

Word Power

Building a Medical Vocabulary



Wm. Blake Tyrrell

SIT-, food
labi-, lip, lips
labium
CHEIL-, lip
STOM-, STO
palat-, palate
URAN-, pala
uvul-, uvula
STAPHYL-,
bucc-, cheek
lingu-, tongu
GLOSS-, ton
BLENN-, mu
gingiv-, the g
dent-, tooth
ODONT-, to
SIAL-, saliva
PTY-, to spit
PTYAL-, saliva
PHARYNG-, pharynx
ESOPHAG-, esophagus

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Preface

This book is the product of my experience in teaching medical terminology at Michigan State University. It is intended for all students of medicine. Its approach is linguistic rather than scientific, and so it may be used profitably, I believe, by those students with nonprofessional interests in medicine. It has three purposes.

The first is to train the student in the analysis of terms. The vocabulary of medicine is vast and grows daily. Unreflective memorization not only is a Herculean task; it provides no help in deciphering unfamiliar words. Most medical terms, however, are composed of elements taken from Greek and Latin in a way that signals their technical meaning. Analysis, or the breaking up of terms into their components, provides clues to the meaning of new terms and mnemonics for retaining others. Augmenting the student's recognition and retention of medical terms through the principles of analysis is the primary purpose of this book.

The way to growth in vocabulary begins with a command of the components of terms—prefixes, bases, and suffixes. They are the building blocks; their meanings must be memorized, not the terms themselves. Bases are presented by body systems. Those which derive from Greek are capitalized; those from Latin are in lower case. The purpose of this distinction is to encourage the student to learn the origin of a base, since it is important for both the history and makeup of terms. All prefixes are presented in the early lessons; suffixes are throughout the lessons.

Each lesson has an exercise in analysis except those that treat anatomical terminology. Analysis consists of breaking a term into its components, assigning each a meaning, and reassembling the meanings. It leads to a definition which, at the least, alludes to the meaning of the term. For example, tonsillitis breaks up into the suffix -itis (inflammation) and the base (tonsill-) and means inflammation of the tonsils. Nephroma is a tumor (-oma) of the kidney (NEPHR-); pericardiorrhaphy is the suture (-rrhaphy) of the membrane around (peri-) the heart (CARDI-). The principles that govern the formation of definitions will be discussed. How closely analysis comes to the technical meaning depends upon how carefully the term was composed.

Exercises in composing terms are introduced in Lesson Five. Composition is the reverse of analysis: a definition is translated into a term. A key of terms corresponding to the definitions is provided. Every term in this book is or has been part of the language of medicine. Most are found in *Dorland's Illustrated Medical Dictionary*, 25th edition.

To fulfill its function of precise and unambiguous communication of ideas, a scientific language should be exact and free from vague connotations, because language is the medium in which we think as well as communicate. Analysis soon reveals that the language of medicine falls short of this goal. Generations of men have observed, formed hypothesis, and named the structures of the body, symptoms and causes of diseases, and their treatments. Schools of thought, each with its own way of looking at things and naming them, have contended for favor since modern medicine began with Hippocrates. Terms have been actively and not always correctly adapted from the ancient languages and changed according to the haphazard, intuitive principles of spoken language. The result is that medical terminology is both more and less than a scientific nomenclature. It

is a living language with an elusiveness of its own. The second purpose of this book is to convey some notion of the history and whimsy of medical language.

The third purpose is to train the student to translate Latin anatomical nomenclature. Such terminology is part of the language of medicine, and though it may be fudged or blindly memorized, it can become a source of anxiety and a stumbling block to learning. Effort expended in acquiring the skill to translate these terms is repaid twofold. Terms will be more easily remembered since they will make sense on their own. Moreover, once translated, they identify or describe the structure to which they refer, thus aiding the study of anatomy. The elements of Latin presented in the lessons are limited to those necessary for translating terms.

On the other hand, since many medical schools and journals in this country permit anglicized terminology (which is not strictly a translation), the student may deem such skill unnecessary. For this reason, the lessons on anatomical terminology have been written as a self-contained unit. They may be omitted without impairing the book's primary purpose. Even so, it is recommended that they be read as background.

