Interpreting in Healthcare Settings -

MEDICAL AND HEALTH RELATED TERMINOLOGY **HANDBOOK**

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The Interpreter's Lab is an interpreter education program that trains interpreters to work in community, healthcare and legal settings.

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Contact Information:

Shifting Pictures
1424 Commercial Drive
Vancouver BC
V5L 3X0

admin@interpreterslab.org
www.interpreterslab.org

Updated: 2019
Edition: 7

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Overview of Medical Terminology

Anatomy and physiology are basic subject areas in health care. You don't need to be expert in these areas, but you do need to have basic understanding of the terminology used so you can accurately interpret. In this short workbook you will find basic medical terminology, anatomy vocabulary, common medical procedures and basic cancer terminology.

Components of Medical Words

What is Medical Terminology?
The words, or terms that make up the language of medicine are referred to as the terminology of the medical field, or *Medical Terminology*. Like every other language, Medical Terminology has changed over time, but the majority of terms are based in Latin or Greek.

How Does Medical Terminology Work?

Most medical terms can be broken down into one or more word parts. For simplicity in explanation, let's say that there are four possible word parts, and any given medical term may contain one, some, or all of these parts:

- Roots
- Prefixes
- Suffixes
- Linking or combining vowels

An example of a word with three of the above parts is the medical term pericarditis, which means inflammation of the outer layer of the heart. Pericarditis can be divided into three parts: peri -card -itis

Once divided into its essential parts, pericarditis can be translated:

- the prefix peri translates to surrounding,
- the root card translates to heart, and
- the suffix itis translates to inflammation.

Hence, pericarditis is an inflammation of the area surrounding the heart, or an inflammation of the outer layer of the heart, anatomically known as the pericardium.

Medical terms always consist of at least one root, although they may contain more than one. The root of a word is that part which contains the essential meaning of the word. An example of this can be seen above in the term pericarditis. The root of the word -card -refers to the heart, so any prefix or suffix added to the root (card) will only function to add to the specificity of that word. An example of this would be the prefix brady, which means slow. If "brady" is added to the root "card", the term bradycard -which roughly means slow heart -is created. Then, if the suffix ia -which means abnormal state-is added to ''bradycard", the medical term bradycardia is formed. The translation of bradycardia (brady-card¬ia) is slow - heart - abnormal state; or the abnormal state of a slow heart rate.[i]

Linking or Combining Vowels

As was discussed above, a medical term must have at least one root, but does not have to have a prefix and/or a suffix. An example of this is the term sternocleidomastoid, which is a muscle that has attachments at the sternum, the clavicle, and the mastoid. The term sternocleidomastoid can be divided into three parts (three roots, in this case): stern -o-cleid - o-mastoid. Notice that there are vowels between the three roots. These are linking or combining vowels, which serve to make a term easier to pronounce.

The vowel used most of the time is o, but other vowels such as i and a are also used. Combining vowels are often used between roots and suffixes or roots and other roots, but they are NOT used between prefixes and roots.

Root Words - some examples of root words

component	meaning	example
BLAST-	germ, immature cell	
blastoma = a cancer made of immature cells		
CARCIN-	cancer	carcinogenic = cancer causing
CARDIO-	heart	cardiotoxicity = toxicity to the heart
CLEID		
clavicle	sternocleidomastoid = muscle attached at the sternum and clavicle	
CYTO-	cell	cytotoxic = toxic to the cell
DERMA-	skin	dermatitis = inflammation of the skin
HISTIO-	tissue	histology = study of tissue
HEPATI-	liver	hepatoblastoma = liver cancer
MALIGN-	bad / harmful	malignant = growing, spreading
NEPHRO-	kidney	nephrotoxic = harmful to the kidneys
MASTOID		
part of the skull	mastoid process = the portion of the temporal bone of the skull that is behind the ear	
NEURO-		
nerves	neurob1ast = an immature nerve cell	
ONCO-	mass / tumour	oncology = the study of cancer
OSTEO-	bone / bony tissue	
osteosarcoma = bone cancer		
PAED-	child	paediatric oncology = study of childhood cancer
SARCO-	tissue	sarcoma = tumour of bone, muscle, or connective tissue
STERNO	sternum	Sternum = breastbone located in the center of the chest
TOXO-	poison	toxicology = study of poisons

Suffixes - some examples of suffixes

component	meaning	example
-AEMIA	condition of blood	leukaemia = cancer of blood cells
-ECTOMY	excision / removal	nephrectomy = excision of a kidney
-ITIS	inflammation	hepatitis = inflammation of the liver
-OLOGY	study / science of	cytology = the study of cells
-OMA	tumour	retinoblastoma = tumour of the eye
-PATHY	disease	neuropathy = disease of the nervous system
-OSIS	disease /condition	necrosis = dying cells

