FOR STUDENT

MANUAL LAB ACTIVITY

Study Skill & Critical Thinking

1st Semester

Academic Year 2019/2020



Introduction to Medical Terminology Basic Medical Terminology & Body of Knowledge Effective Reading, Note Taking, & Mind Mapping

Universitas Islam Bandung Faculty of Medicine 2019

Introduction

Learning Skills and Critical Thinking Block is the first module in undergraduate medical curriculum of the Faculty of Medicine Unisba and last for 3 weeks. This module aims to enable students to understand the principles of learning of medicine and be able to apply these principles well to be a competent doctor in the future.

The learning of this block aims to make students have an understanding of the principles of learning in taking medical education and the principles of scientific methods in gathering information, as well as the skills to use, assess and manage information in a valid and critical manner, the ability to be self-aware, self-development and lifelong learning, as well as the ability to trace and critically examine various scientific information in order to obtain appropriate, trusted and useful learning resources.

The Lab Activity Module of learning skills and critical thinking is applied in the first semester with the number of meetings 3 times in 3 weeks and provides some provisions for students to understand the basic medical terms and basic literatures needed in education in the next semester.

Learning Outcomes:

After completing this lab activity series students are able to:

- 1. Know the language structure of medical and health terminology
- 2. Recognizing basic terms and body of knowledge in medicine and health
- 3. Knowing the types of literature and their priorities in supporting learning
- 4. Applying the effective reading method of literature books in medicine
- 5. Using Mind Mapping in the learning process

Learning Objectives:

Module 1: Medical Terminology 1-Introduction to Medical Terminology

- 1. Analyze unfamiliar medical terms using your knowledge of word parts.
- 2. Describe the steps in locating a term in a medical dictionary.
- 3. Define the commonly used prefixes, word roots (combining forms), and suffixes introduced in this chapter.
- 4. Pronounce medical terms correctly using the "sounds like" system.
- 5. Recognize the importance of always spelling medical terms correctly.
- 6. Recognize, define, spell, and pronounce the medical terms in this chapter.
- 7. Identify the roles of the three types of word parts in forming medical terms.

Module 2: Medical Terminology 2 -Human Body in Health and Disease

- 1. Define anatomy and physiology and use anatomic reference systems to identify the anatomic position, body planes, directions, and cavities.
- 2. Recognize, define, spell, and pronounce the terms related to the structure, function, pathology and procedures of cells, tissues, and glands.
- 3. Define the terms associated with genetics including mutation, genetic engineering, and genetic counseling.

- 4. Identify the body systems in terms of their major structures, functions, and related word parts.
- 5. Recognize, define, spell, and pronounce the terms related to types of diseases and the body of knowledge/branch and or specialties in medicine

Module 3: Textbook Reading, Note Taking and Summarizing/Mind Mapping

- 1. Define the basic concept of mind mapping
- 2. Recognize the use and purpose of mind mapping in studying medicine
- 3. Identify type of literatures in studying medicine and classify the literature books in medicine based on disease, body knowledge of medicine, and medical specialties
- 4. Recognize the appropriate mind mapping example
- 5. Identify the appropriate mind map for the example case given by the tutor
- 6. Perform a presentation of a mind map in front of small group and tutor

Materials

- 1. Lab Activity Manual
- 2. LCD Projector
- 3. Flipchart Paper and Stands
- 4. Board marker pen (Three Color)
- 5. E-book (selected chapter)
- 6. Medical Dictionary (Dorland, etc.)
- 7. English-English dictionary (recommended as priority) or English-Indonesia Dictionary
- 8. Laptop for tutor

Methods:

- 1. Homework assignment
- 2. Pre-test
- 3. Discussion
- 4. Presentation
- 5. Demonstration
- 6. Module Practice
- 7. Feedback
- 8. Take home self-assignment

References and Further Readings:

- 1. Gylys, Barbara A. 2009. Medical terminology systems: a body systems approach / 6th ed. Philadelphia. FA. Davis Company
- 2. Christy Hicks. 2012. Medical Terminology. Clayton State University.
- 3. Logic. 2016. Medical Terminology Study Guide. Retrieved September 12, 2018. http://www.dmu.edu/medterms/welcome/
- 4. Walker S, Wood M, Nicol J. 2017. Mastering Medical Terminology-2nd edition. Elsevier.

