

The
Language
of
Medicine

A WRITE-IN TEXT EXPLAINING MEDICAL TERMS

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Second Edition

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PREFACE

During the past five years, it has been gratifying to witness the expanding use of the first edition of *The Language of Medicine* by allied health professionals in classrooms, hospitals, and offices throughout the country. This second edition reflects not only the new ideas that have come from my personal classroom experience, but also the suggestions, comments, and questions from teachers and students who have used the book in these past years.

The basic assumptions and format of the workbook-text have remained unaltered in this new edition. It is a workbook, a write-in text in which students are asked to answer exercise questions (and check their responses), complete review sheets, and label diagrams, thereby testing and retesting their understanding of the material presented. Second, the book abounds with factual information to enhance knowledge and comprehension of medical terms. Anatomical, physiological, and pathological material related to body systems is presented so that students of all backgrounds can learn. Flow charts and simple anatomical diagrams accompany discussions of each system of the body. Thus, logical and rational comprehension of terms is emphasized, rather than rote memorization of isolated words.

Several new features of the second edition are:

1. A section in each chapter devoted to pronunciation of terms. Words are listed alphabetically and the phonetic pronunciation is given. I use these lists in my classes for oral drill, and students comment that they are helpful as review. Phonetic markings on vowels are as follows:

ā as in tāp	ā as in tāpe
ē as in nēt	ē as in rēject
ī as in tīp	ī as in tīe
ō as in nōt	ō as in nō
ū as in tūb	ū as in ūnit
oo as in loose	
oy as in toy	

Boldface capital letters indicate which syllable should be accented. Audiotapes containing verbalization of the pronunciation lists and the meanings of terms are available from the publisher.

2. Chapters 6 through 19 contain sections on special clinical procedures, laboratory tests, and abbreviations. Vocabulary lists are now found after the major textual information, so that they can be useful as review and reference.

3. Pathological terminology sections have been expanded and brought up to date, and additional materials on dental, obstetrical, and neonatal terms have been included.

4. Chapter 22, Psychiatry, is new to this edition, and three previous chapters on Cancer Medicine have been condensed into one chapter (Chapter 19).

In the process of revision, the size of *The Language of Medicine* has grown. Don't let the number of pages scare you! The size is due in large measure to the method of the book. This is a write-in text and there are many blank spaces throughout for answers to exercises, review sheets, and word lists. I believe that the best way to learn is by writing terms, and their meanings, over and over again. Once the write-in part of the book is completed, the expository material is readily available for reference and review.

Chapters 1 through 5 constitute the foundation of the book. Basic word analysis, vocabulary building using an example of medical writing, terms related to the body as a whole, and common suffixes and prefixes are introduced in these chapters. I teach this material in a short (16- to 20-hour) course in hospitals, insurance companies, and HMO's, and to allied health groups. A standard three-semester-hour college course includes approximately half the book (Chapters 1 to 11); a second-semester course would complete the book, covering such specialty areas as cancer medicine, radiology and nuclear medicine, pharmacology, and psychiatry.

Teaching medical terminology is as exciting to me now as it was when I first began classes over eight years ago and experienced the exhilaration of classroom communication between student and teacher. I hope that my enthusiasm and interest in medical terms can also be communicated through these pages, and that you, fellow students and teachers, will continue to write to me with suggestions for improvements. Understanding the medical language is certainly hard work, but it is also truly rewarding and fun! This book aims not only to teach understanding of medical terms, but to place the terms within their proper context—that is, to give an appreciation of how the human body functions in both health and disease.

Work hard, and have fun with *The Language of Medicine*.

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Chapter 1

BASIC WORD STRUCTURE

In this chapter you will:

Become familiar with basic objectives to keep in mind as you study the medical language;

Divide medical words into their component parts;

Find the meaning of basic combining forms, prefixes, and suffixes of the medical language; and

Use these combining forms, prefixes, and suffixes to build medical words.

This chapter is divided into the following sections:

- I. Objectives in Studying the Medical Language
- II. Basic Word Structure
- III. Combining Forms, Suffixes, and Prefixes
- IV. Exercises
- V. Pronunciation of Terms

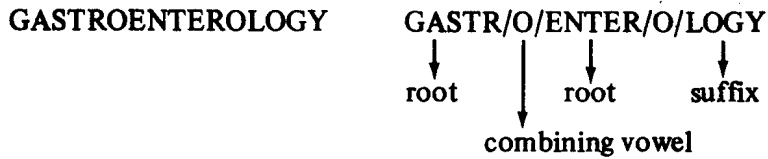
I. OBJECTIVES IN STUDYING THE MEDICAL LANGUAGE

There are three major objectives to keep in mind as you study medical terminology.