Prefixes - some examples of prefixes

component	meaning	example
AN-, A-	without / lack of	anaemia = lack of red blood cells
AB-	away from	abnormal = away from the normal
AD-	near / toward	adrenal gland = gland near to the kidney
BI-	two / both	bilateral Wilm's = tumour in both kidneys
DYS-	difficult / painful	dysfunction = not working properly
ECTO-	outside	ectopic pregnancy = outside the uterine cavity
ENDO-	inside	endoscope = an instrument to look inside the body cavities or organs
EPI-	upon	epidermis = the outer layer of skin
HYPER-	excessive / above	hyperglycaemia = excessive blood sugar levels
HYPO-	beneath / below	hypodermic = injection below the skin
INTER-	between	intercostal = between the ribs
INTRA-	within / Inside	intravenous = into a vein
PARA-	beside, about,near	parathyroid = beside the thyroid gland
PERI-	around	pericardium = membrane around the heart
PRE-	before	prenatal = before birth
POST-	after	post surgical stage = stage after surgery
SUB-	under / below	submucosa = tissue below mucus membrane
SYN-	together with	syndrome = group of symptoms occurring together

Common Medical Procedures

Digestive System

Endoscopy: The physician inserts a thin fiber-optic tube with a scope on the end into the digestive tract. This allows the physician to actually see on a TV monitor the inside of the tract and to identify ulcers, irritations, tumors, etc.

Upper Endoscopy: The scope is used to examine the esophagus, the stomach and the duodenum (the first part of the intestine).
Colonoscopy: A scope is used to examine the entire colon.

Sigmoidoscopy: A scope is used to examine as far as the transverse the colon

Upper GI Series (barium swallow): Barium sulfate is swallowed and an X-ray is taken of the esophagus, the stomach and the small intestine.

***Biopsy:** A small sample of affected tissue is cut out and examined later in the laboratory under a microscope.

Cardiovascular System

Electrocardiogram (EKG): A recording of the electricity flowing through the heart. Small discs connected to a machine by wires are stuck to the patient's chest. The patient feels nothing during the recording. The discs are easily removed.

Echocardiogram (Echo): Pulses of ultrasound are directed through the patient's chest, and the returning echoes are recorded. This test shows the structure and movement of the heart.

Exercise Tolerance Test (ETT): While a patient is walking or jogging on a treadmill, a technician measures blood pressure, pulse, and takes an EKG. This procedure determines how the heart responds under stress and helps identify areas of weakness.

Respiratory

Bronchoscopy: A light, flexible fiber-optic tube is passed through the nose, throat, larynx and trachea into the lungs to examine the bronchial tubes. Biopsies can be performed or specimens of the mucus in the lungs can be obtained.

Pulmonary Function Test: This test studies how well the lungs are breathing. The patient is asked to breathe in and then blowout as hard and long as he can into a tube connected to a machine.

Musculoskeletal

*X-Ray: X-rays are invisible rays of energy, produced by an energy source, that can penetrate different materials to different degrees and then expose a photo- graphic plate. X-rays pass through tissue more than bone and so are very useful in diagnosing bone disorders. However, X-rays are used in many medical specialties.

*Computed Tomography (CT Scan): This is a type of X-ray that is beamed through a patient at many different angles around a specific section of the body. A computer synthesizes this information into a single picture of a "slice" of the section of the body. CT scans can detect problems in soft tissues that simple X-rays cannot.

*Magnetic Resonance Imaging (MRI): This test does much the same as the CT scan without using X-rays at all, but by using magnetic and radio waves.

Female Reproductive System

Pap Smear: The physician inserts a speculum into the vagina to hold the vaginal walls apart and then scrapes some material from the cervix (the entrance to the uterus). This material is later examined in the laboratory under a micro- scope, looking for abnormal cells that might suggest cancer. This test is named for the doctor who developed it, whose last name was Papaniccolao.

Colposcopy: The physician uses a lighted, magnifying instrument to visually examine the cervix. This test is more accurate than a Pap smear.

Mammogram: an X-ray of the breast.

*Ultrasound: Sound waves bouncing off the organs of the pelvis are recorded on a monitor and can be made into a permanent record similar to an X-ray. This procedure can be used to diagnose masses such as tumors or cysts, among other things.

Male Reproductive System

Semen Analysis: The patient is asked to masturbate and ejaculate into a cup. The sperm in the semen is then counted under a microscope. If the count is less than 20 million sperm/ml. of semen, the man is usually sterile.

