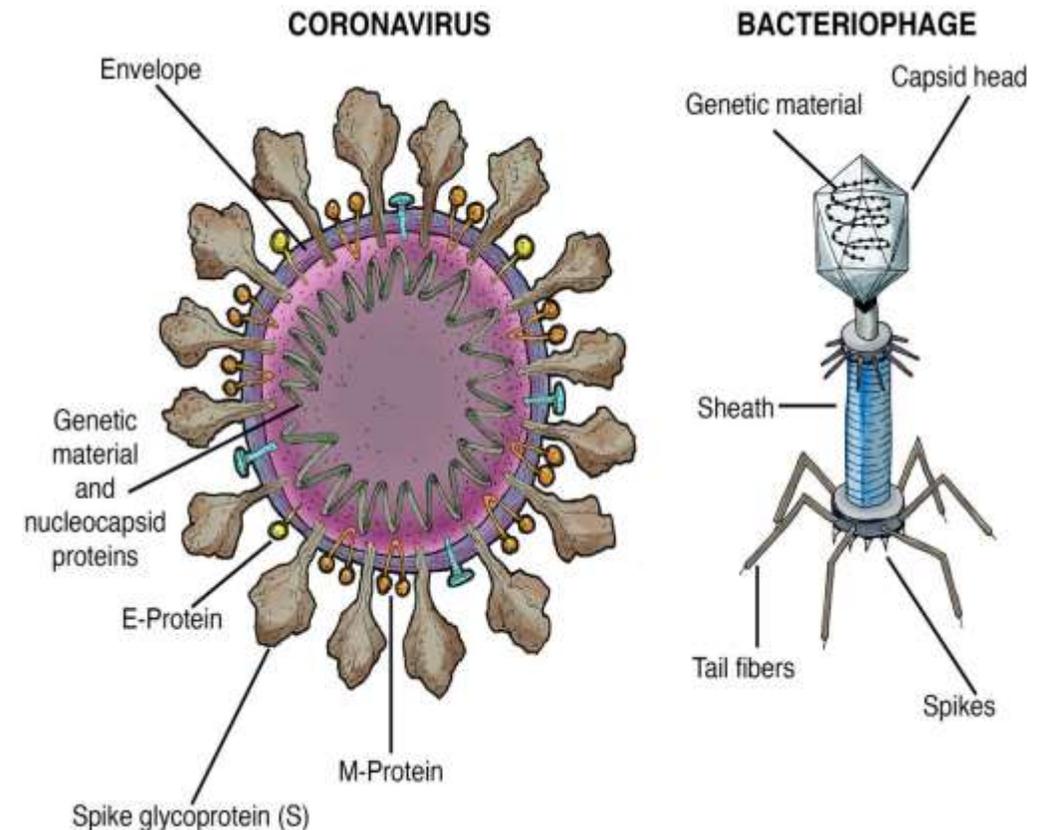
Milli	Milli means 1000th so milligram means: A thousandth of a gram.
Centi	Centi means 100th so centigram means: A hundredth of a gram.
Deci	Deci means 10th so decigram means: A tenth of a gram.
Grams	
Deca	Deca means 10 so decagram means: Ten grams.

• Deci-

- Decimeter
- Decigram
- Deciliter

Examples of prefixes of size in everyday life

- Micro-
 - Microorganisms: very small living things, such as bacteria and viruses
- Prefixes of time are used in medical terminology to describe the timing of events or conditions.
- Some common prefixes of time in medical terminology include:
 - ante- (before)
 - chrono- (time)
 - peri- (around)
 - post- (after)
 - pre- (before)
 - re- (again)



Prefixes of time in medical terminology (continued)

- Prefixes of time can also be used to describe the frequency of a condition. For example, the prefix "intermittent" is used to describe a condition that occurs on and off.

For example, intermittent claudication is pain in the legs that occurs when walking and goes away when resting.



- The prefix "continuous" is used to describe a condition that occurs all the time.
For example, continuous glucose monitoring is a device that measures blood sugar levels continuously

Medical terminology prefixes of time

Prefixes of time can also be used to describe the course of a disease or condition. For example, intermittent claudication is a condition in which a person experiences pain in their legs when they walk, but the pain goes away when they rest. Prophylactic antibiotics are antibiotics that are given to prevent an infection from developing. Retrograde amnesia is a type of amnesia in which a person is unable to remember recent events.

II: Introduction

- Prefixes of time are used in medical terminology to indicate the timing of a medical event or condition.
- Some common prefixes of time in medical terminology include:
 - ante- (before)
 - post- (after) pre- (before)
 - pro- (forward)
 - retro- (backward)
 - intra- (during)
 - inter- (between)
 - peri- (around)
 - pre- (before)
 - pro- (forward)
 - retro- (backward)

Examples of prefixes of time in medical terminology

- Ante-
 - Antenatal (before birth)
 - Antepartum (before childbirth)
 - Antecedent (preceding event or condition)
- Post-
 - Postoperative (after surgery)
 - Postpartum (after childbirth)
 - Postmortem (after death)
- Intra-
 - Intraoperative (during surgery)
 - Intrapartum (during childbirth)
 - Intracranial (within the skull)

- **Inter-**

- Intermittent (occurring at intervals)
- Interparoxysmal (between seizures)
- Intermenstrual (between menstrual cycles)

- **Peri-**

- Perinatal (around the time of birth)
- Perimenopausal (around the time of menopause)
- Periimplantitis (inflammation around a dental implant)

- **Pre-**

- Preoperative (before surgery)
- Prenatal (before birth)
- Premature (before maturity)

- **Pro-**

- Prognosis (forecast of the course of a disease)
- Prophylactic (preventive)
- Prolapse (downward displacement of an organ or body part)

- **Retro-**

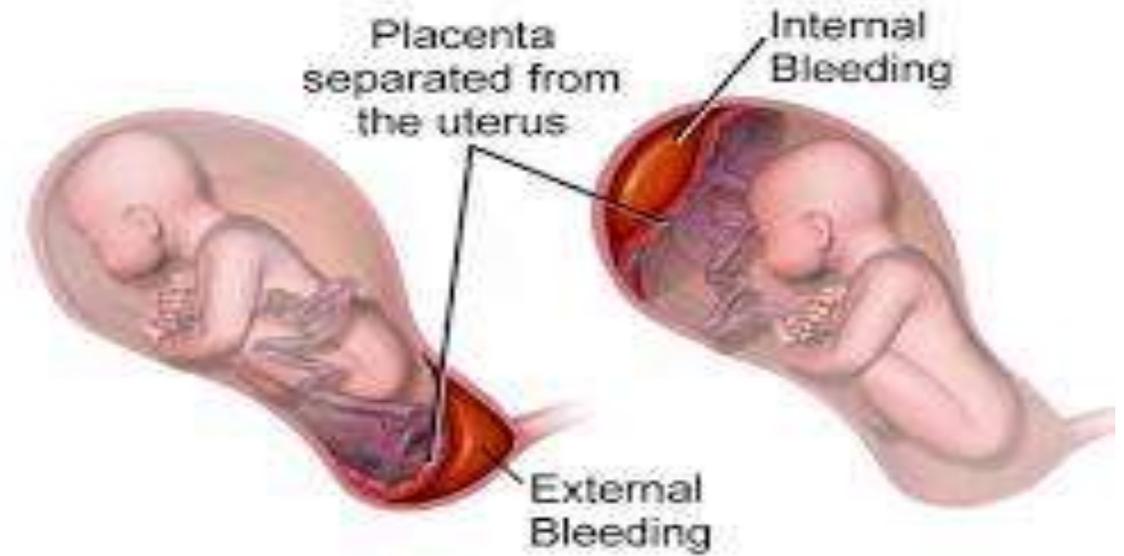
- Retrograde (backward)
- Retroactive (applying to something that has already happened)