WEEK 1 Introduction to Medical Terminology

Activity Outline:

- Objectives
- Medical Word Elements
- Word Roots
- Combining Forms
- Suffixes
- Prefixes
- Basic Rules
- Defining Medical Words
- Building Medical Words
- Pronunciation Guidelines

Specific Objectives

Upon completion of this activity, you will be able to:

- 1. Identify the four-word elements used to build medical words.
- 2. Divide medical words into their component parts.
- 3. Apply the basic rules to define and build medical words.
- 4. Pronounce medical terms presented in this chapter.
- 5. Demonstrate your knowledge of this laboratory activity by completing the learning activities both individually and groups.

PART ONE - Medical Word Elements

The language of medicine is a specialized vocabulary used by health care practitioners. Many current medical word elements originated as early as the 1st century B.C., when Hippocrates practiced medicine. With advancements in medicine, new terms have evolved to reflect these innovations. For example, radiographic terms, such as *magnetic resonance imaging* (MRI) and *ultrasound* (US), are now used to describe current diagnostic procedures.

Medical words are like individual jigsaw puzzles. Once you divide the terms into their component parts and learn the meaning of the individual parts. You can use that knowledge to understand many others new terms.

A medical word consists of some or all the following elements:

- a. word root,
- b. combining form,
- c. suffix, and
- d. prefix.

How you combine these elements, and whether all or some of them are present in a medical term determines the meaning of a word. The purpose of this activity is to help you

identify these elements to construct medical terms correctly.

A. Word Roots

A word root is the foundation of a medical term and contains its primary meaning. All medical terms have at least one-word root. Most word roots are derived from Greek or Latin language. Thus, two different roots may have the same meaning. For example, the Greek word *dermatos* and the Latin word *cutane* both refer to the skin.

<u>As a general rule:</u>

1. Greek roots are used to build words that describe a disease, condition, treatment, or diagnosis.

2. Latin roots are used to build words that describe anatomical structures. Consequently, the Greek root *dermat* is used primarily in terms that describe a disease, condition, treatment, or diagnosis of the skin; the Latin root *cutane* is used primarily to describe an anatomical structure. (See Table 1-1.)

This table lists examples of word roots as well as their phonetic pronunciations. Begin learning the pronunciations as you review the information below.

English Term	Greek or Latin Term*	Word Root	Word Analysis
skin	dermatos (Gr)	dermat	dermat /itis (dĕr-mă-TĪ-tĭs): inflamma- tion of the skin
			A term that describes a skin disease
	cutis (L)	cutane	cutane /ous (sŭb-kū-TĀ-nē-ŭs): pertaining to the skin
			A term that describes an anatomical structure
kidney	nephros (Gr)	nephr	nephr /oma (nĕ-FRŌ-mǎ): tumor of the kidney
			A term that describes a kidney disease
	renes (L)	ren	ren/al (RĒ-năl): pertains to the kidney
			A term that describes an anatomical structure
mouth	stomatos (Gr)	stomat	stomat /itis (stō-mă-TĪ-tĭs): inflam- mation of the mouth
			A term that describes any inflammatory condition of the mouth
	oris (L)	or	or /al (OR-ăl): pertaining to the mouth
			A term that describes an anatomical structure
	Table 1 1 Ev	ample of wor	d roots
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B. Combining Forms

A combining form is created when a word root is combined with a vowel. The vowel, known as a *combining vowel*, is usually an *o*, but sometimes it is an *i*. The combining vowel has no meaning of its own but enables two-word elements to be connected. Like the word root, the combining form is the foundation to which other word elements are added to build a complete medical word. In this text, a combining form will be listed as *word root/vowel* (such as *gastr/o*), as illustrated in Table 1-2.

This table illustrates how word roots and vowels create combining forms. Learning combining forms rather than word roots makes pronunciation a little easier because of the terminal vowel. For example, in the table below, the word roots gastr and nephr are difficult to pronounce, whereas their combining forms gastr/o and nephr/o are easier to pronounce.

Word Root	+	Vowel	=	Combining Form	Meaning
erythr/	+	o	=	erythr/o	red
gastr/	+	0	=	gastr/o	stomach
hepat/	+	0	=	hepat/o	liver
immun/	+	o	=	immun/o	immune, immunity, safe
nephr/	+	0	=	nephr/o	kidney
oste/	+	0	=	oste/o	bone

Table 1.2 Example of a combining form

C. Suffixes

A suffix is a word element placed at the end of a word that changes the meaning of the word. In the terms tonsill/*itis*, and tonsill/*ectomy*, the suffixes are *-itis* (inflammation) and *-ectomy* (excision, removal). Changing the suffix changes the meaning of the word. In medical terminology, <u>a suffix usually describes a pathology</u> (disease or abnormality), symptom, <u>surgical or diagnostic procedure, or part of speech</u>. Many suffixes are derived from Greek or Latin words. (See Table 1-3.)