Circumcision: In this surgical procedure, the fold of skin over the glans of the penis is surgically removed, leaving the glans exposed. This does not affect fertility.

Vasectomy: The tube which carries sperm from the scrotum to the penis is cut. This sterilizes the patient, but, since it does not interfere with nerves or blood supply to the penis, it does not interfere

with sexual function.

Neurological System

Electroencephalogram (EEG): a recording of the electrical activity of the brain. This can detect seizure activity in the brain, tumors or injuries to the brain.

Lumbar Puncture: cerebrospinal fluid (CSF), the fluid that encases the brain and fills the spinal cord, can be removed through an incision between two vertebrae. The pressure of the fluid can be measured, contrast materials can be injected, or medicines can be administered this way. The CSF can be tested for infection, etc.

Urinary System

Urine Tests: The patient is asked to urinate into a cup. The urine is then tested and examined under a microscope to identify bacteria or viruses.

IVP (Intravenous Pyelogram): Contrast material is injected into a vein. It travels to the kidneys, where it becomes part of the urine and then travels through the rest of the urinary tract. Meanwhile, X-rays are taken of this dye, which shows how the kidneys are functioning and if there are tumors, cysts, stones, etc.

Cystoscopy: A hollow metal tube (called a cytoscope) is passed into the urinary opening and up through the urethra into the bladder. By means of mirrors and a light source, the physician can examine the inside of the bladder. Urine samples can be withdrawn and contrast materials injected into the bladder through the cytoscope.

Lithotripsy: As the patient is immersed in a tub of water, shock waves are used to break up stones in the kidneys so they can be passed.

Renal Dialysis: When the kidneys stop functioning, the waste materials in the blood build up. Dialysis is a procedure to artificially do the kidney's work: to filter the waste products from the patient's bloodstream. There are two kinds of dialysis. In hemodialysis, blood flows from the patient into an artificial kidney machine where it is filtered and then back into the patient. In peritoneal dialysis, fluid is introduced into the cavity around the major organs (the peritoneal cavity). Waste passes from the blood to the fluid, which is then removed through a catheter.

Blood System

Blood Tests: Blood is withdrawn with a needle, usually from one of the veins in the inside of the elbow. The number of vials of blood drawn will depend on what kind of tests the provider has requested. Blood tests check for the number and function of normal parts of the blood, such as the red blood cells

or platelets, or for the presence of invaders in the blood, such as viruses.

Blood Transfusion: In this procedure, blood (or some part of it) is taken from a donor, tested for match of blood type, and then infused into the patient. Before being infused, the blood is tested for hepatitis and HIV to be sure it's safe.

Bone Marrow Transplant: This transplant is done when a patient's own bone marrow can no longer produce the blood he needs. First, the patient receives chemo- therapy or radiation to kill his own diseased bone marrow. Then the bone marrow from a donor is infused through an intravenous line. It will find and lodge in the space where the old bone marrow was. This is a very dangerous procedure and can result in serious infection, a rejection by the body of the new bone marrow, or a return of the original disease.

NOTE
* These diagnostic procedures are used in multiple disciplines

Basic Cancer Terminology[ii]

Diagnosis

Biopsy
This is the removal of a small section of the tumour, the sample will be analyzed by a histopathologist in order to establish a precise diagnosis. This may be a needle biopsy, where a very fine needle is used to take a tiny sample of the tumour. Occasionally a surgeon may remove the whole tumour prior to diagnosis; a resection biopsy.

Haematology
Is the branch of medicine that specializes in the study and treatment of blood and blood tissues (including bone marrow) A blood count is where the various types cells in the blood are measured. This may aid diagnosis and will be used during treatment to monitor toxicity. The Haematologist may also examine samples from a bone marrow aspiration (needle into the bone) and samples of spinal fluid from a lumbar puncture (needle between the vertebra of the spine).

Histopathology
The study of cells relating to the disease. (Histology is the microscopic study of cells and tissues, Pathology is the study of the disease). The histopathologist will determine a precise diagnosis by laboratory tests and microscopic examination of the cells.

Differentiation
Is where normal cells go through physical changes in order to form the different specialized tissues of the body. Malignant cells may range from well-differentiated (closely resembling the issue of origin) or undifferentiated or anaplastic (bearing little similarity to the tissue of origin). In general, it is the undifferentiated or anaplastic histologies which are more aggressive.