Retroperitoneal (behind the peritoneum, the membrane that lines the

Examples of prefixes of time

- **ante-**

- Antenatal care: care provided to a pregnant woman before childbirth.
- Antepartum hemorrhage: bleeding from the vagina during pregnancy.
- Antegrade amnesia: loss of memory for events that occurred before a brain injury.

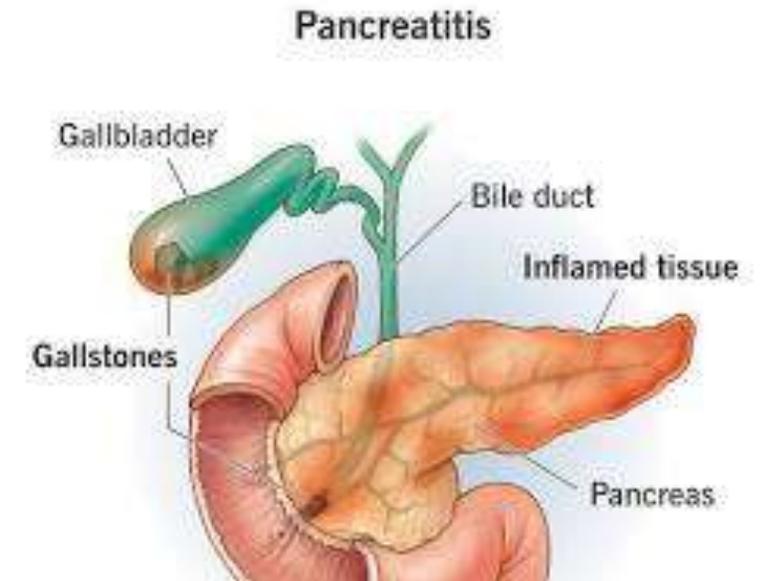


Abruptio Placenta (Placental Abruption)

Prefixes of time in medical terminology (continued)

- Prefixes of time can also be used to describe the duration of a condition. For example, the prefix "chronic" is used to describe a condition that is long-lasting or persistent. For example, chronic kidney disease is a long-lasting condition that affects the kidneys.
- The prefix "acute" is used to describe a condition that is sudden and severe. For example, acute myocardial infarction is a sudden and severe heart attack.

- Acute myocardial infarction (AMI) (heart attack)
- Acute pancreatitis (inflammation of the pancreas)
- Acute respiratory distress syndrome (ARDS) (severe lung condition that makes it difficult to breathe)

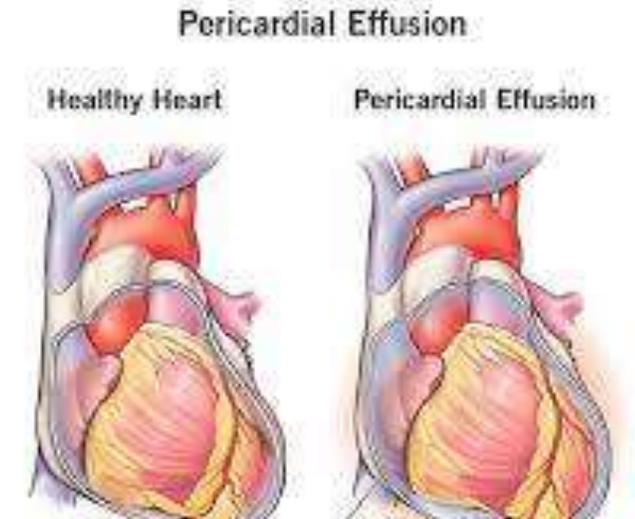


• chrono-

- Chronobiology: the study of biological rhythms.
- Chronological age: the age of a person calculated from the date of birth.

• peri-

- Perinatal mortality rate: the number of stillbirths and deaths of infants within the first seven days of life per 1,000 live births.
- Pericardial effusion: a buildup of fluid around the heart.
- Perimenopause: the period of time leading up to menopause.



