

**Faculty of Medicine**  
**Alexandria University**

**Short course**  
**in**  
**Medical Terminology**  
**for medical students**

**Course Description**

Medical terminology is a specialized language used by health care practitioners and just like any foreign language; it has its own vocabulary and ways of stringing together words in an acceptable i.e. understandable to everyone format.

The goal of this course is medical terminology is to help students to learn the basics of what makes up medical terms so that he/she can not only use and understand them but be able to recognize and learn new terms when he/pr she comes across them in the future.

**Course objectives**

At the end of the medical terminology course, students will be able to

1. Become familiar with medical terms
2. Learn the categories of medical terms ( eponyms and descriptive)
3. Learn the basic parts of medical terms ( word roots, prefix and suffix)
4. Learn the word roots for different organs in the human body
5. Be able to recognize and learn medical terms when coming across them during the different medical courses.

Free resources: visit

[http://the\\_point.iww.com/colins](http://the_point.iww.com/colins) ....<http://www.dmu.edu/medterms>

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## MEDICAL TERMINOLOGY

Every profession including the medical profession has its jargon, a specialized language that allows for quick, efficient communication between members of the same profession while minimizing the potential for misunderstandings. .

Medical terminology is a specialized language used by health care practitioners. And, just like a foreign language, it has its own vocabulary and ways of stringing together words in an acceptable, i.e., understandable to everyone, format.

The goal of this course in medical terminology is to learn the basics of what makes up medical terms so that the medical student can not only use and understand them himself , but be able to recognize and learn new terms when he comes across them in the future.

There are two major **categories of medical terms**:

- 1- **Descriptive**- describing shape, color, size, function, etc,
- 2- **Eponyms**, literally "putting a name upon". The latter has been used to honor those who first discovered or described an anatomical structure or diagnosed a disease or first developed a medical instrument or procedure. Examples of eponyms:
  - **Fallopian** tubes (uterine tubes-Gabriello **Fallopio**)
  - **Eustachian** tubes (auditory tubes-Bartolommeo **Eustachii**)

### Fundamentals of how medical terminology is constructed as a language.

There are three basic parts to medical terms:

- 1- **A word root** (usually the middle of the word and its central meaning),
- 2- **A prefix** (comes at the beginning and usually identifies some subdivision or part of the central meaning),
- 3- A **suffix** (comes at the end and modifies the central meaning as to what or who is interacting with it or what is happening to it

#### **Word Root**

**therm** = heat

- **hypothermia** (less heat): prefix +word root)
- **thermometer** (measuring heat)" :Word root + suffix

**myocarditis**

(prefix)	(root)	(suffix)
<b>myo</b> = muscle	<b>card</b> = heart	<b>itis</b> = inflammation

Prefix and suffix changes can alter the meaning of a term without changing its central meaning by keeping the root the same.

**Prefix change:**

<b><u>myo</u>carditis</b>	= muscle layer of heart inflamed
<b><u>per</u>icarditis</b>	= outer layer of heart inflamed
<b><u>endo</u>carditis</b>	= inner layer of heart inflamed

**Suffix change:**

<b>cardi<u>ologist</u></b>	= a physician specializing in the heart
<b>Cardi<u>omyopathy</u></b>	= damage to heart muscle layer
<b>Cardi<u>omegaly</u></b>	= enlargement of the heart

Examples of prefixes and suffixes.

<b>-itis</b>	= inflammation	tonsillitis, appendicitis
<b>-osis</b>	= abnormal condition	cyanosis (of blueness, due to cold or low oxygen)
<b>-ectomy</b>	= to cut out (remove)	appendectomy, tonsillectomy
<b>-otomy</b>	= to cut into	tracheotomy (to cut into the windpipe, temporary opening)
<b>-ostomy</b>	= to make a "mouth"	colostomy (to make a permanent opening in colon)
<b>a/an</b>	= without, none	anemia (literally no blood but means few red cells)
micro	= small	microstomia (abnormally small mouth)
macro	= large	macrostomia (abnormally large mouth)
mega/ -	= enlarged	megacolon (abnormally large colon =

megaly		large intestine)
Dys-	Difficult/faulty	Dyphagia: difficulty in swallowing
<b>-scopy/ -scopic</b>	= to look, observe	colonoscopy (look into colon)

<b>-graphy/ -graph</b>	= recording an image	mammography (imaging the breasts)
<b>-gram</b>	= the image (X-ray)	mammogram

The endings, **-graphy, -graph, -gram**, relate to recording an image such as an X-ray, CT or MRI scan or a written recording with pen and moving paper.

- **Mammography** is the process of recording, i.e. the machine and procedure. **Mammogram** is the image itself, the X-ray.
- A recording of heart activity is called an **electrocardiogram** using an **electrocardiograph**.
- A recording of brain activity is an **electroencephalogram** and the medical procedure and machine is called **electroencephalography**

<b>-ology/ -ologist</b>	= study, specialize in	<b>Cardiologist</b> ( specialized in the study of heart diseases,
		<b>Pulmonologist</b> ( specialist in lung diseases)
		<b>Neurologist</b> ( specialist in nerve and brain diseases.
		<b>Ophthalmologist</b> ( specialist in eye diseases)

## Word roots that identify major organs in the body.

Note that some organs have more than one word root. Example: "masto" and "mammo". Typically, one is derived from the Greek and one from Latin. The word ending **itis** means inflammation,

<b>Stomato</b>	<b>= mouth</b>	<b>stomatitis</b>
<b>Dento</b>	<b>= teeth</b>	<b>dentist</b>
<b>Glosso/linguo</b>	<b>= tongue</b>	<b>glossitis, lingual nerve</b>
<b>Gingivo</b>	<b>= gums</b>	<b>gingivitis</b>
<b>Encephalo</b>	<b>= brain</b>	<b>encephalitis</b>
<b>Gastro</b>	<b>= stomach</b>	<b>gastritis</b>
<b>Entero</b>	<b>= intestine</b>	<b>gastroenteritis</b>
<b>Colo</b>	<b>=large intestine</b>	<b>colitis, megacolon</b>

