

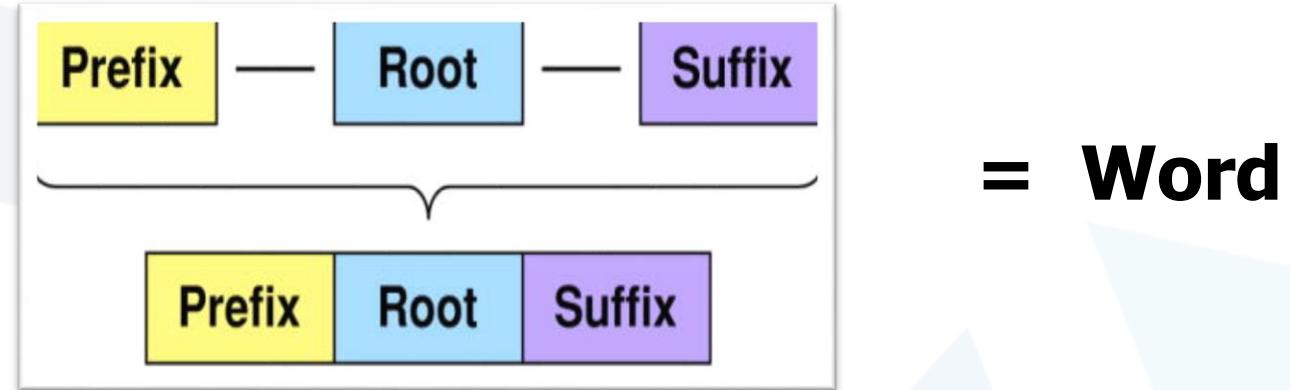
المحاضرة الثالثة
مكونات المصطلحات الطبية وبناءها

Word parts & building medical terms



Zuheir ALSHEHABI *MD, PhD, FASCP*
2022

1- The word parts:



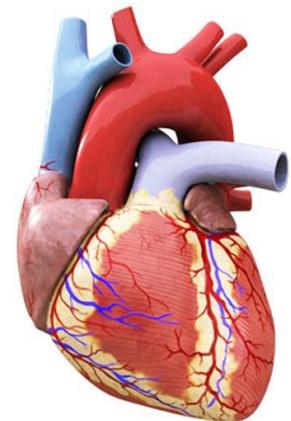
- Root الجذر
- Prefix سابقة
- Suffix لاحقة
- Combining vowel حرف الوصل
- Combining forms الأشكال المؤلفة

جذر الكلمة - أصل الكلمة Root

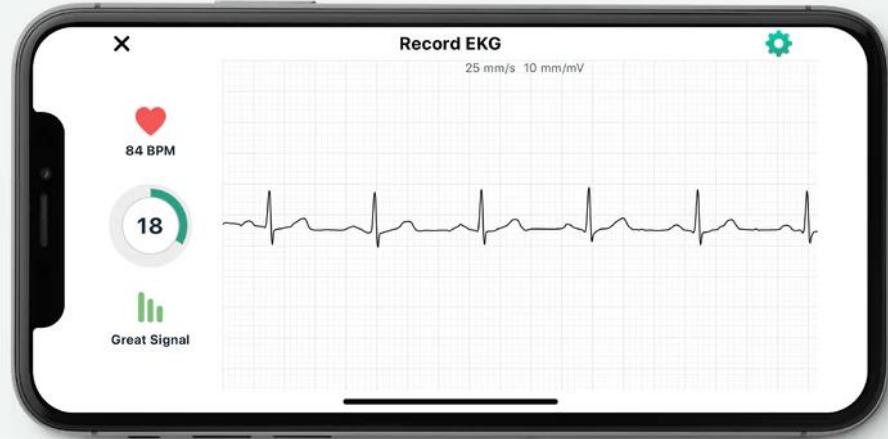
- The basic part of medical word
- The fundamental meaning of the word
- **Prefixes & suffixes** are added to that part.

EX:

- Greek word for heart is *kardia*
- Latin word for lung is *pulmo*



Kardia = Heart



السابقة-Prefix

- Short word part added in the front of a root
- Modifies the meaning of the root

Example:

Verb = فعل

حکمة, مثل, قول مأثور Pro-verb = Proverb

Better than a thousand days of diligent study is one day with a great teacher....

Japanese Proverb

Common prefixes – Negation النفي

| Prefix | Meaning | Example |
|--------------|-------------------|--|
| a-, an- بدون | without, not | Anoxia (<i>without</i> oxygen) بدون أوكسجين Anemia فقر الدم |
| anti- ضد | against | Antidote مضاد سم (against poison) |
| contra- ضد | against, opposite | Contraindication مضاد استطباب |
| In- | not | Inactive (not active) غير فعال |
| un- | not | Unconscious (not responsive) غائب عن الوعي |

مضاد استطباب للحوامل

Contraindication during pregnancy



فاقد الوعي

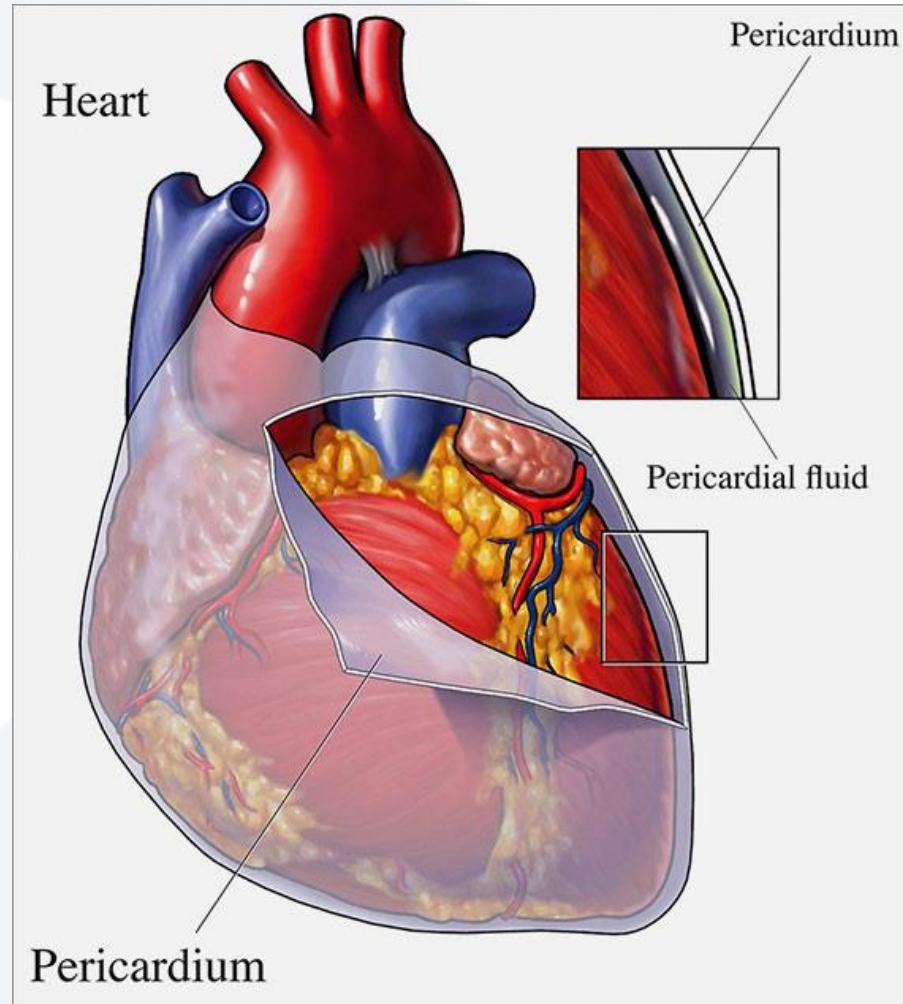
Unconscious



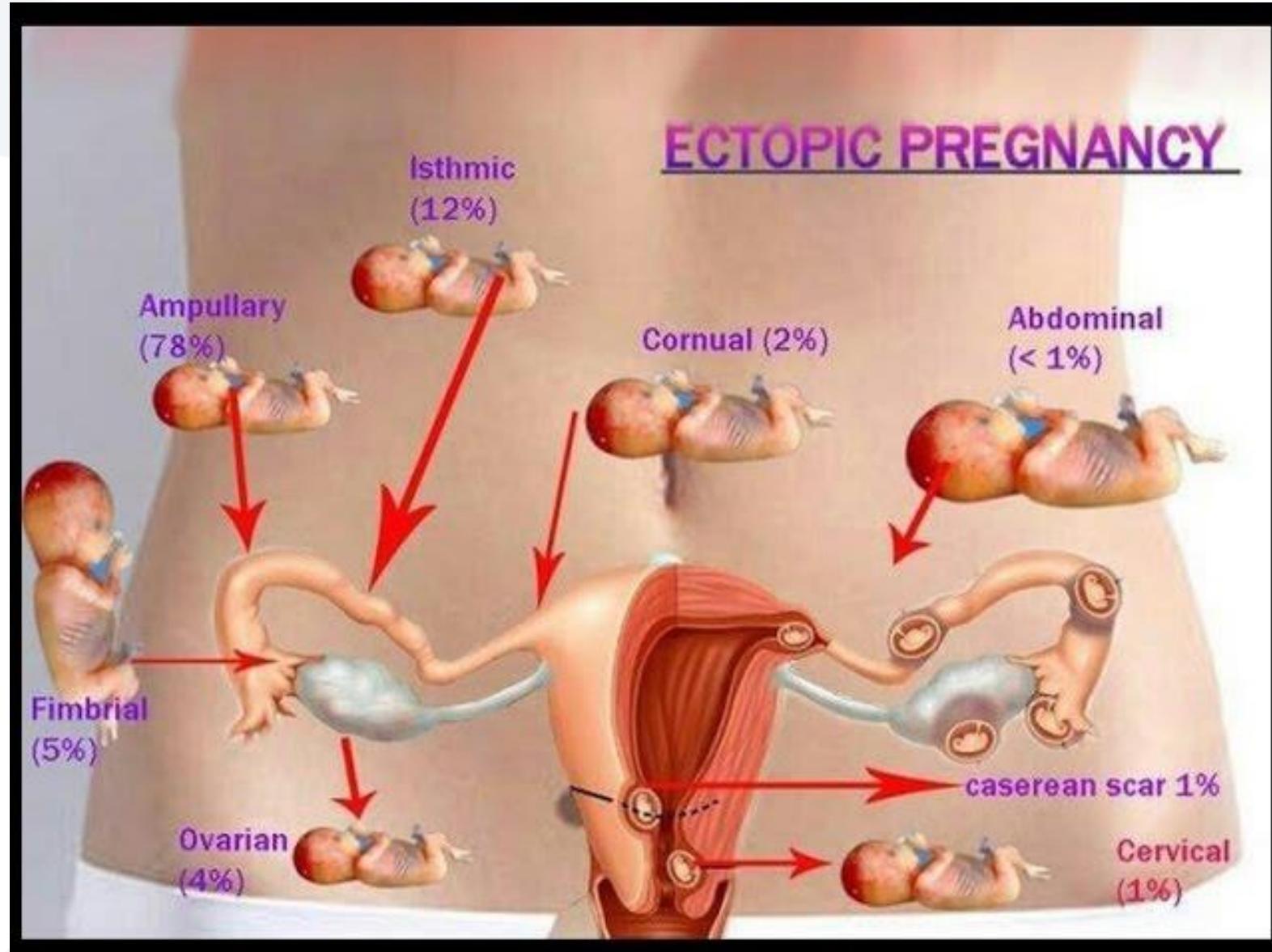
Common prefixes – POSITION/DIRECTION الوضعية - الاتجاه

| Prefix | Meaning | Example |
|------------------|---------|---|
| peri- حول | around | Pericardium (around the heart) تامور |
| ecto-, exo- خارج | outside | Ectopic (a place outside) Exocrine (secretion outside) |
| Sub- تحت | Under | Sub-cutaneous تحت الجلد |