- **post-**

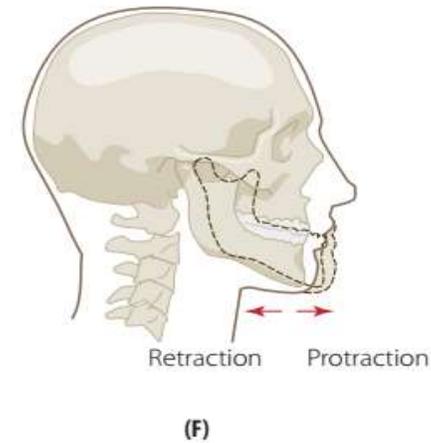
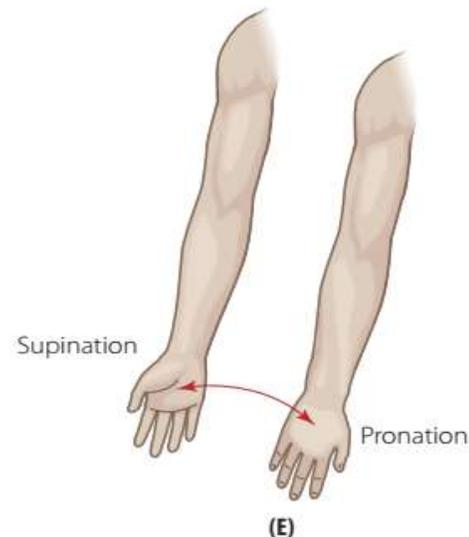
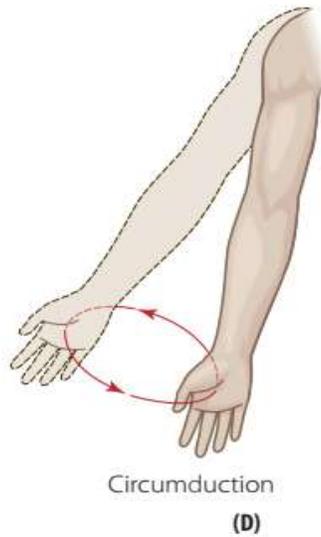
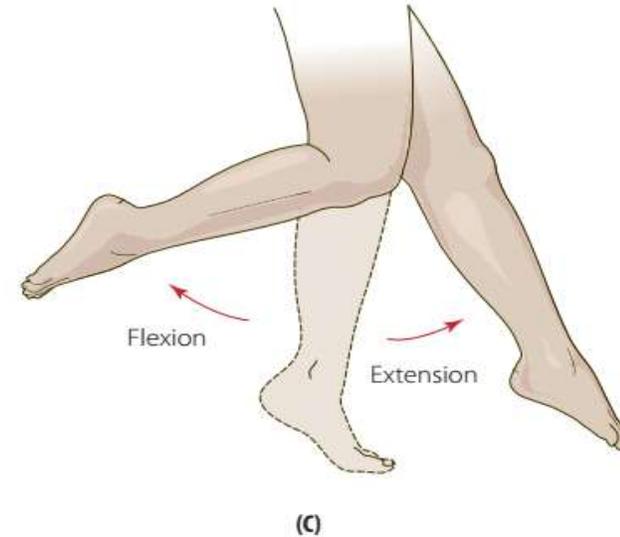
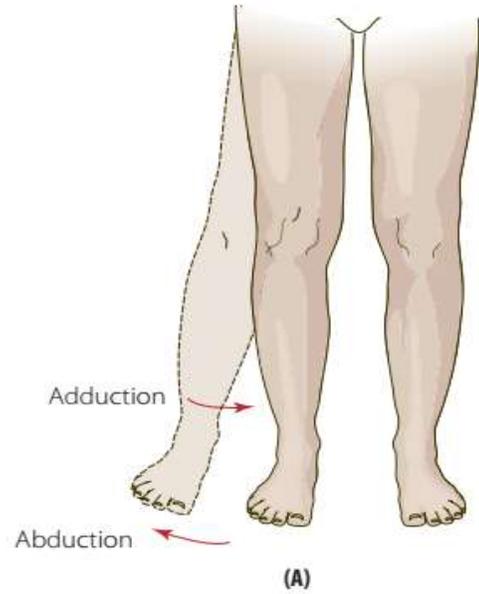
- Postoperative pain: pain experienced after surgery.
- Postpartum depression: depression experienced after childbirth.
- Postmortem examination: an examination of a body after death.

- **pre-**

- Preoperative care: care provided to a patient before surgery.
- Premature birth: a birth that occurs before 37 weeks of pregnancy.
- Preeclampsia: a pregnancy complication characterized by high blood pressure and protein in the urine.

PART 2: PREFIXES FOR POSITIONS AND DIRECTIONS

Prefixes that indicate directions describe a location. They tell you whether the location is above, below, inside, in the middle, around, near, between, or outside a body structure.



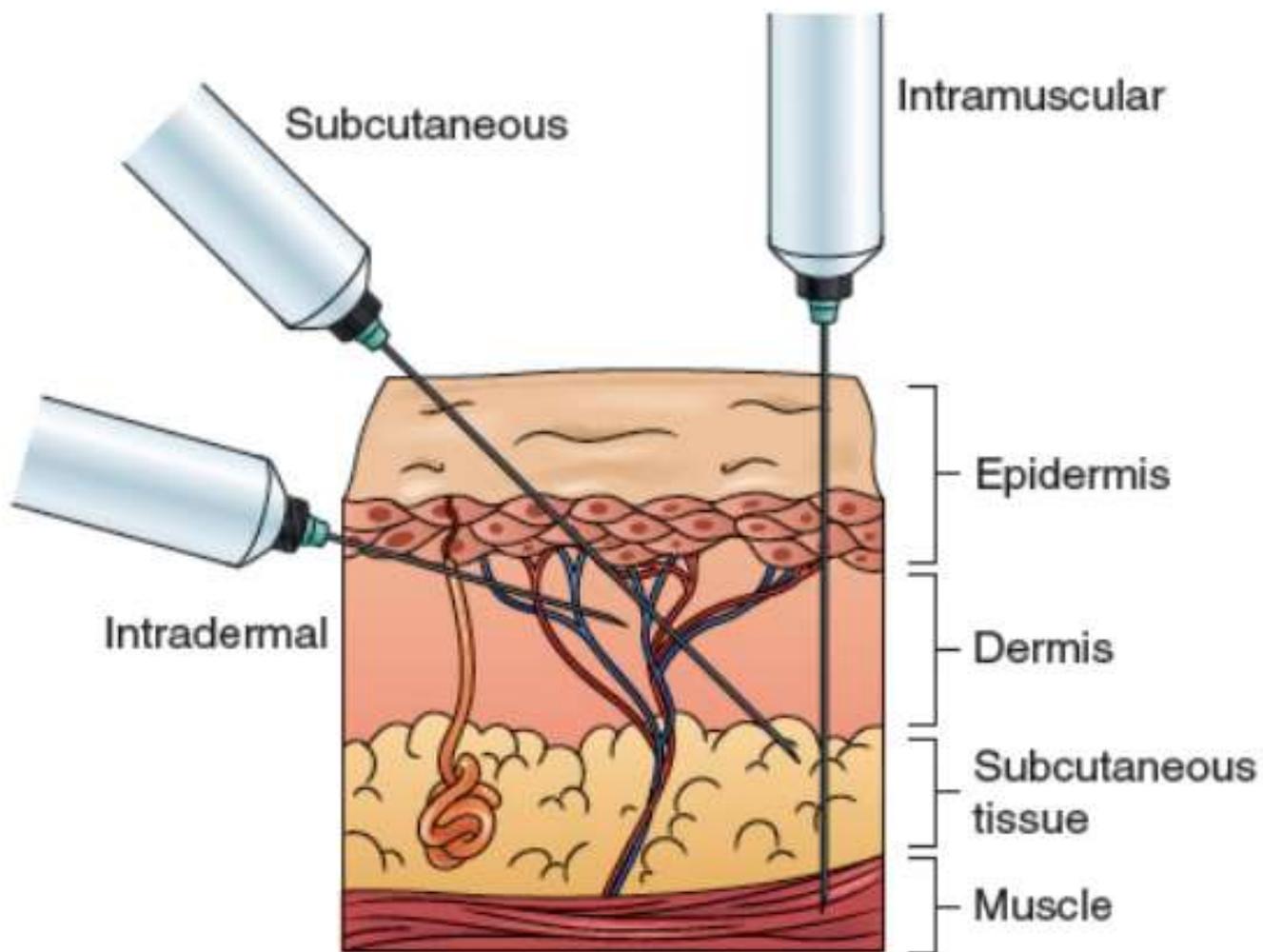


Figure 3-1 Hypodermic needles inserted within the skin (**intradermal**), under the skin (**subcutaneous**), or in between the muscular layer (**intramuscular**).

