Biomedical Terminology

Introduction to Biomedical Terms, Body Structure, Color, Oncology
Introduction to Biomedical Terminology

• Medical terms are mostly built from Greek and Latin word parts
• They are also built from eponyms, acronyms and terms from modern language
  • Ex) Islets of Langerhans, Achilles tendon (Calcaneus Tendon), AIDS
• This class will focus on terms derived from word parts derived from Greek and Latin word parts
Combining Forms

• A combining form is a word root with the combining vowel attached, separated by a vertical slash.
  • Ex.) arthr/o

• The combining vowel is used in the following ways:
  • The combining vowel is used if the word root is followed by a suffix that begins with a consonant
    • Eg) Neuropathy
  • The combining vowel is not used if the word root is followed by a suffix that begins with a vowel
    • Eg) Neuralgia
  • The combining vowel is used when connecting two word roots
    • Eg) Neuroarthropathy
  • A combining vowel is not used when combining a prefix and a word root
    • Eg) Perineural
Biomedical Term Parts

• Most medical terms built from word parts consist of some or all of the following:
  • Word root/s – Ex) hepat/itis
  • Suffixes – Ex) hepat/itis
  • Prefixes – Ex) sub/hepat/ic
  • Combining vowel (usually an o) – Ex) hepat/o/megaly
Organization and Cavities of the Body
Organization of the Body

• The structures of the human body fall into the following four categories:
  • Cell
  • Tissues
  • Organs
  • Systems
Levels of Organization

• Cellular
  • Cells (cyt/o) are the basic unit of life
  • Composed of
    • Plasma membrane, Cytoplasm (cytosol and organelles), Nucleus (kary/o)

• Tissue (hist/o) - Multiple cells of certain types combine to form tissue which perform certain tasks
  • There are 4 tissue types
    • Epithelial (epitheli/o, aden/o)
    • Connective (sarc/o, lip/o, fibr/o)
    • Muscle (my/o)
    • Nervous (neur/o)
Levels of Organization

• Organ (organ/o, viscer/o) - Two or more tissues combine to perform a specific function/s and create an organ

• System (system/o) - Two or more organs which work together to perform complex functions form organ systems
Body Cavities

• Dorsal Cavity
  • Contains cranial cavity and spinal cavity
  • Cranial cavity contains the brain and is created by the cranial bones
  • Spinal cavity contains the spinal cord and is created by the vertebral column

• Ventral Cavity
  • Contains the thoracic cavity and abdominopelvic cavity
  • Thoracic cavity contains the organs surrounded by the ribcage
  • Abdominopelvic cavity contains the abdominal and pelvic organs
Body Cavities – Thoracic Cavity

- The thoracic cavity is bounded by the ribcage. Its lower boundary is the diaphragm.
Body Cavities – Thoracic Cavity

- The thoracic cavity contains the following cavities and regions
  - The pleural cavity
    - Bounded by the pleura
    - Contains the lungs
  - The mediastinum
    - The region between the two pleural cavities
    - Contains the pericardial cavity (bounded by the pericardium and houses the heart), major vascular structures (aorta, venae cavae), major respiratory tubes (trachea, bronchi) esophagus, thymus, thoracic duct
Body Cavities – Abdominopelvic Cavity

• The abdominopelvic cavity is bordered superiorly by the diaphragm and is surrounded by the peritoneum

• It contains the abdominal cavity (contains the digestive organs) and pelvic cavity (contains the bladder, rectum, and reproductive organs)
Combining Forms for Body Structures

• Aden/o – gland
  • Ex) adenoma
    • -oma – tumor, swelling
    • Tumor composed of glandular tissue

• Cyt/o – cell
  • Ex) cytoid
    • -oid – resembling
    • Resembling a cell

• Epitheli/o – epithelium
  • Ex) epithelial
    • -al – pertaining to
    • Pertaining to epithelium

• Fibr/o – fiber
  • Ex) fibrosarcoma
    • -sarcoma – malignant tumor
      (connective tissue based)
    • Malignant tumor composed of fiber
      (fibrous tissue)

• Hist/o – tissue
  • Ex) histology
    • -logy – study of
    • Study of tissue
Combining Forms for Body Structures

• Lip/o – fat
  • Ex) lipoma
    • -oma – tumor or swelling
    • Tumor composed of fat (benign)

• My/o – muscle
  • Ex) rhabdomyoma
    • Rhabd/o – rod-shaped, striated
    • -oma – tumor, swelling
    • Tumor composed of striated muscle (benign)

