

## Medical Terminology

Unit 2 –Surgical Suffixes,  
Hematology, and  
Diagnostic Imaging

### Suffix for “Cutting”

*Tomos* = Cutting (Greek)

Tom = word root for cut

- **-tome** = cutting instrument
- **-tomy** = to cut into (incise)
  - Tom/e = cut
  - **-y** is a noun suffix
- **-ectomy** = to cut out (excise)
  - Ect/o = outside
- **-ostomy** = to form a new opening (surgical)
  - Os = mouth, opening



### Suffix for “Cutting”



Example:

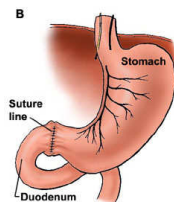
- |   |                 |
|---|-----------------|
| • <b>-tome</b> = cutting instrument                 | ✓ Derm/a/tome   |
| • <b>-tomy</b> = to cut into (incise)               | ✓ Gastr/o/tomy  |
| • <b>-ectomy</b> = to cut out (excise)              | ✓ Duoden/ectomy |
| • <b>-ostomy</b> = to form a new opening (surgical) | ✓ Col/ostomy    |

### -ectomy vs. -ostomy

- Gastr/ectomy: Excision (removal) of all or part of the stomach
  - Ect/o = combining form meaning “outside”
  - Tom/e = combining form meaning “cut”
  - **-y** = noun suffix
    - One “t” is dropped when tome is preceded by “ect”.
- Gastr/ostomy: New opening made in stomach by cutting
  - Os = combining form for “mouth, opening”
  - Tom/e = combining form meaning “cut”
  - **-y** = noun suffix

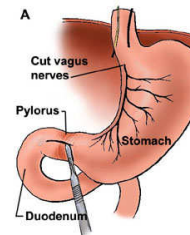
### -ostomy = Forming a New Opening

- Gastr/o/duoden/o/stomy:
  - Forming a new opening between the stomach and duodenum. Surgical procedure where natural connection between the duodenum and stomach is removed and new connection is formed.



### -tomy = Incision Into

- Duoden/o/tomy: Incision into the duodenum



- Derm/a/tome = An instrument that cuts skin
- Tom/o/graphy = A process that makes images of slices (planes) of the body

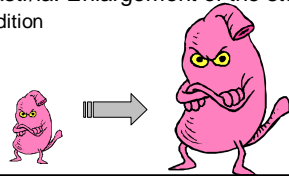
## Gastr/o = Stomach

- Excision of the stomach
- Incision into the stomach
- Make a surgical opening in the stomach (i.e. to insert a feeding tube)
- Gastr/ectomy
- Gastr/o/tomy
- Gastr/ostomy

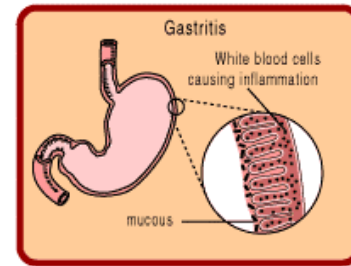
- Note: The combining form is not used when the suffix begins with a vowel

## Gastr/o = Stomach

- *Gaster* = Stomach (Greek)
- Gastr/itis: Inflammation of the stomach
- Gastr/o/megaly: Enlargement of the stomach
- Megal/o/gastr/ia: Enlargement of the stomach
- *-ia* = Condition



## Gastritis

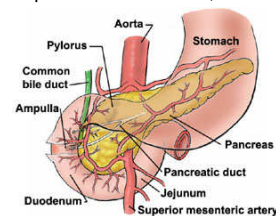


## Duoden/o = Duodenum

- Duoden/um (noun) = First part of the small intestine that connects with the stomach
- Gastr/o/duoden/ostomy = Forming a new opening between the stomach and duodenum.
  - Used to bypass obstruction in between stomach and duodenum
- Duoden/o/tomy = incision into the duodenum
- Duoden/ostomy = Forming a new opening into the duodenum
- Duoden/itis = Inflammation of duodenum