Peri- Pericardium التامور

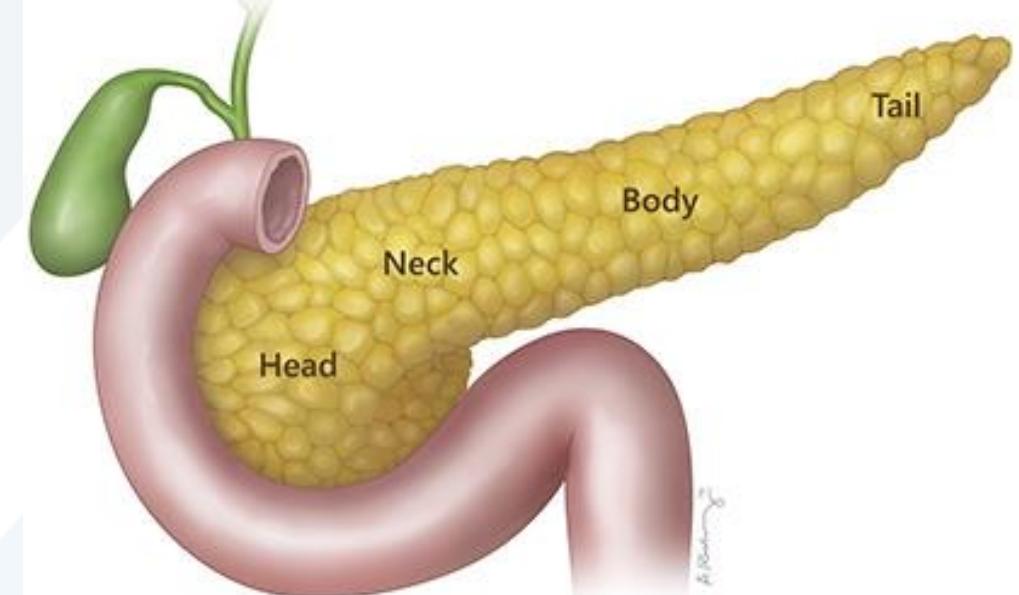
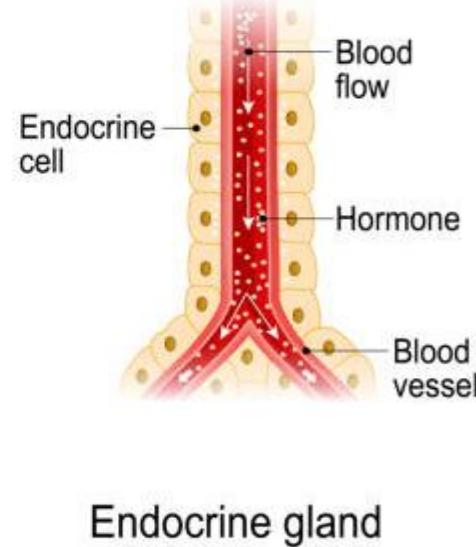
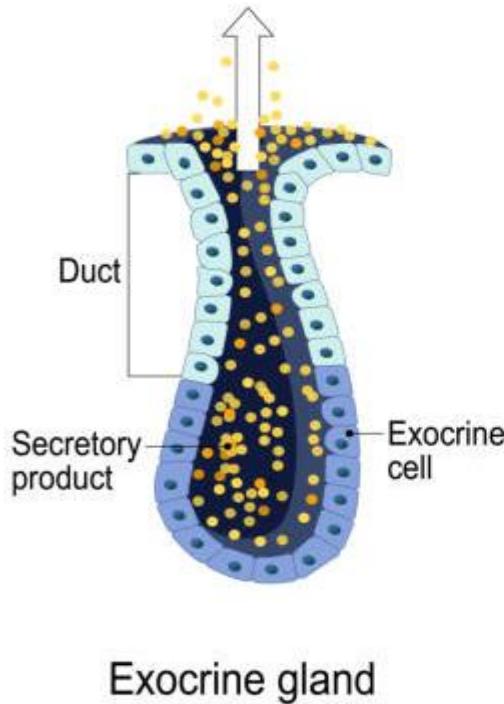


الحمل الهاجر Ecto - Ectopic Pregnancy



Exo- Exo-crine gland غدة خارجية الافراز

Types of gland



Sub- نَحْتٌ

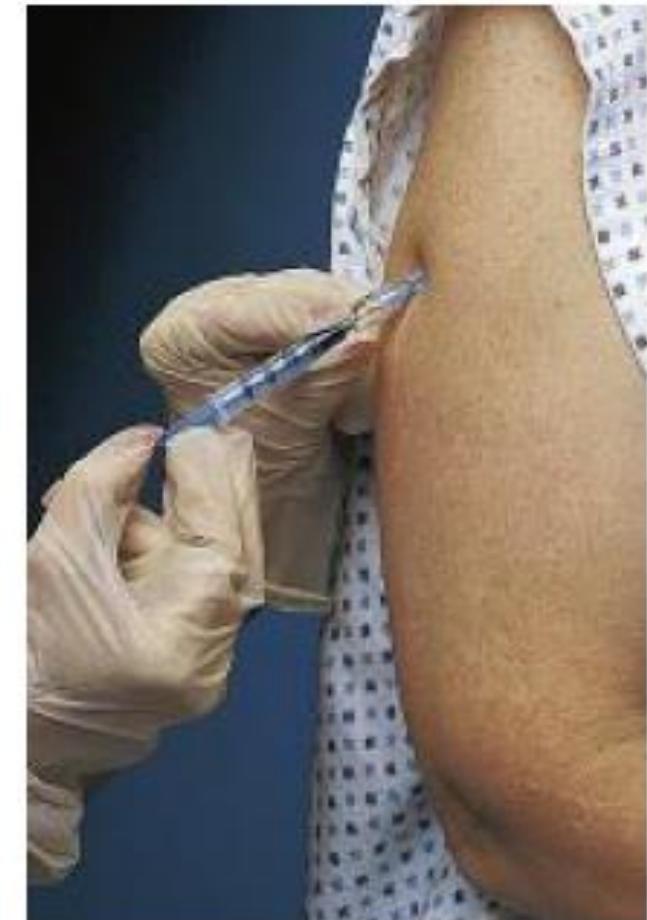
under, below

EXAMPLE **subcutaneous injection**

(pertaining to under the skin)

(sub- + cutane/o + -ous)

An injection into the fat layer beneath the skin.



Common prefixes – POSITION/DIRECTION

الوضعية - الاتجاه

| Prefix | Meaning | Example |
|----------------|-------------------|--|
| extra- خارج | outside | (خارج الأوعية) Extravascular |
| endo- داخل | within, in | (تنظير داخلي) Endoscope |
| intra- داخل | within, inside of | (داخل الوريد) Intravenous |
| epi- فوق | Upon | (البشرة الجلدية) Epidermal |
| sub- تحت | below or under | Sublingual (pertaining to under the tongue) تحت اللسان |
| supra- أعلى | Above | Suprarenal gland (pertaining to above the kidney) غدة الكظر |
| infra- أسفل | below or under | Infrared الأشعة تحت الحمراء |

Intra- داخلي

within

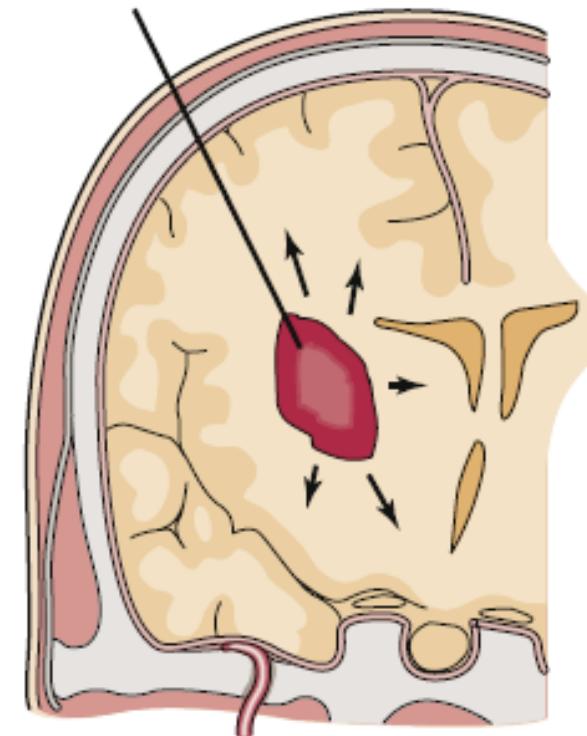
EXAMPLE **intracerebral hematoma**

(pertaining to within the cerebrum)

(**intra-** + **cerebr/o** + **-al**)

A collection of blood within the cerebrum, usually resulting from a contusion or stroke.

Intracerebral hematoma



ورم دموي داخلي الدماغ

Epi- أعلى

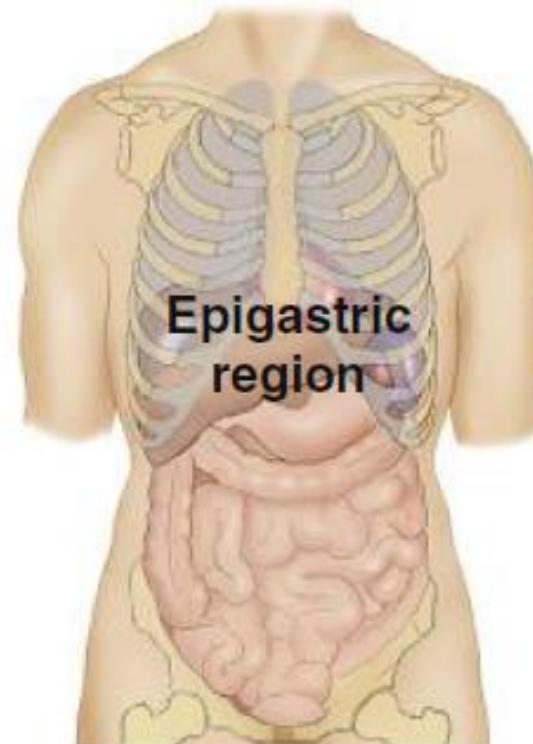
above, on top of

EXAMPLE **epigastric region**

(pertaining to above the stomach)

(**epi-** + **gastr/o** + **-ic**)

The part of the abdomen between the left and right hypochondriac regions above the stomach.