<b>Procto</b>	<b>= anus/rectum</b>	<b>proctitis, proctologist</b>
<b>Hepato</b>	<b>= liver</b>	<b>hepatitis, hepatomegaly</b>
<b>Nephro/rene</b>	<b>= kidney</b>	<b>nephrosis, renal artery</b>
<b>Orchido</b>	<b>= testis</b>	<b>orchiditis, orchidectomy</b>
<b>Oophoro</b>	<b>= ovary</b>	<b>oophorectomy</b>
<b>Hystero/metro</b>	<b>=uterus</b>	<b>hysterectomy, endometritis</b>
<b>Salpingo</b>	<b>= uterine tubes</b>	<b>hystosalpingogram</b>
<b>Dermo</b>	<b>= skin</b>	<b>dermatitis</b>

<b>Masto/mammo</b>	<b>= breast</b>	<b>mammography, mastectomy</b>
<b>Osteo</b>	<b>= bones</b>	<b>osteoporosis</b>
<b>Cardio</b>	<b>= heart</b>	<b>electrocardiogram (ECG)</b>
<b>Cysto</b>	<b>= bladder</b>	<b>cystitis</b>
<b>Rhino</b>	<b>= nose</b>	<b>rhinitis (runny nose!)</b>
<b>Phlebo/veno</b>	<b>= veins</b>	<b>phlebitis, phlebotomy</b>
<b>Pneumo/pulmo</b>	<b>= lung</b>	<b>pneumonitis, pulmonologist</b>
<b>Hemo/emia</b>	<b>= blood</b>	<b>hematologist, anemia</b>

## Technicolor Terms

<b>Leuk/o</b>	= white	leukemia ( excess of white blood cells)
<b>melan/o</b>	= black	melanoma (black tumor of the skin)
<b>cyan/o</b>	= blue	cyanosis (blueness may be due to cold or not enough oxygen in blood)
<b>xanth/o</b>	= yellow	xanthoma (yellow tumor)

## Tumor Talk

Adding -- **oma** (a swelling) to organ and tissue word roots names **tumors**.

<b>Aden/o</b>	= gland	adenoma
<b>Lip/o</b>	= fat	lipoma
<b>My/o</b>	= muscle	myoma
<b>Lymph/o</b>	= lymph tissue	lymphoma
<b>Carcin/o</b>	= malignant	carcinoma
<b>Osteo/o</b>	= bone	osteoma

## Directions

<b>Endo</b>	= within, inside of	endoscopy (to inspect the inside of an organ or space with a lighted instrument)
<b>Peri</b>	= around	perianal (around the anus)
<b>Circum</b>	= around	circumcise (cut around)

<b>Retro</b>	= behind	retrosternal (behind the breastbone)
<b>Epi</b>	= upon, on top	epidermis (the top or outermost layer of skin)
<b>Trans</b>	= through	transurethral (through the urinary exit duct)
<b>Intra</b>	= within	intravenous (inside the veins, e.g. IV fluids)
<b>Sub</b>	= below	subclavian (below the clavicle = collar bone)

In review, the word parts that make up medical terminology are prefixes, suffixes and word roots. The most typical sequence is prefix, word root, suffix with the word root being central but this is not always the case.

Sometimes a slash and vowel are added to the word root to make it easier to attach to word parts and make pronunciation easier.

# Quiz I

**1-If I haven't been brushing my teeth often enough, I may end up with bleeding from my gums, a condition called**

- hepatitis
- colitis
- gingivitis
- stomatitis
- proctitis

**2-A patient has had a diagnosis of colon cancer and will need surgical removal of the colon. She will end up with a permanent hole in her abdomen for drainage into a bag. The permanent opening is called a**

- megacolon
- colitis
- colonoscopy
- colostomy
- colectomy

**3-You have been having chronic pains in your upper abdomen, and your family physician refers you to a specialist in diseases of the digestive tract called a**

- cardiologist
- pulmonologist
- neurologist
- gastroenterologist
- proctologist

**4-You have just been diagnosed as having an enlarged liver. The doctor describes it as**

- megacolon
- hepatomegaly
- macrostomia
- hepatitis
- gastroenteritis

**5-You have taken your friend to the emergency room with severe lower back pain and blood in his urine. After examination and lab tests, the physician reports that your friend has an inflammation of his kidneys and makes a diagnosis of**

- hepatitis
- cystitis
- proctitis
- nephritis
- orchiditis

**6-Your friend who is a long distance runner is told by his physician that he has an enlarged heart, but that this can be a normal finding in well conditioned athletes. The doctor writes on his chart that your friend has**

- hepatomegaly
- cardiomegaly
- megacolon
- macrostomia
- myocarditis

**7-Your mother is having her uterus surgically removed along with her ovaries. Removal of ovaries is called**

- hysterectomy
- orchidectomy
- appendectomy
- oophorectomy
- gastrectomy

**8-A patient has become sterile due to chronic inflammation of her uterine tubes from frequent infection with sexually transmitted diseases. This tubal inflammation is called**

- endometritis
- perimetritis
- salpingitis
- hepatitis
- proctitis

**9- A patient with epilepsy has had a procedure performed that records brain electrical activity. This procedure is called**

- electrocardiography
- electroencephalography
- electromyography
- electrogastrography
- electrophoresis

**10-A female patient has a special X-ray procedure of the breasts performed. The X-ray image is called a**

- mammoplasty
- mammoplasia
- mammography
- mastectomy
- mammogram

## Cardiovascular system Term

<b>Cardi/o</b>	= heart	<b>Endocarditis, myocarditis, pericarditis</b> (inflammation of the lining, the muscle layer, the outer layer of the heart)
<b>Brady/tachy</b>	= slow/fast	Bradycardia (rate<60) <b>tachycardia</b> (rate>100)
<b>Angi/o</b>	= vessel	<b>Angiography, angiogram</b> (X-ray of artery)
<b>Veno/phlebo</b>	= vein	<b>Venogram</b> (X-ray of veins), <b>phlebitis</b> (inflammation of veins)
<b>-stasis</b>	= to stop	<b>Hemostasis</b> (to stop bleeding), <b>hemostat</b> (a clamp-like instrument)
<b>-cyte</b>	= cell	<b>Erythrocytes, leucocytes</b> (red, white blood cells)
<b>Hem/o, -emia</b>	= blood	<b>Hypoxemia</b> (low oxygen), <b>hematosalpinx</b> (blood in the uterine tubes)

### Cardiovascular system procedures

- **Cardiologist-**
  - a physician specializing in the diagnosis and treatment of diseases of the cardiovascular system, especially, the heart.
- **Hematologist**
  - a physician specializing in diseases of the blood.

