

Introduction

Understanding the language of medicine is basic to comprehension and competency in the world of veterinary medicine. Medical terms are often heard on various television shows and movies and are seen in novels. What you may not realize is that these medical terms are variations of Greek and Latin terminology.

When we see medical terms, we should look at them differently from other words in the English language. Your task in learning medical terminology is to break these big words into smaller components, understand the meaning of those components, and then create an overall definition for the medical term.

Basic knowledge of anatomy and physiology is essential for the understanding of these medical terms. Therefore, this textbook will use various diagrams and photographs to help you to learn this new language. This book will not go into further detail other than the basics. You must learn medical terminology before focusing on more complicated curriculum.

Ultimately the use of proper medical terminology is key to a professional work environment. Proper spelling and pronunciation of medical terms is essential for communication with the professional staff as well as clients.

Anatomy of a Medical Term

There are five components to medical terms. Typically, a medical term will use two or three of these components. There is no rule that states how many parts a medical term must use. Your goal is to break down a medical term into its component parts, then define each part separately. These components were derived from Greek or Latin, so when defining these parts, we are in essence translating them to the English language. This book does not nearly cover all the medical terms that have ever existed. Instead, it will prepare you for any terms that you may encounter by teaching you how to translate their component parts.

The Root

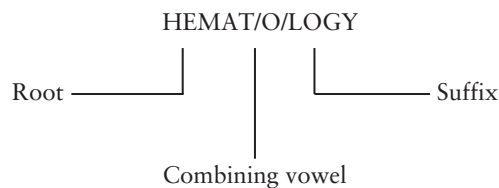
The root is the foundation of the term. It is the basic essential part of the word that other words are derived from. Think of it as the root of a tree. Like the roots of a tree holding it in place, the root of a medical term holds the main meaning of the word.

You are probably already familiar with some roots of medical terms that you've heard from friends, family, and television shows. The following are examples of roots:

Root	Meaning	Example of Use	
Cardi	= Heart	Cardiology	Study of the heart
Hemat	= Blood	Hematology	Study of blood
Dermat	= Skin	Dermatology	Study of skin
Gastr	= Stomach	Gastrology	Study of the stomach
Enter	= Small intestine	Enterology	Study of the small intestine

The Combining Vowel

The combining vowel is a vowel that is used to link the root to its suffix. In most cases it is the letter “o.” The combining vowel has no meaning and therefore will not alter the meaning of the term. The following is an example of how the combining vowel is used:



Notice that in order to attach the root “Hemat” to the suffix “-logy,” we must use a combining vowel. In this case it is the letter “o.”

The Combining Form

The combining form is the root plus its combining vowel. The meaning of the root is not altered by adding the combining vowel. Let’s use roots from previous examples:

Combining Form	Meaning
Cardi/o	= Heart
Hemat/o	= Blood
Dermat/o	= Skin
Gastr/o	= Stomach
Enter/o	= Small intestine

The Prefix

The prefix precedes the root (comes before the root) and modifies its meaning. Not all terms will have a prefix.

Prefix	Meaning	Example of Use	
Sub-	Below	Subgastric	Pertaining to below the stomach
Epi-	Above	Epigastric	Pertaining to above the stomach
Trans-	Across	Transgastric	Pertaining to across the stomach

The Suffix

The suffix follows the root and modifies its meaning.

Suffix	Meaning	Example of Use	
-ic	Pertaining to	Gastric	Pertaining to the stomach
-logy	Study of	Hematology	Study of blood
-itis	Inflammation	Enteritis	Inflammation of the small intestine

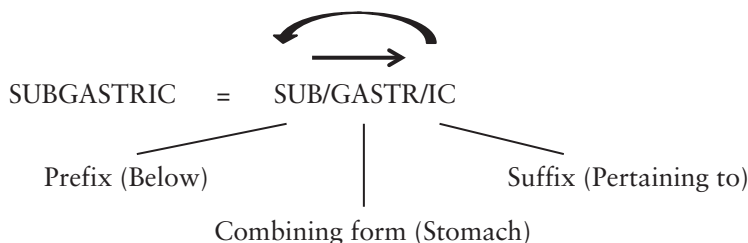
TECH TIP 1.1 If you need a quick reference for word parts and definitions, check out the glossary in the back of this book.

Five Rules to Medical Terminology

There are five basic rules to medical terminology. If you can remember these rules then understanding the terms and their meanings will be much easier.

1. **If a suffix begins with a vowel, drop the combining vowel.** The following are two different examples to illustrate this rule. In the first example, we'll come up with the medical term that means "pertaining to the stomach." If you refer to the previous examples under their word parts you'll see that the suffix for "pertaining to" is "-ic," and the combining form for stomach is "gastr/o."

Gastr/o = Stomach
-ic = Pertaining to



Now we need to combine these parts. Because the suffix "-ic" begins with a vowel, then we must drop the combining vowel in the combining form *gastr/o*. Therefore, we drop the letter "o."

GASTR/~~o~~ + -IC = GASTRIC

In the second example we look at the definition "study of the stomach."

Gastr/o = Stomach
-logy = Study of

Because the suffix does not begin with a vowel, we can keep the combining vowel.

GASTR/O + -LOGY = GASTROLOGY

2. **Read the parts to define the term from back, then to the beginning, and follow through.** You have probably noticed by now that when we define a medical term, we begin at the suffix, then look at the beginning of the term, and follow through. The following is an example of this rule:

Define the suffix, followed by the prefix, and then follow through.

SUBGASTRIC = PERTAINING
TO BELOW
THE STOMACH

Not all medical terms will use this rule; however, the rule will apply 90% of the time.

3. **Keep the combining vowel between roots.** Some medical terms have more than one root. When attaching roots together we leave the combining vowel between them.

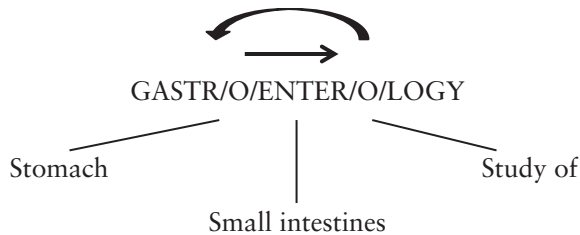
GASTR/O/ENTER/O/LOGY

In this example we have combined the combining forms “gastr/o” for

the term enterogastrology because the intestines are not before the stomach. If you’re asking how I know this, don’t worry, this textbook will teach you basic anatomy so you will also know how to place certain roots in anatomical order.