المنطقة الشرسوفية

Common prefixes – POSITION/DIRECTION

الوضعية - الاتجاه

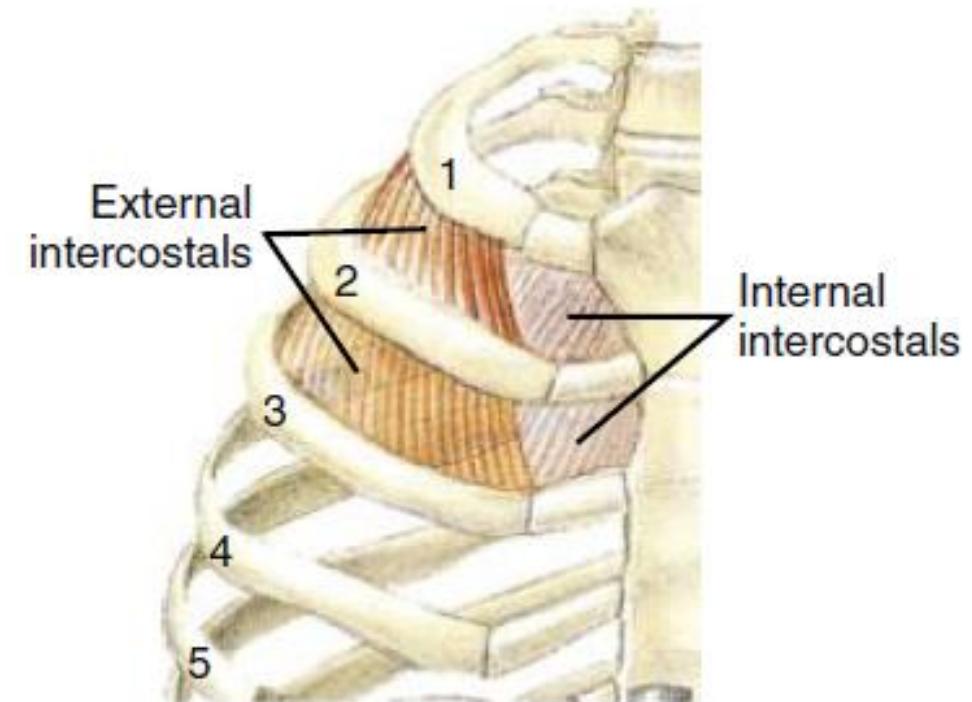
| Prefix | Meaning | Example |
|------------|--------------------------|--|
| inter- بين | Between | Intercostal (pertaining to between the ribs) بين الأضلاع [cost/o = rib] |
| para- قرب | alongside of or abnormal | Parathyroid (الغدد جارات الدرق) Paranoia (condition of abnormal thinking) الزور |
| retro- خلف | behind | Retroperitoneum خلف البريتون |
| meta- بعد | beyond, after, | Metastasis [انتقالات سرطانية] |
| trans- عبر | across or through | Transfusion (introduction of blood or blood components into blood stream) |

Inter- بین-

between

EXAMPLE **intercostal muscles**
(pertaining to between the ribs)
(inter- + cost/o + -al)

The muscles between the ribs.



Meta -

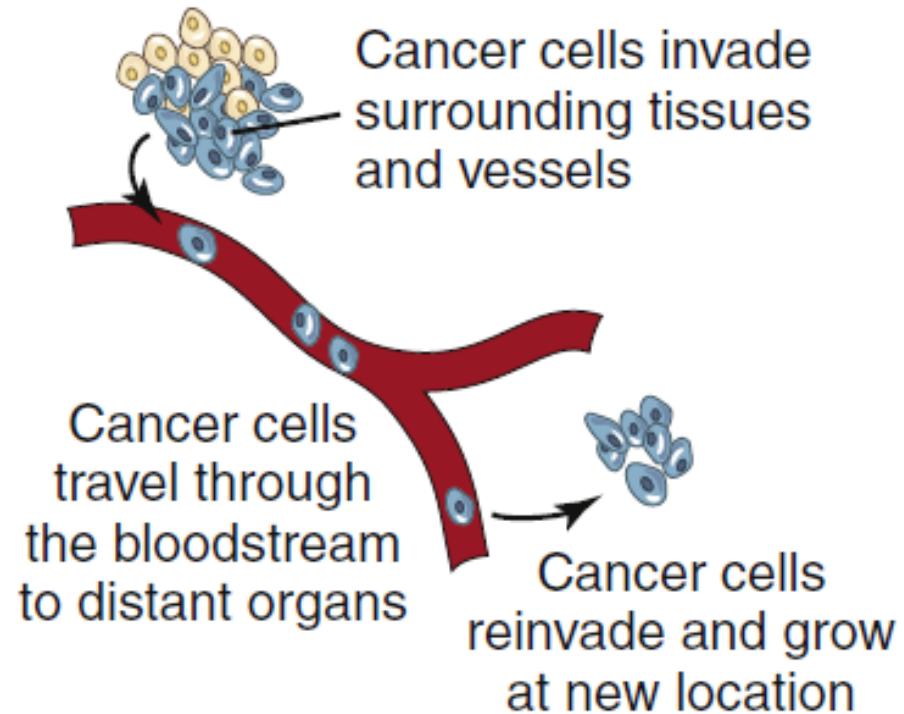
beyond

EXAMPLE **metastasis**

(beyond stopping or controlling)

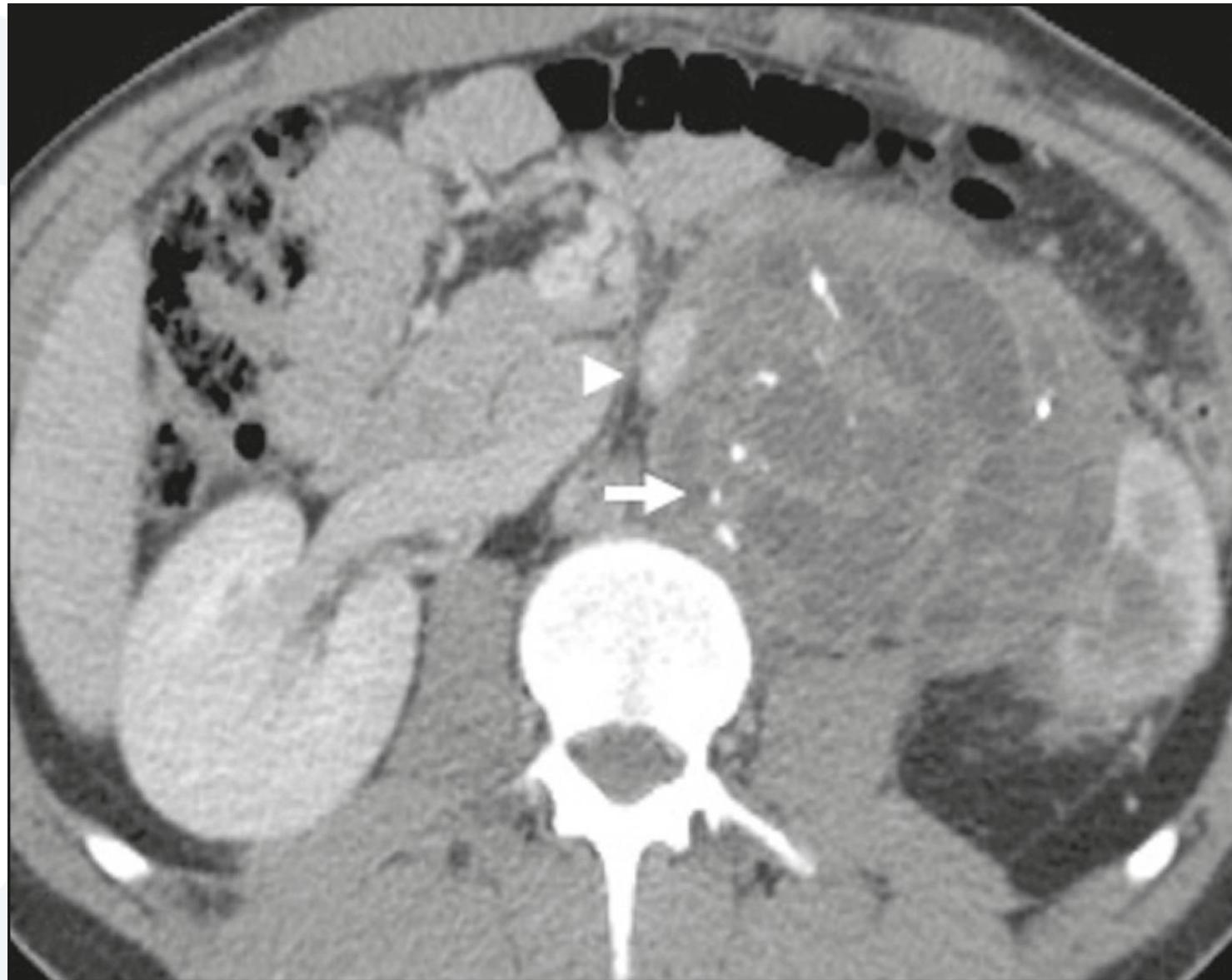
(meta- + -stasis)

Growth of abnormal cells distant from the primary cancer site.



انتقال الخلايا السرطانية بعيداً من المنشأ

Retro-Peritoneal mass



Blood Transfusion نقل الدم



Common prefixes – Quantity or measurement

الكمية والقياسات

| Prefix | Meaning | Example |
|-------------------|------------------|---|
| hemi- نصف | half, one side | Hemisphere نصف كره (one half of a rounded structure) |
| semi- نصف | half, partial | Semisolid نصف صلب (partially solid) |
| oligo- قلة | few or deficient | Oliguria قلة البول (condition of deficient urine) |
| Poly عديد | many | Poly-Cystic ovary |

Hemi- Hemiplasia

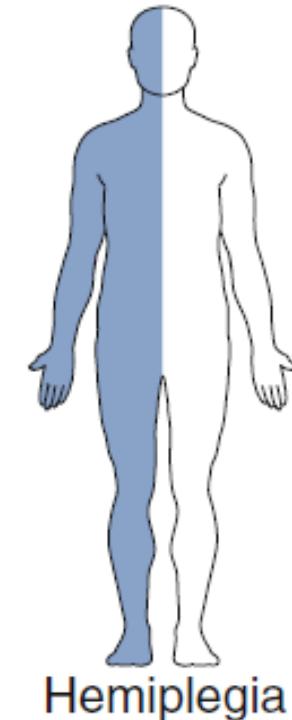
half, partial

EXAMPLE **hemiplegia**

(condition of paralysis of half)

(hemi- + -plegia)

Paralysis in which only the right or left half of the body is affected.