The illustrations are intended as a study aid to the bases. For exact representations, a textbook on anatomy or a medical dictionary should be consulted.

I wish to thank my friend and colleague, Edward Eisenstein, Professor of Biophysics and medical student, for his advice and consultations. Mistakes that remain are my responsibility. As always, I am indebted to my wife, Mary Ann, for her careful and patient reading and rereading of each page.

Preface to Second Edition

I have been guided in editing by the aims expressed in the First Edition Preface.

Preface to Third Edition

After nearly thirty years involved with the Greek and Latin sources of medical terminology, I am ever impressed by its versatility and whimsy. Medical terminology not only describes the forces that condition health and well-being; it also helps to form the ways in which we receive the inevitable breakdown of those forces.

w.b.t.
East Lansing, MI.

This book includes, in part, paraphrases of definitions taken from Dorland's *Illustrated Medical Dictionary*, 25th edition, Philadelphia, Saunders, 1974. Used with permission of W. B. Saunders Company.

Lesson III

Hyphenation

Hyphenization is the use of a hyphen to join or separate words or word elements. It serves to circumvent hiatus, the occurrence of two separately pronounced vowels in successive syllables, e.g., co-operate, juxta-articular. Hyphenation also makes visible more aspects of a concept in its name than euphony would otherwise permit. This advantage can be abused as is shown by the extreme example pneumonoultramicroscopic-silicovolcanoconiosis “abnormal condition of silicon dust from a volcano that is beyond microscopic measurement in the lungs”. It appears that the phrase -ultramicroscopic-silicovolcan- has been inserted into the pneumoconiosis “abnormal condition due to dust in the lungs” to define the size and provenance of the particulate matter.

Hyphenation depends upon personal sensitivities. Both acro-arthritis and acroarthritis appear; on the other hand, acro-osteolysis is hyphenated, but not acrostealgia.

Generally, the hyphen makes for ponderous terms. It is easily omitted by joining the combining form to the second base, a common practice despite hiatus, by using the initial vowel of the second base as the combining vowel, or by another word formation. Barotitis “inflammation of the ears due to atmospheric pressure” makes a handier and more accurate term than aero-otitis “inflammation of the ears due to air”.

The hyphen most aptly joins proper names, e.g., the Mendel-Bekhterev reflex and the Clark-Collip method, or elements that create a hiatus of the same sound, e.g., retro-ocular and multi-infection. In certain combinations, hyphenation is preferable to using the initial vowel of the second base as a combining vowel. In pharyngo-oral “pertaining to the pharynx and mouth”, for instance, the hyphen preserves the identity of the second *o* as part of the base or-.

Prefixes

Learn the following prefixes and their meanings:

1. ambi-, both, on both sides, around
2. circum-, around, all around
Circum- usually means around in the spatial sense of near to or in the sense of circular motion. It is derived from Latin *circus* “circle”. It is noteworthy that the word search derives through Old French from Latin *circare* “to go around”, a verb formed from *circus*. Research, therefore, in its etymological meaning is a going around again (re-).
3. de-, down, away from, completely, privation
From the meaning “down to the bottom of,” the prefix de- came to be used intensively to mean “completely.” From the meaning “away from” developed its use as a privative in the sense of depriving something of the quality or thing expressed by the base, e.g., dehydrate “to take the water from”.
4. extra-, on the outside of, beyond, independent of