TABLE 5-2 Prefixes for Positions and Directions

Prefix	Definition	Word Example	Pronunciation	Definition
ab-	away from	ab duction	ab- <u>duk</u> -shun	to draw away from; the state of being abducted
ad-	toward	ad duction	ah- <u>duk</u> -shun	to draw toward a center or median line
ante-	before, in front	ante cubital	an-tee- <u>cu</u> -bi-tol	"The space" in front of the elbow
circum-	around	circum cision	ser'-kum- <u>sizh</u> -un	surgical removal of all or part of the foreskin, or prepuce, of the penis
contra-	opposition, against	contra indicated	kon'-tra- <u>in</u> -di-ka-ted	any condition that renders a particular line of treatment improper or undesirable
de-	down, away from	de cay	deh- <u>kay</u> '	waste away (from normal)
dia-	through	dia gnosis	dahy-uh-g- <u>noh</u> -sis	knowledge through testing
ecto-, exo-	outside	ecto pic	ek- <u>top</u> -ik	located away from normal position; arising or produced at an abnormal site or in a tissue where it is not normally found
		exo genous	ek- <u>soj</u> -e-nus	originating outside or caused by factors outside the organism
		exo crine	ek- <u>so</u> -krin	secreting externally via a duct; denoting such a gland or its secretion
endo-	within	endo crine	en- <u>do</u> -krin	pertaining to internal secretions; hormonal
		endo genous	en- <u>doj</u> -e-nus	produced within or caused by factors within the organism
epi-	upon, over	epi gastric	ep'-i- <u>gas</u> -tric	the upper and middle region of the abdomen
extra-	outside	extra uterine	ek'-strah- <u>u</u> -ter-in	situated or occurring outside the uterus

infra- (sub)	below, under	infra sternal	in'-frah- <u>ster</u> -nal	beneath the sternum
intra-	inside	intra cellular	in-tra- <u>sel</u> -u-lar	inside a cell
ipsi- (iso)	same (equal)	ipsi lateral	ip'-si- <u>lat</u> -er-al	situated on or affecting the same side
ir-	into, toward	irri gate	ir'-reh- <u>gate</u>	wash into
meso-	middle, pertaining to mesentery	meso derm	<u>mez</u> -o-derm	the middle of the three primary germ layers of the embryo
meta- (supra)	after, beyond, over; change or transformation; following in a series	meta stasis	me- <u>tas</u> -tah-sis	the transfer of disease from one organ or part to another not directly connected with it
		meta bolism	me- <u>tab</u> -o-lizm	the sum of the physical and chemical processes by which living organized substance is built up and maintained and by which large molecules are transformed into energy
		meta morphosis	met'-ah- <u>mor</u> -fo-sis	change of structure or shape; transition from one developmental stage to another

Prefix	Definition	Word Example	Pronunciation	Definition
para-	near, beside	para medical	par'-ah- <u>med</u> -i-kal	having some connection with or relation to the science or practice of medicine
		para normal	par'-ah- <u>nor</u> -mal	near-normal function
peri-	around, surrounding	peri odontal	per'-e- <u>o</u> -don-tal	around a tooth
		peri cardium	per'-i- <u>kar</u> -de-um	pertaining to the fibrous sac enclosing the heart and the roots of the great vessels
retro-	behind, backward	retro peritoneal	ret'-ro- <u>per</u> -i-to- <u>ne</u> -al	behind the peritoneum
sub-	under, near	sub merged	sub- <u>mer</u> -j-ĕd	under the surface
trans-	across, through	trans verse	trans'- <u>verz</u>	positioned across
		trans vaginal	trans'- <u>vaj</u> -i-nal	through the vagina

TERMS FOR DIRECTIONS AND POSITIONS

TABLE 5-3 Terms for Directions and Positions

Term	Pronunciation	Definition
anterior	an- <u>ter</u> -e-or	situated at or directed toward the front; opposite of posterior
posterior	pos- <u>ter</u> -e-or	directed toward or situated at the back; opposite of anterior
cephalic	se- <u>fal</u> -ik	pertaining to the head or the head end of the body
caudal	<u>kaw</u> -dal	situated toward the tail (coccygeal area)
decubitus	de- <u>ku</u> -bi-tus	the act of lying down; the position assumed in lying down
eversion	e- <u>ver</u> -zhun	a turning inside out; turning outward
extension	ek- <u>sten</u> -zhun	the movement bringing the members of a limb into or toward a straight condition
flexion	<u>flek</u> -zhun	the act of bending or the condition of being bent
Fowler's	<u>fow</u> -lerz	the head of the patient's bed is raised 18–20 inches above level
internal	in- <u>ter</u> -nal	situated or occurring within or on the inside
external	eks- <u>ter</u> -nal	situated or occurring on the outside

Term	Pronunciation	Definition
knee-chest	<u>ne</u> -chest	the patient rests on his or her knees and chest; the head is turned to one side and the arms are extended on the bed, the elbows flexed and resting so that they partially bear the weight of the patient
lateral	<u>lat</u> -er-al	situated away from the midline of the body; pertaining to the side
bilateral	bi- <u>lat</u> -er-al	having two sides; pertaining to both sides
lithotomy	li- <u>thot</u> -o-me	position in which the patient lies on his or her back, legs flexed on the thighs, thighs flexed on the abdomen and abducted
medial	<u>me</u> -de-al	situated toward the midline
oblique	o- <u>blēk</u>	slanting; incline
peripheral	pe- <u>rif</u> -er-al	an outward structure or surface; the portion of a system outside the central region
proximal	<u>prok</u> -si-mal	toward the center or median line; the point of attachment or origin
distal	<u>dis</u> -tal	remote; farther from any point of reference
quadrant	<u>kwod</u> -rant	one of four corresponding parts or quarters, as of the surface of the abdomen or the field of vision
recumbent	re- <u>cum</u> -bent	lying down
rotation	ro- <u>ta</u> -shun	the process of turning around an axis
Sims'	simz	the patient lies on his or her left side and chest, the right knee and thigh drawn up, the left arm along the back
sinistro	<u>sin</u> -is-tro	left; left side

dextro	<u>dek</u> -stro	right; right side
superior	soo- <u>per</u> -e-or	situated above or directed upward
inferior	in- <u>fer</u> -e-or	situated below or directed downward
supine	<u>soo</u> -pīn	lying with the face upward or on the dorsal surface
supination	soo'- <u>pi-na</u> -shun	the act of placing or lying on the back
prone	prōn	lying face downward or on the ventral surface
pronation	prō- <u>nā</u> -shun	the act of assuming the prone position
trans	trans	through; across; beyond
Trendelenburg's	tren- <u>del</u> -en-bergz	the patient is supine on a surface inclined 45 degrees, the head lower than the legs
upright	<u>up</u> -rit	perpendicular; vertical; erect in carriage or posture