1. To Analyze Words Structurally

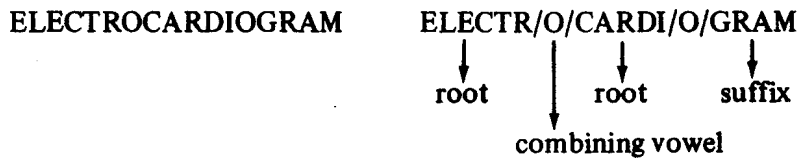
Your goal is to learn the tools of word-analysis which will make the understanding of complex terminology easier. For example, we will learn to divide words into basic elements such as roots, suffixes, prefixes, combining vowels, and combining forms. With this knowledge of word construction and the meanings of the specific word elements, even the longest and most complicated terms can be handled and understood.

You may or may not already know the meanings of the following terms, but this is how we will learn to analyze them structurally:



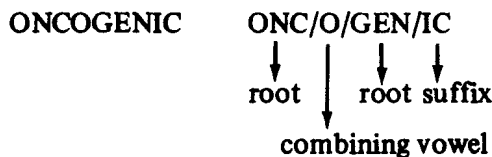
- The root **gastr** means stomach
- The root **enter** means intestines
- The suffix **-logy** means process of study
- The combining vowel **o** links root to root and root to suffix

The entire word (always reading the meaning of terms starting from the suffix back to the first part of the word) means then: the process of study of the stomach and intestines.



- The root **electr** means electricity
- The root **cardi** means heart
- The suffix **-gram** means record

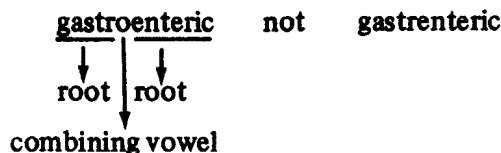
The entire word means: the record of the electricity of the heart.
Try another:



- The root **onc** means tumor
- The root **gen** means producing
- The suffix **-ic** means pertaining to

The entire word means: pertaining to tumor producing.

Note that the combining vowel (o), usually placed between the root and suffix, is dropped in this word because the suffix (ic) begins with a vowel. However, combining vowels are usually retained between two roots in a word even if the second root begins with a vowel. For example:



To summarize: Three important rules to remember as you study the medical language are:

- (a) Read the meaning of medical terms from the suffix back to the first part of the word.
- (b) Drop the combining vowel (usually o) before a suffix beginning with a vowel: gastric not gastroic.
- (c) Retain the combining vowel between two roots in a word.

2. To correlate an Understanding of Word Elements with the Basic Anatomy, Physiology, and Disease Processes of the Human Body

This text will continually emphasize not only the division of terms into structural elements but also the relationship of the medical words to the functioning of the body, in both health and disease.

For example, the term hemat/o/logy means the study of the blood. This term, however, will mean more to you as you learn the many different components of blood, how they function in the body, and the various disease conditions associated with blood. This text is structured so that the terms presented have relevance to the anatomy, physiology, and disease process of the body. Memorization of terms, while essential to retention of the language, should not become the primary objective of your study.

3. To Be Continually Aware of Spelling and Pronunciation Problems

Spelling is especially critical in the medical language because many words are pronounced alike but spelled differently and have entirely different meanings. For example:

ileum is a part of the small intestine

and

ilium is a part of the pelvic, or hip, bone

It should be obvious as well that a misspelled word may give the wrong meaning to a diagnosis. For example:

hepat/oma: tumor of the liver; an abnormal growth of cells

hemat/oma: blood tumor; a mass, or collection, of blood under the skin

Words spelled correctly but incorrectly pronounced may be easily misunderstood. For example:

urethra (ū-RĒ-thrā) is the urinary tract tube leading from the urinary bladder to the external surface

ureter (ū-RĒ-tēr or Ū-rē-tēr) is one of two tubes leading from the kidney to the urinary bladder

Figure 1-1 illustrates the difference between the urethra and ureters.

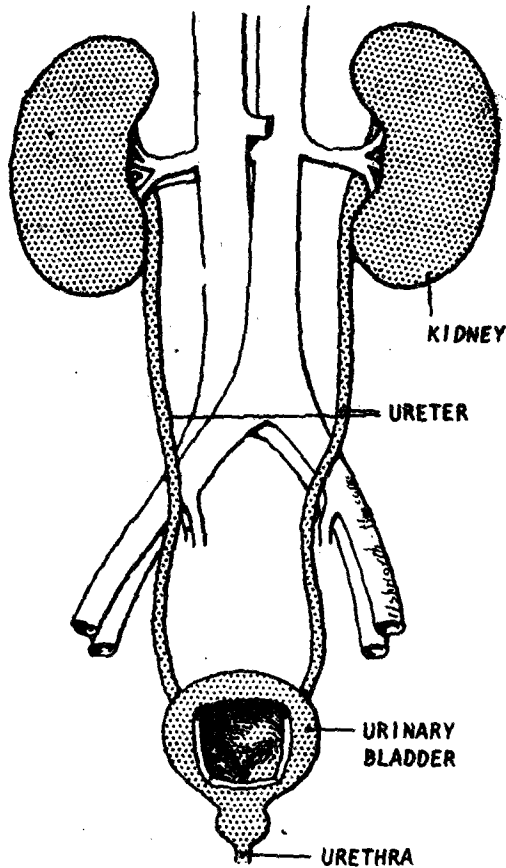


Figure 1-1 Urinary system.