5. **Not all terms break down exactly.** This rule – knowing when to define a medical term literally or use a “special” definition – can be the most frustrating for students. Unfortunately, this knowledge only comes with practice and memorization. You will notice that common sense will become useful with some of these terms. To illustrate this rule, we will look at the term “orthopedic.”

ORTH/O/PED/IC



stomach and “enter/o” for small intestine. Because we have two roots in the term, “gastr” and “enter,” we must leave the combining vowel between them. In this case it’s the letter “o.”

Using our previous rule of how to break down a medical term we get the following:

Definition: Study of the stomach and small intestines.

4. **List the roots in anatomical order.** By now you’ve already used this rule without even realizing it. If we look at the previous term, gastroenterology, the roots are listed in anatomical order. The stomach comes before the small intestines in the order of the organs of the gastrointestinal (GI) tract. It wouldn’t make sense to have

You or a friend may have been seen by an orthopedic surgeon or orthopedic specialist. Usually people associate this term with bones and joints. However, if you break the term down literally, that doesn’t make sense.

Word Part	Meaning
Orth/o	Straight
Ped/o	Child
-ic	Pertaining to

If using the basic rules of medical terminology to define this term, then the definition would be “pertaining to a straight child.” It is for this reason that we must create special definitions for certain terms.

Study Tips

Understanding medical terminology comes down to memorization. You must find the study technique that works best for you. Memorizing the component parts and their definitions is essential to understanding and defining medical terms. Techniques that may help with memorization include:

- Writing the combining forms, suffixes, and prefixes on one side of a page and then their definitions on the other side. Repetition is the key. Also try to write out definitions first and then come up with the combining forms, prefixes, and suffixes. Learn the terms both ways.
- Make up flashcards with the component parts on one side and their meaning on the other side. By the end of this textbook, your pile of note cards will probably be more than 6 feet tall.
- Write and speak the terms over and over again.
- Learn the pronunciation of the terms. You can use the textbook website, which offers a list of the terms in this book and enables you to listen to how they are pronounced, or refer to the pronunciation sections in Appendix A. Sound out the terms.
- Conduct group studies, which work well for subjects like medical terminology. Bring a dry-erase board to the study group and write the terms or definitions on the board, one at a time. The members of the group can say their answers and how they remembered them. Hearing classmates use these terms helps you to remember them. Memorization is both a visual and audio technique.
- Relate the terms to a specific body part or body function. Whether you use this technique while thinking of your pet's body or even your own, it can be quite useful.
- Ask for help. Students don't do this enough. I realize that this subject can be overwhelming and some of you may be afraid to ask for help. The sooner

you ask someone for help, the easier your learning experience will be. If you fail to ask then you will feel as if you're drowning halfway through the book.

- Use the review exercises at the end of each chapter.
- Make up your own terms using the component parts you've already learned.
- Create your own review exercises and mock quizzes. This can be a very useful tool when working in study groups. It's also a useful tool to prevent test anxiety.
- Make multiple copies of the workbook pages and then each day, try to fill them in.
- If you aren't already working in a practice or shelter, try volunteering or working part-time at one. Hearing and seeing these terms used on a consistent basis can help with memorization.

Building the Terms

Combining Forms

For combining forms with multiple meanings, the context in which the term is used determines which definition to choose (Table 1.1).

Prefixes

Prefixes alter the meaning of the term. For prefixes with multiple meanings, the combining form the prefix is attached to determines which meaning to use (Table 1.2).

Suffixes

Suffixes also alter the meaning of the term. For suffixes with multiple meanings, the combining form the suffix is attached to determine which meaning to use (Table 1.3).

Table 1.1 Combining forms.

Combining Forms	Definition	Combining Forms	Definition
Arthr/o	Joint	Hemat/o	Blood
Bi/o	Life	Hepat/o	Liver
Carcin/o	Cancer	Hist/o	Tissue
Cardi/o	Heart	Iatr/o	Treatment
Cephal/o	Head	Leuk/o	White
Cis/o	To cut	Nephr/o	Kidney
Col/o; Colon/o	Large intestine (colon)	Neur/o	Nerve
Cyst/o	Urinary bladder; cyst	Ophthalm/o	Eye
Cyt/o	Cell	Opt/o	Eye; vision
Derm/o	Skin	Oste/o	Bone
Dermat/o	Skin	Path/o	Disease
Electr/o	Electricity	Radi/o	X-rays
Encephal/o	Brain	Ren/o	Kidney
Enter/o	Small intestine	Rhin/o	Nose
Erythr/o	Red	Sarc/o	Connective tissue
Gastr/o	Stomach	Sect/o	To cut
Glyc/o	Sugar	Thromb/o	Clot; clotting
Gnos/o	Knowledge	Ur/o	Urine; urinary tract
Hem/o	Blood		

TECH TIP 1.2 Do you know when to use Ren/o vs. Nephr/o? Ren/o may only be used with the suffix -al. Nephr/o can be used with a variety of suffixes to describe a condition (usually abnormal) of the kidney.

Table 1.2 Prefixes.

Prefix	Definition	Prefix	Definition
a-, an-	no; not; without	in-	in; into; not
brachy-	short	intra-	within; into
dia-	through; complete	meso-	middle
dolicho-	long	pro-	before; forward
endo-	in; within	re-	back; again; backward
epi-	above; upon; on	retro-	behind; back; backward
ex-, exo-	out; away from	sub-	under; below
extra-	outside	trans-	across; through
hyper-	above; excessive		
hypo-	deficient; below; under; less than normal		

Table 1.3 Suffixes.