Tumour Markers
A substance in the body that may indicate the presence of cancer. Markers may be secreted by the tumour itself or produced by the body in response to the cancer. Tumour markers may aid diagnosis or give an indicator of how treatment is progressing. These markers are usually specific to certain types of cancer. For example, neuron¬specific enolase (NSE) is associated with a number of types of cancers, in particular neuroblastoma. Also, alphafetoprotein (AFP) levels are often abnormally high in patients with Germ cell tumours.

Medical Imaging types of medical imaging include:

- X-ray Examination of X-ray films may indicate the site and extent of the tumour and aid in the detection of metastatic spread.
- CT Computed tomography (CT or CAT scan) makes a cross-sectional x-ray picture of a "slice" of the body. The machine rotates around the patient taking x-rays from different angles; the images are then processed by a computer.

- MRI Magnetic resonance imaging. This is used to determine if the biochemical activity of a tissue responds normally to magnetic forces, tumours may give an abnormal signal.
- Ultrasound The use of sound waves to image the underlying structures of the body.
- Ultrasonic waves are reflected differently depending on the type of tissue they pass through, aiding the detection of abnormal tissues.

Staging and Prognosis

- Benign Not spreading, usually a more mild disease.
- Malignant Cancerous, where the tumour grows uncontrollably and may spread.
- In-situ / Invasive
- Localized A tumour restricted to a single site.
- Metastases -Where the tumour has spread to other parts of the body beyond the primary site. Metastatic sites (secondary) may be regional or distant from the original tumour.

Staging

Staging is where the disease is categorized as to how far it has spread. The precise staging system used will depend on the type of cancer the patient has. In general low stage patients are those with localized tumours that are easily re-sectable, whilst high stage patients are those with widespread metastases. The treatment given may largely depend upon which stage the patient is at diagnosis.

Prognosis

Is the expected outcome of a disease and its treatment, this may be influenced by a variety of factors such as stage, age, site etc. depending on the particular type of cancer. For example, in general a patient with localized disease may have a more favourable prognosis compared to a patient with widespread disease which may be less favourable.

Remission

Is where the symptoms of cancer are no longer present. There is no longer any evidence of the disease using the available investigations.

Relapse

This is when the disease reoccurs after a period in remission.

Refractory

This is where the cancer is resistant to treatment; patient may never go into remission, possibly with stable or progressive disease.

Restaging

This is where the patient is staged again after a period of treatment to access the response to therapy.

Follow-up
When treatment is complete the periodic visits to the physician are needed to monitor the patient and ensure there has been no recurrence of the disease.

Treatment
Curative treatment -treatment to destroy the cancer.
Palliative treatment -treatment which relieves the symptoms and pain.

Surgery
- Pre-operative chemotherapy -drugs given to shrink the tumour before surgery.
- Complete resection this is where the entire tumour has been totally removed during surgery, as opposed to an incomplete resection. The surgical specimen maybe examined by a pathologist to determine if it is likely to have removed the entire primary tumour. If there is any tumour left after surgery this may be macroscopic (visible to the eye) or microscopic, in either case radiotherapy may be needed to kill the remaining tumour cells.
- Prosthesis -an artificial replacement e.g. for an amputated limb.
- Endoprosthesis -a prosthesis which fits inside the body e.g. replacing the thigh bone.

Radiotherapy
- External radiotherapy -radioactivity from a source outside the body.
- Internal radiotherapy -placing radioactive source within the body in or near to the tumour to kill the cancer cells (Brachytherapy).
- Fractions -the radiotherapy dose is divided into a number of smaller doses to reduce the risk of side effects. There is normally one fraction per day.
- Hyperfractionated radiotherapy -more than one fraction is given per day.
- Radiotherapy field -the area towards which the radiotherapy was directed.
- Total Body Irradiation (TBI)-radiation to the whole body e.g. to destroy all malignant cells prior to bone marrow transplant (BMT).

Chemotherapy
Since the 1960's the development and use of drugs has dramatically improved the prognosis for many types of cancer. Chemo-means chemicals, for most types of cancer chemotherapy will consist of a number of different drugs; this is known as combination chemotherapy. Chemotherapy may be given in a variety of ways;

- Intravenously (IV) -into a vein is the most common.
- Intramuscularly (1M) -injection into a muscle,
- Orally -by mouth.
- Subcutaneously (SC) -injection under the skin.
- Intralesionally (IL)-directly into a cancerous area.
- Intrathecally (IT)-into the fluid around the spine.
- Topically –medication will be applied onto the skin.