This table lists examples of pathological suffixes as well as their phonetic pronunciations. Begin learning the pronunciations as you review the information below.

Combining	+	Suffix	=	Medical Word	Meaning
	+	-itis	=	gastritis	inflammation of the stomach
gastr/o	+	(inflammation) -megaly	=	găs-TRĪ -tĭs gastromegaly	enlargement of the stomach
(scomach)	+	(enlargement) -oma	=	găs-trō-MĚG-ă-lē gastroma	tumor of the stomach
{	+	(tumor) -itis	=	găs-TRŌ-mă hepatitis	inflammation of the liver
hepat/o	+	(inflammation) -megaly	=	hĕp-ā-Tl -tĭs hepatomegaly	enlargement of the liver
(liver)	+	(enlargement)	_	hĕp-ă-tō-MĔG-ă-lē hepatoma	tumor of the liver
		(tumor)	-	hĕp-ă-TŌ-mă	

Table 1.3 Example of suffixes

D. Prefixes

A prefix is a word element attached to the beginning of a word or word root. However, *not all medical terms have a prefix*. Adding or changing a prefix changes the meaning of the word. The prefix usually indicates <u>a number, time, position, direction, or negation</u>. Many of the same prefixes used in medical terminology are also used in the English words. (See Table 1-4)

This table lists examples of prefixes as well as their phonetic pronunciations. Begin learning the pronunciations as you review the information below.

Prefix	+	Word Root	+	Suffix	=	Medical Word	Meaning
an-	+	esthes	+	-ia	=	anesthesia	condition of not feeling
(without, not)		(feeling)		(condition)		ăn-ĕs-THĒ-zē-ă	
hyper-	+	therm	+	-ia	=	hyperthermia	condition of excessive
(excessive, above normal)		(heat)		(condition)		hī-pěr-THĚR-mē-ă	heat
intra-	+	muscul	+	-ar	=	intramuscular	pertaining to within
(in, within)		(muscle)		(pertaining to)		ĭn-tră-MŬS-kū-lăr	the muscle
para-	+	nas	+	-al	=	paranasal	pertaining to (area)
(near, beside;		(nose)		(pertaining to)		păr-ă-NĀ-săl	near the nose
beyond)							
poly-	+	ur	+	-ia	=	polyuria	condition of much
many, much		(urine)		(condition)		pŏl-ē-Ū-rē-ă	urine

Table 1.4 Example of prefixes

PART TWO - Basic Guidelines

Defining and building medical words are crucial skills in mastering medical terminology. Following the basic guidelines for each will help you develop these skills.

A. Defining Medical Words

Here are three basic steps for defining medical words using *gastroenteritis* as an example.

- 1. Define the suffix, or last part of the word. In this case, the suffix *-itis, which means inflammation.*
- 2. Define the first part of the word (which may be a word root, combining form, or prefix). In this case, the combining form *gastr/o means stomach*.
- 3. Define the middle parts of the word. In this case, the word root *enter* means *intestine*.

When you analyze gastroenteritis following the three previous rules, the

meaning is:

- a. inflammation (of)
- b. stomach (and)
 - intestine.

Thus, the meaning of *gastroenteritis* is *inflammation (of) stomach (and) intestine*. Table 1-5 illustrates this process.

This table illustrates three steps of defining a medical word using the example gastroenteritis.

Combining Form	Middle	Suffix
gastr/o	enter/	-itis
stomach	intestine	inflammation
(step 2)	(step 3)	(step 1)

B. Building Medical Words

There are three basic rules for building medical words.

Rule #1 \rightarrow A word root links a suffix that begins with a vowel.

Rule #2 \rightarrow A combining form (root _ o) links a suffix that begins with a consonant.

Rule #3 \rightarrow A combining form links a root to another root to form a compound word.

This rule holds true even if the next root begins with a vowel, as in *osteoarthritis*. Keep in mind that the rules for linking multiple roots to each other are slightly different from the rules for linking roots and combining forms to suffixes.



When you analyze a medical term, begin at the end of the word. The ending is called a suffix. All medical terms contain suffixes. The suffix in hematology is -LOGY, which mean study of. Next look at the beginning of the term. HEMAT is the word root. The root give the essential meaning of the term. The root HEMAT- means BLOOD.