II. BASIC WORD STRUCTURE

Studying medical words is very similar to learning a new language. The words at first sound strange and complicated although they may stand for commonly known English terms. The words *gastralgia*, meaning "stomach ache," and *ophthalmologist*, meaning "eye doctor," are examples.

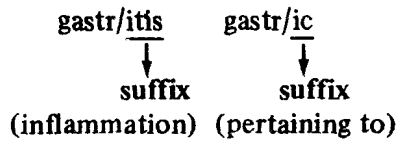
The medical language is fascinatingly logical in that each term, complex or simple, can be broken down into its basic component parts and then understood.

These basic component parts of medical words are:

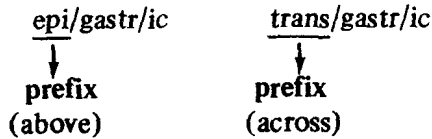
1. Word root: foundation of the word

gastr/ic
↓
root
(stomach)

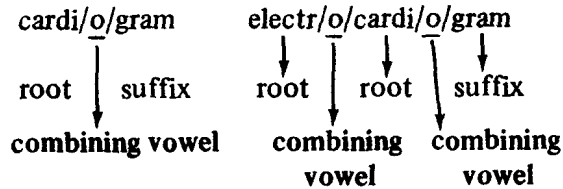
2. Suffix: word ending



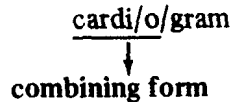
3. Prefix: word beginning



4. Combining vowel: a vowel (usually o) linking the root to the suffix or to another root



5. Combining form: the combination of a word root with the combining vowel



III. COMBINING FORMS, SUFFIXES, AND PREFIXES

In previous examples you have been introduced to the combining forms gastr/o (stomach) and cardi/o (heart). The following lists contain new combining forms, suffixes, and prefixes with examples of medical words using those word parts. Your job is to write the meaning of the new medical word in the space provided. As you do this, you may want to put slashes through the words to divide them clearly into their individual parts.

Don't forget to consult the pronunciation sheet at the end of the chapter which contains an alphabetical list of most new terms. To test your understanding of word parts and terminology, complete the exercises on pages 10 to 16 and check your answers on pages 16 to 18.

Combining Forms

<i>Combining Form</i>	<i>Meaning</i>	<i>Terminology</i>	<i>Meaning</i>
aden/o	gland	<u>adenoma</u> _____ (-oma means tumor)	
		<u>adenitis</u> _____ (-itis means inflammation)	
arthr/o	joint	<u>arthritis</u> _____	
bi/o	life	<u>biology</u> _____ (-logy means process of study)	
carcin/o	cancerous	<u>carcinoma</u> _____	
cardi/o	heart	<u>cardiology</u> _____	
cephal/o	head	<u>cephalic</u> _____ (-ic means pertaining to)	
cerebr/o	brain, cerebrum	<u>cerebral</u> _____ (-al means pertaining to)	
cis/o	to cut	<u>incision</u> _____ (in- means into; -ion means process)	
		<u>excision</u> _____ (ex- means out)	
crin/o	secrete (to form and give off)	<u>endocrine glands</u> _____ (endo- means within)	
cyst/o	urinary bladder	<u>cystoscopy</u> _____ (-scopy means process of visual examination)	
cyt/o	cell	<u>cytology</u> _____	
derm/o dermat/o	skin	<u>hypodermic</u> _____ (hypo- means under, below)	
		<u>dermatosis</u> _____ (-osis means abnormal condition)	

electr/o	electricity	<u>electrocardiogram</u> _____ (-gram means record)
encephal/o	brain	<u>electroencephalogram</u> _____
enter/o	intestines (usually small intestines)	<u>enteritis</u> _____
erythr/o	red	<u>erythrocyte</u> _____
gastr/o	stomach	<u>gastrectomy</u> _____ (-ectomy means removal)
		<u>gastrotony</u> _____ (-tomy means process of cutting)
gen/o	producing, produced by	<u>carcinogenic</u> _____
gnos/o	knowledge	<u>diagnosis</u> _____ (dia- means complete; -sis means state of)
		<u>prognosis</u> _____ (pro- means before)
gynec/o	woman, female	<u>gynecology</u> _____
hem/o hemat/o	blood	<u>hematoma</u> _____
hepat/o	liver	<u>hepatitis</u> _____
iatr/o	treatment	<u>iatrogenic</u> _____
leuk/o	white	<u>leukocytic</u> _____
nephro/o	kidney	<u>nephrotomy</u> _____
neur/o	nerve	<u>neurosis</u> _____
onc/o	tumor	<u>oncology</u> _____
ophthalm/o	eye	<u>ophthalmoscopy</u> _____
oste/o	bone	<u>osteoarthritis</u> _____