## -al = Pertaining to (Adjective Suffix)

- Duoden/al: (Adj.) Pertaining to duodenum
  - Examples: duodenal ulcer, duodenal lesion



## **-al or -ic = (adjective) pertaining to**

- Duoden/o
- Gastr/o
- Duoden/al
  - Duodenal ulcer
- Gastr/ic
  - Gastric lesion

## **-graph = To Write or Record**

- From Greek verb *graphein*, meaning to write or record
- Refers to an instrument used to record data
- Tom/o/graph is an x-ray instrument used to show tissue or organs in one plane or slice

## **-gram = Record or Picture**

- *Gramma* = something written or drawn
- **-gram** = suffix for "something written or drawn". Used in medical terms to refer to a record or picture made by an instrument.
- Tom/o/gram: An X-ray picture made by a tomograph



- **-gram** = A record or picture made by an instrument
  - Tomogram, electrocardiogram
- **-graph** = Instrument used to record data
  - Tomograph, electrocardiograph
  - *Graphein* = to write or record (Greek)
- **-graphy** = The process of making a picture
  - Tomography, electrocardiography
- **-grapher** = A person who records the data
  - Radiographer

## **Tomography**

- A radiographic procedure that uses X-rays to produce images of a slice or plane of the body.
  - MRI: Magnetic Resonance Imaging
  - CT: Computed Tomography
  - PET: Positron Emission Tomography
  - SPECT: Single Photon Emission Computed Tomography



## **-algia = Pain**

- Cardi/algia: Heart pain
- Gastr/algia: Pain in the stomach
- Since **-algia** starts with a vowel, word root is used rather than the combining form.



## Cardi/o (card/o) = Heart



- Cardi/o/megaly: Enlarged heart
- Megal/o/cardia also means enlargement or overdevelopment of the heart. (not used often)
- Cardiac enlargement (CE)
- Card/itis: Inflammation of the heart
- Cardi/o/logist: A specialist in the study of disease of the heart
- Cardi/o/logy: The study of heart



## Cardi/o (card/o) = Heart



- Cardiac (or Coronary) Care Unit (CCU)
- Electr/o/cardi/o/gram (EKG or ECG): Record of electrical waves given off by the heart
- Electr/o/cardi/o/graph: The instrument used to record electrocardiogram
- Electr/o/cardi/o/graphy: The process of making a recording of EKG/ECG using electricity

## Son/o = Sound



- *Sonus* = Sound (Latin)
- Son/o/gram: A picture made using sound waves (ultrasound) with sonograph
- Son/o/graphy: The process of obtaining the sonogram. Also called Ultrasonography.
- Son/o/graph/er: The person who performs sonography (technician).
  - Sonogram is officially READ by a radiologist.

## Ech/o



- Ech/o means sound made by reflected sound waves.
- Ech/o/cardi/o/gram: A record of sound waves reflected through the heart
- Ech/o/cardi/o/graphy: The process of making the echocardiogram using sound waves



## Radi/o = Radiation

- *Radius* = Ray coming from a central point (Latin)
- Radi/o/gram: A picture made by using X-rays (XR)
  - Note: In practice, this is usually called a radiograph.
- Radi/o/graph: Instrument used to produce the radiogram or the X-ray film
- Radi/o/grapher: One who takes X-rays



## Radi/o = Radiation



- Radi/o/logist: A physician specialist who studies (interprets) X-rays
- Radiation Therapists (RATx) use X-rays to irradiate a cancerous area
- Registered Radiologic Technologists (RT[R]) use ionizing radiation (X-rays) to create images for diagnostic interpretation by radiologists.