- Cytotoxic - cytotoxic drugs kill or damage cells. The normal cells of the body grow and die in a controlled way, but cancer cells keep growing and multiplying. Chemotherapy destroys cancer cells by stopping them from growing or multiplying at one or more points during the life cycle of the cell.
- Central line -a thin plastic line into a vein in the chest used for the delivery of chemotherapy e.g. Hickman line.
- Drug resistance is where tumour cells become resistant to chemotherapy. Some tumour cells will be chemo-sensitive and are killed by anticancer drugs; the cells that remain are likely to be more resistant. Thus by selection it is the most resistant cells survive and divide, they may be resistant to a particular drug, a class of drugs, or all drugs.

Bone Marrow Transplantation (BMT)

The bone marrow is destroyed by high dose chemotherapy and possibly radiotherapy which has been given to kill malignant cells in the body. Healthy matching marrow is then transplanted into the patient.

- Allogeneic BMT- Healthy marrow is taken from a matched donor and used to replace the patients' bone marrow which has been destroyed by high dose chemotherapy. The donor may be a relative, if the patient has a twin this may be the best match, otherwise a brother, sister, or another unrelated person may donate marrow.
- Autologous BMT-In an autologous bone marrow transplant the marrow is first taken from the patient The marrow is usually then purged with chemicals to kill any
- malignant cells in it, and may then be frozen to preserve it. High dose chemotherapy is
- given to destroy the patent's remaining marrow. The frozen marrow is then thawed and transplanted back into the patient.
- Peripheral Blood Stem Cell Rescue (PBSe) New approaches -Gene therapy/ Immunotherapy
- In the future patients might be immunized against their own cancers by injecting them with their own tumour cells after they have been genetically modified. The gene-modified tumour cells may encourage the patients own immune system to destroy the cancer cells. Tumour necrosis factor (TNF) and interleukin-2 (IL-2) are substances associated with the immune system which encourage aniti tumour activity.

Toxicity and Late Effects

Acute/Transient- Some side effects may be of short duration; may be sudden or severe. Chronic/ Long lasting- Some side effects may be long lasting e.g. kidney damage. Immune- suppressive drugs may dampen the immune system making he patient prone to infections. Neutropenia- Reduced levels of white cells in the blood. Febrile neutropenia -with fever.

WHO/ toxicity gradings- (World Health Organization toxicity grading guidelines) In general these range from grade 0 (none) to grade 4 (life threatening).
Late effects- It is possible that treatment may have delayed effects e.g. on fertility and growth.

Cancer Research: Basic Science

Developing new drugs
Two general approaches include:
a) The mass screening of thousands of natural substances to see if they have any anti cancer potential; or
b) Making new compounds in the laboratory e.g. a eating analogues of existing drugs (slightly modified chemical structures) designed to make the drug more potent.

Pre-clinical testing of drugs.
New drugs may be tested on animals to indicate the maximum doses, toxicities and anti cancer potential before they are tested on humans (see phase I trials).

In vitro / In vivo
Experiments may be in vitro (in the test tube) or in vivo (in the body). Much laboratory work uses cell cultures (cells grown in the lab); either from established cell lines or from material collected at biopsy/surgery.

Biochemistry
There is a great deal of research investigating the mechanisms of how drugs are metabolized and absorbed by the body's cells. Growing knowledge in this field provides the foundations for improving the anticancer potential for existing drugs and for developing new 'designer' drugs. Other work includes research into the mechanisms of drug resistance.

Tumour Biology
Cytogenetics
During recent years there have been rapid advances in the understanding of tumour biology at the genetic level. Research into the genes associated with different cancers include the identification of oncogenes, tumour supressor genes. This is a key area of cancer research, providing a basis for the development of new treatments and new diagnostic tools. In the future treatment may be more tailored to the biological features of the cancer rather than the standard clinical features.

Cancer Research: Clinical Trials and Epidemiology

Types of study

Some Studies are experimental which make in intervention e.g. clinical trials; others are observational in which no medical intervention is made. Studies may also be prospective ie. On-going into the future, or retrospective ie. looking at historical data. In general studies aim to test a hypothesis (theory) by disproving null hypothesis (the opposite theory) e.g. in a trial of a new drug the null hypothesis might be that the new drug has no effect on survival.

Phase I clinical trials
Tests new types of treatment and aim to define a safe dose that will be used for further studies. This is usually the first testing of a treatment on humans after extensive laboratory work. Recruitment for Phase 1 trials are usually from patients for whom no other effective therapy is known.

Phase II clinical trials
Test the anti cancer effects of the new treatment, and include very detailed toxicity investigations. If there is effective anti-tumour activity, it may be incorporated in a future phase III study.

Phase III clinical trials
Compare one or more treatments of proven efficacy. Often patients will be randomized between an established 'standard' treatment and a new 'experimental' treatment -it is not known which the better treatment is.