- **Electrocardiogram (ECG/EKG)-**

A printout recording of the electrical activity of the heart.

- **Echocardiography-**

Using ultra high frequency sound waves (beyond human hearing), similar to "sonar", to form an image of the inside of the heart. This procedure can demonstrate valve damage, congenital (before birth) defects and other abnormalities.

- **Cardiac scan-**

Using a radioactive element to inject into the blood stream and create an image of the heart showing activity of uptake of radioactivity in various areas of the heart. Cardiac scans can identify areas of damaged or dead tissue, or reduced metabolism due to reduced or blocked blood flow.

- **Cardiac catheterization-**

A long hollow tube, a catheter, can be threaded into a vein up into the heart.

Then material opaque to X-rays can be released into the blood flow through the heart imaging the details of coronary arteries. Typically used to identify a blockage and location in the coronary circulation.

- **Phlebotomist/venipuncturist-**

the specially trained nurse or technician draws blood for lab tests and may also start IV's (intravenous fluids). The Greek and Latin versions of "cutting into a vein".

## QUIZ 2

**1- Pericarditis is a term describing inflammation of**

- the inside lining of heart chambers
- the tough sac surrounding the heart
- the muscular layer of the heart
- a coronary artery
- a heart valve

**2-A physician who specializes in diagnosis of diseases of the heart is called a**

- hematologist
- serologist
- pathologist
- cardiologist
- cardiovascular surgeon

**3-A recording of the electrical activity of the heart is termed**

- echocardiogram
- cardiac scan
- electrocardiogram
- cardiac catheterization
- Magnetic Resonance Imaging (MRI)

**4-Bradycardia is a term describing an**

- abnormally fast heart rate
- inflammation of heart muscle
- enlarged heart
- abnormally slow heart rate
- abnormally small heart

**5-Which of the following cells gives the red color to the blood?**

- leucocytes
- erythrocytes
- melanocytes
- cenocytes
- phagocytes

**6-Inflammation of veins is termed**

- lymphangitis
- hemangioma
- phlebitis
- arteritis
- angina

**7-Permanent damage to heart muscle due to a blocked artery is termed**

- angina pectoris
- myocardial infarct
- cardiomyopathy
- cardiomegaly
- myocarditis

**8-The medical technician who draws blood from a vein for laboratory tests is called a**

- cardiologist
- hematologist
- phlebotomist
- radiologist
- serologist

## Nervous system terms

<b>Cephal/o</b>	Head	Cephalgia (a headache)
<b>Encephal/o</b>	Inside the head (brain)	Encephalitis (inflammation of the brain) Anencephalic (born without a brain)
<b>Mening/o</b>	Membranes surrounding the brain and spinal cord	Meningitis (inflammation of the membranes)
<b>Myel/o</b>	Spinal cord	Myelogram (X-ray of the spinal cord)
<b>Neur/o</b>	Nerve	Neuroma (tumor) Neuritis (inflammation)
<b>Dys</b>	Difficult, painful, abnormal	Dyslexia (difficulty reading)
<b>-cele</b>	Hernia, abnormal protrusion of structure out of normal anatomical position	Meningomyelocele (protrusion of membranes and spinal cord)
<b>-pathy</b>	Disease, abnormality	Encephalopathy (disease of the brain) Neuropathy (disease of the nerves)
<b>-plasia</b>	Development, formation, growth	Aplasia (no development) Hyperplasia (over development)
<b>-plegia</b>	Paralysis	Hemiplegia (paralysis of one side of the body) Quadriplegia (paralysis of all four limbs)

### Nervous system procedures.

- **Neurologist-**

a physician specializing in diseases of the brain, spinal cord and nerves.

- **Lumbar (spinal) puncture or tap (LP)-**

Introducing a needle between the lower bony vertebrae of our spinal column allows a physician to sample the fluid, cerebrospinal fluid (CSF), surrounding the brain and spinal cord. Lab tests on the fluid are used for diagnostic purposes such as presence of bacteria in meningitis, special proteins in multiple sclerosis, or blood cells.

- **Brain scan-**

Introducing a radioactive element into the blood can image possible tumors in the brain.

- **Electroencephalography (EEG)- .**

Starting at the end of the word: an image (in this case a written recording) of the brain's electrical activity. EEG's are used to diagnose different types of seizure disorders such as epilepsy, brain tumors, and are used in sleep research to identify stages of sleep.

- **Computed tomography (CT)-**

A specialized X-ray machine that takes multiple images of a body area from different angles and has a computer that integrates the multiple images into "slices" of the body. Magnetic Resonance Imaging (MRI)-

- **Magnetic Resonance Imaging (MRI)**

Although the image produces the "slices" through the body seen by CT , no X-rays are involved. The patient's body is placed in a strong magnetic field. Radio pulses affect the resonance or "spin" of atoms in the tissues. A computer analyzes this information to show subtle differences in tissue molecular structure producing very high resolution and better differentiation of soft tissue.

# Quiz 3

## 1-Meningitis refers to

- inflammation of the brain
- inflammation of the membranes around the brain
- inflammation of the spinal cord
- a sensation of itchiness of the scalp
- an inflammation unique to males

## 2-Neuropathy is a term describing

- a specialist in diseases of the nervous system
- inflammation of the membranes surrounding the brain
- a noninflammatory disease of nerves
- absence of a brain at birth
- a herniation of the brain outside the skull

## 3-A meningomyelocele describes

- herniation of the brain out of the skull
- herniation of protective membranes surrounding the brain
- herniation of both protective membranes and spinal cord
- inflammation of membranes surrounding the brain
- a hole in the protective membranes surrounding the brain

## 4-Aphasia is a term defining difficulty or loss of ability to

- read
- write
- see
- hear
- speak

## 5-Which of the following procedures involves injecting a radioactive element into a patient's vein that may mark the presence of a tumor?