• Neur/o – nerve
  • Ex) neuroid
    • -oid – resembling
    • Resembling a nerve

• Sarc/o - flesh, connective tissue
  • Note: sarcoma(by itself or as a suffix) indicates a malignant tumor composed of connective tissue
Combining Forms Commonly Used with Body Structure Terms

• Cancer/o, carcin/o – cancer
  • Ex) carcinoma
    • -oma - tumor or swelling
    • Cancerous tumor (malignant)

• Eti/o – cause
  • Ex) etiology
    • -logy – study of
    • Study of cause (of a disease)

• Gno/o – knowledge
  • Ex) diagnosis
  • Dia – through, complete
  • -sis – state of
  • State of complete knowledge (identifying a disease)

• Iatr/o – physician, medicine
  • Ex) iatrogenic
    • -genic – producing, originating, causing
    • Produced by a physician (the unexpected results from a treatment prescribed by a physician)

• Lei/o – smooth
  • Ex) leiomyosarcoma
    • My/o – muscle
    • -sarcoma – malignant tumor (mesenchymal tissue)
    • Malignant tumor of smooth muscle
Combining Forms Commonly Used with Body Structure Terms

• **Onc/o** – tumor, mass
  - Ex) oncologist
    - -logist – one who studies and treats (specialist physician)
    - A physician who studies and treats tumors

• **Path/o** – disease
  - Ex) pathogenic
    - -genice – producing
    - Producing disease

• **Rhabd/o** – rod-shaped, striated
  - Ex) rhabdomyoma
    - Rhabd/o – rod-shaped, striated
    - -oma – tumor, swelling
    - Tumor composed of striated fat (benign)

• **Somat/o** – body
  - Ex) somatic
    - -ic – pertaining to
    - Pertaining to the body
Terminology Related to Neoplasm

• **Neoplasm** means new growth

• **Clinical classification of tumors**
  • Benign or Malignant
    • Benign tumors have a limited growth potential and a good outcome
    • Malignant tumors grow uncontrollably and tend to kill
  • **Histological classification**
    • Cells of benign tumors and some malignant tumors maintain some features of the tissue it arose from
    • Tumors are thus named according to the cell type they resemble
Terminology Related to Neoplasm

• Histological classification
  • Mesenchymal cells are precursor cells of connective tissue, muscle and bone. Tumors derived from mesenchymal tissue generally have the suffix –oma when it is a benign tumor and –sarcoma when it is a malignant tumor.
    • Ex) fibroma is a benign tumor composed of fibrous (connective) tissue, fibrosarcoma is a malignant tumor composed of fibrous (connective) tissue.
  • Epithelial tissue tumors generally have the following suffixes: Benign epithelial tumors have – adenoma, malignant epithelial tumors have – carcinoma, or –melanoma.
    • Ex) adenoma is a benign tumor of glandular (epithelial) tissue, adenocarcinoma is a malignant tumor of glandular (epithelial) tissue.
  • Embryonic cell tumors have the suffix –blastoma and are malignant
  • There are always exceptions.
## Terminology Related to Neoplasm

<table>
<thead>
<tr>
<th>Cell/Tissue Type</th>
<th>Benign</th>
<th>Malignant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mesenchymal Cells (connective tissue, muscle and bone)</td>
<td>-oma*</td>
<td>-sarcoma</td>
</tr>
<tr>
<td>Epithelial Cells</td>
<td>-adenoma</td>
<td>-carcinoma, melanoma</td>
</tr>
<tr>
<td>Embryonic Cells</td>
<td></td>
<td>-blastoma</td>
</tr>
</tbody>
</table>

* exceptions are lymphoma, glioma, seminoma - these are malignant
Combining Forms that Describe Color

• Chlor/o – green
• Chrom/o – color
• Cyan/o – blue
• Erythr/o – red
• Leuk/o – white
• Melan/o – black
• Xanth/o - yellow

• Examples
  • Erythrocyte, leukocyte
    • Red blood cells, White blood cells
    • Abv: RBC, WBC
  • Cyanosis
    • -osis – abnormal condition
    • Abnormal condition of blue (bluish discoloration of the skin caused by inadequate supply of oxygen and blood)
  • Melanoma – black tumor (derived from melanocyte)
Abbreviations

• Ca – carcinoma
• Chemo – chemotherapy
• Dx – diagnosis
• Mets – metastasis
• Px – prognosis
• RBC – red blood cell
• XRT – radiation therapy
• WBC – white blood cell