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MASTERING MEDICAL LANGUAGE

Anthony L. Spatola



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To the Teacher

Along with the traditional premedical and nursing students there has been an impressive growth in the number of students in the various allied health professions. This is especially noticeable in the community colleges where students are prepared for such occupations as nursing, dental assistant, laboratory technician, medical secretary, and various hospital, office, and support personnel. These students find mastering medical terminology a formidable task and frequently settle for learning "just enough to get by." This textbook has been written to serve the needs not only of the traditional students of medical terminology but of these students as well. Because the career objectives and the training of both groups of students are so varied, the author of this text has tried to steer a middle course between the vocabulary versus scientific content approaches to the teaching of medical terminology. The anatomy, physiology, and pathology contained in this text are presented so that students will have at least a basic knowledge of the body systems and diseases, and will see many medical words in context. How much a student is required to master should be based on the objectives of the course and the needs of the student, both of which vary from institution to institution. The teacher may emphasize one or several aspects of medical language according to his or her objectives and training.

Several features distinguish this book from other textbooks and, the author believes, make it an outstanding text. There is a comprehensive introduction to the language of medicine; the textbook was developed from classroom experience; spelling and pronunciation are stressed throughout; in addition to the commonly used vocabulary, terms that are often limited to more "bookish" writing are included; the vocabulary is presented in logical sequence and is drawn from both anatomy and pathology; the content is supported by numerous and meaningful exercises; and there are many clear and pertinent illustrations.

The first four chapters present the "mechanics" of medical language. Chapter 1 begins with a step-by-step analysis of the basic components of medical words by first presenting these elements in English words. From the same English words medical terms are then formed. At each step the student participates by completing the brief exercises. The *patterns* illustrate the various combinations of the combining elements

and demonstrate the logical formulation of medical words. Problems arising from incorrectly combining the elements of medical words are illustrated with clear and effective examples. *Duplication* and the *types of duplicates*, always a source of students' questions, are given a brief but thorough explanation. The exercises at the end of the chapter provide the student with extensive and meaningful reinforcement. Many of the words are already familiar to the student.

Chapters 2 and 3 give an extensive list of the most commonly occurring suffixes and prefixes and supporting exercises. Chapter 4 emphasizes spelling and pronunciation, an emphasis that is long overdue. Beginning with Chapter 4, all combining forms and medical words are given with their pronunciation.

The rest of the book deals primarily with the combining forms for each of the body systems. Each chapter presents: (1) a list of combining forms, (2) the anatomy of the system, (3) clinical and pathological conditions, and (4) exercises. Any combining form or medical word presented for the first time is followed by its pronunciation, and several illustrations of its use are included in each chapter. Without omitting the pertinent anatomical and pathological detail, the text is short enough for a one-semester course.

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To the Student

When you come across medical words, your first reaction may be that these words are mind-boggling. The forms, the sounds, and the very length of these words seem to place them beyond comprehension. Don't despair! Medical terminology is a language. It can be analyzed and studied like any other language.

This text is organized so that you will first learn the "mechanics" or what you might call the grammar of the language of medicine. After you have mastered the basics, learning the vocabulary of your new language will be relatively simple. The vocabulary has been arranged so that you are not memorizing meaningless lists; on the contrary, you will be given a context for understanding each new entry. Although it is not necessary to master anatomy and pathology to learn medical terminology, a general understanding of both will help you to remember much of the medical vocabulary that you learn. Also, the terminology becomes more interesting when it is anchored in anatomy and pathology.

Throughout this course your goals should be:

To become familiar with the system on which the language of medicine is built;

To master the combining forms so that you can both recognize and build medical words;

To pay close attention to the spelling and pronunciation of medical words;

To have a general knowledge of the anatomy, and the clinical and pathological conditions for each system. (Your teacher may or may not require that you learn anatomy and pathology.)

A.L.S.

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1 Basic Elements of Medical Words

The study of medical terminology is the study of the parts that make up medical words and the building of both a general vocabulary and a vocabulary for each of the body systems. Few linguistic concepts need be understood before you can analyze the terms themselves. Most medical words are made from a combination of the following elements: the part of the word that we shall call the BASE because it contains the most fundamental meaning of that word, prefixes and suffixes, and vowels that join all these parts.

THE BASE FORM

The BASE* of a medical word is that word structure that is capable of combining with another base or a suffix to form a medical word that has meaning. The word base is what is left after all added elements are removed. This reduced part of the word contains its most fundamental meaning. The examples in the table illustrate how words are reduced to their bases.

<i>Word</i>	<i>Separation of affixes</i>	<i>Base</i>	<i>Meaning</i>
epigraphic	epi/graph/ic	graph	write
atrophy	a/troph/y	troph	nourish
homogenous	hom/o/gen/ous	gen	produce
interjection	inter/jec/tion	jec	throw
hysterical	hyster/ical	hyster	uterus
linguist	lingu/ist	lingu	tongue
ductile	duct/ile	duc(t)	lead
poetic	poet/ic	poe(t)	make

Notice how the prefixes and suffixes alter the meaning of these bases. The base GRAPH

*Sometimes called a root or a stem.

has the meaning of WRITE. When we add a prefix and a suffix to the base, we change its original meaning.

EPI	GRAPH	IC
on	write	pertaining to

EPIGRAPHIC means “pertaining to the writing” (on buildings and monuments). In the medical word ELECTROENCEPHALOGRAPH we can recognize the word GRAPH as one of the bases that form the word. We can divide the word into its parts in the following manner.

