



Understanding Medical Terminology



Learning Objectives

Upon Completion of this section, you should be able to:

1. Discuss the importance of medical terminology and how it can be incorporated into the study of the human body
2. Differentiate between a prefix, suffix, root word and compound word.
3. Link word parts to form medical terms.
4. Differentiate between singular & plural endings of medical terms.
5. Practice pronunciation of medical terms.
6. Dissect compound medical words into parts to analyze the meaning.
7. Recognize the more commonly used prefixes, suffixes & root words used in medical terminology.

Introduction to Medical Terminology

As students of medical science, we are inheritors of a vast fortune of knowledge. This fortune, amassed by giants of eighteenth- and nineteenth-century scholarship, was nurtured largely in the atmospheres of universities in which Latin and Greek were the languages of lecture and writing. Scientists then strove to define a universal language in which to communicate their findings. Latin and Greek, studied throughout Europe, became the languages of choice for scholars whose native tongue was English, German, French, Spanish and so on, because they all read in Latin and Greek. So, many works in medicine were first penned in Latin, and their vocabularies remain to this day.

Anatomy and physiology were born in the eighteenth century in the midst of a glut of quacks, frauds, charlatans, myths and superstitions. Honest scholars sought proofs to banish practices that should have been questioned by reason and proved wrong by experience. These scholars were among the first to connect disease with the failure of function or structure of body tissue; thus the race to name and define all anatomical structures began.

Problems arose, inevitably, with the discovery of unknown tissue. Names were virtually created from existing words by combining parts until they approximated an acceptable description. Medical terminology is simply a catalog of parts that allows us to take apart and reassemble the special language of medicine. The study of medical terminology is easier than it seems.

Medical words have three basic parts: prefix, root word and suffix. A prefix comes before the word and alters the meaning. For example, the prefix *hyper* means over or above. Hyper/kinetic means overactive, hyperesthesia means overly sensitive, hypertension is high blood pressure and hypertrophy is overdevelopment.

A suffix is attached to the end of a root word and also alters the meaning of the word. For example, the suffix - *itis* means inflammation. Inflammation can occur at almost any part of the body, so -*itis* can be added to root words to make hundreds of words. Dermat/it

is is inflammation of the skin, rhin/itis is inflammation of the nose, gastr/itis is inflammation of the stomach and so on.

A root word is the main part of the word. Once a root word is known for each part of the anatomy, the prefixes and suffixes can be used to analyze and/or become many medical words. The root word for heart is *cardi*. A few terms in which *cardi* appears are: *cardi/algia* meaning pain in the heart, *cardio/megaly* means enlarged heart, *brady/cardia* means slow heart and *peri/cardio/centesis* means puncture to aspirate fluid from around the heart.

Many medical words have, in addition to a prefix and/or suffix, more than one word part. These are called compound words and can be analyzed by breaking them into parts. For example, *hysterosalpingo-oophorectomy* is made up of three root words and a suffix. *Hyster* is the root word for uterus, *salping* is the root word for tube, *oophor* is the root word for ovary and *-ectomy* is the suffix for to cut out. Now we know that *hysterosalpingo-oophorectomy* means the surgical excision of the uterus, tube and ovary.

To facilitate pronunciation, word parts need to be linked together. The linkage for word parts is *o* and is to be referred to as a combining form. For example, linking the root *cardi* with the suffix *-pathy* would produce a word that is difficult to pronounce; therefore an *o* is used to link the root word with the suffix. The complete word is written *cardiopathy* and pronounced *kar"de-op'ah-the*, and the combining form is *cardi/o*.

When a word is only a root or ends with a root, the word ending depends on whether the word is a noun or an adjective. For example, *duodenum* (noun) is a part of the small intestine. *Duodenal* (adjective) is related to the *duodenum* (for example, *duodenal ulcer*).

Accurate spelling of each word part is essential:

1. Changing one letter may change the word part. For example, *ileum* is a part of the small intestine, whereas *ilium* is a pelvic bone.
2. Finding a word in the dictionary requires a knowledge of spelling – at least of the beginning of the word. For example, *pneumonia* and *psychology* have a silent *p*, *rhinitis* has a silent *h* and *eupena* (easy breathing) has an initial silent *e*.