Medical terminology prefixes of place

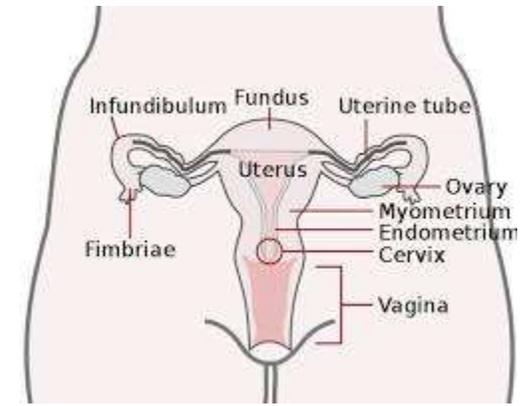
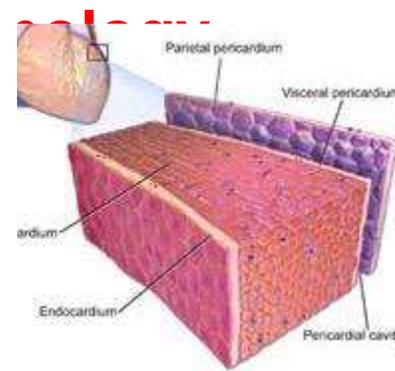
II- Introduction

- Prefixes of place are used in medical terminology to indicate the location of a body part or structure.
- Some common prefixes of place in medical terminology include:
 - endo- (within)
 - epi- (on, upon)
 - exo- (outside)
 - sub- (under)
 - intra- (within)
 - inter- (between)
 - per- (around)
 - retro- (behind)
 - ante- (before)
 - super- (above)
 - sub- (below)

Examples of prefixes of place i

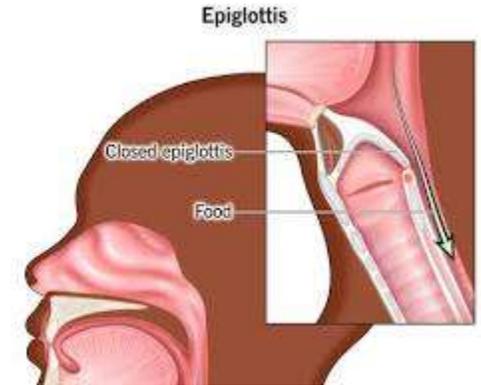
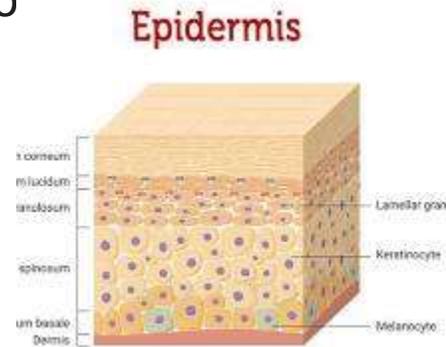
• Endo-

- Endocardium (inner layer of the heart)
- Endometrium (inner lining of the uterus)
- Endoscope (instrument used to view the interior of the body)



• Epi-

- Epidermis (outer layer of the skin)
- Epithelium (tissue that lines the body's surfaces)
- Epiglottis (flap of tissue that covers the windpipe when swallowing)

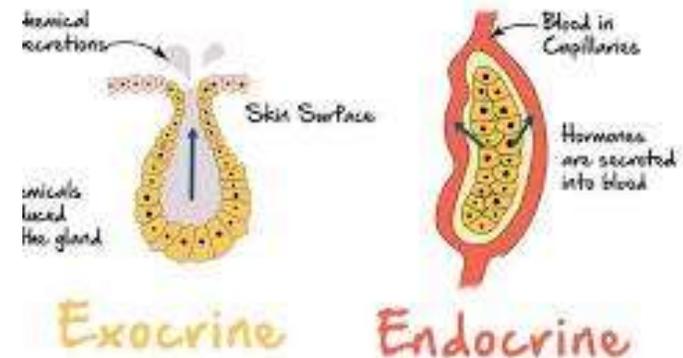


• Exo-

- Exoskeleton (hard outer shell of insects and other arthropods)
- Exocrine gland (gland that releases its secretions to the outside of the body)
- Exophthalmos (bulging of the eyes)