Randomization Treatment is randomly allocated to ensure there is no systematic bias in the results.

Ethical approval all new trials have to first be approved by an independent ethics committee. Informed consent is where patients agree to a treatment /randomization having a reasonable understanding of it.

Morbidity
Looking at the incidence or prevalence of a disease in a population.

Mortality
Looking at the death rates caused by a disease.

Epidemiology
The study of populations. Regional and National cancer registries record all cancers enabling population based studies in cancer to be carried out. Knowing how many people get a type of cancer out of the overall population provides the information needed to calculate incidence rates.

Longitudinal Studies are studies where individuals are followed over time. A fixed population (cohort) may be monitored over a number of years.

Cross-sectional Studies are studies that are carried out at just one point in time.

Case Control Studies are where cases are compared to controls, in order to avoid bias the controls are matched for factors such as age and sex. The aim is to investigate possible associations between certain factors and risk of disease. For example, a study investigating smoking and the risk of lung cancer.

Meta Analysis is where data from a number of studies are lumped together in order to provide evidence for or against a hypothesis.

Cells, Chromosomes and Genes

There are more than 100 trillion cells in the human body. Every cell (except the red blood cells) contain the entire human genome that is, all the genetic information necessary to build a human being. This information is encoded in the DNA.

Inside the cell's nucleus, DNA is tightly twisted and packed into 23 pairs of chromosomes (one chromosome in each pair comes from each parent).

There are 46 human chromosomes which are estimated to contain about 100,000 individual genes that determine each person's inherited human characteristics. Each gene is a segment of double-stranded DNA which holds the information for making a specific molecule, usually a protein. This information (or code) lies in varying sequences of vast numbers of pairs of the four chemical bases that make up the DNA. A change in the sequence (a mutation), or missing sequences (deletion) of these bases may result in an altered protein that does not work properly, or a failure to produce that protein altogether.

Activities Worksheet

Medical Specialists	
Specialists	Describe the area of practice/research/specialty
Endocrinologists	
Cardiologist	
Ophthalmologist	
Pediatrician	
Nephrologist	
Gynecologist Oncologist	
Neurologist	
Otolaryngologist	

ROOT WORDS AND MEANINGS

Root	Meaning	Root	Meaning
abdomin	abdomen	acanth	thorny, spiny
acetabul	acetabulum (hip socket)	acou	hearing
acr	extremities; height	actin	ray; radius
adenoid	adenoids	aden	gland
adrenal	adrenal gland	adren	adrenal gland
aer	air; gas	albumin	albumin
algesi	pain	alveol	alveolus
ambly	dull; dim	amni	amnion
amnion	amnion	amyl	starch
andr	male	angi	vessel
anis	unequal; dissimilar	ankyl	crooked; stiff; bent
antr	antrum	an	anus
aort	aorta	aponeur	aponeurosis
appendic	appendix	arche	first; beginning
arteri	artery	arteriol	arteriole (small artery)
arthr	joint	articul	joint
atel	imperfect; incomplete	ather	yellowish; fatty plaque
atri	atrium	aur	ear
aut	self	axill	armpit
azot	urea; nitrogen	bacteri	bacteria
balan	glans penis	bi	life
bil	bile	blast	developing cell
blephar	eyelid	brachi	arm
bronch	bronchus	bronchiol	bronchiole
bucc	cheek	burs	bursa (cavity)
calc	calcium	cancer	cancer
carcin	cancer	cardi	heart
carp	carpals (wrist bones)	caud	tail; toward the lower part of the body
cec	cecum	celi	abdomen (abdominal cavity)
cephal	head	cerebell	cerebellum
cerebr	cerebrum, brain	cerumin	cerumen (earwax)
cervic	cervix	cheil	lip
chir	hand	cholangi	bile duct
chol	gall; bile	choledoch	common bile duct
chondr	cartilage	chori	chorion
chrom	color	cirro	liver
clavic	clavicle (collarbone)	clavicul	clavicle (collarbone)
col	colon	colp	vagina
coni	dust	conjunctiv	conjunctiva
core	pupil	corne	cornea