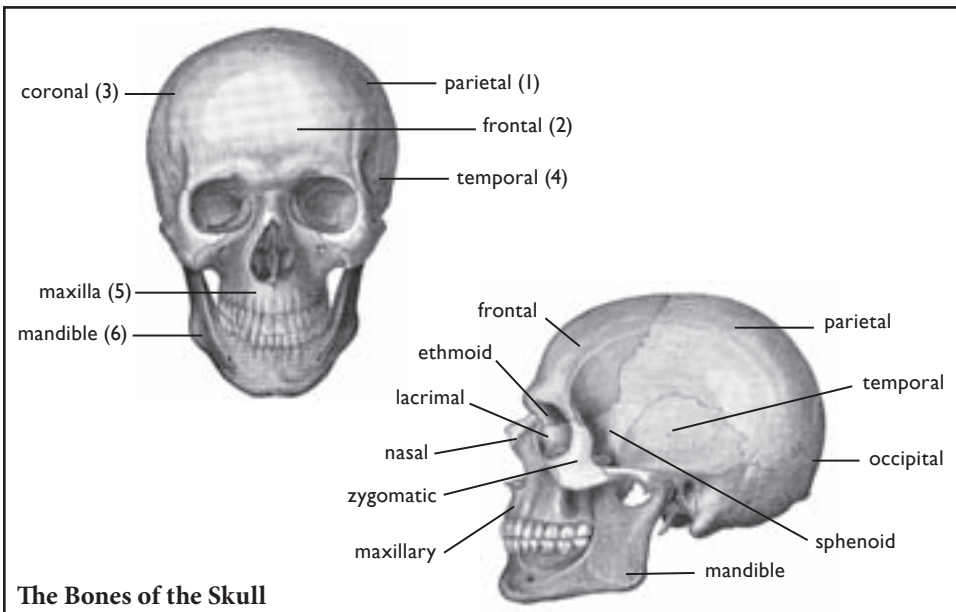
5. extro-, outward, outside
6. infra-, below, underneath
Infra- usually means below in the spatial sense and not in the sense of degree, for which hypo- is common.
7. pro-, before, in front of, forward
8. super-, above, in the upper part of, excessive

Suffixes

Learn the following suffixes and their meanings:

1. -ous, full of, having the nature of, characterized by
2. -ose, full of, abounding in
3. -lent, full of, abounding in
4. -ety, state of, quality of
5. -ia, state of, quality of
6. -ity, state of, quality of
7. -ive, tending to, having the nature of
8. -y, state of, quality of

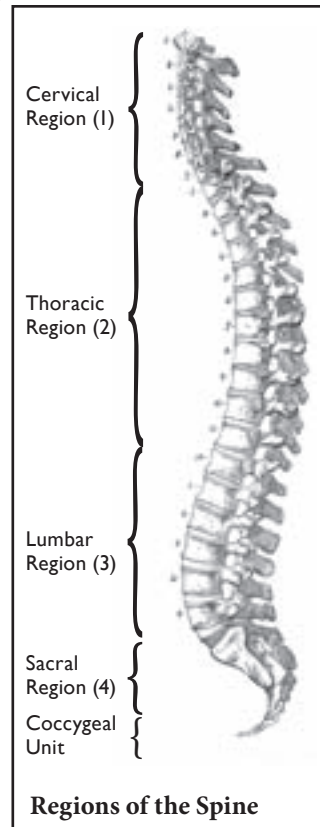
This suffix derives from Greek -eia and -ia from Latin -ia and in part through Old French -ie.



Bases for the Skeletal System

Learn the following bases for the skeletal system:

1. al-, ala, wing, wing-like structure, wing-like process
2. cervic-, cervix, neck
3. CONDYL-, condyle, a rounded projection at the extremity of a bone, knuckle
4. cox-, coxa, hip, hip joint
5. flect-, flex-, to bend
6. lumb-, lumbus, loin
7. mandibul-, mandible, bone of the lower jaw
8. maxill-, maxilla, bone of the upper jaw
9. ment-, mentum, chin
10. nas-, nasus, nose
11. pector-, pectus, breast, chest
12. pub-, os pubis (bone of the pubis), pubic bone
13. radi-, radius, outer bone of the forearm
Radi- also denotes ray, radiation, x-ray.
14. spin-, spine, spinal column, spinal process, spinal projection
Process, derived from Latin pro- (forward) and cess- (to go), is a general term for a mass projecting out from a structure.
15. STERN-, sternum, breast bone
16. tal-, talus, ankle bone, ankle
17. tempor-, the temples, temporal bone
18. THORAC-, thorax, chest
Thorax “chest” is used as a word element (-thorax) to indicate a condition of the chest, e.g., hemothorax “a condition of blood in the chest”. The adjective thoracic is occasionally used as a base, THORACIC-. See Lesson XVII.
19. tuber-, swelling, projection



Index to Prefixes

Numbers refer to Prefixes section of each lesson.

