Introduction to Word Parts

Speaker: Heidi Jones

Current medical terminology that is in use in today's world includes terms built from Greek and Latin word parts. We also have terms are created from eponyms, and acronyms as well as the modern language that we use in today's medical field.

So what is an eponym? It is a medical term that is named for the person who was first to identify a disease of a condition. So what is an acronym? It is a term formed from the first letters of the words in a phrase. You will be required to memorize terms that are built from eponyms, acronyms, and modern language terms.

So, let's get started to view the basics of medical terminology –

The majority of medical terms are formed from four word parts.

- Word roots
- Suffixes
- Prefixes
- Combining vowels

Let's take a moment to define each of the four word parts. The word root is the word part that is said to be the core of the word and contains the fundamental meaning of the word. It is important to note that each medical term will contain one or more word roots.

The suffix is a word part attached to the end of the word root to modify the meaning of the word.

The prefix is a word part attached to the beginning of a word root to modify its meaning. Keep in mind that not all medical terms will have a prefix. A prefix can be used to modify the meaning of a word.

The combining vowel is a word part, usually an *o*, and is used to ease pronunciation of the medical term. A combining vowel is used to connect two word roots and to connect a word root and a suffix.

There are four very important guidelines that are worth mentioning that must be followed for the use of combining vowels:

- When connecting a word root and suffix, a combining vowel is used if the suffix does not begin with a vowel.
- When connecting a word root and a suffix, a combining vowel is usually not used if the suffix begins with a vowel.
- When connecting two word roots, a combining vowel is usually used even if vowels are present at the junction.
- When connecting a prefix and a word root, a combining vowel is not used.

Another important component for this unit is the discussion of the combining form. The combining form is a word root with the combining vowel attached which is then separated by a vertical slash.

The very last important component is how to define medial terms. First begin by defining the suffix (which is the end of the term), then move the beginning of the term (which is the prefix) to complete the definition.

For example, let's look at the medial term osteoarthropathy. You would start with the suffix – *pathy* which means disease. Then move to the beginning of the term *oste/o* – which means bone, and then on to *arthr/o* – which means joint. So, you have a disease of the bone and joint.

We will continue this unit with the discussion of medical terms related to body structure, color, and oncology.

Here's a brief overview of the anatomy for our body systems. The structure of the human body is divided into four basic categories – cells, tissues, organs, and systems. I will give you a term and then provide you with a basic definition of the term.

Let's start with the cell:

- The cell is referred to as the basic unit of all living things.
- The cell membrane is the boundary of the cell.
- Cytoplasm is the body of the cell which is the gel-like fluid inside the cell.
- The nucleus is referred to as the small round structure, which contains chromosomes for cellular reproduction – the center of the cell.
- Genes – not jeans as in blue jeans – are regions within the chromosome that determine hereditary characteristics.
- Deoxyribonucleic acid also known as (DNA) – each gene is made of a DNA-chemical that regulates the activities of the cell.

The second category is tissue:

- Tissue is a group of similar cells that perform specific tasks.
- Muscle tissue purpose is to produce body movement.
- The purpose of nervous tissue is to conduct impulses to and from the brain. You will find nervous tissue in nerves, the spinal cord and the brain.
- The purpose of connective tissue is to connect, support and encases various body structures. Example of connective tissue include adipose and osseous. Adipose means fat and osseous which means bone.
- The last type of tissue is epithelial tissue. Epithelial tissue serves the purpose of covering the external surface of the body; it also forms membranes that line body cavities and is the major tissue in glands.

The third category is organs:

- What is an organ? Organs are referred to as two or more kinds of tissues that together perform special body functions.

The final and fourth is systems:

- A system is a group of organs that work together to perform body functions.

The next topic to discuss is body cavities (known as the spaces within the body). There are five body cavities:

- Cranial cavity which is located inside the skull (cranium), it contains the brain.
- Spinal cavity which is inside the spinal column, it contains the spinal cord.
- Thoracic also known as the chest cavity contains the heart, lungs, esophagus, trachea, bronchi, and thymus.
- Abdominal cavity contains the stomach, intestines, kidneys, liver, gallbladder, pancreas, spleen, and ureters. Notice, I said ureters with an "s" which means two. Many people confuse the urethra with the ureters.
- Pelvic cavity contains urinary bladder, reproductive organs, part of the large intestine, and the rectum.

The following are common combing forms for body structure. I will pronounce the combining form and then provide the definition.

aden/o	gland
cyto/o	cell
epitheli/o	epithelium
fibr/o	fiber
hist/o	tissue
kary/o	nucleus

Again, it is ok for us to think of some word associations to help us in the process of memorizing the terms. For example, for kary/o, I think of the Karo Syrup that is thick and has lots of air bubbles. The air bubbles would represent the nucleus. Growing up, I remember my Grandfather who lived with us, would put this on his corn flakes for breakfast each morning.

lip/o	fat *(as in liposuction – we also had adipose that was fat as well)*
my/o	muscle
neur/o	nerve
organ/o	organ
sarc/o	flesh, connective tissue
system/o	system
viscer/o	internal organs
cancer/o, carcin/o	cancer
eti/o	cause *(of disease)*
gno/o	knowledge *("gno" is pronounced as "no")*
iatr/o	physician, medicine, treatment

lei/o	smooth *("lei" is pronounced as "li-o")*
onc/o	tumor, mass
path/o	disease
rhabd/o	rod-shaped, Striated
somat/o	body