Suffix	Definition	Suffix	Definition
-ac, -al, -ic, -ical	pertaining to	-ion	process
-algia	pain	-ist	specialist
-centesis	surgical puncture to remove fluid or gas	-itis	inflammation
-cyte	cell	-logy	study of
-cytosis	increase in cell number	-oma	tumor; mass; fluid collection
-drome	to run	-opsy	view of
-ectomy	removal; excision; resection	-osis	abnormal condition
-emia	blood condition	-pathy	disease condition; emotion
-emic	pertaining to a blood condition	-scope	instrument for visual examination
-genic	produced by or in	-scopy	visual examination
-gram	record	-sis	state of; condition
-graph	instrument for recording	-tomy	incision; process of cutting into
-graphy	process of recording		

TECH TIP 1.3 Be Careful with “-genic”!

Normally this suffix is defined as “produced by” or “produced in.” However, when attached to the combining forms Carcin/o and Path/o, rule 5 comes into play. We define -genic as “produces” or “producing.”

Now it’s time to put these word parts together. If you memorize the meaning of the combining forms, prefixes, and suffixes, then this will get easier each time. Remember your five basic rules to medical terminology when building and defining these terms.

Parts		Medical Term	Definition	
Arthr/o	+ -ectomy	= Arthrectomy	: _____	
Arthr/o	+ -itis	= Arthritis	: _____	
Arthr/o	+ -centesis	= Arthrocentesis	: _____	
Arthr/o	+ -logy	= Arthrology	: _____	
Arthr/o	+ -pathy	= Arthropathy	: _____	
Arthr/o	+ -scope	= Arthroscope	: _____	
Arthr/o	+ -scopy	= Arthroscopy	: _____	
Arthr/o	+ -osis	= Arthrosis	: _____	
Arthr/o	+ -tomy	= Arthrotomy	: _____	
<i>Notice that the combining vowel was dropped with the suffix “-osis,” but kept with the suffix “-tomy.”</i>				
Bi/o	+ -logy	+ -ical	= Biological	: _____
Bi/o	+ -logy	+ -ist	= Biologist	: _____
Bi/o	+ -logy		= Biology	: _____
Carcin/o	+ -genic		= Carcinogenic	: _____
Cardi/o	+ -ac		= Cardiac	: _____
Cardi/o	+ -logy		= Cardiology	: _____
Cardi/o	+ -pathy		= Cardiopathy	: _____
intra-	+ Cardi/o	+ -ac	= Intracardiac	: _____
retro-	+ Cardi/o	+ -ac	= Retrocardiac	: _____
Cephal/o	+ -ic		= Cephalic	: _____
ex-	+ Cis/o	+ -ion	= Excision	: _____
in-	+ Cis/o	+ -ion	= Incision	: _____
Col/o	+ -ectomy		= Colectomy	: _____
Colon/o	+ -ectomy		= Colonectomy	: _____
Col/o	+ -itis		= Colitis	: _____
Colon/o	+ -itis		= Colonitis	: _____
Colon/o	+ -ic		= Colonic	: _____
Colon/o	+ -pathy		= Colonopathy	: _____
Colon/o	+ -scopy		= Colonoscopy	: _____
Cyst/o	+ -algia		= Cystalgia	: _____
Cyst/o	+ -ectomy		= Cystectomy	: _____
Cyst/o	+ -itis		= Cystitis	: _____
Cyst/o	+ -centesis		= Cystocentesis	: _____

(Figure 1.1)



Figure 1.1 Cystocentesis on a cat. Source: Courtesy of Greg Martinez DVM; <http://www.youtube.com/drgregdvm>.

Cyst/o	+ -gram		= Cystogram	:	_____
Cyst/o	+ -tomy		= Cystotomy	:	_____
Cyt/o	+ -logy		= Cytology	:	_____
Cyt/o	+ -logy	+ -ical	= Cytological	:	_____
Dermat/o	+ -itis		= Dermatitis	:	_____
Dermat/o	+ -logy		= Dermatology	:	_____
Derm/o	+ -al		= Dermal	:	_____
hypo-	+ Derm/o	+ -ic	= Hypodermic	:	_____
intra-	+ Derm/o	+ -al	= Intradermal	:	_____
Electr/o	+ Cardi/o	+ -gram	= Electrocardiogram	:	_____
Electr/o	+ Cardi/o	+ -graphy	= Electrocardiography	:	_____
Electr/o	+ Encephal/o	+ -gram	= Electroencephalogram	:	_____
Encephal/o	+ -ic		= Encephalic	:	_____
Encephal/o	+ -itis		= Encephalitis	:	_____
Encephal/o	+ -gram		= Encephalogram	:	_____
Encephal/o	+ -graphy		= Encephalography	:	_____
Endo-	+ -scope		= Endoscope	:	_____
Endo-	+ -scopy		= Endoscopy	:	_____
			(Figure 1.2)		
Enter/o	+ -ic		= Enteric	:	_____
Enter/o	+ -itis		= Enteritis	:	_____
Enter/o	+ -logy		= Enterology	:	_____
Enter/o	+ -pathy		= Enteropathy	:	_____
Erythr/o	+ -cyte		= Erythrocyte	:	_____
Erythr/o	+ -cytosis		= Erythrocytosis	:	_____
			<i>This condition is also known as polycythemia.</i>		
Gastr/o	+ -ectomy		= Gastrectomy	:	_____
Gastr/o	+ -ic		= Gastric	:	_____
Gastr/o	+ -itis		= Gastritis	:	_____
Gastr/o	+ -tomy		= Gastrotomy	:	_____