PLURAL ENDINGS

In many English words, the plurals are formed by adding *s* or *es*, but in Latin and Greek, the plural may be designated by changing the ending:

<i>Singular Ending</i>	<i>Plural Ending</i>	<i>Examples</i>
a	ae	aorta-aortae
ax	aces	thorax-thoraces
en	ena	lumen-lumena
ex, ix	ices	cortex-cortices appendix-appendices
is	es	testis-testes
on, um	a	phenomenon-phenomena medium-media
ur	ora	femur-femora
us	i	bronchus-bronchi
x	ces	calyx-calyces
y	ies	anomaly-anomalies
ma	mata	adenoma-adenomata

Commonly Used Prefixes

Prefix	Meaning	Example
a-, an-, in-	without, negative	a/men/orrhoea - without a monthly flow
ab-	from, away from	ab/normal - away from normal
ad-, ac-, as-, at-	to, toward	ad/duct - carry toward
aniso-	unequal	an/iso/cyt/osis - condition of unequal cells
ante-, pre-	before	anterior - front; pre/natal - before birth
anti-, ant-, ob-	against	anti/pyre/tic - agent used against fever
bi-	two	bi/lateral - two sides
bio-	Life	bio/logy - study of life
brachy-	short	brachy/dactyl/ism - short fingers & toes
brady-	slow	brady/cardia - slow heart rate
cent-	hundred	centi/meter - one one-hundredth of a meter
circum-	around	circum/cis/ion - to cut around
co-, com-, con-	with/together	con/genital - born with
contra-	against	contra/indicated - against indication
de-	away from	de/hydrate - loss of water
dextr-	right	dextr/o/cardia - heart displaced to right
dia-	through	dia/rrhea - flow through
dis-	apart	dis/sect - to cut apart
dys-	bad, difficult	dys/pnea - difficult breathing
e-, ex-	out, out from	ex/cise - to cut out
ect-, exo-, extra-	outside	extra/corporeal - outside the body
en-	in, on	en/capsulated - in a capsule
end-	within	endo/scopy - visualization within
epi-	upon	epi/dermis - upon the skin
eu-	good	eu/phonic - good sound
hemi-, semi-	half	hemi/gastr/ectomy - surgical removal half of stomach
hyper-	over, above	hyper/kinetic - overactive
hypo-	under, below	hypo/glossal - under the tongue
immun-	free, exempt	immun/ity - exempt from effects of disease agents
infra-	beneath	infra/mammary - beneath the breast
inter-	between	inter/cellular - between cells
intra-	within	intra/cranial - within the cranium
kil-	thousand	kilo/gram - 1,000 grams
lyso-	dissolution	lyso/some - organelle that degrades worn cell parts
macr-	large	macro/cyte - large cell
mal-	bad	mal/nutrition - bad nourishment
mes-	middle	mes/entery - middle of intestine
meta-	after, beyond	meta/carpals - beyond the carpals (wrist)
micr-	small	micro/cephal/ic - having a small head
milli-	one-thousandth	milli/liter - one one-thousandth of a liter
multi-	many	multi/para - one who has many children
neo-	new	neo/plasm - new growth
olig-	scanty, few	olig/uria - scanty amount of urine
onc-	tumor	onc/ology - study of tumors
per-	through	per/cutaneous - through the skin
peri-	around	peri/tonsillar - around the tonsil

pleur-	rib, side	pleur/al membranes - enclosing lungs
poly-	much, many	poly/cystic - many cysts
post-	after	post/mortem - after death
pre-	before	pre/natal - before birth
presby-	old	presby/opia - old vision
primi-	first	primi/gravida - first pregnancy
pro-	before	pro/gnosis - foreknowledge/ predict outcome
re-	back, again	re/generate - produce , develop again
retr-	behind	retro/sternal - behind the sternum
sub-	under	sub/lingual - below the tongue
super-, supra-	above	superior - above
syn-, sym-	with, together	syn/ergism - working together
tachy-	fast	tachy/phasia - fast speech