Hemiplegia

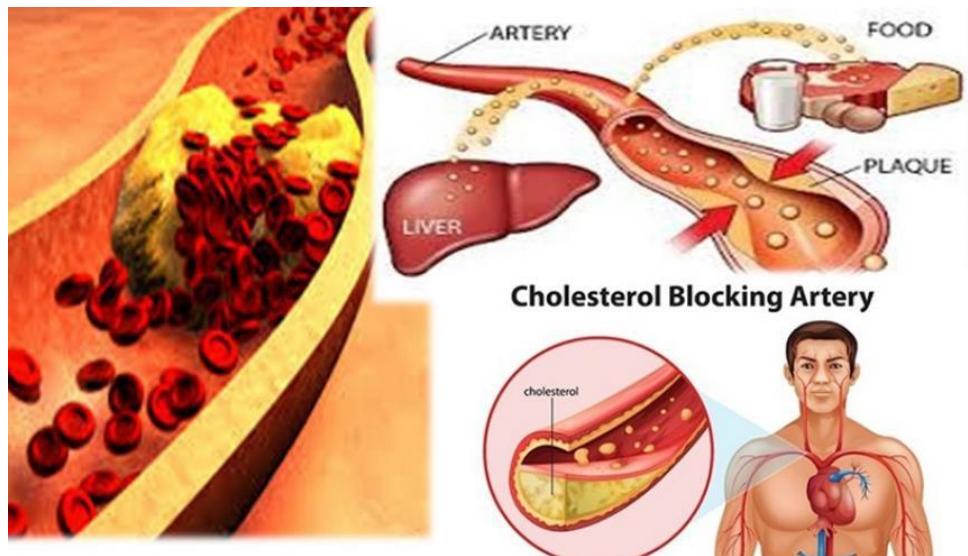
شلل نصفي

Common prefixes – Quantity or measurement

الكمية والقياسات

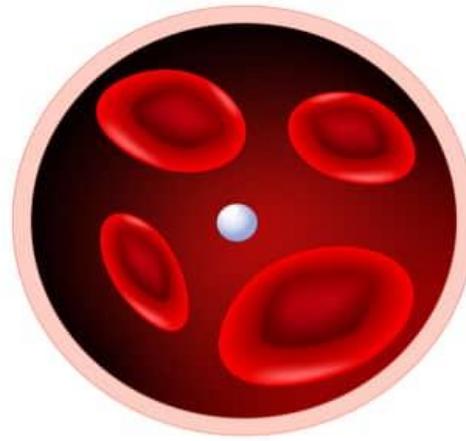
| Prefix | Meaning | Example |
|---------------|--------------------|--|
| pan- شامل- | All | Pancytopenia نقص عناصر الدم |
| hyper- زيادة- | excessive | Hyperlipidemia (excessive fat in the blood) فرط شحوم الدم |
| hypo- نقص- | below or deficient | Hypothermia نقص حرارة الجسم (condition of below normal temperature) |
| macro- كبير- | large or long | Macrophage خلية بالعنة |
| micro- صغير- | small | Micro-organism جراثيم |
| ultra- فوق- | beyond | Ultrasonic (pertaining to beyond sound) صوتية |

فرط شحوم الدم Hyper-lipidemia

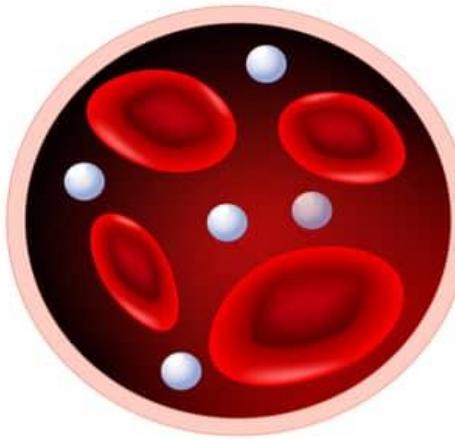


Hypo-glycemia نقص سكر الدم

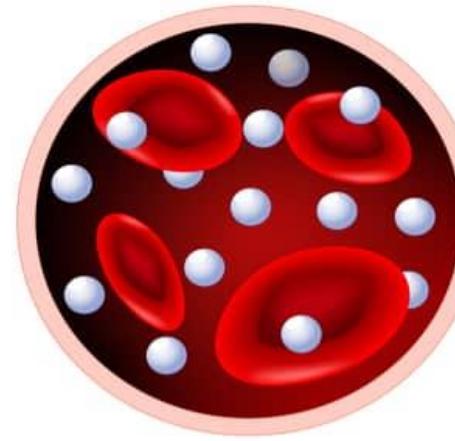
THE GLUCOSE LEVEL



HYPOGLYCEMIA
(low blood sugar)



NORMAL LEVEL



HYPERGLYCEMIA
(high blood sugar)

Macro- كَبِيرٌ

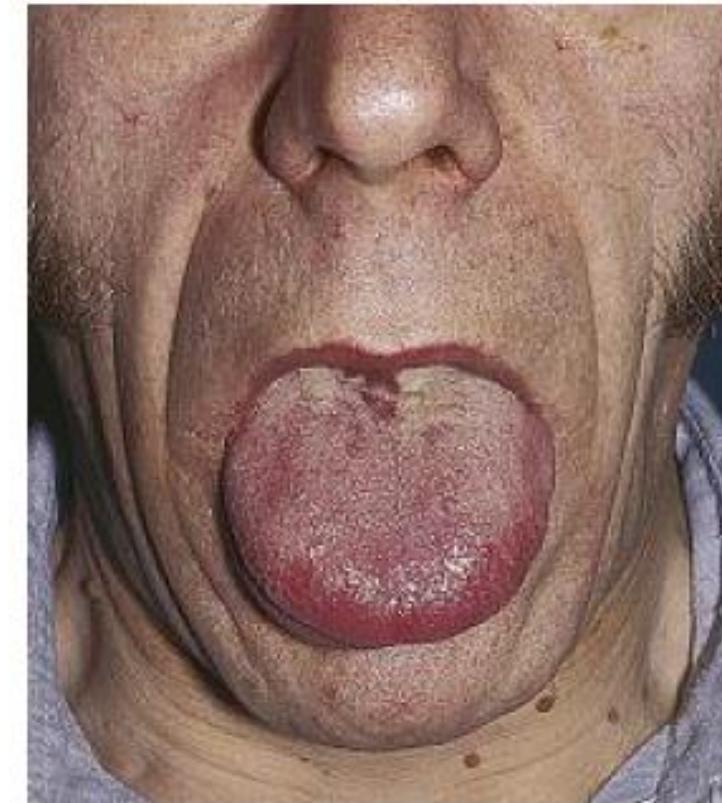
large

EXAMPLE **macroglossia**

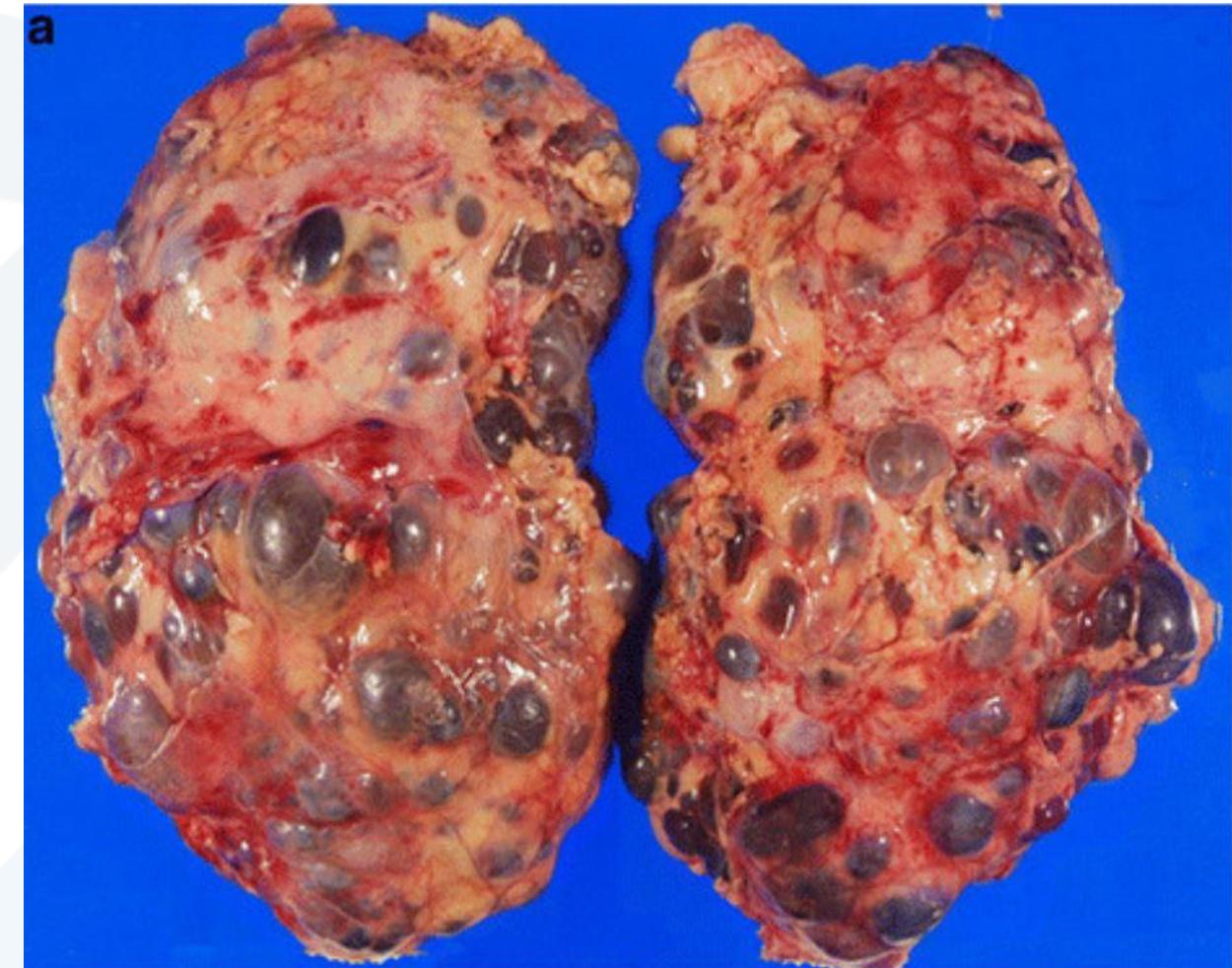
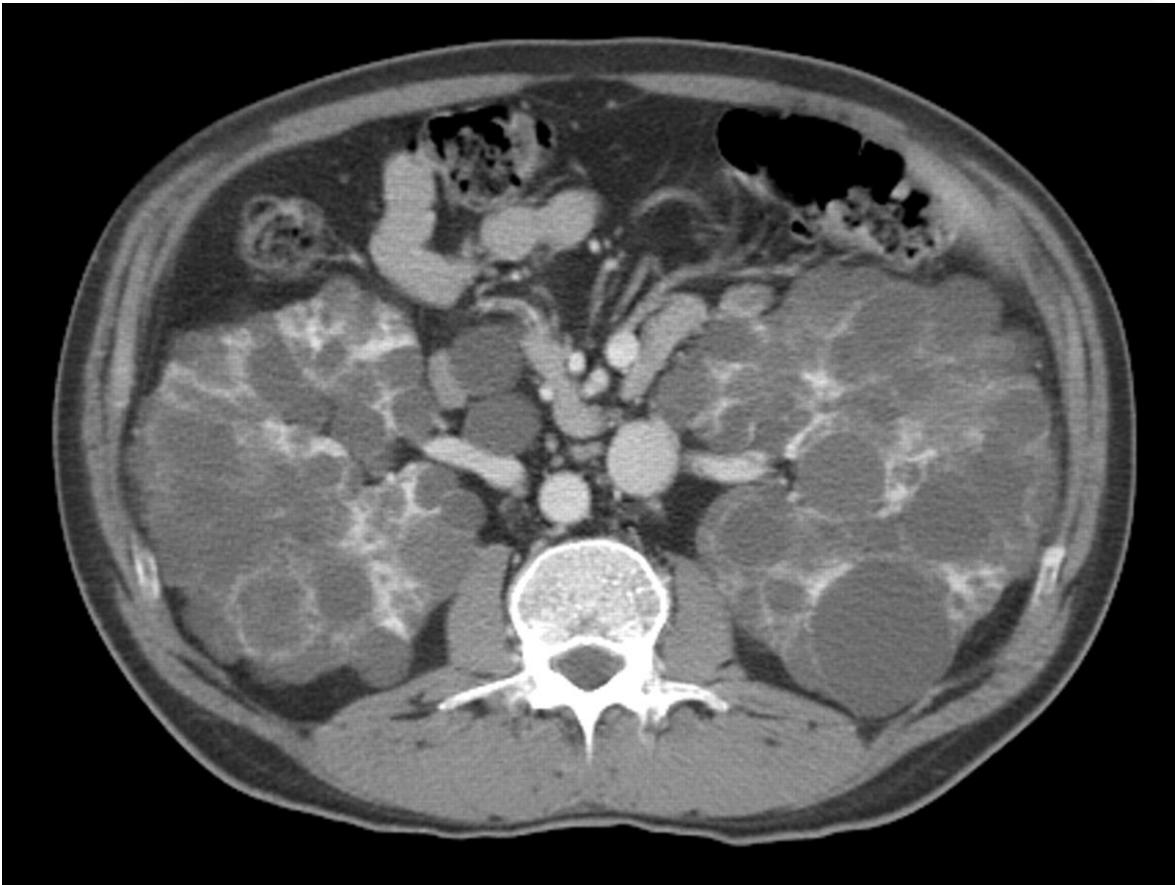
(condition of large tongue)