- A brain scan
- Computed tomography
- Electroencephalography

- Magnetic resonance imaging
- Angiography

**6-A baby is born without a brain. The diagnosis would be**

- encephalitis
- myelodysplasia
- meningocele
- anencephalic
- meningomyelocele

**7-A patient may have a brain tumor, and the physician decides to use a procedure that will give the highest resolution of imaging soft tissues. He gives orders for**

- a brain scan
- computed tomography
- electroencephalography
- magnetic resonance imaging
- lumbar puncture

**8-A tumor of the protective membranes surrounding the brain and spinal cord is called a/an**

- neuroma
- encephalocele
- myeloma
- meningioma
- meningocele

## Digestive System Terms

<b>Gastr/o</b>	Stomach	Gastritis, Gastrectomy
<b>Chol/e</b>	Gall, bile	Cholecystitis, cholecystectomy (inflammation of, removal of gallbladder)
<b>Cyst/o</b>	Bladder, sac	(see above)
<b>Emes/o</b>	Vomit	Emesis (vomiting), emetic (stimulating vomiting), antiemetic (stopping vomiting)
<b>Lith/o</b>	Stone	Cholelithotomy (removal of gall stones)
<b>Lapar/o</b>	Abdominal wall	Laparotomy (cutting into the abdomen)
<b>-centesis</b>	To puncture	Abdominocentesis (puncturing and draining)
<b>-tripsy</b>	To crush	Cholelithotripsy (smashing gall stones with sound waves)
<b>-rrhea</b>	Flow, discharge	Diarrhea
<b>-iasis (-osis)</b>	Abnormal condition	Cholelithiasis (presence of gall stones causing symptoms)

### Digestive system procedures and specialist.

#### **Gastroenterologist-**

a physician specializing in diseases of the digestive system including esophagus, stomach and intestines. These specialists do not do surgery. Patients needing surgery are referred to a general surgeon.

#### **Proctologist-**

a physician specializing in diseases of the rectum and anus. Proctology is a surgical subspecialty.

**Liver scan-**

Injecting a radioactive element into the blood stream that can image tumors in the liver. The radioactivity is very low and detectable only with an instrument more sophisticated than the old Geiger counter.

**Endoscopy-**

use of a flexible fiberoptic instrument attached to a video camera that can be used to directly visualize the esophagus, stomach and large bowel. Special names may be used for each area explored such as colonoscopy.

**Ultrasonography (ultrasound)-**

a procedure using high frequency sound waves to visualize internal organs. Primarily used to visualize abdominal and pelvic organs, such as the pregnant uterus

## QUIZ 4

**1-An emetic drug would have which of the following actions?**

- Stop bleeding
- Induce vomiting
- Stop vomiting
- Stop diarrhea
- Kill bacteria

**2-Introduction of a fiberoptic instrument through the abdominal wall for diagnostic purposes is called**

- sigmoidoscopy
- colonoscopy
- laparoscopy
- endoscopy
- colposcopy

**3-The procedure of crushing gallstones with ultrasound rather than surgical removal is termed**

- cholelithiasis
- cholelithotomy
- cholelithotripsy
- cholecystectomy
- cholangiography

**4-Cirrhosis is a condition involving**

- abnormal outpocketing of the large intestine
- inflammation of the small intestine
- constriction of the esophagus with a tumor
- difficulty swallowing
- degeneration of the liver

**5-You read in a medical report that a patient had a proctoscopic examination. You conclude that the physician will be looking for, among other possibilities, a tumor in the**

- mouth
- colon
- rectum
- stomach
- gallbladder

**6-Dysphagia is a term describing difficult, painful or abnormal**

- passing of stool
- emptying of the stomach
- swallowing
- passing gas (flatulence)
- chewing of food

**7-A patient from a car accident has a swollen belly and the surgeon suspects bleeding into the abdomen. He/she will puncture the belly and drain any fluid looking for blood. This procedure is termed**

- laparotomy
- endoscopy
- thoracocentesis
- abdominocentesis
- colectomy

**8-Cholangioenterostomy describes a procedure that**

- examines the interior of the gallbladder with a lighted fiberoptic instrument.
- surgically creates an opening between the intestines and the abdominal wall.
- surgically creates a passageway between the gallbladder duct to the intestine.
- Involves X-rays showing the gallbladder draining into the intestine.
- surgically removes gallstones through an opening in the abdomene pregnant uterus

## Respiratory System Terms

<b>Rhin/o</b>	Nose	Rhinitis, rhinorrhea (inflammation of and "runny" nose)
<b>Laryng/o</b>	Larynx, "voice box"	Laryngotomy, Laryngectomy (cutting into, surgically removing the larynx)
<b>Trache/o</b>	Trachea, "windpipe"	Tracheotomy, tracheostomy (temporary and permanent openings)
<b>Bronch/o</b>	Lung air passageways	Bronchoscopy (looking into the bronchi)
<b>Pne/u, -pnea</b>	Breath, air, lung	Tachypnea, dyspnea, apnea (accelerated, difficult/painful, cessation of breathing)
<b>Pulmo/o</b>	Lung	Pulmonary artery
<b>-ptysis</b>	Spitting (coughing)	Hemoptysis (spitting or coughing up blood from lungs)
<b>-plasty</b>	Reconstruction	Rhinoplasty (surgical reconstruction of nose)

### Respiratory system procedures.

#### **Pulmonologist-**

a physician specializing in diseases of the lungs.

#### **Respiratory Therapist-**

a specially trained technician who administers, among other treatments, inhalation therapy to patients with lung disease.

#### **Pulmonary angiography-**

special X-rays of the vessels of the lungs.

#### **Laryngoscopy-**

visual examination of the larynx.

**Endotracheal intubation-**

passing a special air-tube into the trachea so oxygen can be reliably supplied directly to the lungs without risk of inhaling vomit from the stomach. Typically done for surgery or whenever general anesthesia is administered among other situations where the patient's airway must be secured.

## QUIZ 5

**1-Surgical reconstruction or cosmetic alteration of the nose is termed**

- rhinectomy
- rhinoplasty
- rhinopexy
- rhinotomy
- rhinoscopy

**2-A faster than normal respiratory rate of breathing is termed**

- dyspnea
- apnea
- tachypnea
- pleurisy
- pneumoconiosis

**3-Hemoptysis is a term describing**

- a bloody nose
- bleeding from the gums
- blood in the chest cavity
- a clot in a pulmonary artery
- coughing up blood from the lungs

**4-A patient with a foreign body trapped in a lung passageway would be a candidate for which of the following procedures?**

- Laryngoscopy
- Tracheostomy
- Bronchoscopy
- Laryngectomy
- Pulmonectomy

**5-Patients with pneumonia often find it difficult or painful to take deep breaths. The term for this is**

- tachypnea
- dyspnea
- apnea

- atelectasis
- emphysema

**6-A special procedure to examine the blood vessels of the lungs by X-ray is called**

- a lung scan
- thoracocentesis
- bronchoscopy
- endotracheal intubation
- pulmonary angiography