The third part of this term, which is the letter 'O', has no meaning on its own but is an important connector between the root (HEMAT) and the suffix (-LOGY). It is called a combining vowel. Now put together the meaning of the suffix and word root: HEMATOLOGY means Study of Blood.

Example 2

Another familial medical term is electrocardiogram. You probably know this term,often abbreviated with ECG (or EKG). This is how you divide it into its parts:



Start with the suffix at the end of the term. The suffix -GRAM means a record. Now look at the beginning of the term. ELECTR is a word root, and its means electricity. This medical terms have another word root. The second word root is CARDI, meaning heart. When you see CARDI uses in other medical term, you will know that it means heart.

Read the meaning of medical terms from the suffix, back to the beginning of the term, and then across. ELECTROCARDIOGRAM means record of the electricity of the heart. Notice the two-combining vowel "O" after the word roots and help you to identify and divide the terms. The vowel "O" called combining vowel/form.

PART 4 LABORATORY TASK I

Students' Learning Activity 1-1

Understanding Medical Word Elements

- A. Fill in the following blanks to complete the sentences correctly.
 - 1. The four elements used to form words are.....
 - 2. A root is the main part or foundation of a word. In the word's *arthritis, arthroma,* and *arthroscope,* the root is

B. Identify the following statements as true or false, circle the correct answer! If false, rewrite the statement correctly on the line provided!

3. A combining vowel is usually an 'e'. True False
4. A word root links a suffix that begins with a consonant. True False
5. A combining form links multiple root to each other. True False
6. A combining form links a suffix that begins with a consonant. True False
7. To define a medical word, first define the prefix. True False
8. In the term *intramuscular, intra* is the prefix. True False

C. Find in your dictionary or medical encyclopedia and write down the meaning of the words

9. Muscul/o	meaning :
10. neur/o,	meaning :
11. Cardi/o,	meaning :
12. Pulm/o	meaning :
13. splen/o,	meaning :
14. nephr/o,	meaning :
15. gastr/o,	meaning :
16. ot/o,	meaning :
17. ophtalm/o,	meaning :
18. dermat/o,	meaning :
19. imun/o,	meaning :
20. hemat/o,	meaning :

Learning Activity I-2

Identifying Word Roots and Combining Forms

Match these case!

	Medical words	Word Root(s)		Meaning
1.	Ophthalmologist		a.	inflammation of the kidneys
2.	Hepatoma		b.	fixation of a joint
3.	Arthrodesis		с.	inflammation of the skin
4.	Nephritis		d.	specialist in Eye diseases
5.	Dermatitis		e.	excision of the stomach
6.	Osteoma		f.	inflammation of cartilage
7.	Chondritis		g.	tumor of the liver
8.	Gastria		h.	pertaining to muscles
9.	Gastrectomy		i.	condition of the stomach
10.	Muscular		j.	tumor of the bone

Learning Activity I-3

A. Identifying Suffixes and Prefixes

Pronounce the following medical terms. Then analyze each term and write the suffix in the right-hand column.

No	Term	Suffix	Meaning of the suffix
1	Thoracotomy	-tomy	Cutting, cut, removal, excission
2	Neural		
3	Arthralgia		
4.	Leukocyte		
5.	Pathology		
6.	Osteoporosis		
7.	Gastric		
8.	Hepatoma		
9.	Tonsillitis		
10.	Biopsy		

Analyze each term and write the element that is a prefix in the right-hand column. The first prefix is completed for you.

No	Term	Prefix	Meaning of the
			prefix
1	Anesthesia	An-	Absence of
2	Hypertension		
3	Hypothermia		

4.	Intramuscular	
5.	Paranasal	
6.	Polyuria	
7.	Dysmenorrhea	
8.	Diagnosis	
9.	Endometrium	
10.	Exophthalmos	

B. Match the term to appropriate prefix/suffix root

MATC	H—Term to appropriate prefix/suffix root.		
	The foundation of a word is its	A.	-cele
	Part of a word that precedes the foundation and changes its meaning	B.	a-
	Word ending used to change the meaning of the word foundation	C.	Suffix
	Suffix that means a swelling or an enlarged space	D.	anti-
	To mean an absence or deficiency begin the word with prefixes such as	E.	-plasty
	Prefix that means against	F.	-scope
	Suffix that means repair or correction	G.	-scopy
	An instrument used to look into the bronchi would be a broncho	H.	endo-
	Prefix that means inside of	I.	Root
	Procedure of looking inside of the body using an instrument would be called Endo	J.	Prefix