## Path/o = Disease

- Path/o/logy: The study of disease or the cause of disease
- Path/o/logist: A physician specializing in diagnosing (discovering) diseases
- -pathy = Disease
- Dermat/o/pathy: Disease condition of the skin
  
- Eti/o/logy = The study of the cause of the disease

## Jaundice

- Jaundice is a yellow appearance of a skin caused by a reflection of bright yellow color through the blood plasma. Plasma gets a bright yellow color when a person has a high blood bilirubin level.
- Examples:
  - Viral hepatitis A, B, or C
  - Neonatal jaundice
  - Cirrhosis of the liver

## Colors

- Leuk/o
  - Melan/o
  - Erythr/o
  - Cyan/o
  - Chlor/o
  - Xanth/o
- 
- White
  - Black (dark pigment)
  - Red
  - Blue
  - Green
  - Yellow

## Colors



- Blue skin
  - Red skin
  - White skin (vitiligo)
  - Yellow skin
  - Black (discolored skin)
- Cyan/o/derma
  - Erythr/o/derma
  - Leuk/o/derma
  - Xanth/o/derma
  - Melan/o/derma

## -osis = Condition

- -osis means disease, condition, status, or process
- Cyan/osis = condition of blueness
- Dermat/osis = condition of the skin
- Dermat/o/cyan/osis or Cyan/o/derma = condition of blueness of the skin

## -tic = pertaining to

- -osis (noun)
- Cyan/osis
- Acr/o/cyan/osis
- -tic (adjective)
- Cyan/o/tic
- Acr/o/cyan/o/tic

## **-cyte = Cell**

- Chlor/o/cyte: A green cell (in plants)
- Melan/o/cyte: Black cell (dark pigmented)
- Leuk/o/cyte: White (blood) cell
- Erythr/o/cyte: Red (blood) cell. Contains a red substance called hemoglobin.

## **-blast = Embryonic, Immature Cell**

- Leuk/o/blast: An embryonic white cell
  - Melan/o/blast: An embryonic black (dark pigment) cell
  - Erythr/o/blast: An embryonic red cell
  
  - Blast/o = (combining form) embryonic or immature cell
  - Blast/o/cyte: An embryonic cell
  - Blast: A cell in its embryonic stage
- Note: An embryonic white cell is NOT leukoblastocyte. You choose either blast or cyte when has another combining form in front.

## **-emia = Blood Condition**

- Hema = Blood (Greek)
- An/emia: Lack of blood
- Xanth/emia: Yellow blood condition (jaundice)
- Erythr/emia: Red blood condition (polycythemia)
- Chlor/emia: Green blood condition (increased chlorine in the blood)
  - Chlorosis is a condition in which the skin takes on a greenish tinge due to anemia



- Erythema
- Erythremia
- Erythroderma
- Abnormal flushing of skin caused by dilation of capillaries
- Abnormally red blood condition due to too many erythrocytes
- Redness of the skin

## **Cyt/o = Cells**



- A cell is the smallest structural unit of all living organisms.
- Cyt/o/logy: The study of cells
- Cyt/o/logist: The one who studies cells or the cause of diseases of the cell.
- Cyt/o/techn/o/logists: Technicians who prepare and screen human tissue slides to detect abnormalities of the cells. They are usually supervised by pathologists.

## **-meter, -metry**

- **-meter** = An instrument used to measure or count something
- Cyt/o/meter: The instrument used to count cells
- **-metry** = The process of measuring or counting something
- Cyt/o/metry: The process of counting cells

## Blood Cells and Platelets

- Red Blood Cells (RBC): Erythrocytes
- White Blood Cells (WBC): Leukocytes
  - Granular leukocytes
    - Eosinophils
    - Neutrophils
    - Basophils
  - Agranular leukocytes
    - Monocytes
    - Lymphocytes: T cells, B cells, Plasma cells
- Thrombocytes (Platelets): Thromb/o = blood clot
- Wandering macrophages (Phagocytes)



Red Blood Cell

## -penia = Decrease, Not Enough

- Means poverty
- Leuk/o/cyt/o/penia (leukopenia): Decrease in or not enough white blood cells
- Thromb/o/cyt/o/penia: Abnormal decrease in the number of clot-forming cells (thrombocytes)
- Erythr/o/cyt/o/penia: Decrease in red blood cells

## -osis = Condition of increased number

- -osis may be used to indicate an increase in numbers of blood cells.
- Leuk/o/cytosis: Increase in white blood cells
- Erythr/o/cyt/osis: Increase in red blood cells
- Thromb/o/cyt/osis: Increase in number of platelets

## Leukemia

- Leuk/emia, a "blood cancer", literally means "a condition of white blood".
  - Leuk/o = White
  - em = blood
  - ia = condition
- In Leukemia, the blood is not really white. There are too many immature white cells (leukocytes) in the blood. This finding was used to name the **disease** "Leukemia".