**7-A tracheostomy is a procedure involving**

- visual examination of the interior of the trachea
- a temporary opening cut into the trachea
- a permanent opening cut into the trachea
- visual examination of the lung passageways
- surgical reconstruction of a crushed trachea

**8-Epistaxis is the term for**

- a collapsed lung
- a nosebleed
- uncontrollable sneezing
- coughing up blood from the lungs
- "miner's lung" disease

## Urinary System Terms

<b>Nephr/o, ren/o</b>	Kidney	Nephritis, renal artery
<b>Hydro/o</b>	Water	Hydronephrosis (abnormal condition involving back up of urine into the kidney)
<b>Cyst/o</b>	Bladder	Cystitis: Inflammation of bladder  cystectomy :removal of bladder)
<b>Pyel/o</b>	Renal collecting ducts	Pyelogram (X-ray of the collecting ducts)
<b>Ur/o, -uria</b>	Urine	Polyuria,= (frequent urination,  Anuria= no urine formation)
<b>Olig/o</b>	Scanty, less than normal	Oliguria (reduced urine formation)
<b>-pexy</b>	To surgically reattach, fix in normal position	Nephropexy (surgically attach kidney in normal anatomical position)

**Nephrosis-** a noninflammatory disease of kidneys.

**Nephrolith-** a kidney stone.

**Urethritis-** inflammation of the urethra, the final pathway for urine in both sexes, and the common pathway for urine and semen in the male.

**Nocturia-** frequently getting up and urinating during the night.

**Enuresis-** involuntary release of urine, most often in reference to "bedwetting".

## Urinary System Procedures

**Nephrologist** - is a physician specializing in kidney diseases.

**Urologist** - a physician specializing in diseases of the lower urinary tract, that is, the bladder and urethra. Also, urology is the profession that takes care of problems of the male reproductive system, sort of the male equivalent of a gynecologist.

**Cystoscopy** - looking into the urinary bladder with a fiberoptic instrument.

**Intravenous pyelogram** - special X-rays showing the drainage pattern of the kidneys. A dye opaque to X-rays is injected into a vein. After a waiting period for the blood and dye to pass through the kidneys, X-rays can be taken of the collecting system of the kidney, ureter and bladder.

**Retrograde pyelogram** - In this procedure a dye opaque to X-rays is flushed backwards up the urethra and bladder and up the ureters to the kidneys.

**Voiding cystourethrogram** - take this apart starting at the end of the word: an imaging technique (X-ray) displaying the urethra and bladder while urinating

**Dialysis** - a procedure for cleansing the blood of waste products in individuals with complete kidney failure or who have had kidneys removed by surgery. With the in-hospital procedure, the patient's blood is circulated through a machine that removes waste products. The blood is recirculated back into the patient.

**Lithotripsy** - Crushing kidney stones with sound waves.

## QUIZ SIX

**1-Frequently after surgery involving general anesthetic, a patient may not void urine for a period of time, because the kidneys have stopped producing urine. This usually temporary condition is termed**

- polyuria
- oliguria
- anuria
- nocturia
- enuresis

**2-Presence of a kidney "stone" is termed**

- nephrosis
- hydronephrosis
- nephritis
- nephrolithiasis
- pyelonephrosis

**3-A specialist in diseases of the lower urinary tract, bladder and urethra, is called a**

- nephrologist
- urologist
- proctologist
- blepharologist
- serologist

**4-Nephrolithotomy is the term for**

- removing a kidney
- removing a kidney stone
- crushing kidney stones with sound waves
- removing a tumor from a kidney
- transplanting a replacement kidney

**5-The term for scanty or less than normal urine formation is**

- anuria
- enuresis
- oliguria
- polyuria
- nocturia

**6-A procedure that allows a physician to look into the bladder and examine its interior is termed a**

- retrograde pyelogram
- cystoscopy
- cystogram
- voiding cystourethrogram
- intravenous pyelogram

**7-Surgical fixation or return and attachment of a kidney dislodged during an auto accident would be termed**

- nephrotomy
- nephrolithotomy
- nephrolithotripsy
- nephropexy
- nephrectomy

**8-A lab report comes back to a physician documenting numerous erythrocytes in the urine specimen. The term for this is**

- oliguria
- polyuria
- anuria
- hematuria
- nocturia

## Male Reproductive system Terms

Orchid/o, test/o	Testes (male gonad)	Orchiditis, orchidectomy, testicular artery, testosterone (male sex hormone)
Balan/o	Head of the penis	Balanitis
Andr/o	Male	Androgenic (stimulating maleness), androgynous (characteristics of male and female appearance)
Prostat/o	Prostate	Prostatitis, prostatectomy
Vas/o	Vessel, duct	Vas deferens, vasectomy (duct carrying semen from testes, cutting the duct)
-rrhaphy	To suture	Herniorrhaphy (surgical correction of inguinal hernia)

**Hypospadias-** literally "below the fleshy spike". A condition in which the external urinary meatus (opening) opens anywhere below the tip of the penis rather than at the tip.

**Hydrocele-** a fluid filled sac partially surrounding the testis. Manifests itself as a swelling on the side of the scrotum.

**Varicocele-** dilated and twisted veins of the testis,

**Cryptorchidism-** literally "hidden testicle". A condition of lack of descent of one or both testes into the scrotum. If not corrected, usually by surgery, before puberty, can lead to sterility and increased risk of testicular cancer.

**Benign prostatic hypertrophy (BPH)-** swelling of the prostate gland which surrounds the base of the male bladder and urethra causing difficulty urinating, dribbling, and nocturia

**Transurethral resection of the prostate (TURP)-** the surgical cure for BPH. An instrument inserted through the penile urethra is used to partially cut away the prostate to relieve obstruction of the urinary tract.

**Prostate Specific Antigen (PSA)-** PSA is a marker protein for prostate cell secretions which can be detected with a lab test. A rising PSA may be an early sign of prostate cancer, although there may be other causes including false positive tests.