MATCH—Term to appropriate prefix/suffix.					
to indicate the belly area	A.	pneumo-			
or	B.	hema-			
word root that means gland	C.	-algia			
root word that means air	D.	pre-			
word part that means blood	E.	sepsis			
prefix that means new	F.	abdomin			
suffix that refers to pain	G.	aden-			
word that means germs or disease	H.	neo-			
prefix that means before	I.	laparo-			
prefix that means after	J.	post-			

MATCH—Term to appropriate prefix/suffix.				
	prefix that means very fast	A.	arthr-	
	To indicate inflammation, end the word with	B.	-itis	
	To show relationship to a joint use	C.	-ectomy	
	Removal or destruction of a part is shown by the addition of	D.	tachy-	
	To indicate a cancer use	E.	carcin-	
	To mean very slow use	F.	brady-	

COMBINE —two or three word parts from below list to complete the following sentences; write appropriate words in the blanks				
Electro-, cardio-, -graph, encephalo-, -gram				
An x-ray film of the head (including the brain) is called an				
The instrument that is used for producing a tracing of heart muscle electric c	urrent is an			
The tracing of heart muscle electric current is called an				
A graphic record of electrical currents in the brain (brain waves) is called an				
MATCH—Term to appropriate prefix/suffix.				
To indicate origin or producing add A. leuko-				
Suffix that means incision into a part is Bostor				
To indicate the formation of a new opening use Cgenic				
To show that something is red use the word part D. erythr				
To indicate that something is white use Eotomy				

COMBINE—appropriate word parts from below and write the correct word in the blanks. You will not use all of these word parts

hemo-, hemato-, -ectomy, –itis, pneumo, aden-, arthr-, -lysis, bio-, -oma, -logy, oste-, osteo-, carcin	
The study of living things is called	
Inflammation of a joint is known as	
Removal of a gland is called	
The removal of a joint is called	
A cancerous tumor is called a	
The study of blood is	
A tumor filled with blood is a	
The removal of a lung would be a	
The breaking or destruction of blood cells (especially red blood cells) is called	
A firm tumor made of bone or bonelike tissue is known as an	

COMPLETION—Print the word or phrase that correctly completes the sentence.				
A root word that indicates the stomach is				
A word that refers to the mouth or a created opening is a				
A suffix that means infection is				
A word part that means skull is				

Learning Activity I-4

Final Task

If you are told that the man in Room 28 is a post-operative patient, it means that he has not had surgery yet.	Yes No
The terms used to describe the digestive system are gastrointestinal.	Yes No
If you are told that a patient is hyperthermic you will know that he is very cold.	Yes No
If you are told that a patient is septic you will know that he has a bacterial or disease process going on in his body.	Yes No

Osteomalacia	A. A needle inserted under the skin.
Adenoma	B. Surgical repair of a joint.
Laryngotomy	C. Softening of bone tissue.
Hypertrophy	D. Tumor of glandular tissue.
Arthroplasty	E. Excessive or over development.
Hypodermic	F. Incision into the larynx.

Surgical removal of the thyroid gland	A.	Thyroid
Inflammation of glandular tissue	B.	Aden
A malignant tumor	C.	Carcin
Excessive vomiting	D.	emesis
Toothache pain	E.	algia
Making a new permanent opening into the larynx	F.	Laryng
Inflammation inside the head	G.	cephal
Refers to the teeth	H.	Dent
Refers to disease and the study of diseases	I.	Path-
A specialist in treating skin disorders is a	J.	-logist

Learning Activity I-5 (Take-Home Assignment)

Make your own Glossary in alphabetical order based on new medical terms that you have learned in this lab activity-1. Write it in a Polio paper and give to your tutor at the next week of lab activity (lab activity 2) use this table form!

Name:		St <mark>ude</mark> nt'	's Num	ber:		Group:
Medical terms	Prefix	Combining form	Suffix	Word Root	Means	of the medical terms

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"Dan Dia mengajarkan kepada Adam nama-nama (benda-benda) seluruhnya, kemudian mengemukakannya kepada para Malaikat lalu berfirman: "Sebutkanlah kepada-Ku nama benda-benda itu jika kamu memang orang-orang yang benar!" Mereka menjawab: "Maha Suci Engkau, tidak ada yang kami ketahui selain dari apa yang telah Engkau ajarkan kepada kami; sesungguhnya Engkaulah Yang Maha Mengetahui lagi Maha Bijaksana,"