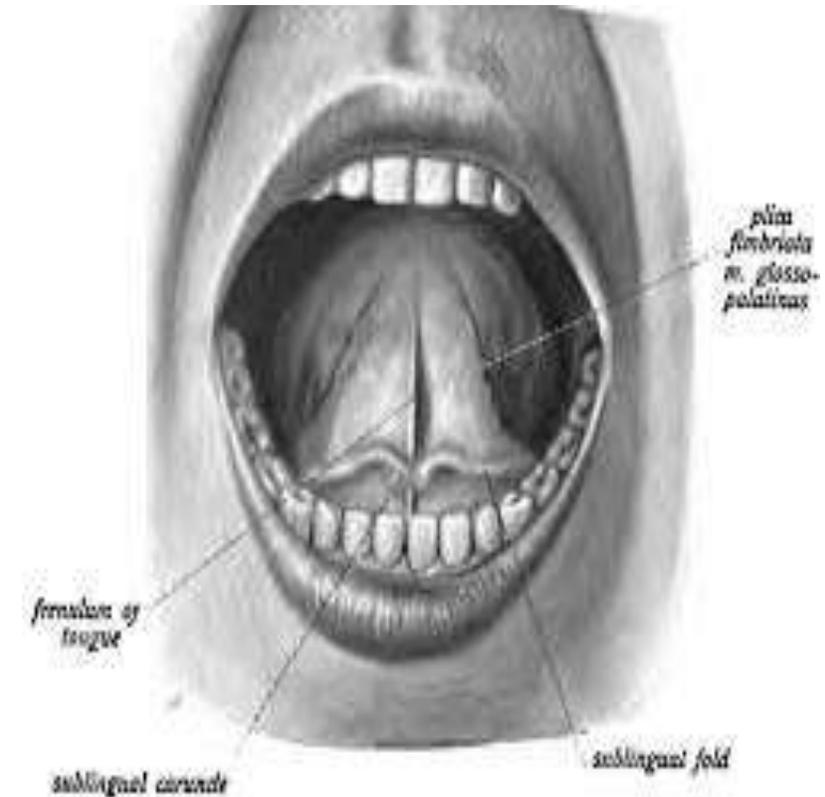
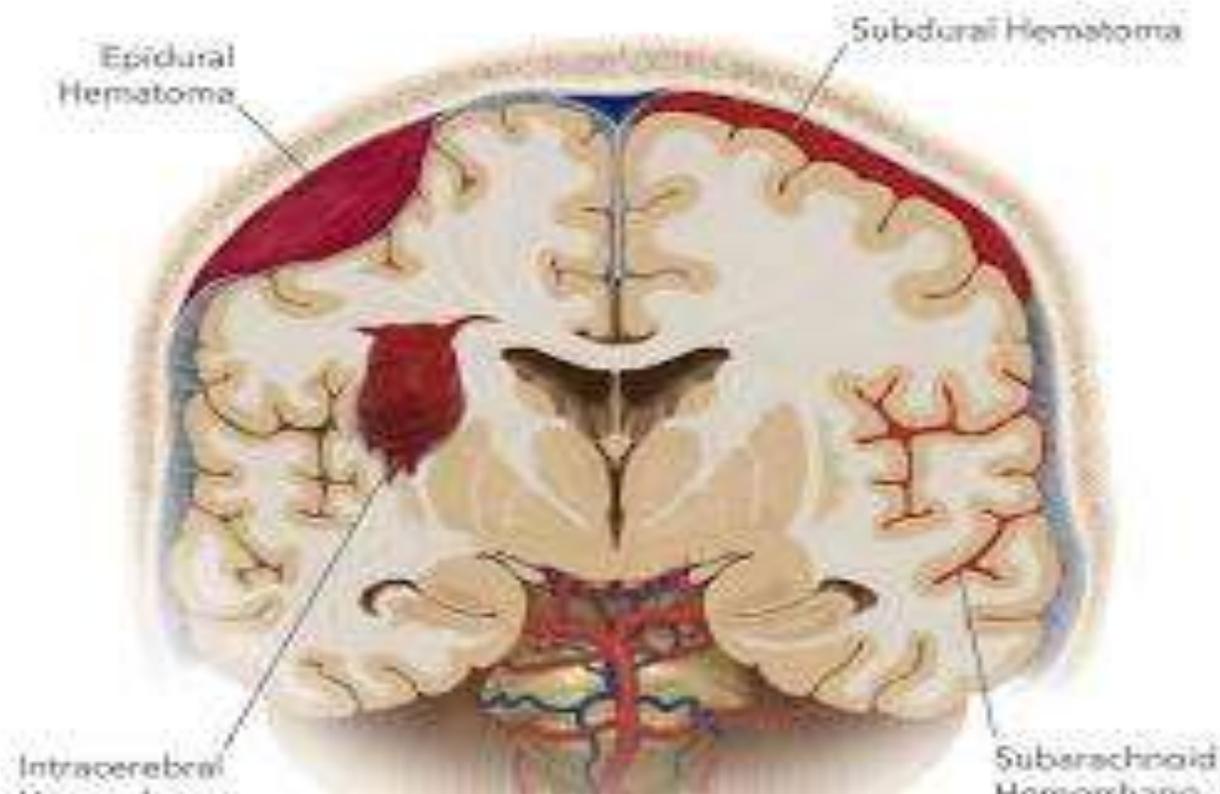
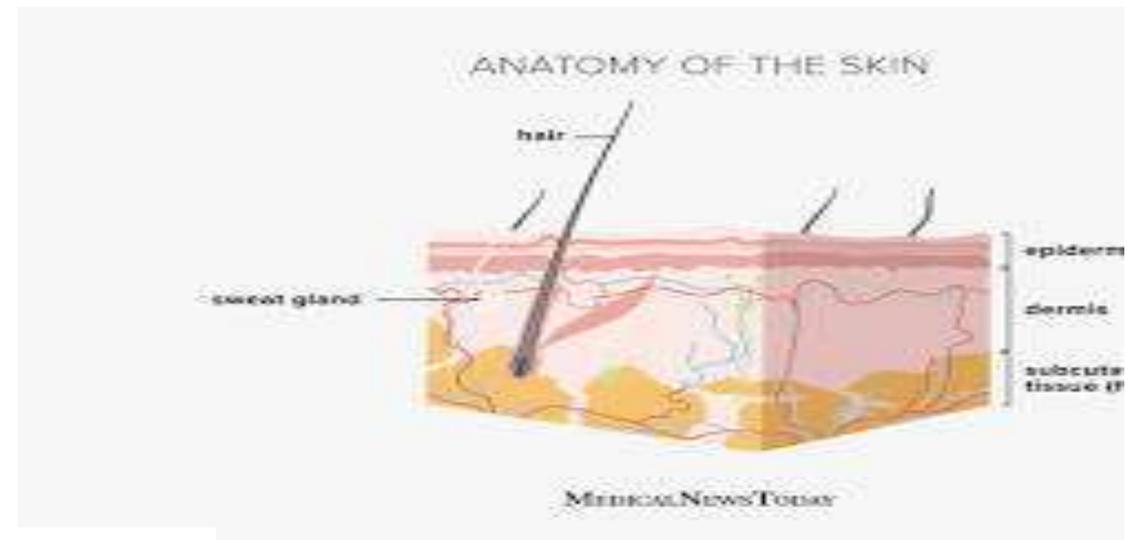


Endocrine vs Exocrine Glands



• Sub-

- Subcutaneous (under the skin)
- Sublingual (under the tongue)
- Subarachnoid (under the arachnoid membrane, which covers the brain and spinal cord)

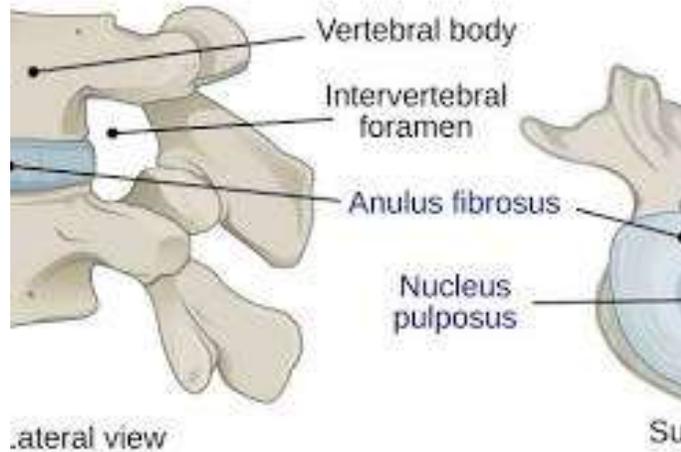


Intra-

- Intracellular (within a cell)
- Intravascular (within a blood vessel)
- Intrauterine (within the uterus)

Inter-

- Intercostal (between the ribs)
- Intervertebral (between the vertebrae)
- Intermuscular (between the muscles)