## QUIZ SEVEN

**1-Surgical repair of hypospadias using the foreskin of the head of the penis would be termed**

- orchidopexy
- balanopexy
- oophoropexy
- balanoplasty
- colpoplasty

**2-Cancer of the testicle usually requires its surgical removal. This procedure is termed**

- orchidectomy
- orchidoplasty
- orchidopexy
- orchiocatabasis
- orchidoptosis

**3-A hydrocele defines**

- blood engorged, enlarged testicular veins
- a hernia in the inguinal region
- a clear fluid filled sac partially surrounding the testis
- a urinary tract opening along the under surface of the penis
- a partial obstruction of the urethra at the base of the bladder

**4-The surgical procedure performed to relieve partial obstruction of the male urethra due to an enlarged gland at the base of the bladder is called a**

- BPH
- TURP
- IVP
- UTI
- CVA

**5-Cryptorchidism refers to**

- congenital absence of a testicle
- an undescended testicle (not in scrotum)
- inflammation of a testicle
- a tumor of the testicle
- presence of a testicle in a female

**6-A male with testosterone deficiency may most likely be treated with which of the following agents to restore and maintain normal sexual function?**

- carcinogenic
- iatrogenic
- estrogenic
- androgenic
- androgynous

**7-Surgical implantation of an undescended testicle into the scrotum and anchoring it in its correct anatomical position is termed**

- orchidectomy
- orchidoplasty
- orchidopexy
- orchiocatabasis
- orchidoptosis

**8-Inflammation of the head of the penis is termed**

- oophoritis
- salpingitis
- orchiditis
- balanitis
- epididymitis

## Female reproductive system terms

<b>Hyster/o, metr/o</b>	Uterus	Hysterectomy=surgical removal of the uterus endometritis (inflammation of the lining of uterus)
<b>Salping/o, -salpinx</b>	Uterine tube	Salpingitis,=inflammation of the uterine tube hematosalpinx (blood in the uterine tube)
<b>Colp/o</b>	Vagina	Colporrhaphy (suturing a tear), colpoplasty (surgical reconstruction), colposcopy (viewing the interior)
<b>Oophor/o</b>	Ovary	Oophorectomy, (surgical removal of the ovaries) oophoropexy (surgery fixation, reattachment)
<b>Men/o</b>	Menstruation	Menarche (first), dysmenorrhea (painful menstruation)
<b>Mamm/o, mast/o</b>	Breast	Mammogram, mastectomy
<b>- pareunia, coitus</b>	Intercourse	Dyspareunia (painful intercourse), precoital,=before intercourse postcoital (after intercourse)

### Female genital system procedures and specialists

**Obstetrician-** literally "midwife" in Latin. A physician specializing in the diagnosis and management of pregnancy and delivering babies.

**Gynecologist-** a physician specializing in diseases of the female reproductive system and surgery of this area. Most physicians currently specialize in combined practice of OB/GYN.

**Episiotomy**- a surgical procedure cutting into the perineal area, the area between the vagina and anus in order to prevent tearing of tissues when the baby's head traverses the vaginal opening.

**Hysterosalpingogram**- special X-rays of the uterus and uterine tubes involving passing an opaque dye backwards up through the uterus to determine if the tubes are patent. Since the tubes are open into the abdominal (peritoneal) cavity, if patent, dye should spill out of the end of the tubes and be manifest on the X-ray.

**Colposcopy**- using a magnifying instrument to inspect the interior of the vagina and cervix, the entrance to the uterus.

**Dilatation and curettage (D &C)**- dilating the cervix, the entrance into the uterus, and passing instruments that enable scraping off superficial layers of the endometrium. May be done as an early therapeutic abortion, or following a normal pregnancy to remove residual tissue remaining in the uterus, or may be done as a diagnostic procedure to examine lining tissue of the uterus.

**Mammoplasty**- Surgical reconstruction of the breast may involve breast enlargement or reduction or cosmetic reconstruction after mastectomy.

### Female reproductive system terms of pregnancy

- <b>gravida</b>	Pregnancy	Nulligravida (never pregnant), primigravida (first-time pregnant), multigravida (many pregnancies)
<b>-para</b>	Live birth	Nullipara (no live births), multipara (many live births)
<b>Part/o, toc/o</b>	Labor/birth/delivery	Prepartum, postpartum (before and after delivery), dystocia (difficult delivery)

EXAMPLE: On an OB patient's chart you may see the abbreviations: **gravida 3, para 2**. This means three pregnancies, two live births. Possibly one baby was stillborn.

## QUIZ EIGHT

### **1-Hematosalpinx is a term describing**

- inflammation of the uterus
- blood in a uterine tube
- a tear in the wall of the vagina
- blood in the uterus
- blood in the abdomen

### **2-Surgical reconstruction of the vagina would be termed**

- oophoropexy
- balanoplasty
- colpoplasty
- orchidopexy
- colposcopy

### **3-Dyspareunia is the term for painful, difficult or abnormal**

- intercourse
- menstruation
- childbirth (delivery)
- labor
- lactation (milk production)

### **4-A hysterosalpingo-oophorectomy is the term for surgical removal of the**

- uterus
- uterus and uterine tubes
- uterus, uterine tubes and ovaries
- uterus, uterine tubes and vagina
- ovaries

### **5-A woman who has two children, but had four pregnancies would be noted on her chart as**

- gravida 2, para 4
- gravida 4, para 2

- gravida 4, para 4
- gravida 4, para 0

**6-Mammoplasty refers to**

- removal of a breast
- an X-ray of a breast
- an abnormally large breast
- inflammation of a breast
- surgical reconstruction of a breast

**7-Oligomenorrhea refers to**

- painful menstruation
- cessation of regular menstrual periods
- a "missed" period
- scanty, less than normal menstrual flow
- abnormally heavy menstrual flow

**8-Difficult, complicated, labor and delivery is termed**

- dyspnea
- dyspareunia
- dyspepsia
- dysuria
- dystocia

**9-A patient requires surgery to restore and reattach the uterus back in its normal anatomical position because of uterine prolapse into the vagina. This procedure is termed**

- colpexy
- colpoplasty
- hysteropexy
- hysteroceleisis
- hysterocolpectomy

## Musculoskeletal system terms

<b>Oste/o</b>	<b>Bone</b>	<b>Osteitis, osteoma, osteocyte</b>
<b>Chondr/o</b>	<b>Cartilage</b>	<b>Chondritis, chondroma, chondrocyte</b>
<b>Arthr/o</b>	<b>Joint</b>	<b>Arthritis, arthroplasty</b>
<b>Myel/o</b>	<b>Bone marrow</b>	<b>Myeloma</b>
<b>Ten/o, tendin/o</b>	<b>Tendon (binds muscle to bone)</b>	<b>Tendonitis, tenorrhaphy</b>
<b>Ligament/o</b>	<b>Ligament (binds bone to bone)</b>	<b>Ligamentous injury</b>
<b>Burs/o</b>	<b>Bursa, "bag", (shock absorber between tendons and bones)</b>	<b>Bursitis</b>
<b>My/o, myos/o</b>	<b>Muscle</b>	<b>Myoma, myositis</b>