Root	Meaning	Root	Meaning
cor	pupil	cost	rib
crani	cranium (skull)	cry	cold
crypt	hidden	culd	culdesac
cutane	skin	cyan	blue
cyes	pregnancy	cyst	bladder; sac
cyt	cell	dacry	tear, tear duct
dactyl	fingers or toes	dent	tooth
dermat	skin	derm	skin
dextr	right	diaphor	sweat
diaphragmat	diaphragm	dipl	two; double
dips	thirst	disk	intervertebral disk
diverticul	diverticulum	dors	back (of the body)
duoden	duodenum	dur	hard; dura mater
dynam	power or strength	ech	sound
ectop	located away from usual	electr	electricity, electrical activity
embry	embryo; to be full	emmetr	a normal measues
encephal	brain	endocrin	endocrine
enter	intestines	epididym	epididymis
epiglott	epiglottis	episi	vulva
epitheli	epithelium	erythr	red
esophag	esophagus	esthesi	sensation, sensitivity, feeling
eti	cause (of disease)	faci	face
femor	femur (upper leg bone)	fet	fetus; unborn child
fibr	fibrous tissue, fibers	fibul	fibula (lower leg)
gangli	ganglion	ganglion	ganglion
gastr	stomach	ger	old age; aged
geront	old age; aged	gingiv	gum
glomerul	glomerulus	gloss	tongue
gluc	sweetness; sugar	glyc	sugar
glycos	sugar	gnath	jaw
gnos	knowledge	gon	seed
gravid	pregnancy	gynec	woman
gyn	woman	hem	blood
hemat	blood	hepat	liver
herni	hernia	heter	other
hidr	sweat	hist	tissue
hom	same	home	sameness; unchanging
humer	humerus (upper arm bone)	hydr	water
hymen	hymen	hypn	sleep
hyster	uterus	iatr	medicine; physician
ichthy	fish	ile	ileum

Root	Meaning	Root	Meaning
ili	ilium	immun	immune
irid	iris	iri	iris
ischi	ischium	isch	deficiency; blockage
is	equal; same	jejun	jejunum
kal	potassium	kary	nucleus
kerat	cornea	kerat	horny tissue; hard
kin	movement	kinesi	movement; motion
kyph	hump	labi	lips
labyrinth	labyrinth	lacrim	tear duct, tear
lact	milk	lamin	lamina (thin; flat plate or layer)
lapar	abdomen	laryng	larynx
later	side	lei	smooth
leuk	white	lingu	tongue
lip	fat	lith	stone; calculus
lob	lobe	lord	bent forward
lymph	lymph	macr	abnormal largeness
mamm	breast	mandibul	mandible (lower jawbone)
mast	breast	mastoid	mastoid
maxill	maxilla (upper jawbone)	meat	meatus (opening)
melan	black	mening	meninges
menisc	meniscus (crescent)	men	menstruation
ment	mind	metr	uterus
mon	one	morph	form; shape
muc	mucus	myc	fungus
myel	bone marrow; spinal cord	myelon	bone marrow
myos	muscle	myring	eardrum
my	muscle	narc	stupor
nas	nose	nat	birth
necr	death (cells; body)	nephr	kidney
neur	nerve	noct	night
nyct	night	nyctal	night
ocul	eye	olig	scanty; few
omphal	umbilicu; navel	onc	tumor
onych	nail	oo	egg; ovum
oophor	ovary	ophthalm	eye
opt	vision	orchid	testis; testicle
orchi	testis; testicle	orch	testis; testicle

organ	organ	or	mouth
orth	straight	oste	bone
ot	ear	ov	egg
ox	oxygen	pachy	thick
palat	palate	pancreat	pancreas

Root	Meaning	Root	Meaning
papill	nipple	parathyroid	parathyroid gland
par	bear; give birth to; labor	patell	patella (kneecap)
path	disease	part	bear; give birth to; labor
pector	chest	ped	child; foot
pelv	pelvis; pelvic bone	perine	perineum
peritone	peritoneum	petr	stone
phac	lens of the eye	phag	eat; swallow
phak	lens of the eye	phalang	pharynx
phas	speech	phleb	vein
phot	light	phren	mind
physi	nature	plasm	plasma
pleur	pleura	pneumat	lung; air
pneum	lung; air	pneumon	lung; air
pod	foot	poli	gray matter
poikil	varied; irregular	polyp	polyp; small growth
poster	back (of body)	prim	first
proct	rectum	prostat	prostate gland
pseud	fake; false	psych	mind
pub	pubis	puerper	childbirth
pulmon	lung	pupill	pupil
pyel	renal pelvis	pylor	pylorus (pyloric sphincter)
py	pus	pyr	fever; heat
quadr	four	rachi	vertebra; spinal or vertebral column
radic	nerve root	radicul	nerve root
radi	radius (lower arm bone)	rect	rectum
ren	kidney	retin	retina
rhabd	rodshaped, striated	rhin	nose
rhytid	wrinkles	rhiz	nerve root
salping	fallopian (uterine) tube	sarc	flesh; connective tissue
scapul	scapula (shoulder bone)	scler	sclera
scoli	crooked, curved	seb	sebum (oil)

sept	septum	sial	saliva
sigmoid	sigmoid	sinus	sinus
somat	body	somn	sleep
son	sound	spermat	spermatozoan; sperm
sperm	spermatozoan; sperm	sphygm	pulse
spir	breathe; breathing	splen	spleen
spondyl	vertebra; spinal or vertebral column	staped	stapes (middle ear bone)
staphyl	grapelike clusters	stern	sternum (breastbone)
steth	chest	stomat	mouth
strept	twisted chains	synovi	synovia; synovial membrane