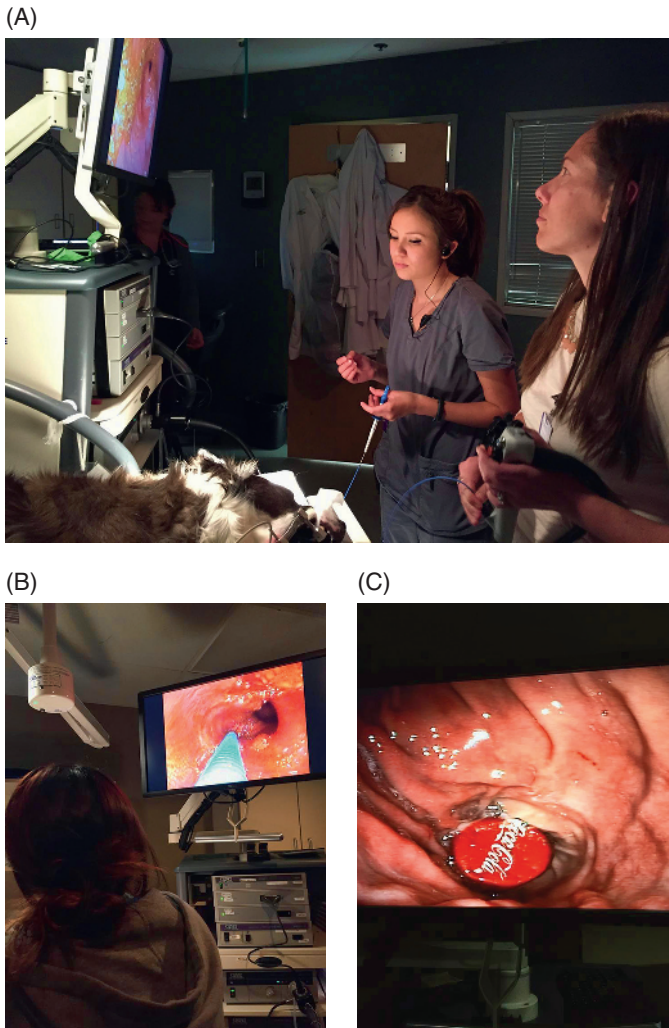


Figure 1.2 Endoscopy. (A) Veterinarian and technician with endoscope. (B) Image from the endoscope on the screen. (C) Foreign body located with endoscope. Source: Courtesy of Kari Walker, BS, CVT, VTS (SAIM).

Gastr/o	+ Enter/o	+ -itis	= Gastroenteritis	: _____
epi-	+ Gastr/o	+ -ic	= Epigastric	: _____
hypo-	+ Gastr/o	+ -ic	= Hypogastric	: _____
Glyc/o	+ -emic		= Glycemic	: _____
hyper	+ Glyc/o	+ -emia	= Hyperglycemia	: _____
hypo-	+ Glyc/o	+ -emia	= Hypoglycemia	: _____
Hemat/o	+ -logy		= Hematology	: _____
Hemat/o	+ -oma		= Hematoma	: _____
Hepat/o	+ -ic		= Hepatic	: _____
Hepat/o	+ -itis		= Hepatitis	: _____
Hepat/o	+ -oma		= Hepatoma	: _____
sub-	+ Hepat/o	+ -ic	= Subhepatic	: _____

trans-	+ Hepat/o	+ -ic	= Transhepatic	: _____
Hist/o	+ -logy		= Histology	: _____
Hist/o	+ -logy	+ -ist	= Histologist	: _____
Hist/o	+ Path/o	+ -logy + -ist	= Histopathologist	: _____
Iatr/o	+ -genic		= Iatrogenic	: _____
Leuk/o	+ -cyte		= Leukocyte	: _____
Leuk/o	+ -cytosis		= Leukocytosis	: _____
Nephr/o	+ -algia		= Nephralgia	: _____
Nephr/o	+ -ectomy		= Nephrectomy	: _____
Nephr/o	+ -itis		= Nephritis	: _____
Nephr/o	+ -osis		= Nephrosis	: _____
Nephr/o	+ -gram		= Nephrogram	: _____
Nephr/o	+ -oma		= Nephroma	: _____
Nephr/o	+ -logy		= Nephrology	: _____
Neur/o	+ -al		= Neural	: _____
Neur/o	+ -algia		= Neuralgia	: _____
Neur/o	+ -ectomy		= Neurectomy	: _____
Neur/o	+ -itis		= Neuritis	: _____
Neur/o	+ -logy		= Neurology	: _____
Ophthalm/o	+ -ic		= Ophthalmic	: _____
Ophthalm/o	+ -logy	+ -ist	= Ophthalmologist	: _____
Ophthalm/o	+ -logy		= Ophthalmology	: _____
Ophthalm/o	+ -scope		= Ophthalmoscope	: _____
			(Figure 1.3)	
Opt/o	+ -ic		= Optic	: _____
Opt/o	+ -ical		= Optical	: _____
Oste/o	+ -ectomy		= Ostectomy	: _____
Oste/o	+ -itis		= Osteitis	: _____
Oste/o	+ Arthr/o	+ -itis	= Osteoarthritis	: _____
Oste/o	+ -genic		= Osteogenic	: _____
Oste/o	+ -logy		= Osteology	: _____
Oste/o	+ -tomy		= Osteotomy	: _____
Path/o	+ -genic		= Pathogenic	: _____
Path/o	+ -logy		= Pathology	: _____
Path/o	+ -logy	+ -ist	= Pathologist	: _____
Radi/o	+ -graph		= Radiograph	: _____
			(Figure 1.4)	
Radi/o	+ -graphy		= Radiography	: _____
Radi/o	+ -logy		= Radiology	: _____
Ren/o	+ -al		= Renal	: _____
re-	+ Sect/o	+ -ion	= Resection	: _____
Rhin/o	+ -itis		= Rhinitis	: _____
Thromb/o	+ -cyte		= Thrombocyte	: _____
			<i>Also known as a platelet.</i>	
Thromb/o	+ -cytosis		= Thrombocytosis	: _____
Ur/o	+ -logy		= Urology	: _____



Figure 1.3 Ophthalmoscope.

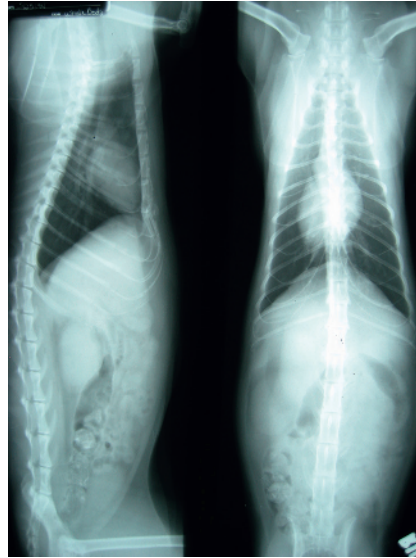


Figure 1.4 Radiograph of a cat.

Special Terms

The following medical terms do not break down correctly. Therefore, we must create new and more specific definitions.