## Lymph/o = Lymphatic System

- *Lympha* = Water or liquid (Latin)
- Lymph/o/cyte: A type of WBC produced by the lymphatic system
- Acute Lymphocytic Leukemia (ALL) is a disease involving the lymphocytes

## Hist/o = Tissue

- Hist/o/blast: Immature tissue
- Hist/o/logy: The study of tissues
- Hist/o/logist: One who studies tissues
- Hist/o/cyte: A tissue cell



Connective tissue cell

## Hist/o = Tissue

- Hist/o/lysis: Destruction of tissue
- Hist/o/genous: A substance that is made by tissue
- Hist/o/logy: The study of tissue
- Hist/o/logist: One who studies tissues
- Hist/o/blast: An embryonic tissue
- Hist/o/cyte: A tissue cell
- Hist/oid: Resembling tissue



## Mania = Madness

- *Mania* = Madness (Greek)
- Man/ia means a condition of madness or excessive preoccupation
- Many mental disorders end with this word.
- Megal/o/mania: Symptom of a mental disorder in which the patient has delusions of grandeur (greatly enlarged opinions of themselves).



## -ic, -ac = Pertaining to

### Examples:

- |            |                  |
|------------|------------------|
| ❖ Leukemic | ❖ Leukocytic     |
| ❖ Dermic   | ❖ Cyanotic       |
| ❖ Manic    | ❖ Melanic        |
| ❖ Gastric  | ❖ Xanthemic      |
| ❖ Cardiac  | ❖ Erythroblastic |

## Abbreviation

- |         |  |
|---------|--|
| ● ACVD  | > Acute Cardiovascular Disease                       |
| ● ALL   | > Acute lymphocytic leukemia                         |
| ● ARRT  | > American Registry of Radiologic Technologists      |
| ● ARDMS | > American Registry of Diagnostic Medical Sonography |
| ● ASRT  | > American Society of Radiologic Technologist        |
| ● CBC   | > Complete Blood Count                               |
| ● CCU   | > Cardiac (Coronary) Care Unit                       |
| ● CE    | > Cardiac Enlargement                                |
| ● CPK   | > Creatine Phosphokinase (Cardiac Enzyme)            |

## Abbreviation

- |                |                                 |
|----------------|---------------------------------|
| ● CT, CAT scan | > Computed Tomography (Scan)    |
| ● DMS          | > Diagnostic Medical Sonography |
| ● ECHO         | > Echocardiogram                |
| ● EKG, ECG     | > Electrocardiogram             |
| ● ER           | > Emergency Room                |
| ● GA           | > Gastric Analysis              |
| ● GI           | > Gastrointestinal              |

## Abbreviation

- |             |   |
|-------------|---|
| ● Hb, HbG   | > Hemoglobin                                |
| ● LDH       | > Lactic Dehydrogenase (Cardiac Enzyme)     |
| ● MRI       | > Magnetic Resonance Imaging                |
| ● Ra        | > Radium                                    |
| ● RATx (RT) | > Radiation Therapy                         |
| ● RBC       | > Red Blood Cell (Count)                    |
| ● RDCS      | > Registered Diagnostic Cardiac Sonographer |
| ● RT(R)     | > Registered Radiologic Technologist        |
| ● RVT       | > Registered Vascular Technologist          |
| ● WBC       | > White Blood Cell (Count)                  |
| ● XR        | > X-ray                                     |