(Qur'an Surat al-Baqarah [2]: 31-32)

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Cut Here

Pre-Activity Task

(completed at home and collected to the lecturer before the implementation of the lab activity)

letter may b	e used more than once or not at all.
Α.	Anti-
В.	Dys-
C.	Osteo -
D.	Myo-
E.	Arthro-
F.	Phlebo-
G.	Oto-
H.	-emia
I.	Nephro-
J.	Hemo-
К.	Hepato-
L.	Arterio-
M.	Reni-
N.	Нуро-
О.	Hyper-
Р.	Entero-
Q.	Colo-
R.	Stoma-
S.	Ileo
Τ.	Cysto
U.	Pneumo
V.	Emesis
W.	Thoracic
Χ.	Cepalo
Υ.	Crani
Ζ.	Gyne
AA.	Ped
BB.	Derm
CC.	Opthalm
DD.	Hyst
	letter may b A. A. B. C. D. E. F. G. I. J. I. J. I. J. I. J. R. Q. P. Q. I. V. Q. V. V. <t< td=""></t<>

Glossary

This glossary will help you to answer several tasks in this laboratory activity. You can also use an English dictionary or medical dictionary/encyclopedia.

Word Element	Refers to or means	Example	Pronunciation
A-, AN-	without, lack of, absent, deficient	Asepsis, anorexi	A/SEP/sis, an/or
AB -, ABS	from, away	Abnormal, abscess	ab/NORM/al, ABS/
AD-	near, toward	adrenal	ad/REN/al
ADENO	gland	adenopathy	ad/en/OP/a/thy
AERO	air	anaerobe	an/A/er/obe
ALB	white	albumin	al/BU/min
-ALGIA, - ALGESIA	pain	analgesia	an/al/GE/si/a
AMBI	both	ambidextrous	am/bi/DEX/trous
ANGIO	vessel (blood or lymph)	angioma	an/gi/O/ma
ANO	anus	anoscope	A/no/scope
ANTE-	before	antenatal	an/te/NAT/al
ANTI-	against	antiseptic	an/ti/SEP/tic
ARTERIO	artery	arteriosclerosis	ar/ter/i/o/scler/osis
ARTHRO	joint	arthroplasty	Ar/thro/plas/ty
-ASTHENIA	weakness	myasthnia	my/as/THE/ni/a
AUTO-	self	autonomic	au/to/NOM/ic
BI-	two, twice	biweekly	bi/WEEK/ly
BRADY-	slow	bradycardia	brad/y/CAR/di/a
BRONCHO	bronchus	bronchitis	bron/CHI/tis
CARDIO	heart	myocardium	my/o/CAR/di/um
-CELE	tumor, swelling, hernia, sac	enterocele	EN/ter/o/cele
-CENTESIS	puncture	thoracentesis	tho/ra/cen/TE/sis
CEPHALO	head	hydrocephaly	hy/dro/CEPH/a/ly
CHOLE	gall	cholelithiasis	chol/e/lith/I/a/sis
CHOLECYSTO	Gall bladder	cholecystectomy	cho/le/cys/tect/o/my
CHOLEDOCHO	common bile duct	choledochostomy	chol/ed/o/CHOS/to/my
CHONDRO	cartilage	chondroma	chon/DRO/ma
-CIDE	kill	germicide	GERM/i/cide
CIRCUM-	around	circumcision	cir/cum/CI/sion
-CISE	cut	excise	ex/CISE
COLO	colon	colitis	co/LI/tis
COLPO	vagina	colporrhaphy	col/POR/rha/phy
CONTRA-	against	contraception	con/tra/CEP/tion
COSTO	rib	intercostal	in/ter/COS/tal