Anemia	Decrease in red blood cells and/or hemoglobin.
Biopsy	Removal of tissue for microscopic examination.
Brachycephalic	Pertaining to a short, wide head (i.e., Persians, Pugs, Boston Terriers).
Dolichocephalic	Pertaining to a narrow, long head (i.e., Greyhounds, Collies).
Mesocephalic	Pertaining to an average width head (i.e., Golden Retrievers).
Carcinoma	Malignant tumor arising from epithelial tissue.
Sarcoma	Malignant tumor arising from connective tissue
Prodrome	Symptoms run together before the onset of a more specific disease.
Syndrome	Symptoms that run together and point to a specific disease.
Signalment	Description of the patient such as age, breed, weight, and sex.
Leukemia	Increase in the number of cancerous white blood cells.

TECH TIP 1.4 Various breeds have a variety of skull shapes. Brachycephalics are of greatest concern because they are predisposed to various medical conditions. These animals are an anesthetic risk so additional precautions must be taken with surgery. See Figure 1.5.

TECH TIP 1.5 Leukocytosis vs. Leukemia

At first glance the definitions for these terms are very similar. However, there is one word that makes a huge difference: cancerous. Leukocytosis is simply an increase in the number of white blood cells, whereas leukemia is an increase in the number of cancerous white blood cells.

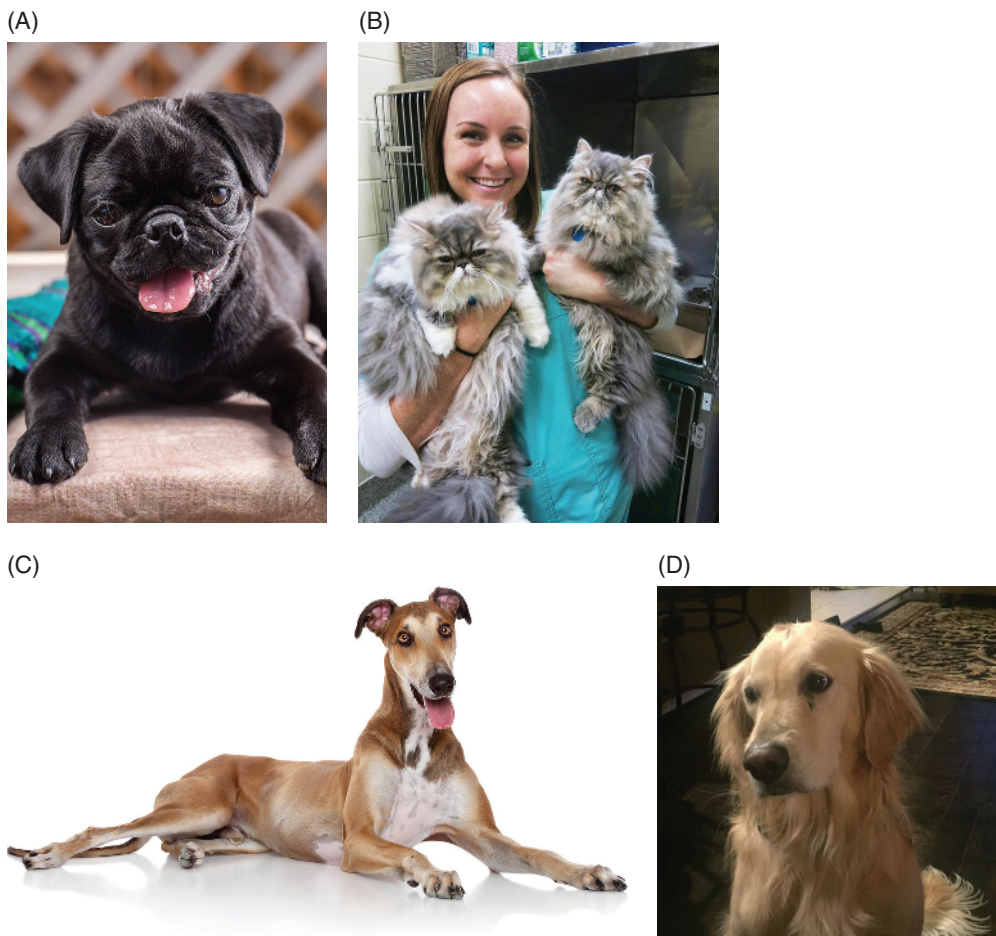


Figure 1.5 (A) A Pug is an example of a brachycephalic breed. Source: Courtesy of Lanie Maes. (B) Persians are brachycephalics. Source: Courtesy of Lauren Minner, AAS, LVT. (C) Greyhounds are dolichocephalics. Source: Courtesy of shutterstock/Jagodka. (D) Golden Retrievers are mesocephalics. Source: Courtesy of Judy Daniels.

Diagnosis	Estimation of the cause of disease.	Aggressive	Eager to fight (Figure 1.6A, B).
Prognosis	Estimation of disease outcome.	Alert	Energetic, quick, and responsive (Figure 1.6C).
Canine	Dog.	Docile	Relaxed, easy to handle (Figure 1.6D).
Feline	Cat	Feral	Wild (Figure 1.6E).
Equine	Horse.	Submissive	Willing to submit (Figure 1.6F).
Bovine	Cattle.	Anxious	Feeling of uneasiness or apprehension (Figure 1.6G).
Ovine	Sheep.		
Caprine	Goat.		
Porcine	Pig.		