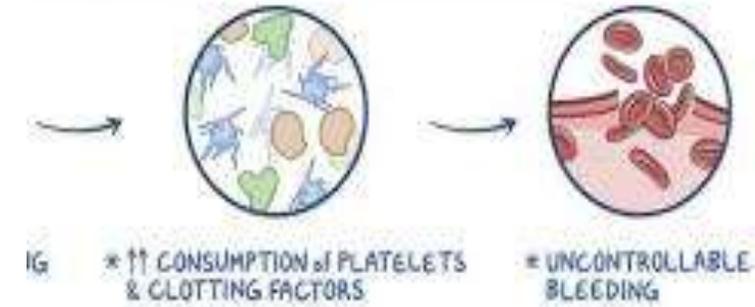


Peri-

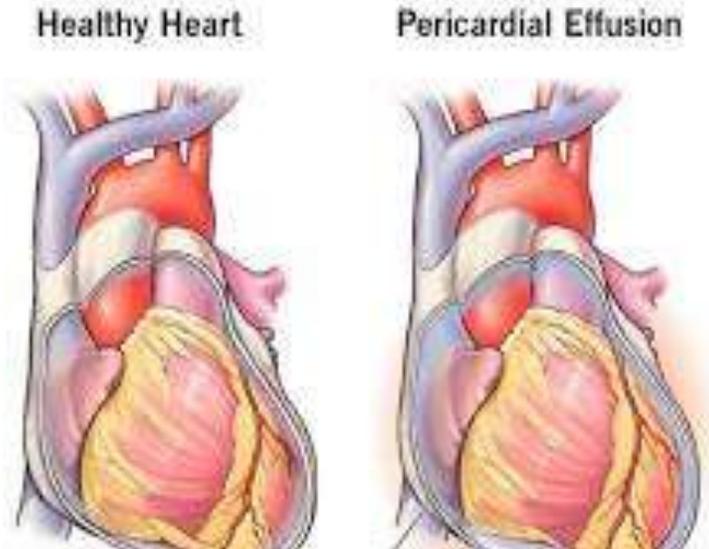
- Pericardium (sac that surrounds the heart)
- Peritoneum (membrane that lines the abdominal cavity)
- Periosteum (membrane that covers the bones)

SEMENATED INTRAVASCULAR COAGULATION (DIC)

IRREVERSIBLE but LIFE-THREATENING CONDITION



Pericardial Effusion



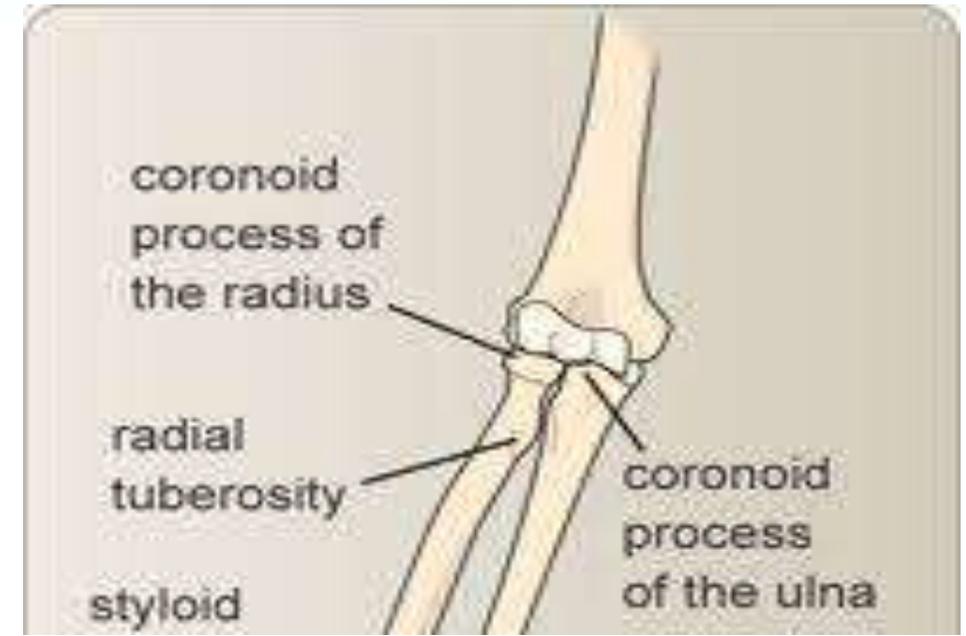
• Retro-

- Retroperitoneal (behind the peritoneum)
- Retrobulbar (behind the eyeball)
- Retrograde (backward)



• Ante-

- Antepartum (before childbirth)
- Anterior (toward the front of the body)
- Antebrachium (forearm)



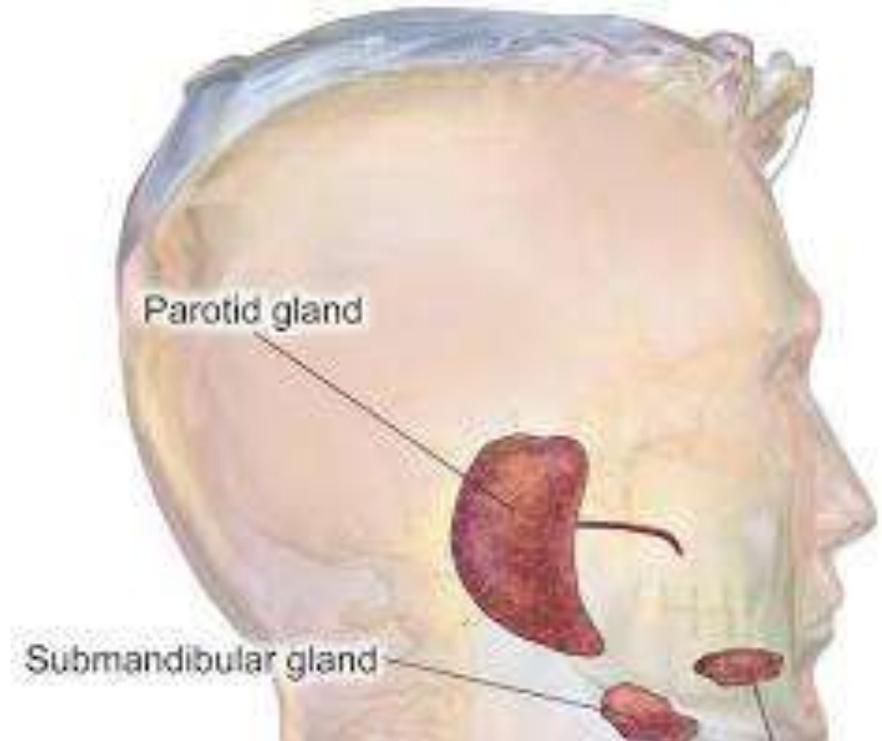
. Super-

- Superior (above)
- Supraclavicular (above the clavicle, or collarbone)
- Suprapubic (above the pubis, the front of the pelvic bone)