Commonly Used Root Words

Roots	Meaning	Example
acr-	extremity, peak	acro/megaly - enlarged extremities
aden-	gland	adeno/pathy - disease of a gland
aer-	air	aero/phagia - swallowing air
angi-	vessel	angi/oma - tumor of a vessel
arthr-	joint	arthr/algia - pain in the joint
blast-	bud	neuro/blast - growing nerve cell
blephar-	eyelid	blepharo/ptosis - drooping of eyelid
brachi-	arm	brachial - pertaining to the arm
bronch-	windpipe	bronch/us - a branch of the trachea
carcin-	cancer	adeno/carcin/oma - cancerous tumor of a gland
cardi	heart	myo/cardi/tis - inflammation of heart muscle
carp-	wrist	flexor carpi - muscle to bend wrist
caud-	tail	caudal - pertaining to tail
celio-	abdomen	celio/tomy - incision of the abdomen
cephal-	head	cephalo/dynia - pain in the head
cervic-	neck	cervic/itis - inflammation of the neck of uterus
cheil-	lip	chelio/plasty - shaping the lip
cheir-, chir-	hand	chiro/megaly - large hands
chol-	bile, gall	chole/cyst/ectomy - surgical removal of gallbladder
chondr-	cartilage	chondro/malacia - softening of cartilage
chrom-	color	poly/chromatic - having many colors
chron-	time	syn/chron/ous - occurring at the same time
col-	colon	mega/colon - enlarged colon
colp-	vagina	colp/orrhaphy - suture of vagina
cost-	rib	inter/costal - between the ribs
crani-	skull	crani/otomy - incision into the skull
cry-	cold	cryo/philiac - cold loving
crypt-	hidden	crypt/orchid/ism - hidden (undescended) testicle
cutan-, cut-	skin	sub/cutaneous - below the skin

cyan-	blue	acro/cyan/osis – condition of blue extremities
cyst-	bladder	cysto/cele – bladder hernia
cyt-	cell	thrombo/cyte – clotting cell (platelet)
dacry-	tear	dacryo/rrhea – flow of tears
dactyl-	fingers, toes	poly/dactyl/ism – too many fingers and toes
dent-, odont-	tooth	peri/odontal – around the teeth
derm-, dermat-	skin	intra/dermal – within the skin
dextr-	right	dextro/cardia – heart displaced to the right
dips-	thirst	poly/dipsia – excessive thirst
dors-	back	dorsal – pertaining to the back
duct-	carry	ovi/duct – tube to carry ova (eggs)
encephal-	brain	encephalo/cele – hernia of the brain
enter-	intestine	gastro/enter/itis – inflammation of stomach/intestine
erg-	work	en/ergy – working with
erthyr-	red	erythro/cyto/penia – deficiency of red cells
esthe-	sensation	an/esthe/tic – agent to eliminate sensation
esthen-	weakness	my/esthenia – muscle weakness
febr-	fever	a/febrile – without a fever
flex-	bend	dorsi/flex – bend backward
gastr-	stomach	gastro/scopy – visualization of the stomach
gen-	produce	patho/genic – agent that produces disease
gingiv-	gums	gingiv/ectomy – removal of gums
gloss-	tongue	hypo/glossal – under the tongue
glyc-, glu	sugar	hypo/glyc/emia – low blood sugar
gnath-	jaw	micro/gnath/ism – small jaw
grav-	heavy	secundi/gravida – second pregnancy
gynec-	femal	geneco/logy – study of female conditions
hem-, hemat-	blood	hemat/emesis – vomiting blood
hepat-	liver	hepato/megaly – enlarged liver
heter-	different	hetero/genous – different origins
hidr-	perspiration	hidro/rrhea – flow of perspiration
hist-	tissue	histo/logy – study of tissue
home-, hom	same	homeo/stasis – stay same, equilibrium
hydr-, hydra-	water	de/hydra/tion – process of losing water
hyster-	uterus	hyster/ectomy – removal of the uterus
iatr-	physician	iatro/genic – produced by the physician
irid-	iris	irid/ectomy – surgical removal of iris
is-	equal	iso/tonic – equal in pressure
kary-	nut, nucleus	mega/karyo/cyte – cell with large nucleus
kerat-	cornea	kerato/plasty – repair of cornea
kin-	move	kinesio/logy – study of movement
lacrim-	tear	lacrima/tion – crying
lact-, galact-	milk	lacto/genic – milk producing
lapar-	abdomen	laparo/rrhaphy – suture of the abdomen
laryng-	larynx	laryngo/scopy – visualization of the larynx
later-	side	bi/lateral – two sides
leuk, leuc	white	leuko/rrhea – white discharge
lingu-	tongue	sub/lingual – under the tongue
lip-	fat	lip/oma – tumor of fat