a-	not, without, less, absence of (4)	exo-	outside, outer, outward (7)
a-, ab-	from, away, from , off (1)	extra-	on the outside of, beyond, independent of (3)
ad-	to, toward, near (2)	extro-	outward, outside (3)
ambi-	both, on both sides, around (3)	hyper-	over, above, abnormal, excessive (4)
amphi-	both, on both sides, around (8)	hypo-	under, below, deficient, abnormally low, faulty (4)
ampho-	both, on both sides, around (8)	in-	in, into, on (1)
an-	not, without, less, absence of (4)	infra-	below, underneath (3)
ana-	up, upward, back, backward, again, completely (9)	inter-	between (1)
ante-	before, in front of, forward (1)	intra-	within, inside (2)
anti-	against, opposing (7)	juxta-	beside, near (1)
apo-	out from, out of, from, without (8)	kata-	down, downward, lower, against, completely (9)
circum-	around, all around (3)	meta-	after, next, change (8)
cata-	down, downward, lower, against, completely (9)	para-	beside, beyond, abnormal, disordered (8)
co-	with, together, completely, very (1)	per-	through, throughout, very, completely (1)
con-	with, together, completely, very (1)	peri-	around, near (4)
de-	down, away from, completely, privation (3)	post-	after, behind (2)
dia-	through, across, completely, apart (7)	pre-	before, in front of (2)
dis-	away, apart from , removed, not (2)	pro-	before, in front of, forward (3, 9)
dys-	painful, difficult, abnormal (4)	re-	back, again (1)
e-	out from, out of, from, without (2)	retro-	backward, behind (2)
ec-	out from, out of, from, without (8)	sub-	under, below, less than, moderately, almost (2)
ecto-	on the outside, outside, external (9)	super-	above, in the upper part of, excessive (3)
ek-	out from, out of, from, without (8)	supra-	above, over (1)
en-	in (7)	syn-	with, together with (7)
endo-	within, inward, inner (8)	trans-	across, through, beyond (2)
ento-	on the inside, within, inner (9)	ultra-	beyond, excessive (2)
epi-	on, upon (7)		
eso-	within (8)		
eu-	well, good, easy, normal (9)		
ex-	out, from , out of, from, without (2, 8)		

Index to Bases

Numbers refer to the Bases section of each lesson. An asterisk (*) after a number indicates that the base is found in another section of that lesson.

abdomin	abdomen (17)	ASTRAGAL-	astragalus, ball of the ankle joint (2)
ACAR-	mite (26)	ater-	black (14)
ACR-	the extremities (2, 10*)	atr-	black (14)
ACROMI-	acromion (2)	atri-	black (10)
ACTIN-	ray (26)	aur-	ear (9)
ADEN-	gland (11)	aur-	gold (29)
adip-	fat (5)	AUT-	self, one's own (10*, 29*)
adjuv-	to assist, to aid (27)	bacill-	bacillus, any rod-shaped bacterium (26)
adren-	adrenal gland (23)	BACTERI-	bacterium (26)
AER-	air, gas (11)	BALAN-	balanus, glans penis (22)
AGON-	contest (27*)	BAR-	weight, atmospheric pressure (29)
al-	wing, wing-like structure (3)	BI-	life (26)
alb-	white (14)	bi-	two (28)
ALG-	pain (27)	bil-	bile (19)
ALGE-	pain (27)	BLAST-	bud, embryonic cell (4)
ALGES-	pain (27)	BLENN-	mucus (16)
ALL-	other (11*, 27)	BLEPHAR-	eyelid (9)
ALLEL-	one another (28*)	BOL-	to throw (19*)
AMBLY-	dull, blunted (25)	BRACHI-	arm (29)
ameb-	amoeba (26)	BRACHY-	short (20*, 29)
AMYL-	starch (29)	BRADY-	slow (10*, 11)
an-	anus (17)	BROM-	food (16)
ANDR-	man, male sex (22)	BROMAT-	food (16)
ANGI-	vessel, blood vessel, duct (10*, 11)	BRONCH-	bronchus, air passage of a lung (15)
ANIS-	unequal, dissimilar (13)	BRONCHI-	bronchium, air passage smaller than a bronchus (15)
ANKYL-	bent, crooked, fused, adhered (29)	bucc-	cheek (16)
anter-	before, in the forward part of (1)	BUL-	will, willpower (25)
ANTHRAC-	coal (15)	burs-	bursa, sac (4)
ANTHROP-	human being, humankind (14*)	CAC-	bad (20*)
anxie-	uneasy, anxiety (27*)	calcane-	calcaneus, heel bone (2)
aort-	aorta (10)	capill-	capillary (10)
aortic-	aorta (10)	CARDI-	heart (11,17)
aqu-	water (7*)	CARP-	carpus, bones of the carpus, wrist (2)
ARACHN-	spider (20*)	caud-	tail, lower end of the body (1)
areol-	areola, little space (23)	cec-	cecum (17)
argent-	silver (29)	CELI-	abdomen (17)
arteri-	artery (10)	cent-	one hundred (28)
ARTHRO-	joint (1*, 4)		
articul-	joint (2)		

