

SPO

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Decoding Medical Terminology



Jargon of the trade

Are all the new cover sheets on the TPS reports?



It appears that the patient has a subdural hematoma in the right temporal lobe.



You need get me a blind count on that break-bulk shipment.



- Any profession practiced today uses jargon to provide quick and meaningful communication. Whether you are a nurse in the emergency room, a family doctor in the office, or a patient awaiting test results, being able to communicate clearly and effectively is extremely important.

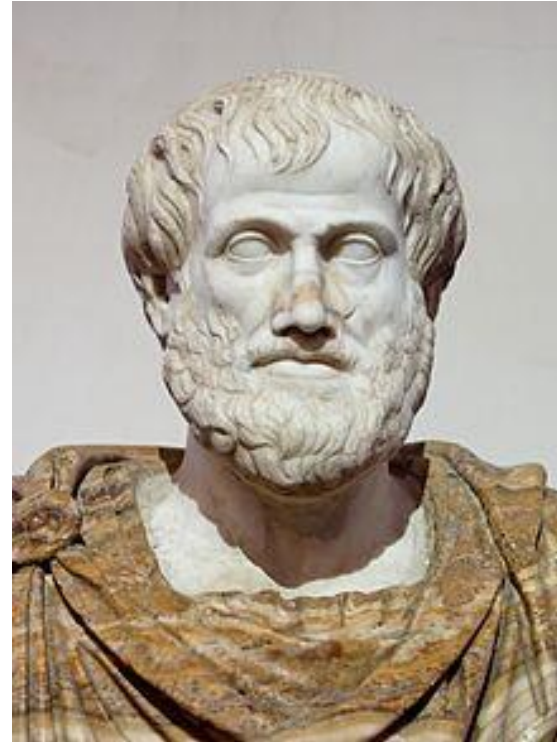
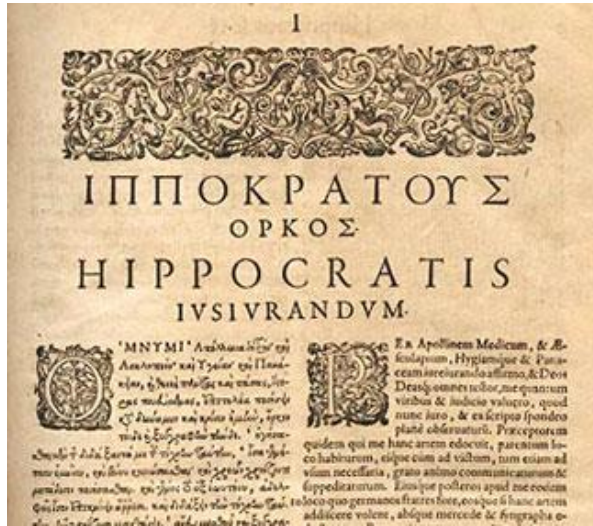
Precise and efficient communication



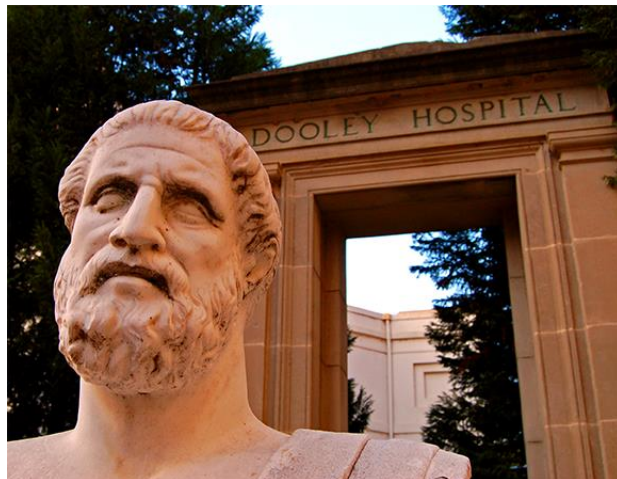
- Medical terminology is an agreed upon set of words that help explain body parts, body processes, diseases, procedures and diagnoses.
- Most medical terminology is based in Latin or ancient Greek. These languages are used as the basis for medical terminology because they are no longer used in modern everyday language. This lends stability in the way the terminology is used because the meanings of the words no longer change radically as with commonly used words.
- This agreed upon system of naming helps speed up written and verbal communication as well as helping to reduce mistakes due to misunderstanding.