lith-	stone	litho/tripsy - crushing a stone
mast-, mamm-	breast	mast/itis - inflammation of the breast
melan-	black	melan/oma - black tumor
men-	monthly, menses	dys/meno/rrhea - difficult monthly flow
mening-	membrane	mening/es - membranes covering brain & sp. cord
metr-	uterus	endo/metr/ium - lining of uterus
morph-	shape, form	poly/morphic - pertaining to many shapes
my-	muscle	myo/metr/itis - inflammation of muscle of uterus
myc-	fungus	onycho/myc/osis - fungus condition of the nails
myel-	marrow, sp. cord	myelo/gram - Xray record of spinal cord
myring-	eardrum	myringo/tomy - opening into eardrum
nas-	nose	naso/pharyng/eal - pertaining to nose & throat
nat-	to be born	pre/nat/al - before birth
necr-	dead	necr/opsy - examining dead bodies, autopsy
nephr-, ren-	kidney	hydro/nephr/osis - abnormal condition - water in kids
neur-	nerve	neur/algia - nerve pain
noct-, nyct-	night	noct/uria - voiding at night
nucle-	kernel	nucle/us - dense core (kernel) of an atom/cell
null-	none	nulli/gravida - woman who has had no pregnancies
ocul-	eye	mon/ocular - pertaining to one eye
omphal-	umbilicus	omphalo/rrhea - discharge from the naval
onych-	nail	onycho/crypt/osis - hidden nail condition (ingrown)
oo-	ova, egg	oo/genesis - producing eggs
oophor-	ovary	oophoro/cyst/ectomy - removal of cyst from ovary
ophthalm-	eye	ex/ophthalmos - condition of protruding eyes
or-	mouth	oro/pharyngeal - pertaining to mouth & throat
orchid-	testis	orchid/ectomy - removal of testis
orexis-	appetite	an/orexis - absence of appetite
orth-	straight	orth/odont/ist - one who straightens teeth
oste-, oss-	bone	osteo/chondr/oma - tumor of bone & cartilage
ot-, aur-	ear	ot/itis - inflammation of the ear
para-	to bear	primi/para - to bear first child
path-	disease	patho/physio/logy - study effects of disease on body
pect-	chest	pectoralis - chest muscle
ped-	child	ped/iatrician - doctor who specializes in children
peps-	digest	dys/pepsia - bad digestion
phag-	swallow, eat	a/phagia - inability to swallow
pharmae-	drug	pharmaco/logy - study of drugs
pharyng-	throat	pharyng/itis - inflammation of the throat
phas-	speak, say	tachy/phasia - speaking fast
phleb-	vein	phlebo/thromb/osis - condition of clot in vein
phon-	voice	a/phonic - absence of voice
phren-	diaphragm	phreno/hepatic - pertaining to diaphragm & liver
pil-, trich-	hair	tricho/glossia - hairy tongue
pneum-	air, breath	pneumo/thorax - air in the chest
pneumon-	lung	pneumon/ectomy - surgical removal of the lung
pod-	foot	pod/iatrist - one who specializes in foot problems
proct-	rectum	procto/scopy - visualization of the rectum
pseud-	false	pseudo/cyesis - false pregnancy
psych-	mind	psycho/somatic - pertaining to the mind & body