(macro- + gloss/o + -ia)

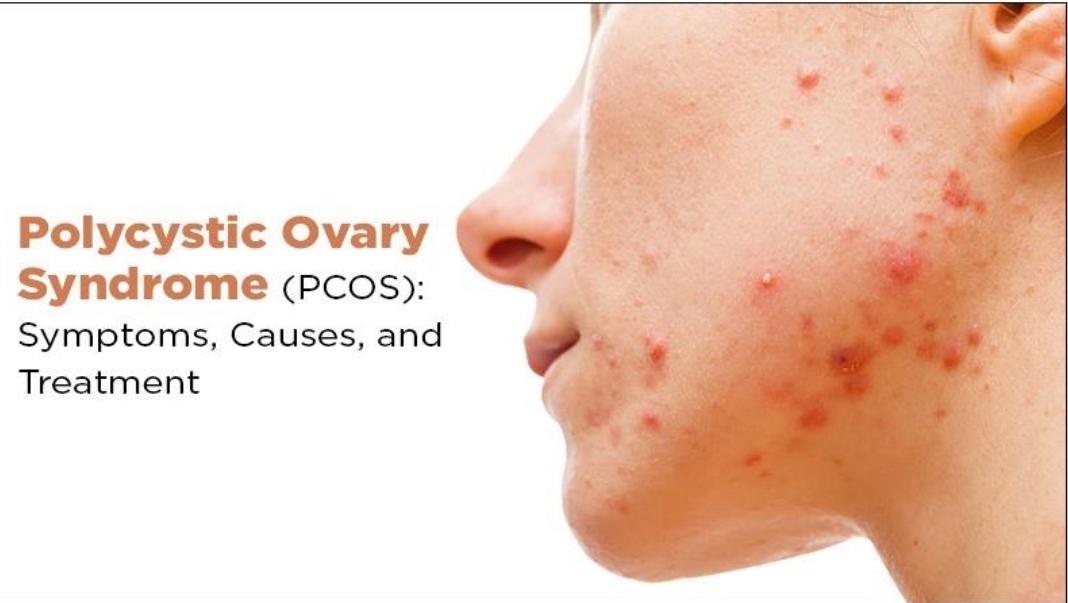
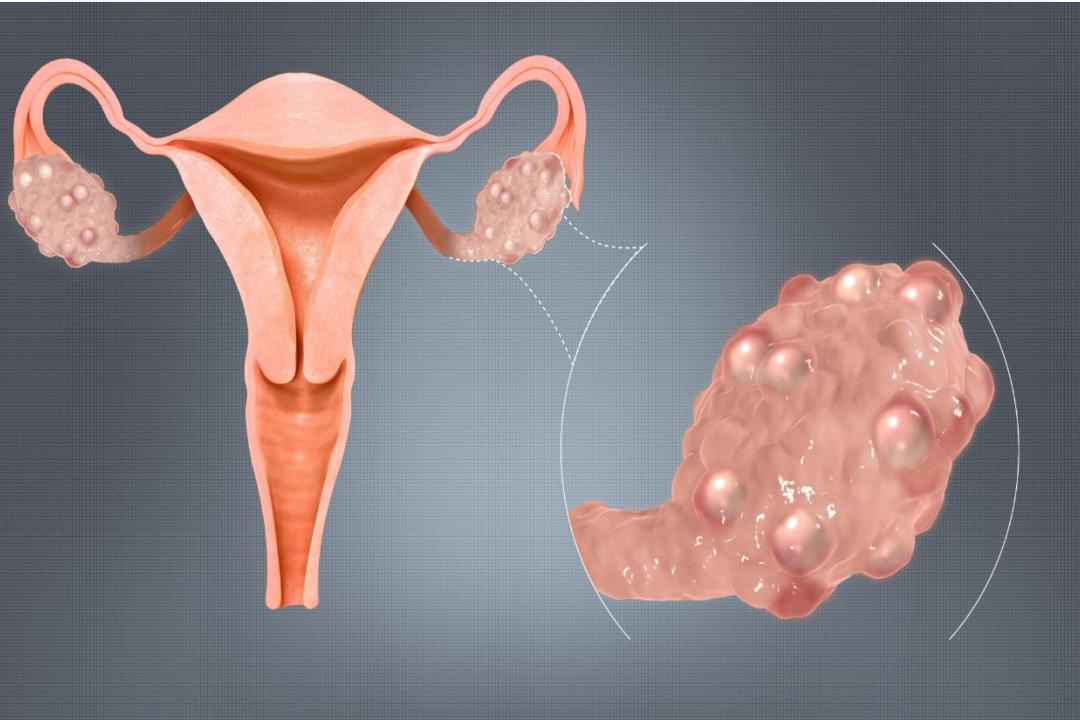
An excessively large tongue, a common condition in Down syndrome.



Poly-cystic kidney كلية عديدة الكيسات



مبيض عديد الkipسات



- 1 دورات طمية غير منتظمة
- 2 فرط الاندروجينات
- 3 أكثر من 10 أجربة في المبيض
تقيس من 8-2 ملم

Common prefixes – Time الوقت

| Prefix | Meaning | Example |
|-------------|---------------------|---|
| ante- قبل | Before | Antenatal (before birth) قبل الولادة |
| pre- قبل | before, in front of | Premature (before ripe) غير ناضج |
| pro- قبل | before, in front of | Prognosis (انذار) [prediction of outcome of a disease] |
| post- بعد | after, behind | Postmenopausal (after menopause) ما بعد سن اليأس |
| brady- بطء | Slow | Bradycardia (condition of slow heart) بطء القلب |
| tachy- تسرع | Fast | Tachycardia (condition of fast heart) تسريع القلب |

قبل الولادة Anti-natal



Premature الخديج



ما بعد سن اليأس Post-Menipausal



Postmenopausal: After menopause, the period of time after a woman has experienced 12 consecutive months without menstruation.

Tachy-Cardia

condition of the heart

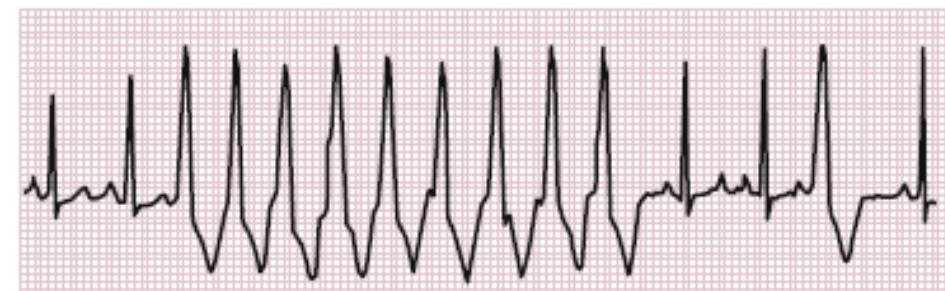
EXAMPLE **tachycardia**

(condition of rapid heart [beat])

(tachy- + -cardia)

A condition in which the heart contracts more than 100 beats per minute.

Ventricular Tachycardia



Common prefixes – General عامة

| Prefix | Meaning | Example |
|-------------------|-------------------------------|--|
| con- | together, with | Congenital (being born with) ولادي |
| dys- عسر | painful, difficult, or faulty | Dyspnea عسر تنفس (condition of difficult breathing) Dysmenorrhea عسر طمث |
| neo- جديد | New | Neoplasia (a new formation) ورم |
| hetero- غير مماثل | other, different, unequal | Heterosexual متباين الجنس (pertaining to the opposite sex) |

Congenital ولادي



عسر الدورة الطمثية Dys-menorrhea



Dysmenorrhea

ورم Neo-plasia



Neo-

new

EXAMPLE **neonatal**

(pertaining to newborn)

(neo- + nat/o + -al)

Pertaining to an infant in the first month after birth.