Hippocrates and Aristotle



The physician heals, nature makes well.
~ Aristotle



The art of medicine consists of three elements: the disease, the patient, and the doctor. ~ Hippocrates

- These two ancient Greek philosophers had a large impact on the teaching and training of physicians for centuries.
- Over 2,000 years ago Hippocrates and Aristotle saw the need for specific, descriptive medical terminology that could be used widely in training new physicians.
- Even though many of their ideas about human health proved false (ie. 4 bodily humors that must be balanced) the standards they brought to speaking and writing about medicine have been maintained throughout the centuries.

Etymology



- Etymology, not to be confused with the study of insects, is the study of the origins of words shown by tracing their development and linguistic relationships.
- For example, the English adjective medical derives from the 1600s French term *médical* meaning healer which derives from the Latin *medicus* which means physician or surgeon.
- Dissection of words is as important to learning anatomy as the dissection of organs. If you know the meaning of a selection of prefixes, roots and suffixes you can piece together the meaning of most medical terminology.

Prefix+ Root + Suffix= meaning

Roots

- In any medical term there is a root, or the main part of the word. Some terms can even have more than one root.
- The root of a medical term contains the essential meaning of the word and most often refers to a body part or system.



Common Examples:

Root	Meaning
Arthr	Joint
Aur	Ear
Angi	Vessel
Brachi	Arm
Bucc	Cheek
Cardi	Heart
Cephal	Head
Chondro	Joint
Dactyl	Fingers
Derm	Skin
Encephal	Brain
Episi	Vulva
Gastro	Stomach
Gingiv	Gums
Gnath	Jaw
Hemat	Blood
Hist	Tissue
Lapar	Abdomen
Lingu	Tongue

Prefixes

- Many medical terms also have a prefix in front of the root.
- The prefix is a modifier of the root and usually refers to how, why, when, where how much, how many position, direction, time or status.



Common Examples:

Prefix	Meaning
A-	Without; absence of
Ana-	Up; again; backward
Brady-	Slow
Cata-	Down
Dia-	Through
Ecto-	Outer; outside
Eso-	Inward
Epi-	On; over
Hyper-	Above; excessive
Hypo-	Below; deficient
Infra-	Under; below
Mal-	Bad
Meso-	Middle
Meta-	After; change
Osteo-	Bone
Peri-	Surrounding
Neo-	New
Syn-	Joined; together
Tachy-	Fast; rapid

Suffixes

- A suffix is a modifier of the root located after the root.
- Suffixes will most often indicate a procedure, condition or disease.
- not all medical terms will have a suffix.



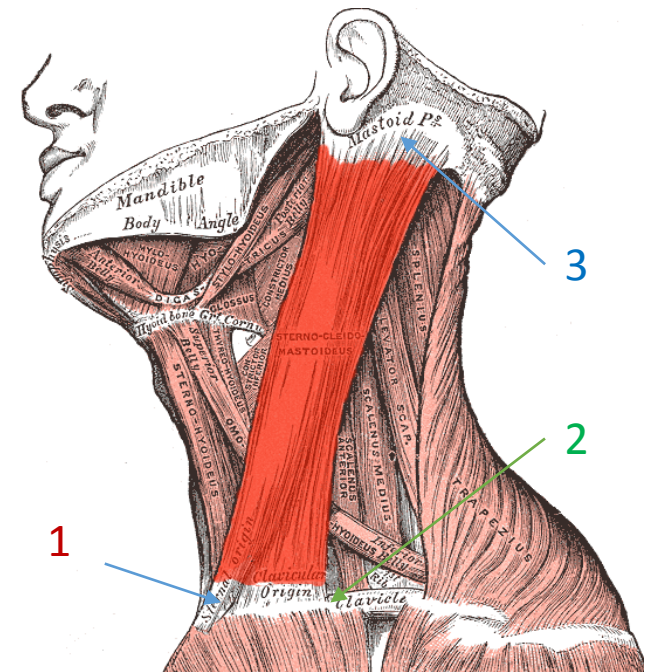
Common Examples:

Suffix	Meaning
-algia	Pain
-cele	Protrusion, hernia
-clast	Break
-crit	To separate
-cyte	Cell
-ectomy	Surgical removal
-emesis	Vomiting
-emia	Blood condition
-genic	Producing; causing
-ia	Abnormal state
-itis	Inflammation
-lysis	Loosening; separating
-oma	Tumor; swelling
-otomy	Cut into; incision
-porosis	Passage
-sepsis	Infection
-sis	State of
-trophy	Nourishment
-ule	Little

Putting it all together

- Linking or combining vowels are often added to medical terms to join roots, prefixes or suffixes.
- Sternocleidomastoid is an example of a term that uses three roots and no prefix or suffix but requires two linking vowels. The sternocleidomastoid is a muscle that has an attachment or origin on three different bones:

Root	Meaning
Stern	Sternum (breast bone) 1
Claid	Clavicle (collar bone) 2
Mastoid	Mastoid process (skull temporal bone protrusion) 3



Stern-O-Claid-O-Mastoid

Examples



Headache = cephalgia

ceph= head; algia= pain
root suffix



Slow heartrate = bradycardia

brady= slow; cardia= heart
prefix root



Rheumatism= osteoarthritis

osteo= bone; arthr= joint; itis= inflammation
prefix root suffix

Eponyms



Johann Gottfried Zinn 1727-1759

Zonule of Zinn:

(my personal favorite eponym)
This is the structure in the eye that connects the lens to the iris.



F.G.J. Henle 1809-1885

Loop of Henle:

This is a structure in the nephron of a kidney that helps control water balance.



Louis-Antoine Ranvier 1835-1922

Node of Ranvier:

This is gap between the pillows of myelin on a particular part of a neuron.

Medical eponyms do not follow the prefix, root, suffix pattern. These medical terms are usually derived from the name of the researcher who discovered the condition or described the anatomical structure first. While there is a trend toward changing some eponyms to more descriptive Greek and Latin based terms there are still plenty of eponyms in use today. In current usage the possessive apostrophe is not required. Unfortunately, these terms must be memorized or looked up in reference rather than "dissection" the term to find its meaning.

Practice Exercise

Use the prefix, root, and suffix reference guide from Wikipedia and the Free Medical Dictionary to determine the meaning of the terms below. The definition for each word is either a condition, a procedure or referring to an anatomical structure.

http://en.wikipedia.org/wiki/List_of_medical_roots,_suffixes_and_prefixes

<http://medical-dictionary.thefreedictionary.com/>

1. achromatopsia
2. bronchoalveolar
3. cephalocele
4. districhiasis
5. embolectomy
6. fibrosarcoma
7. gastroduodenal
8. hematomyelia
9. infrascapular
10. jejunectomy
11. kinesia
12. labiodental
13. mononeuritis
14. neurogenesis
15. oophorosalingitis
16. peridendritic
17. retinoblastoma
18. sensorimuscular
19. thrombocyst
20. uraniscoplasty
21. vasodilation
22. Wernicke's encephalopathy
23. xanthocyte
24. zoonosis

Practice Exercise Answers 1-8

Term	Prefix; Root; Suffix	Brief Definition: Term Type
achromatopsia	without; color; vision	Colorblindness; condition
bronchoalveolar	windpipe; air sac; adjective form	referring to the junction of the windpipe and the alveoli in the lungs; structure
cephalocele	head; protrusion	cerebral hernia; condition
districhiasis	two; hair; formation	two hairs growing from the same follicle; process
embolectomy	blood clot; removal	surgical removal of a blood clot within a vessel; procedure
fibrosarcoma	hairlike; tumor of connective tissue	malignant tumor of fibrous connective tissue
gastrodoudenal	stomach; intestine; relating to	relating to the junction of the stomach and 1 st segment of the small intestine; structure
hematomyelia	blood; spinal cord; condition	appearance of blood in the spinal cord

Practice Exercise Answers 9-16

Term	Prefix; Root; Suffix	Brief Definition; Term Type
infrascapular	below; shoulder blade; adjective	relating to the area under the shoulder blade; adjective form of name
jejunectomy	2 nd intestinal section; removal of	the surgical removal the 2 nd section of the small intestines; procedure
kinessia	motion; condition	motion sickness, sea sickness; condition
labiodental	lips; teeth; pertaining to	about the lips and teeth; region
mononeuritis	one; nerve; inflammation	inflammation of a single nerve; condition
neurogenesis	nerve; formation;	formation of nervous tissue; process
oophrosalpingitis	ovary; tube; inflammation	inflammation of the ovary and oviduct; condition
polyganglionic	many; nerve; concerning	referring to many nerves