The following are combining forms for color:

chrom/o	color
cyan/o	blue *(for example, if a patient is cyanotic – they are blue)*
erythr/o	red *(for example, erythrocyte – would be a red blood cell (RBC))*
leuk/o	white *(then we would have a white blood cell (WBC))*
melan/o	black
xanth/o	yellow
chlor/o	green

Now, we will move on to prefixes:

dia-	through, complete
dys-	painful, abnormal, difficult, labored
hyper-	above, excessive
hypo-	below, incomplete, deficient
meta-	after, beyond, change
neo-	new
pro-	before

The following are suffixes:

-al, ic, and ous	all mean pertaining to
-cyte	cell

Students tend to get the next three combining forms mixed up, so I have provided some helpful hints:

Let start defining some medical terms!

Carcinoma:

- We always start with the suffix which is *oma* which means tumor or swelling
- Then to the beginning for the term which is *carcin/o* which means growth of new cells
- So the definition for the term carcinoma means cancerous tumor

Neoplasm:

- Start with *plasm* which means growth, substance, formation
- Then *neo* which means new
- So the definition for the term *neoplasm* means new growth

Melanocarcinoma

- We have already had *carcinoma* which means cancerous tumor
- Then *melano* which means black
- So the definition for the term *melanocarinoma* is cancerous black tumor (malignant)

Myoma

- *oma* means tumor, swelling
- *My/o* means muscle
- So the definition for the term *myoma* is a tumor composed of muscle

Leiomyoma

- *Oma* means tumor, swelling
- *Lei/o* is smooth
- *My/o* is muscle
- So the definition for the term *leiomyoma* is tumor of smooth muscle

Leiomyosarcoma

- *sarcoma* always means malignant tumor
- *Lei /o* means smooth
- And *my/o* means muscle
- So the definition for *leiomyosarcoma* is malignant tumor of smooth muscle

There are also some medical terms that are not built from word parts, and cannot be correctly defined by applying the meanings of the word parts. These terms are learned by memorizing the whole word such as the following:

Benign — a tumor that is not malignant, nonrecurring and is favorable for recovery

Chemotherapy (chemo) — a treatment of cancer with drugs

Encapsulated — a tumor that is enclosed in a capsule, as with benign tumors

Exacerbation — an increase in the severity of a disease of its symptoms

Inflammation — a response to injury or destruction of tissue characterized by redness, swelling, heat, and pain

Malignant — tending to become progressively worse and to cause death, as in cancer

Radiation therapy (RXT) — treatment of cancer with a radioactive substance, x-ray, or radiation (radiation oncology or radiotherapy)

The following are some common abbreviations, and their meaning:

Ca	carcinoma
chemo	chemotherapy
Dx	diagnosis
mets	metastasis
Px	prognosis
RBC	red blood cell
XR	radiation therapy
WBC	white blood cell

The last portion of our lecture will cover directional terms, anatomic planes, regions, and quadrants. **This section is very important regarding positioning of the patient.**

We will start right off with combining forms. I will provide you with the combining form as well as the definition:

anter/o	front
caud/o	tail (downward)
cephalo/o	head (upward)
dist/o	away (from point of reference)
dors /o	back
infer / o	below
later / o	side
medi/o	middle
poster / o	back, behind
proxim/o	near (the point of reference)
super / o	above
ventr / o	belly (front)

The following are prefixes:

bi-	two
uni-	one

The following are suffixes:

-ad	toward
-ior	pertaining to

Here are directional terms, broken down:

anterior (ant)	pertaining to the front
anteroposterior (AP)	pertaining to the front and to the back
bilateral	pertaining to two sides
caudal	pertaining to the tail
cephalad	toward to the head
cephalic	pertaining to the head
distal	pertaining to away from
dorsal	pertaining to the back
inferior (inf)	pertaining to below
lateral (lat)	pertaining to a side
medial (med)	pertaining to the middle
mediolateral	pertaining to the middle and the side
posterior	pertaining to the back
posteroanterior (PA)	pertaining to the back and to the front
proximal	pertaining to near
superior (sup)	pertaining to above
unilateral	pertaining to one side
ventral	pertaining to the belly or front

Anatomic planes are imaginary flat fields used as points of reference to identify the position of parts of the body:

Frontal or coronal— is referred to as a vertical field passing through the body from side to side, thus dividing the body into anterior and posterior portions.

Sagittal — is a vertical field running through the body from front to back, thus dividing the body into right and left sides.

Midsagittal — divides the body into right and left halves.

Transverse — is horizontal field dividing the body into upper and lower portions.

Anatomical Abdominal Regions:

Umbilical — around the navel (umbilicus)

Epigastric region —directly above the umbilical region

Hypogastric region — directly below the umbilical region

Hypochondriac region — to the right and left region of the epigastric region

Lumbar region — to the right and left of the umbilical region

Iliac region — to the right and left of the hypogastric region

Abdominopelvic Quadrants:

Right Upper Quadrant (RUQ)

Left Lower Quadrant (LLQ)

Right Lower Quadrant (RLQ)

Left Upper Quadrant (LUQ)