<b>-malacia</b>	<b>Softening</b>	<b>Osteomalacia, chondromalacia</b>
<b>-porosis</b>	<b>Porous</b>	<b>Osteoporosis</b>
<b>-asthenia</b>	<b>Weakness, loss of strength</b>	<b>Myasthenia gravis</b>
<b>-trophy</b>	<b>Development, stimulation, maintenance</b>	<b>Atrophy (shriveling of muscles), hypertrophy (increase in size and strength of muscles)</b>
<b>-algia, algesia</b>	<b>Pain</b>	<b>Myalgia, arthralgia, analgesia (take away pain)</b>

## **Musculo skeletal system procedures and specialists.**

**Orthopaedist-** "To straighten up children" Orthopaedics is a surgical subspecialty that in the past devoted much of its time to treating musculoskeletal deformities in children. Now with improved prenatal diagnosis and better nutrition, orthopaedists still treat children with spine and limb deformities but also adults with complicated bone fractures, damaged tendons or ligaments, or needing surgery to replace a damaged hip or knee joint.

**Rheumatologist-** "To study the flux of fluids". Rheuma is an old medical term for a watery discharge. Among other diseases, Rheumatologists treat joint diseases such as the various forms of arthritis including rheumatoid arthritis. Inflamed joints accumulate "fluid" and swell among other signs and symptoms. This medical subspecialty also evaluates and treats osteoporosis, tendonitis, gout, and lupus among many other chronic musculoskeletal pain disorders.

**Physical Therapist-** Although not a physician, this health care professional typically has at least two years of specialized training beyond a college degree. PT's are rehabilitation specialists treating a multitude of medical problems including patients recovering from joint surgery, limb amputation, a stroke, heart attack, and suffering with chronic neuromuscular diseases.

**Arthroscopy-** A fiberoptic instrument is introduced into a joint cavity in order to visualize surfaces of bones entering into a joint, find tears in internal joint structures and evaluate sources of inflammation.

**Bone scan-** A radioactive element in very small amounts, not enough to cause any radiation injury to the patient, is introduced into the blood stream. The specially selected element accumulates in bone and using a much more sophisticated version of the old Geiger Counter instrument, the distribution of the element is used to diagnose potential bone tumors among other bone pathologies.

**Electromyography-** A big, scary word! But, you are experienced by now in taking them apart. I like to start at the end and work backward: "a recording of muscle electrical activity". Fine needles are introduced into muscles in order to make recordings of contractile activity. This procedure is useful in evaluating causes of paralysis, diagnosing muscular dystrophy and other neuromuscular disorders.

**Muscle biopsy-** Cutting out a small tissue sample of muscle in order to examine it under a microscope. This procedure can be useful in diagnosing muscular dystrophy and other neuromuscular disorders

## QUIZ Nine

### 1- Arthroplasty describes

- visualization of the interior of a joint
- inflammation of a joint
- surgical reconstruction of a joint
- autoimmune degeneration of a joint
- abnormal development of a joint

### 2-Tenorrhaphy is the term describing

- a torn tendon
- inflammation of a tendon
- surgical removal of a tendon
- surgically suturing a torn tendon
- measuring the length of a tendon

### 3-If your arthritis has noticeably worsened and pain and swelling no longer is controlled with high dose aspirin, your family physician would most likely refer you to a

- pathologist
- neurologist
- orthopaedic surgeon
- rheumatologist
- physical therapist

### 4-Soft, rubbery bones due to inadequate calcium deposition related to vitamin D deficiency would be termed

- osteoporosis
- osteitis
- osteomyelitis
- osteomalacia
- myeloma

**5-The term for painful, aching muscles is**

- neuralgia
- myalgia
- analgesia
- arthralgia
- cephalgia

**6-Myasthenia gravis involves**

- inflammation of muscles
- degeneration of muscles
- severe muscular weakness
- inflammation of joints
- paralysis of muscles

**7-When weight-lifters exercise regularly their muscles become stronger and the increase in muscular size is do to**

- atrophy
- dystrophy
- myasthenia
- myositis
- hypertrophy

**8-Chondrocytes are cells found in**

- tendons
- bones
- bone marrow
- cartilage
- blood

**9-A bone marrow tumor is termed**

- osteitis
- osteoma
- myoma
- myeloma
- lymphoma

**10-A form of dwarfism results from achondroplasia, a term meaning**

- a cartilage tumor
- inflammation of cartilage
- lack of normal cartilage development
- cartilage transforming into bone
- degeneration of cartilage

**11-A procedure to evaluate concentration of an injected radioactive element in bone to localize a possible tumor is termed**

- electromyography
- pyeloscopy
- bone scan
- bone biopsy
- osteopathy

**12-Inflammation of the shock absorber-like structure protecting a tendon sliding over a bone is termed**

- arthritis
- tendonitis
- bursitis
- osteitis
- osteomyelitis

# CANCER TERMS

## Oncology:

The study of tumors

## Oncologist

Physician specialised in the treatment of cancer

## TUMOR TYPES

**Malignant** vs. **benign** (literally, "evil" versus "good")

Tumors are masses of cells that have slipped the bonds of control of cell multiplication. Malignant tumors, cancers, are life-threatening because they are invasive (spread into surrounding organs) and **metastasize** (travel to other areas of the body to form new tumors).

Specifically, invasiveness results in penetration, compression and destruction of surrounding tissue causing such problems as loss of organ function (liver, kidneys), difficulty breathing (lungs), obstruction (intestines), possible catastrophic bleeding, and severe pain. .

## Carcinoma

is the most common form of cancer.

By definition, this type develops from epithelia (sheets of cells that cover a surface, example-skin, or line a body cavity, example-glandular lining of stomach).

Some names for tumors of this type would be: carcinoma of the prostate, adenocarcinoma of the lung, hepatocellular carcinoma

Note that the term carcinoma typically appears in the name.