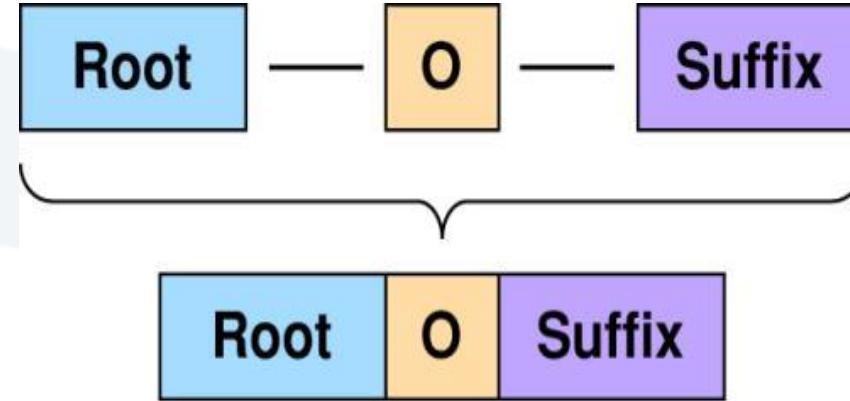


مولود جديد

حرف الوصل Combining vowel

- (O) usually is the combining vowel .
- (I) & (e) are rarely used.
- Combining vowel is used to make pronunciation of medical term easier.

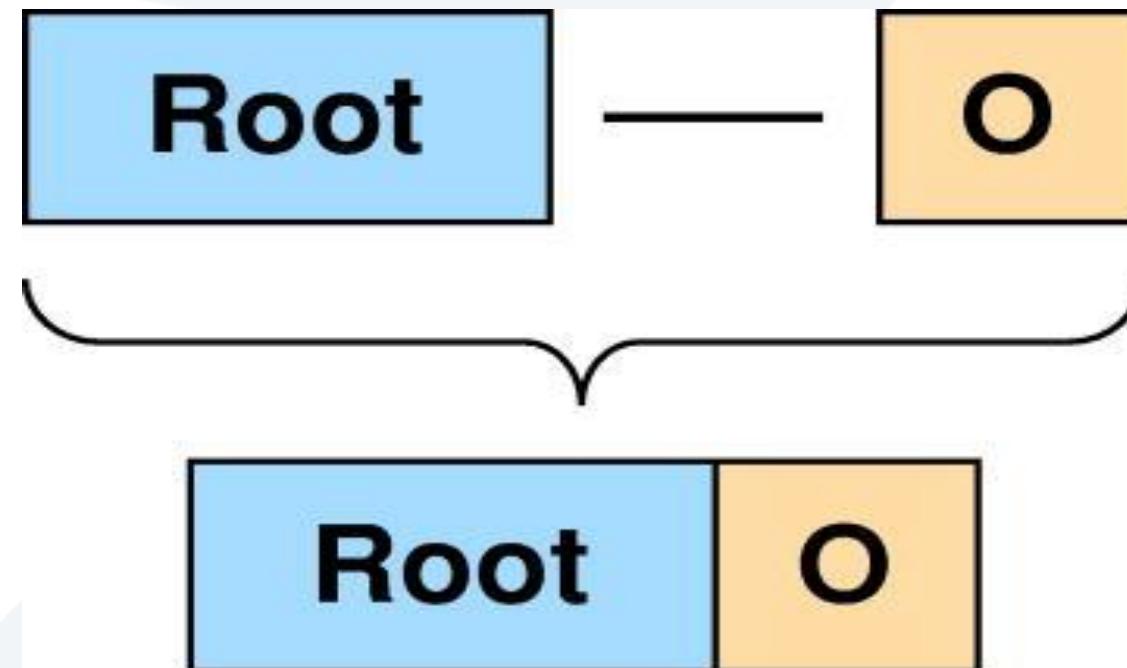
Combining vowel حرف الوصل



- A combining vowel is used to combine
 1. Root & root &
electr/ **o** /cardi / **o** /gram
 2. Root & suffix
Encephalo**gram**

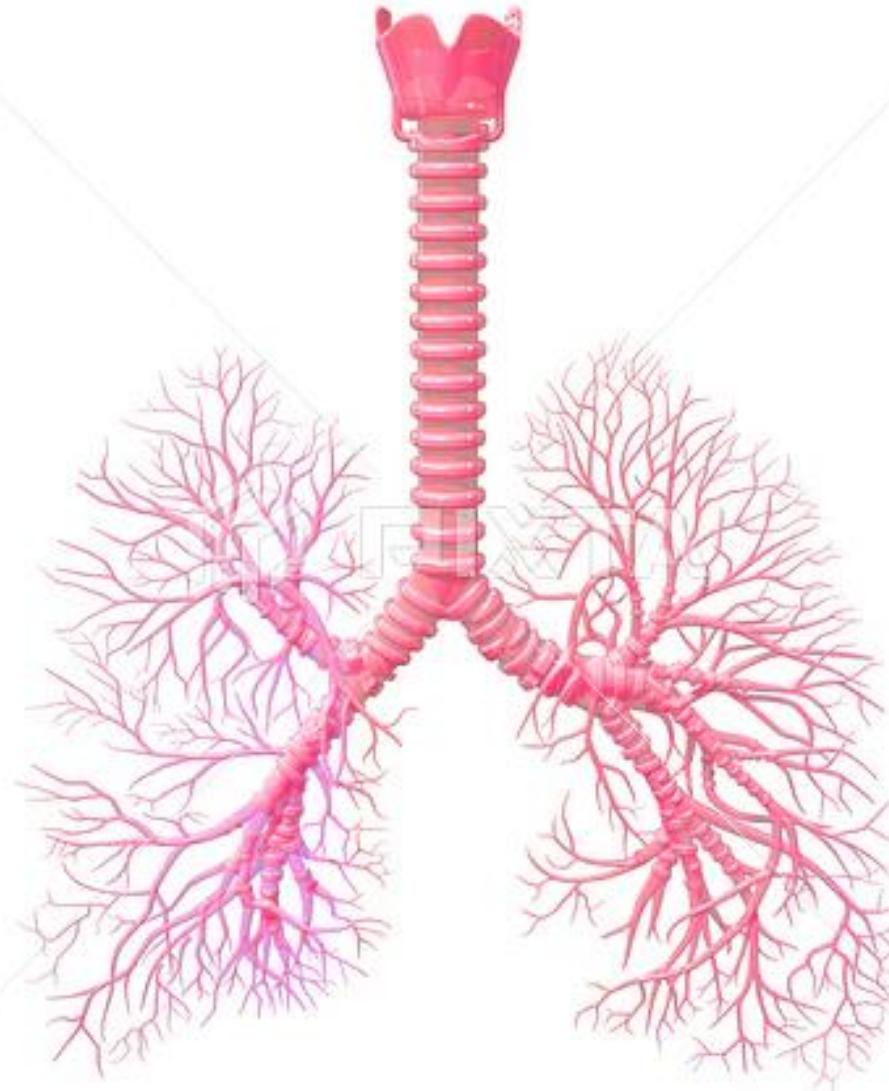
Combining forms الأشكال المؤلفة

Root + combining vowel = combining form.

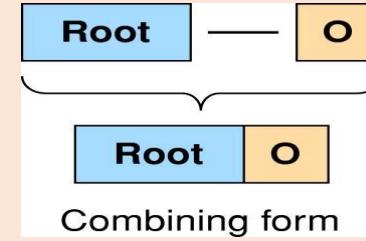


Combining form

bronch/o, bronchi/o فصبي

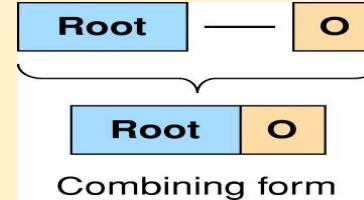


Combining form



| Combining form | Meaning | Example |
|----------------|----------------|---|
| cardi/o قلبی | Heart | Cardiologist |
| Pulm(o) رئوی | Lung | Pulmonary infarction |
| aden/o غدی | Gland | Adenoma (gland tumor) |
| lapar/o بطنی | abdominal wall | Laparotomy (incision into the abdominal wall) |
| Gastr/o هضمي | Stomach | Gastric (stomach) |

Combining form



| Combining form | Meaning | Example |
|-----------------|---------|---|
| carcin/o سرطاني | Cancer | Carcinogenic (pertaining to production of cancer) |
| hydr/o مائي | Water | Hydrophobia (fear of water) |
| leuk/o أبيض | White | Leukocyte (white cell) |

اللاحقة -Suffix

- Short word part or parts added to the end of a word.
 - Modifies the meaning of the root
 - A dash is inserted before the suffix (-*itis*)
-
- Ex : Appendic-*itis* التهاب الزائدة الدودية

Suffixes

اللواحق

Suffixes are endings that modify the root.

They are 2 types:

1- Simple suffixes:

Form basic terms such as [-ic].

EX: Gastric = pertaining to the stomach. معدوي

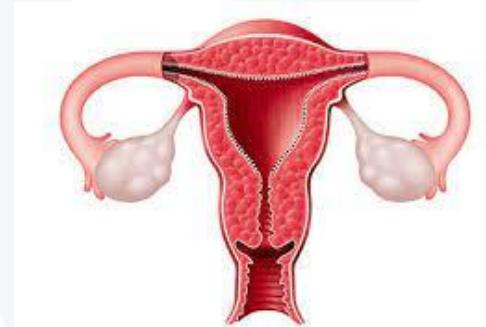


2- Compound suffixes:

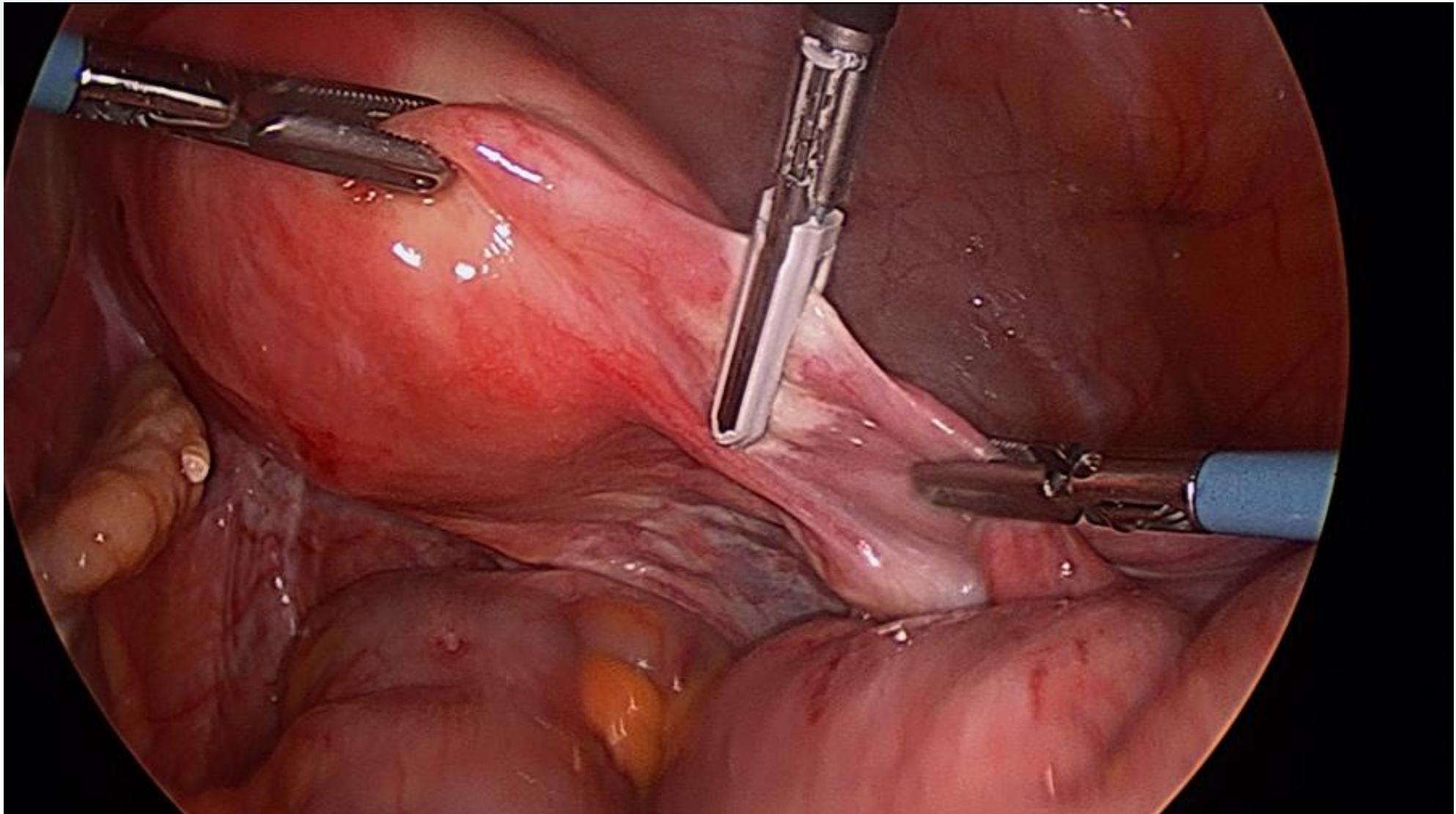
Formed by a combination of basic term components such as [-ectomy].

EX: Hysterectomy =excision of the uterus. استئصال الرحم

Hystr(o) = Uterus



استئصال الرحم Hysterectomy

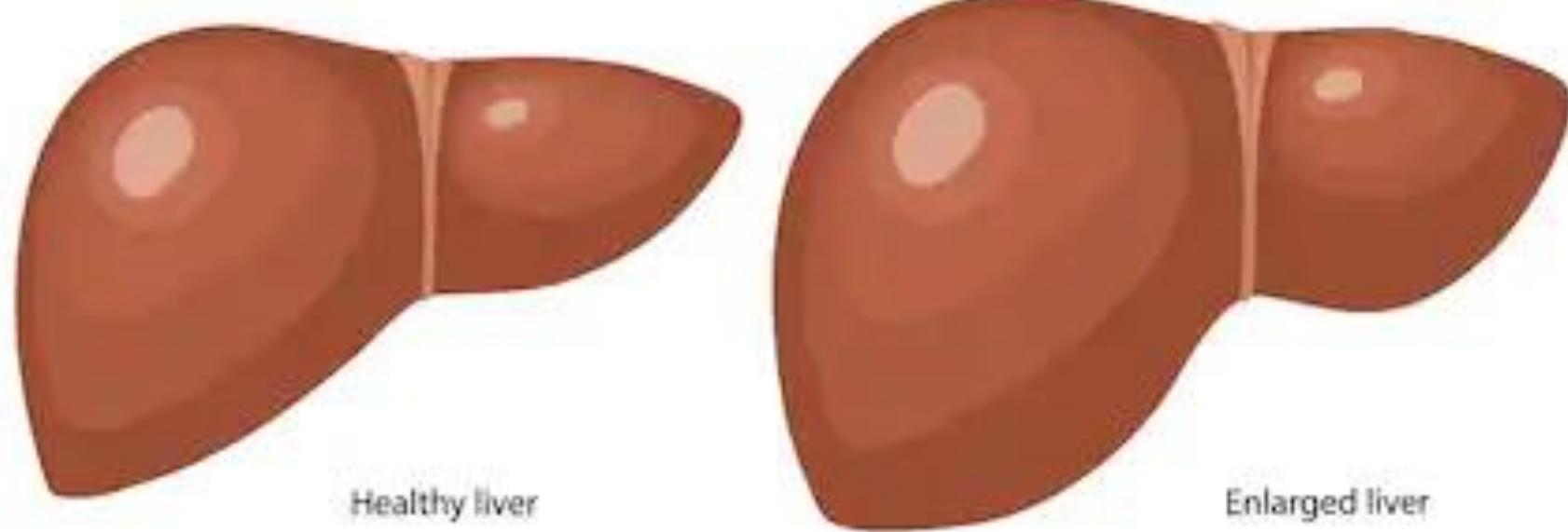


Common suffixes – General عامة

| Suffix | Meaning | Example |
|---------------|-----------------|---|
| -algia ألم | pain | arthralgia [Pain of the joint] الم مفصلي |
| -lysis انحلال | dissolution | Hemolysis (breakdown of blood) انحلال الدم |
| -megaly ضخامة | enlargement | Hepatomegaly ضخامة الكبد |
| -penia نقص | reduction | Leukopenia نقص الكريات البيض |
| -emia دم | blood condition | Hyperglycemia (blood condition of excessive sugar) ارتفاع سكر الدم |

Hepato-megaly

Hepatomegaly



-emesis ةيڻ

vomiting

EXAMPLE **hematemesis**

(*bloody vomit*)

(hemat/o + -emesis)

Vomiting of bright red blood, indicating rapid upper gastrointestinal bleeding.



Common suffixes - General

| Suffix | Meaning | Example |
|----------------|--------------------------------|--|
| -itis التهاب | inflammation | Hepatitis (inflammation of the liver) التهاب الكبد |
| -malacia تلرين | softening | Osteomalacia (softening of bone) تلرين العظام |
| -oma ورم | tumor | Fibroma (fibrous tumor) ورم ليفي |
| -phil محب | attraction for | Hemo-philia (الناعور) |
| -philia | | |
| -rrhage نزف | to burst forth (usually blood) | Hemorrhage نزف |

التهاب -itis



التهاب قصبات مزمن Chronic Bronchitis

تلين العظام -malacia

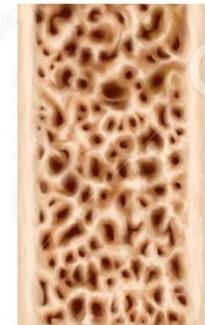
condition of softening

EXAMPLE **osteomalacia**

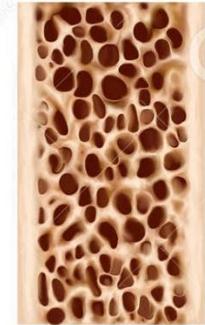
(condition of softening of bone)

(**oste/o** + **-malacia**)

An abnormal skeletal condition, characterized by softening of the bones.



Normal



Rickets/ Osteomalacia

Common suffixes – Operative عمليات

| Suffix | Meaning | Example |
|-----------------|--|---|
| -tomy قطع | incision | Laparatomy (incision into the abdomen) |
| -stomy مفاغرة | creation of an opening or an anastomosis | Gastrostomy (creation of an opening in the stomach) |
| -ectomy استئصال | excision | Nephrectomy |
| -plasty تصنیع | surgical repair or reconstruction | Rhinoplasty (surgical repair of the nose) |

استئصال -ectomy

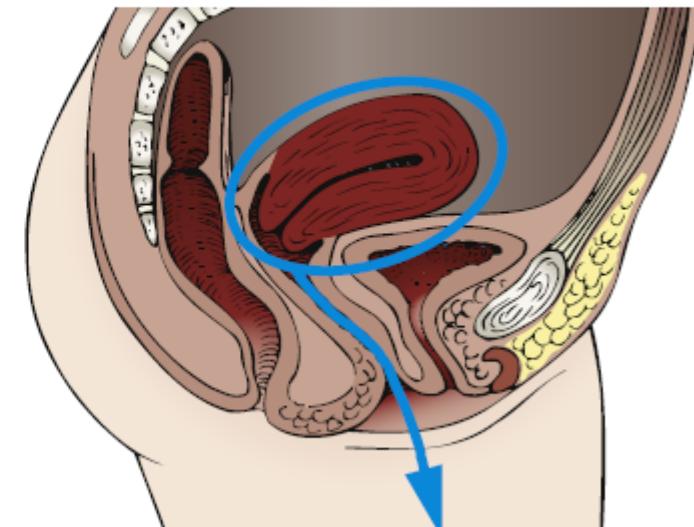
removal, excision,
resection

EXAMPLE **hysterectomy**

(removal of the uterus)

(hyster/o + -ectomy)

Surgical removal of the uterus.



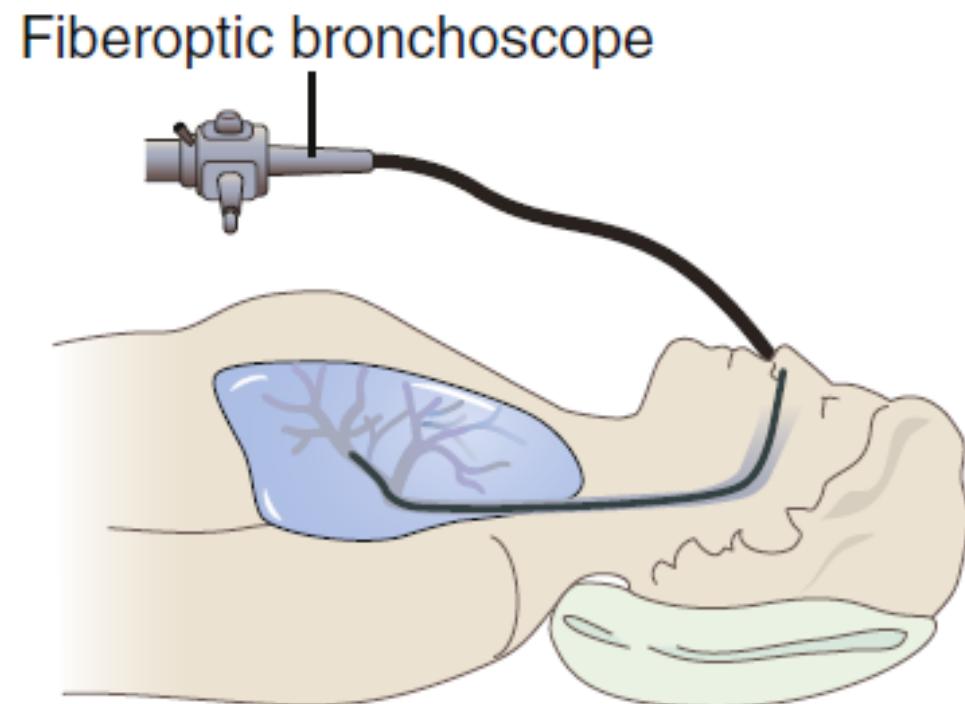
ـ تـنظـير -scopy

process of viewing

EXAMPLE **bronchoscopy**
(process of viewing a bronchus)

(bronch/o + -scopy)

The visual examination of the tracheobronchial tree.