ELECTR/O/EN/CEPHAL/O/GRAPH			
electrical	in	head	write
impulses			

In medical language electroencephalograph refers to an instrument that records the electrical impulses of the brain.

Let's analyze the other examples on our list and use the bases to make medical terms.

ATROPHY:

A/TROPH/Y		
not	↓	condition of
	nourish	

DYS/TROPH/Y		
poor	↓	condition of
	nourish	

Base:

TROPH

TROPH

Meaning: Both are medical terms. Atrophy refers to the physical deterioration due to a lack of nourishment. (Atrophy is most commonly used to refer to a decrease in tissue size resulting from a reduction of the number and/or size of cells.) Dystrophy refers to a physical deterioration due to poor or insufficient nourishment.

HOMOGENOUS:

HOM/O/GEN/OUS		
same	↓	pertaining to
	produce	

GAMET/O/GEN/E/SIS		
reproductive cell	↓	process
	produce	

Base:

GEN

GAMET and GEN

Meaning: Homogenous means producing something that is the same—that is, something uniform in its parts or structure. Gametogenesis refers to the process of producing male and female reproductive cells.

INTERJECTION:

INTER/JEC/TION		
between	↓	act or process
	throw	

IN/JEC/TION		
into	↓	act or process
	throw	

Base:

JEC

JEC

Meaning: Interjection refers to an exclamatory word in a sentence. An injection is the process of putting a liquid into the body by means of a hypodermic syringe.

HYSTERICAL:	HYSTER/IC/AL uterus pertaining to	HYSTER/EC/TOM/Y uterus out cut process
Base:	HYSTER	HYSTER

Meaning: A person who is hysterical is one lacking emotional control. The ancient Greeks believed that hysteria was a disturbance of the uterus. Hysterectomy refers to the surgical procedure for removing the uterus.

LINGUIST:	LINGU/IST tongue one who specializes in	SUB/LINGU/AL under ↓ pertaining to tongue
Base:	LINGU	LINGU

Meaning: A linguist is one who specializes in the science that deals with language. Sublingual refers to the area under the tongue.

DUCTILE:	DUCT/ILE lead capable of	OV/I/DUCT egg lead
Base:	DUC (T)	OV and DUC (T)

Meaning: What is ductile is capable of being led. An oviduct is a tube that leads the egg from the ovary to the uterus.

POETIC:	POET/IC make pertaining to	THROMB/O/POIE/SIS clots make process
Base:	POE (T)	THROMB and POE (T)

Meaning: The poet is one who makes or creates. Thrombopoiesis refers to the formation of blood clots.

THE COMBINING VOWEL

When two bases are combined or a suffix is added to a base, if no vowel occurs at the junction of the two forms, a vowel called the COMBINING VOWEL is added (Ex: THROMB/O/POIESIS; /O/ is the combining vowel). Usually the combining vowel is O. The combining vowel O has been used so extensively that it has replaced other combining vowels (I, E, A) in many medical words. As a result, O is the most commonly occurring combining vowel. I is the second most common combining vowel. We call a base with a combining vowel a combining form. For example, HEMATO (HEMAT+O)

and GASTRO (GASTR + O) are combining forms. Here are some examples of common English words that use O as a combining vowel. Using a dictionary, give their meanings by analyzing their parts.

GE/O/GRAPH/Y.....

METR/O/POLIS

ORTH/O/DOX.....

MON/O/TON/OUS.....

ANTH/O/LOG/Y.....

Do the same for the following medical terms.

LOB/O/TOM/Y

OPT/O/METR/IST

UR/O/LOG/Y

HYDR/O/THERAP/Y

AUR/I/SCOP/E

CENT/I/GRAD/E

CORN/I/FAC/TION

MILL/I/METER

PELV/I/METER

VENTR/I/DUCT

Notice that in the last six medical terms I is used as the combining vowel.

PREFIXES AND SUFFIXES

PREFIXES are placed before a word to alter the basic meaning of the word. SUFFIXES appear at the end of the word and, in a sense, function like prefixes. Suffixes, however, not only alter the meaning of a word, but they also determine the various word

functions, such as part of speech or whether the word is singular or plural. We will deal with prefixes and suffixes in great detail in Chapters 2 and 3. For now let us look at how they affect the word base in general.

We have a word base CARDI, meaning heart. Notice how the addition of a prefix and suffix alter the basic meaning.

PERI/CARDI/O/TOM/Y
around heart cut process

Translated, pericardiotomy means the process of making an incision into the pericardium, the sac that encloses the heart. Notice that when we translated the medical word into an English phrase, we translated the suffix first. In translating medical terms, we frequently begin with the suffix and then end with the beginning of the term.

PERI/CARDI/O/TOM/Y
3 4 2 1

NEPHR/O/TOM/Y NEPHR means kidney
3 2 1

NEPHR/O/PATH/Y PATH means disease
3 2 1

but in NEPHR O LITH LITH means stone
1 2

The term NEPHROLITH has two base forms *without* any suffix.

In the medical terms given below divide each word into its parts, number the order of translating the parts, and translate the entire term. Use a dictionary for any unfamiliar terms.

3 2 1

NEPHROGRAPHY nephro/o/graph/y process of recording the kidney (x ray)

ANTIFUNGAL

PROPHYLACTIC

HYPERTROPHIC

INTRAVENOUS

ECTOPIA

PERIODONTIST

ESOPHAGOJEJUNOSTOMY