Word Element	Refers to or means	Example	Pronunciation
CRANIO	skull	craniotomy	cra/ni/OT/o/my
CYANO	blue	cyanotic	cy/an/OT/ic
CYSTO urinary bladder		cystogram	CYS/to/gram
CYTO	cell	monocyte	MON/o/cyte
DE	down, from	decubitus	de/CU/bi/tus
DENTI	tooth	dentistry	DEN/tis/try
DERMO DERMATO	skin	dermatology	derm/a/TOL/o/gy
DI-	two	diataxia	di/a/TAX/i/a
DIA-	through, between, across, apart	diarrhea	di/a/RRHE/a
DIS	apart	dissect	dis/SECT
DYS	painful, difficult, disordered	dysmenorrhea	dys/men/o/RRHE/a
ECTO-	outer, on the outside	ectoparasite	ect/o/PAR/a/site
-ECTOMY	surgical removal	prostatectomy	pros/ta/TEC/to/my
-EMESIS	vomiting	hematemesis	hem/at/EM/e/sis
-EMIA	blood	leukemia	leu/KE/mi/a
EN-	in, inside	encapsulated	en/CAP/su/la/ted
ENCEPHALO	brain	encephalitis	en/ceph/a/LI/tis
ENDO-	within, inner, on the inside	endometrium	en/do/ME/trim/um
ENTERO	intestine	enteritis	en/ter/I/tis
EPI-	above, over	epigastric	ep/i/GAS/tric
ERYTHRO	red	erythroblast	er/yth/RO/blast
-ESTHESIA	sensation	paresthesia	par/es/THE/si/a
EX-	out	excretion	ex/CRE/tion
FEBR	fever	afebrile	a/FEB/rile
FIBRO	connective tissue	fibroid	FI/broid
GASTRO	stomach	gastro-intestinal	gas/tro-in/TEST/in/a
-GENE, -GENIC	production, origin	neurogenic	neu/ro/GEN/ic
GLOSSO	tongue	glossalgia	glos/SAL/gi/a
GLUCO, GLYCO	sugar, sweet	glycogen	GLY/co/gen
-GRAM	record	myelogram	MY/e/lo/gram
-GRAPH	machine	electroencephalograph	e/lec/tro/en/CEPH/alo/graph
-GRAPHY	practice, process	ventriculography	ven/tri/cu/LOG/ra/phy
GYNE	woman	gynecology	gy/ne/COL/o/gy

Word Element	Refers to or means	Example	Pronunciation	
НЕМА, НЕМАТО, НЕМО	blood	hematology	hem/at/OL/o/gy	
HEMI-	half	hemiplegia	hem/i/PLE/gi/a	
HEPA, HEPATO	liver	hepatitis	hep/a/TI/tis	
HERNI	rupture	herniation	her/ni/A/tion	
HISTO	tissue	histology	his/TOL/o/gy	
HYDRO-	water	hydronephrosis	hy/dro/neph/RO/sis	
HYPER-	over, above, increased, excessive	hypertension	hy/per/TEN/sion	
НҮРО-	under, beneath, decreased	hypotension	hy/po/TEN/sion	
HYSTER	uterus	hysterectomy	hys/ter/ECT/o/my	
-IASIS	condition of	psoriasis	psor/I/a/sis	
ICTERO	jaundice	icterus	IC/ter/us	
ILEO	ileum (part of small intestine)	ileitis	il/e/I/tis	
ILIO	ilium (bone)	iliosacrum	il/i/o/SA/crum	
INTER	between	intrecellular	inter/CELL/u/lar	
INTRA	within	intramuscular	in/tra/MUS/cu/lar	
-ITIS	inflammation of	appendicitis	ap/pen/di/CI/tis	
LAPARO	abdomen	laparotomy	la/par/OT/o/my	
-LEPSY	seizure, convulse	narcolepsy	NAR/co/lep/sy	
LEUKO	white	leukorrhea	leu/ko/RRHE/a	
LIPO	fat	lipoma	lip/O/ma	
LITH	stone, calculus	lithotomy	lith/OT/o/my	
-LYSIS	loosen, dissolve	hemolysis	hem/OL/y/sis	
MACRO-	large, long	macrocyte	MAC/ro/cyte	
MAL-	bad, poor, disordered	maladjusted	mal/ad/JUST/ed	
-MANIA	insanity	kleptomania	klep/to/man/ia	
MAST	breast	mastectomy	mas/TEC/to/my	
MEGA	large	acromegaly	ac/ro/MEG/a/ly	
MEN	month	menstruation	men/stru/A/tion	
MESO-	middle	mesentery	MES/en/ter/y	
-METER	measure	thermometer	ther/MOM/e/ter	
METRO	uterus	metrorrhagia	met/ror/RHA/gia	
MICRO-	small	microscope	MIC/ro/scope	
MONO-	single, one	monocyte	MON/o/cyte	
MUCO	mucous membrane	mucocutaneous	mu/co/cu/TA/ne/ous	