pulmo(n)-	lung	cardio/pulmonary – pertaining to the heart & lungs
py-	pus	pyo/rrhea – flow of pus
pyel-	kidney, pelvis	pyelo/nephr/itis – inflammation of the kidney pelvis
pyl-	door, orifice	pyl/oric sphincter – muscle ring controlling food flow
pyr-	fire, fever	anti/pyretic – agent used against fever
quadri-	four	quadri/plegia – paralysis of all four extremities
rhin-	nose	rhino/plasty – revision of the nose
salping-	tube	salping/itis – inflammation of the uterine tube
sanguin-	blood	ex/sanguina/tion – process of bleeding out(to death)
sarc-, sarco-	flesh,	sarco/lemma – cell membrane of a muscle fiber
scler-	hard	arterio/scler/osis – condition of hardening of arteries
sect-	cut	dis/section – cutting apart
sept-	contamination	anti/septic – agent used against contamination
sial-	saliva	poly/sialia – excessive salivation
sten-	narrow, constrict	pyloric stenosis – narrowing of pyloric
stomat-	mouth	stomat/itis – inflammation of the mouth
strict-	draw tight	vaso/con/strict – agent that compresses vessels
tax-	order, arrange	a/taxic – uncoordinated
ten-	tendon	reno/rraphy – suture a tendon
therm-	heat	hyper/thermia – raising body heat
thorac-	chest	thoraco/centesis – puncture to aspirate chest fluid
thromb-	clot	thrombo/cyte – clotting cell
tox-	poison	tox/emia – poison in the blood
trache-	windpipe	tracheo/malacia – softening of tracheal cartilages
trachel-	neck	trachel/orraphy – suture of cervix (uterine neck)
traumat-	wound	traumat/ology – study of trauma
tri-	three	tri/geminal – having three beginnings
troph-	turn	ec/tropion – turned out
ur-	urine	ur/emia – urine constituents in the blood
vas-	vessel	vaso/constriction – narrowing of a vessel
vert-	turn	retro/vert/ed – turned backward
vesic-	bladder	vesico/cele – hernia of the bladder
viscer-	internal organs	e/viscera/tion – viscera protruding from ab wall
vita-	life	vital – necessary for life

Commonly Used Suffixes

Suffix	Meaning	Example
-algia	pain	dent/algia - pain in the tooth
-atresia	without opening	proct/atresia - rectum without an opening
-cele	hernia	omphalo/cele - umbilical hernia
-centesis	aspirate fluid	arthro/centesis - puncture to aspirate fluid from joint
-cept	take, receive	re/cept/or - something that receives again
-cide	kill	bacteri/cidal - able to kill bacteria
-cis	cut	circum/cis/ion - cutting around
-cyte	cell	erythro/cyte - red cell
-denia	pain	cephalo/denia - pain in the head
-desis	fusion	arthro/desis - fusion of a joint
-ectasia	expansion	cor/ectacis - expanding/dilating pupil
-ectomy	cut out, excise	nephr/ectomy - surgically remove kidney
-edema	swelling	cephal/edema - swelling of head
-emesis	vomiting	hyper/emesis - excessive vomiting
-emia	blood	hyper/glyc/emia - elevated blood sugar
-gnosis	knowledge	dia/gnosis - knowledge through examination
-gram	record	myelo/gram - Xray of the spinal cord
-graphy	making a record	angio/graphy - making a record of vessels
-iasis	condition	chole/lith/iasis - condition of gallstones
-ist	one who	opto/metr/ist - one who measures vision
-itis	inflammation	aden/itis - inflammation of a gland
-lepsy	seizures	narco/lepsy - seizures of numbness
-logist	specialist	ophthalmo/log/ist - one who specializes in eyes
-logy	study of	bio/logy - study of life
-lysis, -lytic, lyze	break down	teno/lysis - destruction of tendons
-lyt	dissolvable	electro/lyte - substances that ionizes in water
-malacia	abn. softening	osteo/malacia - abnormal softening of bone
-mani	madness	pyro/mania - irresistible urge to set fires
-megaly	enlargement	spleno/megaly - enlargement of spleen
-meter	measure	thermo/meter - instrument to measure temperature
-oid	resembling	muc/oid - resembling mucus
-oma	tumor	neur/oma - nerve tumor
-opia	vision	ambly/opia - dim vision
-osis	abn. condition	nephr/osis - abnormal condition of kidney
-osme	smell	an/osmia - inability to smell
-ostomy	create opening	col/ostomy - to create an opening in the colon
-otia	ear	macr/otia - large ear
-pathy	disease	encephalo/pathy - disease of the brain
-penia	deficiency, poor	leuko/cyto/penia - deficiency of white cells
-pepsia	digestion	dys/pepsia - bad digestion
-pexy	surgical fixation	mephro/pexy - surgical fixation of kidney
-phasia	speak, say	a/phasia - without ability to speak
-philia	love, attraction	chromo/philic - attracted to color
-phobia	abnormal fear	agora/phobic - abnormal fear of crowds
-plasia	formation	hyper/plasia - excessive formation
-plasm	substance	proto/plasm - original substance