path/o	disease	<u>pathologist</u> _____ (-ist means a specialist)
pedi/o	child	<u>pediatric</u> _____
physi/o	nature	<u>physiology</u> _____
psych/o	mind	<u>psychosis</u> _____ (a more serious abnormal mental condition than neurosis)
radi/o	rays, x-rays	<u>radiology</u> _____
rhin/o	nose	<u>rhinitis</u> _____
secti/o	to cut	<u>section</u> _____ (an incision)
thromb/o	clot	<u>thrombocyte</u> _____
tom/o	to cut	<u>gastrotomy</u> _____
ur/o	urine, urinary tract	<u>urology</u> _____

Suffixes

<i>Suffix</i>	<i>Meaning</i>	<i>Terminology</i>	<i>Meaning</i>
-ac	pertaining to	<u>cardiac</u> _____	
-al	pertaining to	<u>neural</u> _____	
-algia	pain	<u>arthralgia</u> _____	
-cyte	cell	<u>leukocyte</u> _____	
-ectomy	excision	<u>adenectomy</u> _____	
-emia	blood condition	<u>leukemia</u> _____	
-gram	record	<u>electroencephalogram</u> _____	
-ia	condition	<u>erythremia</u> _____	
-ic	pertaining to	<u>gastric</u> _____	

-ist	one who specializes in	nephrologist _____
-itis	inflammation	cystitis _____
-logy	process of study	endocrinology _____
-oma	tumor	hepatoma _____
-opsy	process of viewing	biopsy _____
-osis	abnormal condition	leukocytosis _____ <i>(means slight increase when used with blood cell terms)</i>
-scope	instrument to visually examine	gastroscope _____
-scopy	process of visually examining	gastroscopy _____
-sis	state of, condition	diagnosis _____
-tome	instrument to cut	osteotome _____
-tomy	process of cutting	rhinotomy _____
-y	process	gastroenterology _____

Prefixes

<i>Prefix</i>	<i>Meaning</i>	<i>Terminology</i>	<i>Meaning</i>
a-, an-	no, not	anemia _____ <i>(decrease in erythrocytes)</i>	
auto-	self	autopsy _____	
ana-	up	anatomy _____	
dia-	through, complete	diagram _____	
endo-	within	endocrinologist _____	

epi-	above	<u>epidermic</u> _____
ex-	out	<u>excision</u> _____
exo-	out	<u>exocrine glands</u> _____
hyper-	excessive, above	<u>hyperemia</u> _____
hypo-	below, deficient	<u>hypogastric</u> _____
re-	back	<u>resection</u> _____ (an excision)
retro-	behind	<u>retrogastric</u> _____
peri-	surrounding	<u>pericardium</u> _____ (-um means a structure)
pro-	before	<u>prognosis</u> _____
trans-	across	<u>transgastric</u> _____

IV. EXERCISES

A. Complete the following:

1. Word beginnings are called _____ .
2. Word endings are called _____ .
3. The foundation of a word is called the _____ .
4. A letter linking a suffix and a root or two roots in a word is called the _____ .

5. The combination of a root and a combining vowel is known as the _____ .

B. Using slashes (/), divide the following terms into component parts; write the word root; and give the meaning of the entire medical term:

	<i>Root</i>	<i>Meaning</i>
1. adenoma	_____	_____
2. cerebral	_____	_____
3. pathogenic	_____	_____
4. hypogastric	_____	_____
5. leukocytic	_____	_____
6. rhinitis	_____	_____
7. arthrotomy	_____	_____
8. hepatitis	_____	_____

C. *Using slashes, divide the following terms into component parts; identify the combining forms; and give the meaning of the entire term:*

	<i>Combining Form</i>	<i>Meaning</i>
1. carcinogenic	_____	_____
2. electroencephalogram	_____	_____
3. osteotome	_____	_____
4. erythrocytosis	_____	_____
5. nephrologist	_____	_____
6. encephalopathy	_____	_____
7. biology	_____	_____
8. physiology	_____	_____

D. *Find the suffixes in the following words and give the meaning of the entire term:*

	<i>Suffix</i>	<i>Meaning</i>
1. leukemia	_____	_____
2. gastrectomy	_____	_____