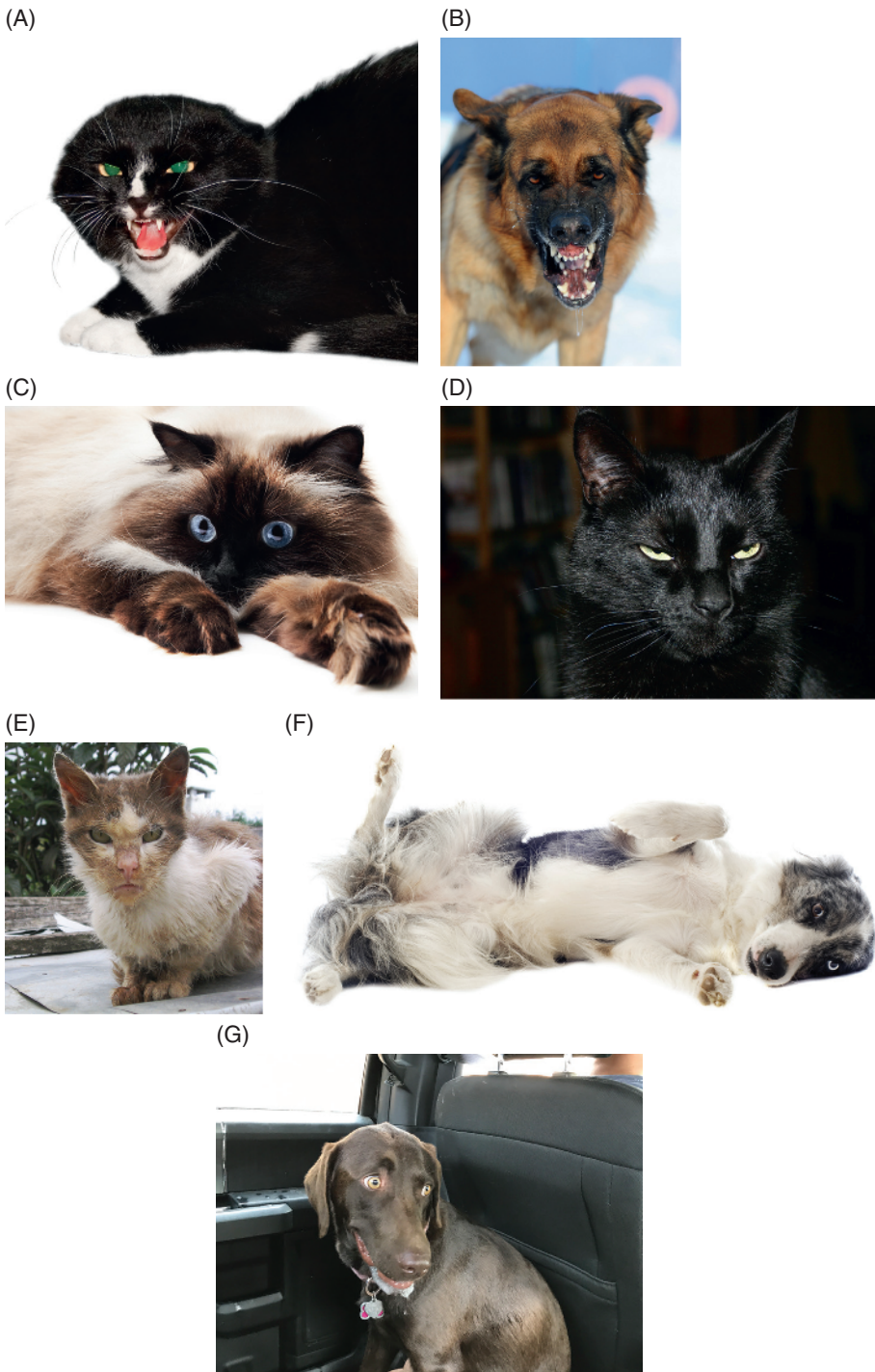


Figure 1.6 Types of behavior. (A) Aggressive cat. Source: Courtesy of shutterstock/Kuzmin Andrey. (B) Aggressive dog. Source: Courtesy of shutterstock/Antonova Victoria. (C) Alert cat. Source: Courtesy of shutterstock/Adisa. (D) Docile cat. Source: Courtesy of shutterstock/Jennifer Nickert. (E) Feral cat. Source: Courtesy of shutterstock/Andre Blais. (F) Submissive dog. Source: Courtesy of shutterstock/cynoclub. (G) Anxious dog. Source: Courtesy of Amy Johnson BS, LVT, RLATG.

Chapter Abbreviations

At the end of each chapter there is a set of abbreviations that are commonly used in

veterinary medicine. These abbreviations can be used to communicate with other professionals on cage cards, files, appointment books, and prescription labels (see Table 1.4).

Table 1.4 Abbreviations.

Abbreviation	Definition
BAR	Bright, alert, responsive
BARH	Bright, alert, responsive, hydrated
BD/LD	Big dog/little dog
QAR	Quiet, alert, responsive
CCU	Critical care unit
ICU	Intensive care unit
CWPM	Continue with previous medication
DLH	Domestic long hair (a mixed-breed cat with long hair) (see Figure 1.7)
DMH	Domestic medium hair (a mixed-breed cat with medium hair) (see Figure 1.7)
DSH	Domestic short hair (a mixed-breed cat with short hair) (see Figure 1.7)
DOA	Dead on arrival
DOB	Date of birth
ER	Emergency room
OR	Operating room
GROS	Gross review of systems
K-9	Canine
ISO	Isolation unit
NAF	No abnormalities found
NSF	No significant findings
P/E	Physical examination
PPH	Past pertinent history
R/O	Rule out

(Continued)

Table 1.4 (Continued)

Abbreviation	Definition
SOAP	Subjective, objective, assessment, plan (see explanation in following section)
TPR(W)	Temperature, pulse, respiration, (weight)
WNL	Within normal limits
°C	Degree Celsius
°F	Degree Fahrenheit

(A)



(B)



(C)



Figure 1.7 (A) Domestic long hair (DLH). Source: Courtesy of Alisha Coombe. (B) Domestic medium hair (DMH). Source: Courtesy of Danielle Ritter, CVT. (C) Domestic short hair (DSH). Source: Courtesy of Holly Jensen, CVT.

SOAP

When the veterinary technician goes into the exam room to perform the TPR(W) (Figure 1.8) and to speak with the owner, the tech begins to fill out a patient record

(Figure 1.9). As you can see, the tech recorded the patient's TPR(W) and began a SOAP. There are parts of the SOAP that can be filled out by the technician and other parts to be filled out by the veterinarian. The type of information is as follows:



Figure 1.8 Technician performing P/E and TPR. Source: Courtesy of J.M. Gunter, CVT.