. Sub-

- Inferior (below)
- Subcostal (below the ribs)
- Submandibular (below the mandible, or lower jawbone)

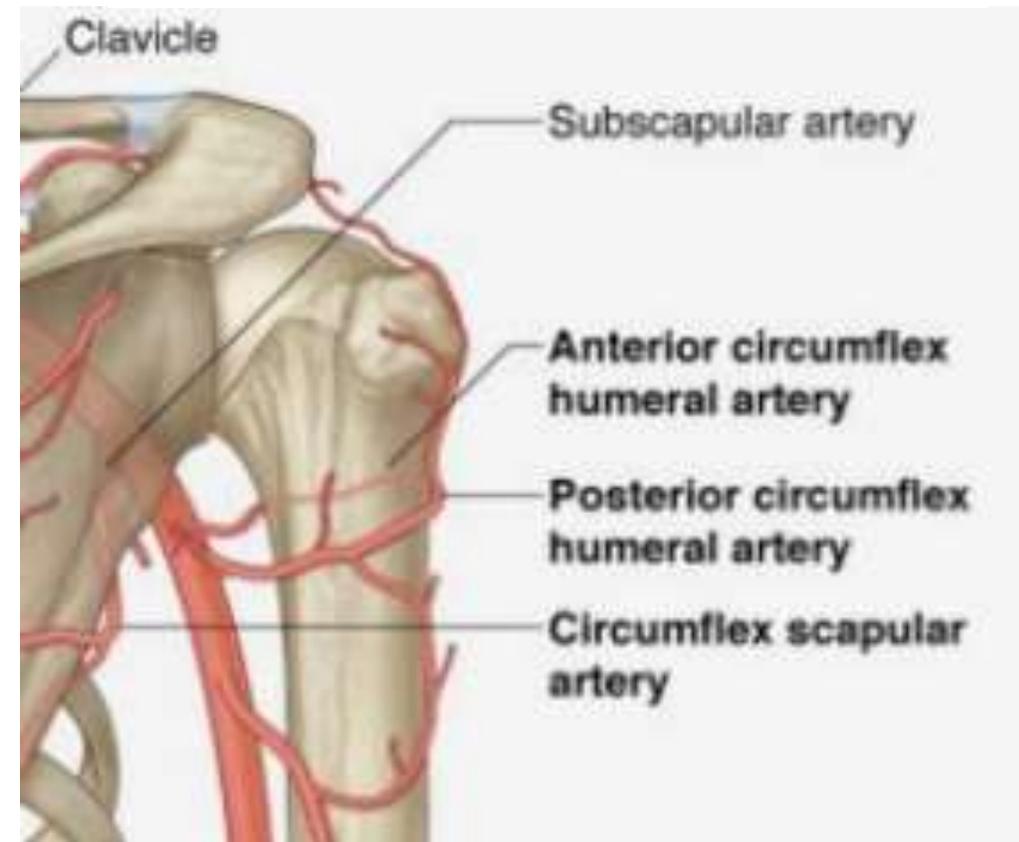


more examples of prefixes of place in medical terminology:

- circum- (around)
- infra- (below)
- trans- (across)
- para- (beside)
- post- (after)
- pre- (before)

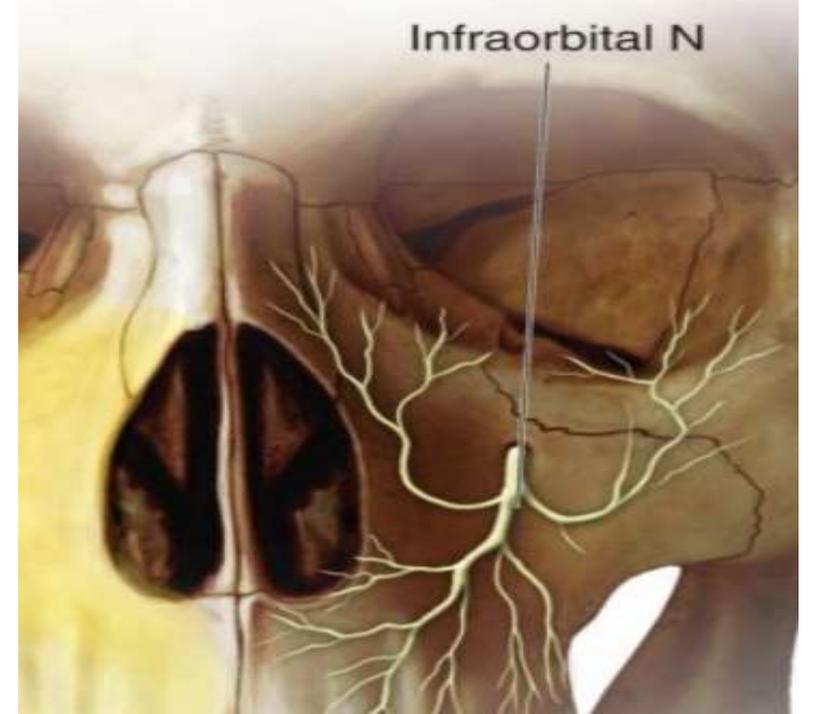
Examples:

- **circum-**
 - Circumcision (removal of the foreskin)
 - Circumlocution (roundabout way of speaking)
 - Circumflex (artery that curves around the elbow)



infra-

- Infraorbital (below the orbit, or eye socket)
- Infrapatellar (below the kneecap)
- Inframandibular (below the mandible, or lower jawbone)



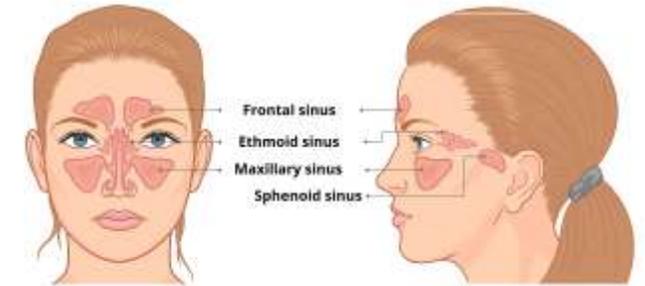
trans-

- Transfusion (transfer of blood or other fluid from one person to another)
- Transplant (transfer of an organ or tissue from one person to another)
- Transcutaneous (through the skin)



• para-

- Paramedical (related to medicine but not requiring a medical degree)
- Paranasal (sinuses located near the nose)
- Parathyroid (four glands located near the thyroid gland)



• pre-

- Prenatal (before birth)
- Preoperative (before surgery)
- Premedication (drugs given before surgery to reduce anxiety or pain)

• post-

- Postoperative (after surgery)
- Postmortem (after death)
- Postpartum (after childbirth)

thank
you