-plasty	make, shape	rhino/plasty - to shape the nose
-plegia	paralysis	hemi/plegia - paralysis of one-half of body
-pnea	breath	tachy/pnea - fast breathing
-ptosis	prolapse, drop	hystero/ptosis - prolapse of uterus
-rrhagia	burst forth	metro/rrhagia - hemorrhage from uterus
-rrhaphy	suture, sew	hernio/rrhaphy - suture a hernia
-rrhea	flow, discharge	oto/rrhea - discharge from ear
-rrhexis	rupture	spleno/rrhexis - rupture of the spleen
-scope	view instrument	oto/scope - instrument to look in ears
-scopy	visualization	laryngo/scopy - visualization of larynx
-some, soma	body	lyso/some - body that lyses/dissolves
-spasm	twitching	blepharo/spasm - twitching of eyelid
-stasis	stop, control	hemostasis - control of bleeding
-therapy	treatment	hydro/therapy - treatment with water
-tome	instrument to cut	osteo/tome - instrument to cut bone
-tomy	to cut	laparo/tomy - to cut into the abdomen
-tripsy	crushing	nephro/litho/tripsy - crushing stone in kidney
-trophy, -trophic,	development	hyper/trophy - overdevelopment
-uria	urine	hemat/uria - blood in the urine



MEDICAL TERMINOLOGY



Creating Words

***Define the following word parts:**

PREFIXES:

- | | | |
|----------------|----------------|-----------------|
| 1. a _____ | 6. macr _____ | 11. super _____ |
| 2. dextr _____ | 7. mal _____ | 12. tachy _____ |
| 3. eu _____ | 8. neo _____ | 13. dys _____ |
| 4. hyper _____ | 9. pleur _____ | 14. peri _____ |
| 5. intra _____ | 10. sub _____ | 15. anti _____ |

ROOT WORDS:

- | | | |
|-----------------|-----------------|-----------------|
| 1. arthr _____ | 6. cyt _____ | 11. hem _____ |
| 2. brachi _____ | 7. dors _____ | 12. lapar _____ |
| 3. cardi _____ | 8. enter _____ | 13. my _____ |
| 4. cephal _____ | 9. erythr _____ | 14. neur _____ |
| 5. cutan _____ | 10. gastr _____ | 15. oste _____ |

SUFFIXES:

- | | | |
|-----------------|-----------------|------------------|
| 1. algia _____ | 6. logy _____ | 11. philia _____ |
| 2. cide _____ | 7. megaly _____ | 12. phobia _____ |
| 3. ectomy _____ | 8. oma _____ | 13. pnea _____ |
| 4. edema _____ | 9. ostomy _____ | 14. scopy _____ |
| 5. itis _____ | 10. pathy _____ | 15. uria _____ |

***Using the word parts from above, match a prefix and/or suffix to a root word to create 5 words & write the definition of that med term:**

1. _____
2. _____
3. _____
4. _____
5. _____



MEDICAL TERMINOLOGY



Defining Words

***Define the following words:**

1. microcephalic _____

2. epidermis _____

3. sublingual _____

4. hydroencephaly _____

5. arthrocentesis _____

6. ophthalmologist _____

7. hypoglycemia _____

8. osteomalacia _____

9. rhinoplasty _____

10. laparotomy _____

11. chiasmegaly _____

12. craniotomy _____

13. gastroscopy _____

14. gynecology _____

15. oogenesis _____

16. pathophysiology _____

17. pharyngitis _____

18. orchidectomy _____

19. arthritis _____

20. myocarditis _____

****BONUS - trichoglossia _____ trichothoracic _____**