Patient Daily Record

Patient Name: "Molly" Jones Date: 9/9/10

Problems	Diagnostic
1 Salivary Cyst abscess	CBC / BUN □
2	
3	
4	
Treatment	
1 1.0cc B ₁₂ IM SID	
2 500mg Tetracycline PO TID	
3	
4	
5	
Comments	
T: 104.5 P: 120 R: 36	S: depressed, responsive
WT: 27.2	
	O: ↑ temp
6:45 A: TPR'd; lethargic; did not eat a.m. food; no urine or feces in cage	A: Salivary Cyst abscess
	P: 1.0cc B ₁₂ IM SID
7:30 A: out to grass; urinated & defecated; fed i/d	500mg tetracycline P.O.
	CBC/BUN
	temp qid
7:55 A. Gave meds	hand feed + water
	} example of SOAP

Figure 1.9 Example of using SOAP in a patient file.

- S (Subjective):** How the animal appears; opinions.
For example, is he/she depressed, BAR, not eating well.
- O (Objective):** Facts. Things that can be reproduced or measured.
For example, an increased temperature or white blood cell count.
- A (Assessment):** Initial diagnosis. This aspect is for the doctor only.
Technicians do not diagnose so they will leave this section to the veterinarian.
- P (Plan):** This is the technician's focus. Lab tests, treatments, and radiographs are ordered. Surgery is recommended. It is the technician's job to carry out these tests.

Case Study: Define the medical terms and abbreviations in bold print

Maverick, a 12-year-old **K-9**, comes in to your clinic for a yearly exam. His owners have just moved from Texas to your state. As the veterinary technician, you are the first into the exam room to perform the **TPR(W)** and to speak with the owner about their visit today. Maverick appears **BAR** and his TPR is normal. His **DOB** is May 5, 2000. The owner, Mrs. Nethery, mentions that Maverick was seen by a different veterinarian a few months ago because he was limping. After obtaining a **PPH**, the owner gives you the copies of Maverick's records and **radiographs** from the previous clinic.

According to Maverick's records, he was previously **diagnosed** with **cardiopathy**, **arthritis**, and **hepatitis**. The veterinarian, Dr. Rojas, enters the exam room to perform the **P/E**. He immediately notices that Maverick has **dermatitis** on his abdomen. Dr. Rojas decides to perform a **cytology** on the affected area of skin. The skin scrape shows **NSF**. While speaking to Mrs. Nethery, the doctor feels a mass in the **hypogastric** region. After discussing the options, Mrs. Nethery agrees to let Dr. Rojas obtain a **gastric biopsy** the following day.

The following day, Maverick checks in for surgery and has a pre-surgical **hematology** panel done. His **erythrocytes**, **leukocytes**, and **thrombocytes** are **WNL**. **Hepatic** enzymes are slightly elevated, but Dr. Rojas isn't too concerned about it. An **electrocardiogram** is also done because Maverick was previously diagnosed with a cardiopathy. The results were unremarkable. He's taken to the **OR** where an **incision** is made into the abdomen and the mass is **excised**. Dr. Rojas asks you to send the mass to a reference lab for a biopsy. Maverick is sent to the **ICU** for recovery after surgery because of his age. The recovery goes well and Maverick is sent home. You tell Mrs. Nethery that the biopsy results will be back in three to five working days.

After a week has passed, Mrs. Nethery has returned with Maverick for a post-surgical exam. Maverick's incision is healing nicely. Dr. Rojas explains that the mass was a **carcinoma**. His **prognosis** is guarded.

Exercises

1-A: Match the combining forms with their meaning.

- | | | |
|-----------|-----------------|---------------|
| 1. _____ | Heart | A. Arthr/o |
| 2. _____ | Small intestine | B. Cardi/o |
| 3. _____ | Brain | C. Col/o |
| 4. _____ | Liver | D. Cyst/o |
| 5. _____ | Electricity | E. Dermat/o |
| 6. _____ | Urinary bladder | F. Electr/o |
| 7. _____ | Stomach | G. Encephal/o |
| 8. _____ | Sugar | H. Enter/o |
| 9. _____ | Joint | I. Gastr/o |
| 10. _____ | Blood | J. Glyc/o |
| 11. _____ | Skin | K. Hemat/o |
| 12. _____ | Large intestine | L. Hepat/o |

1-B: Write the correct medical term in the blank.

1. _____: Study of tissue
2. _____: Mass or collection of blood
3. _____: Inflammation of the brain
4. _____: Disease condition of the heart
5. _____: Tumor on the liver
6. _____: Inflammation of the liver
7. _____: Incision into bone
8. _____: Increase in platelets
9. _____: Specialist in the study of disease
10. _____: Abnormal condition of the kidney
11. _____: Instrument to visually examine the eye
12. _____: Record of electricity in the heart
13. _____: Pertaining to nerves
14. _____: Red blood cell
15. _____: Pertaining to below the skin
16. _____: Pertaining to below the liver
17. _____: Blood condition of excessive sugar
18. _____: Estimation of the cause of disease
19. _____: Inflammation of skin
20. _____: Pertaining to outside the liver

1-C: Complete the definition for the following terms.

1. Arthralgia: Pain in the _____.
2. Neuritis: _____ of nerves.
3. Arthrocentesis: _____ from a joint.
4. Rhinitis: Inflammation of the _____.
5. Cephalic: Pertaining to the _____.

6. Anemic: Pertaining to a decrease in _____ and/or _____.
7. Ophthalmology: Study of the _____.
8. Colectomy: Removal of the _____.
9. Incision: Process of _____.
10. Nephrectomy: Removal of the _____.

1-D: Define the following suffixes.

- | | |
|-------------------|----------------------|
| 1. _____: -itis | 7. _____: -ist |
| 2. _____: -ectomy | 8. _____: -graph |
| 3. _____: -tomy | 9. _____: -pathy |
| 4. _____: -gram | 10. _____: -algia |
| 5. _____: -scopy | 11. _____: -centesis |
| 6. _____: -osis | 12. _____: -emia |

1-E: Circle the correct answer.