## SARCOMA

A rarer form of cancer that arises from connective and supportive tissues, examples: bone, bone marrow, muscle, lymphatics.

Some names of this type of tumor would be: osteosarcoma (malignancy of bone), multiple myeloma (malignancy of bone marrow). Note that the term **sarcoma** does not always appear in the name.

## GRADING AND STAGING

Tumor **biopsies** (tissue samples) are examined microscopically to determine type and degree of development

A **grading** scale is used, Grade I to Grade IV, to describe tumor tissues as well differentiated (still look like the original source tissue which is good) to poorly differentiated (has taken on a more primitive structure and may not resemble its original tissue source which is bad).

**Staging** tumor biopsies evaluates whether they have invaded surrounding tissue, have involved lymphatics (drainage channels for cell fluids other than blood) and whether they have metastasized to other sites in the body.

Grading and staging tumors are important ways to predict the progress and outcome of the disease, called the "**prognosis**", and the type of treatments that may most likely succeed.

In general low grade tumors that have not invaded tissues, have not involved lymph nodes (**negative nodes**) and have not metastasized would be expected to have a better prognosis than a high grade tumor that has invaded tissues, has invaded lymphatics (**positive nodes**) and has metastasized.

## **CAUSES OF CANCER**

Any injury to DNA (the genetic code) may result in loss of control of cell division and the cell population multiplying out of control.

**Carcinogens** are cancer causing agents. Broad categories include radiation exposure, chemicals, drugs and viruses. Only certain types of chemicals, drugs and viruses are carcinogens and excessive radiation exposure.

## **CANCER THERAPY**

### **TUMOR MARKERS**

Tumor markers are substances that are produced by tumors or the body's response to presence of a tumor.

Tumor markers found in various body fluids, such as the blood, can be useful in the detection of certain cancers and treatment of cancer

,Tumor markers are most useful in indicating the progress of treatment in known cancer patients, reducing in level or disappearing with successful treatment, or increasing in level in spite of treatment which may indicate spreading of the cancer.

Two well known markers are Prostate Specific Antigen (PSA) for prostate cancer and CA 125 for ovarian cancer.

### **RADIATION**

High dose radiation focused on cells causes massive damage to them, effectively, destroying cancerous cells. However, even with highly focused radiation treatment, normal tissue cells may suffer some damage leading to undesirable side effects.

Some terms you will hear about are:

**Radiosensitive**- cancer degenerates in response to radiation

**Radioresistant-** cancer slow to respond or may not respond at all to radiotherapy

**Fractionation-** repeated low doses that allow a higher total dose

## CHEMOTHERAPY

Perhaps nothing short of surgery strikes fear into our hearts more than being told, "You're going to need chemo". Stories of hair falling out and nausea and/or diarrhea are awful. But, the essential action of most **chemotherapeutic agents** is to kill or stop development of rapidly dividing cells. Right up there with the rapidly dividing malignant cells are perfectly normal tissues that have rapidly dividing cells to replace those we lose naturally on a recurring basis: hair follicles and the lining cells of our stomach and intestines

Another side effect of chemotherapy is **myelosuppression**, reduction of bone marrow blood cell replacement. Patients may complain of extreme fatigue due to anemia (reduced number of erythrocytes) and can be at increased risk of infectious disease (reduced number of leucocytes).

Promising new treatments are being developed. One of the newest is an **angiogenesis** (blood vessel growing) **inhibitor**. A medication called Avastin blocks blood vessels from growing into a tumor thereby starving the growth.

## SURGERY

The best way to treat cancer is probably by surgery. However, some tumors are so enmeshed in normal tissues that they can not be safely cut out without severe damage to normal tissues, they are **inoperable**. And, depending upon the location (brain, prostate) and amount of excised tissue, one may be left with severe disability. However, surgery can be a complete cure for some types of tumors if done early such as malignant melanoma (skin cancer). The probability of a cure may be enhanced after surgery by following up with additional treatments, chemotherapy, radiation, or combination of both. This procedure is called "**adjuvant therapy**".

Some surgical terms you will hear:

**Cryosurgery-** destroying malignant tissue by freezing it with a cold probe. Often used for soft tissues like the liver.

**Fulguration-** "Lightning" in Latin. Malignant tissue destroyed with an electrocautery instrument (electric current).

**Excisional biopsy-** removal of tumor and a safe margin of normal tissue. Can be curative for many cancers if done before metastases.

**En bloc resection-** removal of tumor and large amount of surrounding tissue including positive lymph nodes.

Unfortunately, not all cancer treatments are curative. **Palliative** treatment gives relief of symptoms, but does not cure and is reserved for advanced malignancy.

# Exercise

1-Following is an abstract of a simulated patient's medical record. Note words in italics. Take them apart. Look for the "root" meaning. Read the record and answer the questions that follow to yourself.

-A 48 year old male complains of abdominal discomfort after meals, especially, high fat meals. At those times he also has aching in his right shoulder and back. An **ultrasound** of the upper abdomen revealed **cholelithiasis**. A consult with a **gastroenterologist** determined that **cholelithotripsy** was considered but it was decided that a **laparoscopic cholecystectomy** would be the first procedure attempted. If complications were encountered then an **open cholecystectomy** would be performed.

Significant medical history: patient had a **coronary angiography** performed at age 46 following suspected **myocardial infarct**.

1. What is the diagnosis (the patient's current medical problem)?
2. Did the procedure performed to aid in the diagnosis involve use of X-rays?
3. Was a specialist appropriate to the diagnosis consulted?
4. What treatments were considered?
5. What significant event was in the patient's medical history?
6. What procedure was performed in the patient's medical history?

2--A 48 year old male complains of **abdominal discomfort after meals**, especially, high fat meals. At those times he also has aching in his right shoulder and back. A **procedure using high frequency sound waves to image the upper abdomen** revealed **stones in the gallbladder**. A consult with a **specialist in diseases of the digestive tract** determined that **crushing the gallbladder stones** with sound waves was considered but it was decided that a **removal of the gallbladder using a scope and instruments inserted into the abdominal wall** would be the first procedure attempted. If complications were encountered then **opening up the abdomen** and **removing the gallbladder** would be performed.

Significant medical history: The patient had a heart attack. **The patient's heart arteries were imaged by injecting a dye opaque to X-rays into a vein** to show area of blockage of blood flow to heart muscle.

Replace each of the underlying phrases with the appropriate medical term.