Practice Exercise Answers 17-24

Term	Prefix; Root; Suffix	Brief Definition; Term Type
retinoblastoma	retina; embryonic cell cancer;	a genetically caused malignant tumor in the eye
scapuloclavicular	scapula; clavical; pertaining to	concerning the region surrounding the scapula and clavicle; adjective
thrombocyst	clot; sac	a membrane sac covering a blood clot
uranoplasty	hard palate; repair	a surgical operation to repair a cleft palate; procedure
vasodilation	blood vessel; increase in diameter;	the increase in internal diameter of a blood vessel
Wernicke's encephalopathy	proper name; brain; disease	a hemorrhagic form of degenerative brain disease described by Carl Wernicke
xenograft	foreign; living tissue transplant;	surgical transplant of tissue from an animal to a person
zoonosis	animal; disease;	transmission of a disease from an animal to a person; process

Recall techniques

Practice is key to learning any new language. Below you will find a list of methods for practicing anatomy and physiology terminology.

1. Mnemonic devices: These are simple ways to memorize lists of terms. Devise an acronym or phrase to practice the order of terms.
cranial bones (skull): "Old Pygmies From Thailand Eat Skulls."
Occipital; Parietal; Frontal; Temporal; Ethmoid; Sphenoid
2. Word grouping and color coding: Sometimes it's easier to remember terms based on their relationship to other terms. Writing related terms in lists or on cards in the same color and using them to review can help to recall the term later.
Grouping ideas: system, function, condition, procedure, body part.
3. Matching: this is a handy way to connect terms with their definitions. For each term use two cards, one for the term and one for the definition. on the other side of each draw the same small symbol (smiley face, star, square and so on). Place the groups of cards on a table and time yourself while you are matching the definition to the term using the symbol to check that you are correct. Race yourself or a partner to see how your recall improves.
4. Crosswords and word searches: Crossword puzzles are handy for recalling terms from definitions and word searches are a great technique for practicing spelling of medical terms.

Resource list

Free Online References:

- Online Etymology Dictionary: provides the meaning and background of words used in the English language
<http://www.etymonline.com/>
- Medilexicon.com: a very complete and searchable site for terms, abbreviations, medical codes and FDA approved drugs
<http://www.medilexicon.com/>
- Free Medical Dictionary.com: comprehensive definitions in a searchable format
<http://medical-dictionary.thefreedictionary.com/>

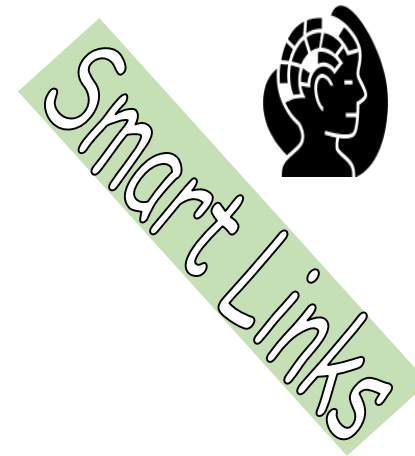
Book References:

Most public libraries will have these two helpful references.

- Taber's Cyclopedic Medical Dictionary
also has a companion website with electronic versions for purchase at less cost than the print version: www.tabers.com
- Mosby's Medical Dictionary
There are several different versions available.
<http://www.us.elsevierhealth.com/dictionary/mosby-medical-dictionary-hardcover/9780323085410/>

Confused?

Here are links to fun resources that further explain Medical Terminology.



AAMA Practice test

<http://www.aama-ntl.org/cma-aama-exam/study/medical-terminology-practice-test>

Medical Terminology Activities

http://msjensen.cehd.umn.edu/1135/med_term_activites/

Quizlet Online Flashcards

<http://quizlet.com/subject/Medical-Terminology/>

Interactive Medical Terminology

<http://www.medterminologyforcare.co.uk/medical/free-american-exercises.htm#dir>