تصنيع -plasty

تصنيع الأنف Rhino-plasty



-metry قیاس

process of measurement

EXAMPLE **spirometry**

(process of measurement of breathing)

(spir/o + -metry)

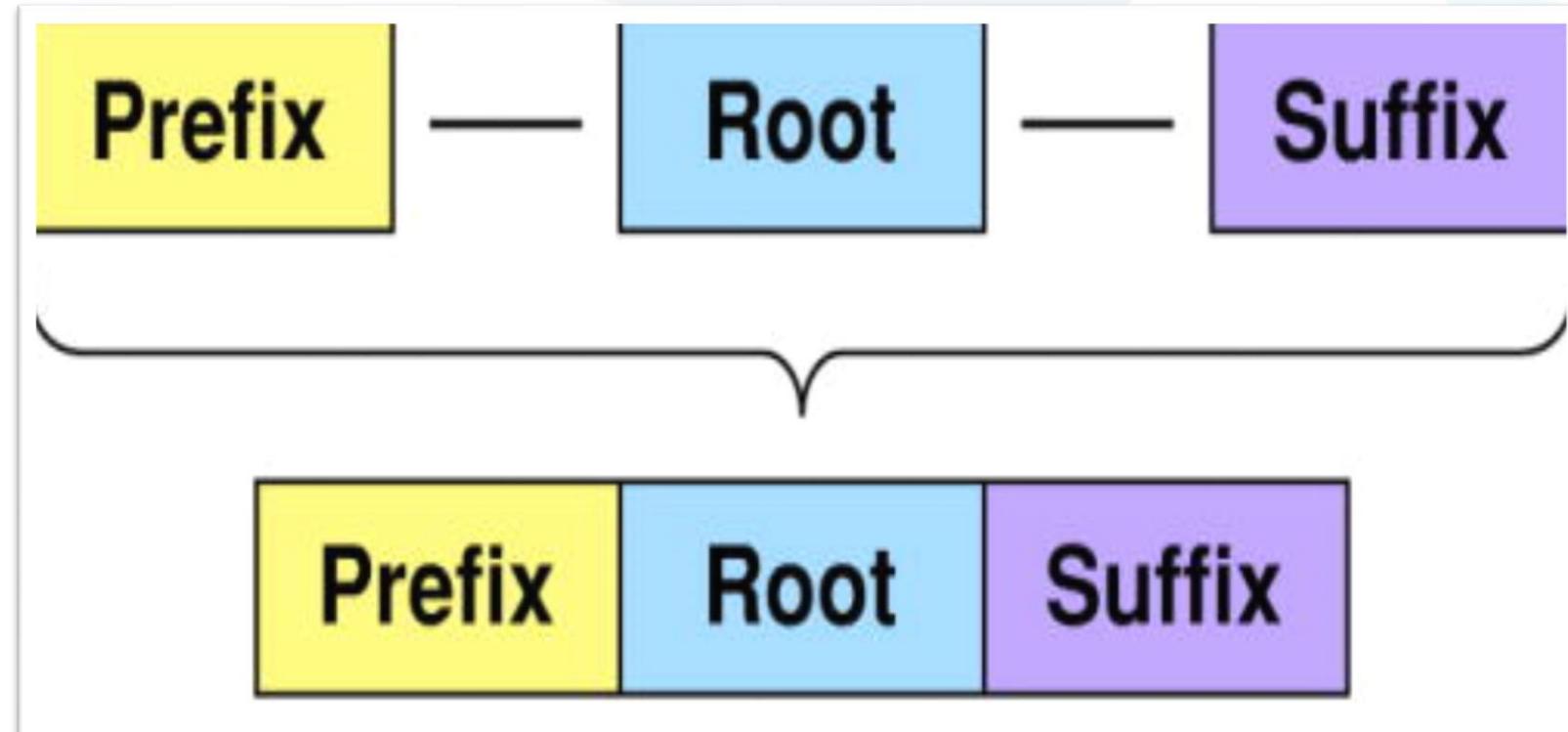
Laboratory evaluation of the air capacity of the lungs by means of a spirometer.



صفات وأشكال Suffices that mean “pertaining to” & form an adjective

| Suffix | Example |
|--------|---|
| -ac | Cardiac (pertaining to the heart) قلبی |
| -ar | Glandular (pertaining to a gland) غدی |
| -ary | Pulmonary (pertaining to the lung) رئوی |
| -eal | Esophageal (pertaining to the esophagus) مریئی |
| -ic | Toxic سمی (pertaining to poison) |

كيفية صياغة المصطلحات الطبية



1 - بوصل البدائة و الجذر واللاحقة

1- By combining prefix, root, and suffix

Ex.(1) Thrombocytopenia

مثال (1) قلة الصفيحات

Prefix : Thrombo

بادئة : جلطة

Root : Cyto

جذر : خلوي

Suffix : penia

لاحقة : قلة

Ex.(2) Hypercalcemia

مثال (2) فرط كلس الدم

Prefix : Hyper

بادئة : فرط

Root : Calc

جذر : كلس

Suffix : emia

لاحقة : الدم

Thrombo/cyto/penia



Hyper/calc/emia



2- بوصل البدائة مع الجذر

2- By combining prefix & root

Ex.(1) Anemia

مثال (1) فقر الدم

Prefix : An

بادئة : انعدام - فقر

Root : emia

جذر : الدم

Suffix : -

لاحقة : -

Ex.(2) Bradycardia

مثال (2) تباطؤ القلب

Prefix : Brady

بادئة : تباطؤ

Root : Cardia

جذر : القلب

Suffix : -

لاحقة : -

3- بوصل الجذر مع اللاحقة

3- By combining root & Suffix

Ex.(1) Appendectomy

مثال (1) استئصال الزائدة الدودية

Prefix : ---

بادئة : ---

Root : Appendic

جذر : الزائدة الدودية

Suffix : ectomy

لاحقة : استئصال

Ex.(2) Hepatoma

مثال (2) ورم كبدي

Prefix : ---

بادئة : - -

Root : Hepat

جذر : كبدي

Suffix : oma

لاحقة : ورم

4- بوصل البدائة مع اللاحقة

4- By combining prefix and suffix

Ex.(1) Acromegaly

مثال (1) ضخامة الاطراف

Prefix : Acro

بدائة : طرف

Root : -

جذر : -

Suffix : Megaly

لاحقة : ضخامة

Ex.(2) Acrocynosis

مثال (2) زرقة النهايات (الأطراف)

Prefix : Acro

بدائة : طرف أو نهاية

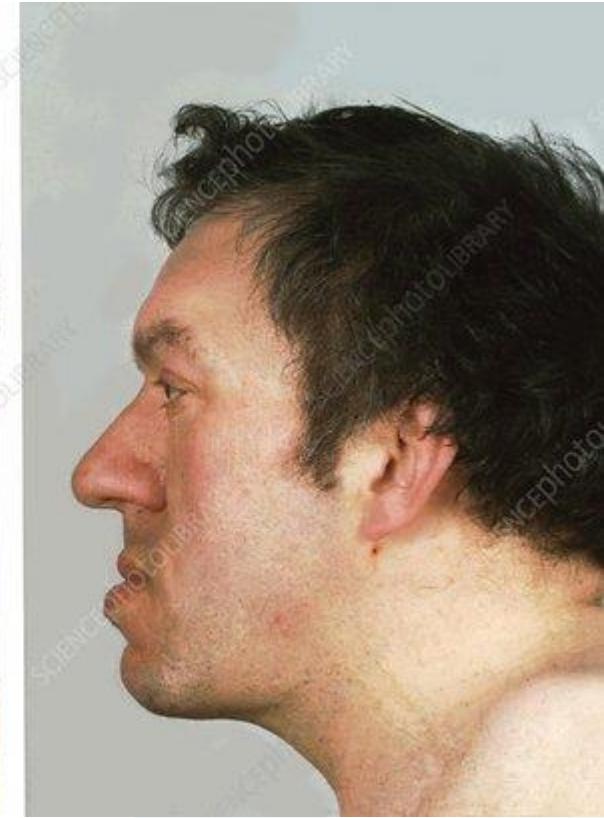
Root : -

جذر : -

Suffix : cynosis

لاحقة : زراق

ضخامة النهايات Acro/megaly



ازرقاق النهايات Acrocyanosis



الجمع Creating plurals

- Most English plurals are formed by adding –s or –es to a word
- Medical terms derived from ancient Greek and Latin often use the regular plural forms from those language (bursa>bursae, embolus> emboli).
- Some plurals are commonly used as well as irregular plurals (foot> ?????)

Creating plurals الجمع

- Most English plurals are formed by adding –s or –es to a word
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1- قواعد جمع المصطلحات الطبية

| | نهاية الكلمة Word end | احذف Drop | أضف Add | مفرد Singular | جمع Pleural | المعنى Meaning |
|---|--------------------------|--------------|------------|------------------|----------------|-------------------|
| 1 | a | --- | e | Vertebra | Vertebrae | فقرة |
| | | | | Pleura | Pleurae | غشاء الجنب |
| 2 | ma | --- | ta | Enema | Enemata | حقنة |
| | | | | Carcinoma | Carcinomata | سرطان |
| 3 | x | x | ges | Phalanx | Phalanges | سلامية |
| | | | | Pharynx | Pharynges | بلعوم |

2- قواعد جمع المصطلحات الطبية

| | نهاية الكلمة Word end | احذف Drop | أضف Add | مفرد Singular | جمع Pleural | المعنى Meaning |
|---|--------------------------|--------------|------------|------------------|----------------|-------------------|
| 4 | is | is | es | Testis | Testes | خصية |
| 5 | ix, ex | ix, ex | ices | Apex | Apices | قمة |
| 6 | on | on | a | Parazoon | Parazoa | طفيلي |
| | | | | spermatozoon | spermatozoa | نطفة |
| | | | | mitochondrion | mitochondria | متقدمة |

3- قواعد جمع المصطلحات الطبية

| | نهاية الكلمة Word end | احذف Drop | أضف Add | مفرد Singular | جمع Pleural | المعنى Meaning |
|---|--------------------------|--------------|------------|------------------|----------------|-------------------|
| 7 | um | um | a | Ovum | Ova | بويضة |
| | | | | bacterium | bacteria | بكتيريا |
| 8 | us | us | i | Bronchus | Bronchi | قصبة |
| | | | | Nucleus | Nuclei | نواة |

Formation of Plurals

| Singular words | Pluralizing rules | Plural words |
|----------------------------------|-----------------------|--------------------------|
| Joint , angioma, cancer , muscle | Add –s | Joints, cancers, muscles |
| Abscess reflex | Add -es | Abscesses , reflexes |
| staphylococcus | Remove us and add – i | staphylococci |

Thank You