1. A dog named Brutus presents to your clinic with an abnormal heart rhythm. After further testing it was recommended that Brutus be referred to a:
 - a. Pathologist
 - b. Histopathologist
 - c. Ophthalmologist
 - d. Cardiologist
2. Mrs. Potter calls your clinic worried about her cat, Harry. She says that Harry has had blood in his urine. She makes an appointment for Harry to come in for an exam and to have his urine checked. When Harry comes for his appointment, the doctor asks you to obtain urine from Harry. What procedure would you perform?
 - a. Arthrocentesis
 - b. Cystocentesis
 - c. Osteocentesis
 - d. Gastrocentesis
3. A horse named Desperado was rushed to your clinic unable to put weight on one of his legs. Apparently fell during a race. The veterinarian suspects a fracture (broken bone). What would confirm this?
 - a. Encephalograph
 - b. Radiograph
 - c. Nephrogram
 - d. Cardiogram
4. Mr. Manning has just rushed into your clinic with his dog, Peyton. Peyton hasn't felt like playing with his ball like he usually does. Upon examination, you notice that he has pale gums. A blood test reveals that his erythrocyte count is decreased. Peyton has:
 - a. Leukemia
 - b. Thrombocytosis
 - c. Leukocytosis
 - d. Anemia

5. A boxer named Rosie presents to your clinic with a mass on her shoulder. The owner is worried that it might be cancerous. What procedure would be performed to see if the cells in the mass are cancerous?
- Electrocardiogram
 - Biopsy
 - Cystocentesis
 - Osteocentesis

1-F: Define the following abbreviations.

- | | |
|------------------|----------------|
| 1. _____: BAR | 7. _____: P/E |
| 2. _____: OR | 8. _____: R/O |
| 3. _____: DSH | 9. _____: ISO |
| 4. _____: ICU | 10. _____: NSF |
| 5. _____: TPR(W) | 11. _____: PPH |
| 6. _____: DOB | 12. _____: WNL |

1-G: Define the following prefixes.

- | | |
|------------------|--------------------|
| 1. _____: intra- | 7. _____: pro- |
| 2. _____: extra- | 8. _____: re- |
| 3. _____: trans- | 9. _____: endo- |
| 4. _____: epi- | 10. _____: retro- |
| 5. _____: sub- | 11. _____: a-, an- |
| 6. _____: hyper- | 12. _____: ex- |

1-H: Define the following medical terms.

- | | |
|----------------------------|--------------------------|
| 1. _____: Hyperglycemia | 8. _____: Biology |
| 2. _____: Prognosis | 9. _____: Brachycephalic |
| 3. _____: Incision | 10. _____: Iatrogenic |
| 4. _____: Cytology | 11. _____: Optic |
| 5. _____: Carcinoma | 12. _____: Osteitis |
| 6. _____: Thrombocytosis | 13. _____: Rhinitis |
| 7. _____: Gastroenterology | 14. _____: Urology |

1-I: Circle the correct terms in parentheses.

- A sterile urine sample must be obtained from a dog so a (cystocentesis, cystotomy, cystectomy) will be performed.
- A (erythrocyte, leukocyte, thrombocyte) count is decreased in a cat confirming anemia.
- A dog has an infection due to an old bite wound. An increase in white blood cells was noted on labwork. This dog has (erythrocytosis, leukocytosis, thrombocytosis).
- A bovine stool sample is brought to the clinic because the owner has noticed diarrhea. A possible cause would be (nephritis, enteritis, neuritis).

5. To confirm a broken leg after being hit by car, the cat must have (nephrograph, radiograph, electrocardiograph) performed.
6. While performing a blood draw on a horse, a hematoma forms just under the skin. This is considered (carcinogenic, pathogenic, iatrogenic).
7. An owner has recently adopted a new cat. The owner has noticed a skin rash on the cat so the cat is referred to a specialist in (hematology, nephrology, cardiology, dermatology).
8. Charlie, an old Schnauzer, has cataracts in his eyes and the owner would like to pursue treatment options. The owner is referred to a/an (cardiologist, pathologist, ophthalmologist).
9. A biopsy is performed to determine if a mass is cancerous. The sample is sent for (histology, neurology, urology).
10. A horse presents with a laceration on its left hind leg. The horse is QAR on P/E, but has an elevated pulse. What part of the SOAP would the elevated pulse be noted? (Subjective, Objective, Assessment, Plan). What portion of the SOAP would QAR be noted? (Subjective, Objective, Assessment, Plan).

Answers can be found starting on page 675.

Review Tables

Fill in the tables and refer to Tables 1.1–1.4 for answers.

Table 1.5

Combining Forms	Definition	Combining Forms	Definition
Arthr/o		Hem/o	
Bi/o		Hemat/o	
Brachy/o		Hepat/o	
Carcin/o		Hist/o	
Cardi/o		Iatr/o	
Cephal/o		Leuk/o	
Cis/o		Nephro/o	
Col/o; colon/o		Neuro/o	
Cyst/o		Ophthalm/o	
Cyt/o		Optic/o	
Derm/o		Oste/o	

(Continued)

Table 1.5 (Continued)

Combining Forms	Definition	Combining Forms	Definition
Dermat/o		Path/o	
Electr/o		Radi/o	
Encephal/o		Ren/o	
Enter/o		Rhin/o	
Erythr/o		Sarc/o	
Gastr/o		Sect/o	
Glyc/o		Thromb/o	
Gnos/o		Ur/o	

Table 1.6

Prefix	Definition	Prefix	Definition
a-, an-		in-	
brachy-		intra-	
dolicho-		meso-	
endo-		pro-	
epi-		re-	
ex-, exo-		retro-	
extra-		sub-	
hyper-		trans-	
hypo-			

Table 1.7

Suffix	Definition	Suffix	Definition
-ac, -al		-ion	
-algia		-ist	
-centesis		-itis	
-cytosis		-logy	
-ectomy		-oma	
-emia		-opsy	
-emic		-osis	
-genic		-pathy	
-gram		-scope	
-graph		-scopy	
-graphy		-sis	
-ic, -ical		-tomy	

Table 1.8

Abbreviation	Definition
BAR	
BD/LD	
CCU	
ICU	
CWPM	
DLH	
DMH	
DSH	
DOA	
DOB	
ER	
OR	
GROS	

(Continued)

Table 1.8 (Continued)

Abbreviation	Definition
K-9	
ISO	
NAF	
NSF	
P/E	
PPH	
R/O	
SOAP	
TPR(W)	
WNL	
°C	
°F	



Go to <http://www.wiley.com/go/taibo/veterinary> to find additional learning materials for this chapter:

- A crossword puzzle
- Flashcards
- Audio clips to show how to pronounce terms
- Case studies
- Review questions
- The figures from the chapter in PowerPoint
- Word Search Puzzle