Root	Meaning	Root	Meaning
system	system	tars	tarsals (ankle bones)
tars	edge of eyelid; tarsal (instep of foot)	tendin	tendon
tend	tendon	ten	tendon
test	testis; testicle	therm	heat
thorac	thorax (chest)	thromb	clot
thym	thymus gland	thyroid	thyroid gland
thyr	thyroid gland	tibi	tibia (lower leg bone)
tom	cut; section	ton	tension, pressure
tonsill	tonsils	top	place
toxic	poison	trachel	neck; necklike
trache	trachea	trich	hair
tympan	eardrum; middle ear	uln	ulna (lower arm bone)
ungu	nail	ureter	ureter
urethr	urethra	urin	urine; urinary tract
ur	urine; urinary tract	uter	uterus
uvul	uvula	vagin	vagina
valv	valve	valvul	valve
vas	vessel; duct	ven	vein
ventricul	ventricle	vertebr	vertebra; spinal or vertebral column
vesic	bladder; sac	vesicul	seminal vesicles
viscer	internal organs	vulv	vulva
xanth	yellow	xer	dry

Anatomy Vocabulary List

Abdomen	Adam's apple	Adrenal gland	Ankle
Anus	Aorta	Appendix	Aqueous humor
Arch	Arm	Armpit (axilla)	Arreola
Artery	Auricle	Back	Ball of the foot
Big toe	Bile duct	Birth canal	Bladder
Blood vessels	Bone	Bone marrow	Bone socket
Bowel	Brain	Breast	Bridge of the nose
Bronchus	Buttock	Calf	Capillary
Cartilage	Cecum	Cerebral cortex	Cervix
Cheek	Cheek bone	Chest	Chin
Clitoris	Coccyx	Colon (ascending, descending. transverse, sigmoid)	Cornea
Cuticle	Diaphragm	Disk	Duodenum
Ear	Ear canal	Ear drum	Earlobe
Elbow	Epiglottis	Esophagus	Eye
Eyeball	Eyebrow	Eyelash	Face
Fallopian tube	Filling (tooth)	Finger	Fingerprint
Fingertip	Follicle	Foot	Forearm
Forehead	Foreskin	Freckle	Gallbladder
Gene	Genitalia	Gland	Glans penis
Groin	Gums	Hair	Hand
Head	Heart	Heel	Hip
Hymen	Index finger	Inner ear	Instep
Intestine	Iris	Jaw	Joint
Kidney	Knee	Kneecap	Knuckle
Labia	Larynx	Leg	Lens
Ligament	Limb	Lip	Little finger
Little toe	Liver	Lower back (lumbar)	Lung
Lymph glands	Middle ear	Middle finger	Mouth
Mucous membrane	Muscle	Nail (finger or toe)	Nail bed
Nape of the neck	Navel (belly button)	Neck	Nerve
Nipple	Nose	Nostril	Oral cavity

Organ	Ossicle	Outer ear	Ovary
Palm	Pancreas	Pelvis	Penis
Perineum	Pharynx	Pituitary gland	Placenta
Plasma	Platelets	Pleura	Prostate gland
Pulmonary artery	Rectum	Retina	Rib
Ring finger	Root of hair	Root of teeth	Salivary glands
Scalp	Scrotum	Shoulder	Sinus
Skin	Skull	Sole of the foot	Spinal cord
Spine	Spleen	Stapes	Stomach
Tear duct	Temple	Tendon	Testicle
Thigh	Thorax	Throat	Thumb
Thyroid gland	Tissue	Toe	Tongue
Tonsils	Tooth	Tooth socket	Trachea
Umbilical cord	Ureter	Urethra	Uterus (womb)
Vagina	Valve	Vas deferens Vein	Vena cava (superior, inferior)
Ventricle	Vertebra	Vitreous humor	Vocal cord
Vulva	Waist	Wrist	

From: http://www3.bc.sympatico.caJme/patientsguidelmedterms.htm#vowels

From: http://www.cancerindex.org/mediterm/medtm3.htm#diagnosis