Word Element	Refers to or means	Example	Pronunciation
MYELO	spinal cord, bone marrow	myelomeningocele	my/el/o/men/IN/go/cele
МҮО	muscle	myopathy	my/OP/a/thy
NARCO	sleep	narcotic	nar/COT/ic
NASO	nose	nasopharynx	nas/o/PHA/rynx
NECRO	death	necropsy	NEC/rop/sy
NEO-	new	neoplasm	NE/o/plasm
NEPHRO	kidney	nephritis	ne/PHRI/tis
NEURO	nerve	neuralgia	neu/RAL/gi/a
NON-	no, not	nontoxic	non/TOX/ic
OCULO	eye	oculist	O/cu/list
-OLOGY	study of	bacteriology	bac/ter/i/OL/o/gy
-OMA	tumor	carcinoma	car/ci/NO/ma
OOPHOR	ovary	oophorectomy	o/opho/REC/to/my
OPHTHALMO	eye	ophthalmoscope	oph/THAL/mo/scope
-OPIA	vision	diplopia	dip/LO/pi/a
ORCHI	testicle	orchipexy	ORCH/i/pex/y
-ORRHAPHY	to repair a defect	herniorrhaphy	her/ni/OR/raphy
ORTHO-	straight	orthopedics	ortho/o/PED/ics
-OSCOPY	look into, see	esophagoscopy	e/soph/a/GOS/co/py
-OSIS	condition of	neurosis	neu/RO/sis
OSTEO	bone	osteoporosis	os/te/o/por/O/sis
-OSTOMY	surgical opening	colostomy	col/OST/o/my
ото	ear	otolith	OT/o/lith
-OTOMY	incision, surgical cutting	gastrotomy	gas/TROT/o/my
PARA-	alongside of	paraplegia	par/a/PLE/gi/a
PATH	disease	pathology	pa/THOL/o/gy
PED (Latin)	foot	pedicure	PED/i/cure
PED (Greek)	child	pediatrics	pe/di/AT/rics
-PENIA	too few	leukopenia	leu-ko-/PEN/i/a
PERI-	around, covering	pericarditis	pe/ri/car/DI/tis
-PEXY	to sew up in position	nephropexy	NEPH/ro/pex/y
PHARYNGO	throat	pharyngoplasty	pha/RHY/go/plas/ty
PHLEBO	vein	phlebitis	phle/BI/tis
-PHOBIA	fear, dread	photophobia	pho/to/PHO/bi/a

Word Element	Refers to or means	Example	Pronunciation
-PLASTY	operative revision	rhinoplasty	RHI/no/plas/ty
PLEGIA	paralysis	quadriplegia	qua/dri/PLE/gi/a
-PNEA	breathing	orthopnea	or/thop/Ne/a
PNEUMO	air, lungs	pneumonia	pneu/Mo/ni/a
POLY-	much, many	polyuria	po/ly/U/ri/a
POST-	after	postpartum	post/PAR/tum
PROCTO	rectum	proctoscopy	proc/TOS/co/py
PRE	before	preoperative	pre/OP/er/a/tive
-PTOSIS	falling	nephroptosis	neph/rop/TO/sis
PYELO	pelvis or kidney	pyelonephritis	py/el/o/neph/RI/tis
РҮО	pus	empyema	em/py/E/ma
PYRO	heat, temperature	pyrexia	py/REX/i/a
RENAL	kidney	suprarenal	su/pra/RE/nal
RETRO-	behind, backward	retrosternal	ret/ro/STER/nal
-RHAGE	hemorrhage, flow	hemorrhage	HEM/or/rhage
-RHEA	flow	diarrhea	di/a/RRHE/a
RHINO	nose	rhinopathy	rhi/NOP/a/thy
SALPINGO	oviduct	salpingectomy	sal/pin/GEC/to/my
SEMI-	half	semicircular	semi/i/CIR/cu/lar
SEPTIC	poison, infection	septicemia	sep/ti/CEM/i/a
STOMATO	mouth	stomatitis	sto/ma/TI/tis
SUB-	under	subacute	sub/a/CUTE
SUPER	above	suprapubic	su/pra/PU/bic
-THERAPY	treatment	hydrotherapy	hy/dro/THER/a/py
-THERMY	heat	diathermy	DI/a/therm/y
THORACO	chest	thoracotomy	thor/a/COT/o/my
THROMBO	clot	thrombosis	throm/BO/sis
THYRO	thyroid gland	thyroxin	thy/ROX/in
TRANS-	across	transfusion	trans/FU/sion
URO	urine	uremia	u/RE/mi/a
-URIA, -URIC	condition of, presence in urine	glycosuria	gly/co/SUR/i/a
UNI	one	unicellular	u/ni/CELL/u/lar
VASO	blood vessel	vasoconstriction	vas/o/con/STRIC/tion