Index to Suffixes

Numbers refer to the Suffixes section of each lesson. The abbreviation chem. indicates a chemical suffix.

-a	plural form of -on and -um (26)	-cide	killing, an agent that kills (26)
-ac	pertaining to, of the nature of (2)	-cirrhosis	a yellow condition, cirrhosis, hardening (20)
-acousia	hearing (9)	-clasia	a breaking up, surgical fracture, surgical refracture (8)
-acusia	hearing (9)	-clasis	a breaking up, surgical fracture, surgical refracture (8)
-acusis	hearing (9)	-cle	small, little (15)
-ad	in the direction of, toward (1)	-cleisis	closure, surgical closure (21)
-agogue	an agent that promotes a flow (20)	-clysis	irrigation, injection of fluid (16)
-agra	a sudden seizure of pain (9)	-coele	cavity, space (16)
-al	pertaining to, characterized by (1)	-cula	small, little (15)
-algia	pain (3*, 9)	-cule	small, little (15)
-an	pertaining to (1)	-culum	small, little (15)
-anastomosis	surgical formation of an artificial opening (16)	-culus	small, little (15)
-ance	quality of, state of, action of, process of (27)	-cyesis	pregnancy (21)
-and	to be treated in a certain way (27)	-desis	fixation, fusion, binding (7)
-aphia	sense of touch (25)	-didymus	a fetal monster consisting of symmetrical twins (22*)
-ar	pertaining to, characterized by (1)	-ectasia	abnormal widening, expansion, dilatation (10)
-arion	small, little (15)	-ectasis	abnormal widening, expansion, dilatation (10)
-arium	small, little (15)	-ectomy	excision (7)
-ary	pertaining to, connected with (1)	-ectopia	displacement (11)
-ase (chem.)	enzyme (13)	-ectopy	displacement (11)
-asthenia	lack or loss of strength and activity, weakness (10)	-edema	swelling (11)
-ate	having the shape or quality of, possessing, characterized by (2)	-el	small, little (15)
-ate (chem.)	greater number of oxygen atoms in an ion (27)	-ella	small, little (15)
-ation	act of, process of, state of, condition of (2)	-ellum	small, little (15)
-blepsia	vision (9)	-ellus	small, little (15)
-carcinoma	malignant tumor (19*)	-emesis	vomiting (17)
-cele	hernia, herniation, swelling with fluid (4)	-emia	a blood condition, usually abnormal (10)
-cele	cavity, space (16)	-emphraxis	a stoppage, obstruction (11)
-centesis	surgical puncture (8)	-ence	quality of, state of, action of, process of (27)
		-ency	quality of, state of, action of, process of (27)
		-end	to be treated in a certain way (27)

Word Power is a text designed for courses that teach terms commonly found in the fields of medicine and allied health. The book's linguistic approach focuses on the analysis of these terms which are derived largely from Greek and Latin roots. It is a nice alternative to rote memorization, because it helps the student understand the origin of the words they will use or come across everyday in their profession. **Word Power** also touches on some history of the medical language where medical terms, for instance, have entered the lexicon in non-scientific ways. Finally, **Word Power** will help the student translate Latin anatomical nomenclature, serving both as an aid to memory and as an aid to studying anatomy.

Wm. Blake Tyrrell has taught Classics and Etymology at Michigan State University.

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