Anatomy Physiology and Disease - An Interactive Journey for Health Professionals 4th edition Colbert Solutions Manual

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Chapter 1

ANATOMY, PHYSIOLOGY, AND DISEASE

LEARNING THE LANGUAGE

LEARNING OUTCOMES

- ⇨ **Explain the terms *anatomy*, *physiology*, and *disease* and how they are interrelated.**
- ⇨ **Construct and define medical terms using word roots, prefixes, and suffixes.**
- ⇨ **Identify commonly used medical abbreviations.**
- ⇨ **Contrast the metric and English systems of measures.**
- ⇨ **Explain the concepts and importance of metabolism and homeostasis.**
- ⇨ **Describe various signs and symptoms of disease along with associated disease terminology.**
- ⇨ **Describe the components of the body's defense system.**
- ⇨ **Identify the four main routes of pathogen transmission.**
- ⇨ **Explain the role Standard Precautions plays in breaking the cycle of infection.**

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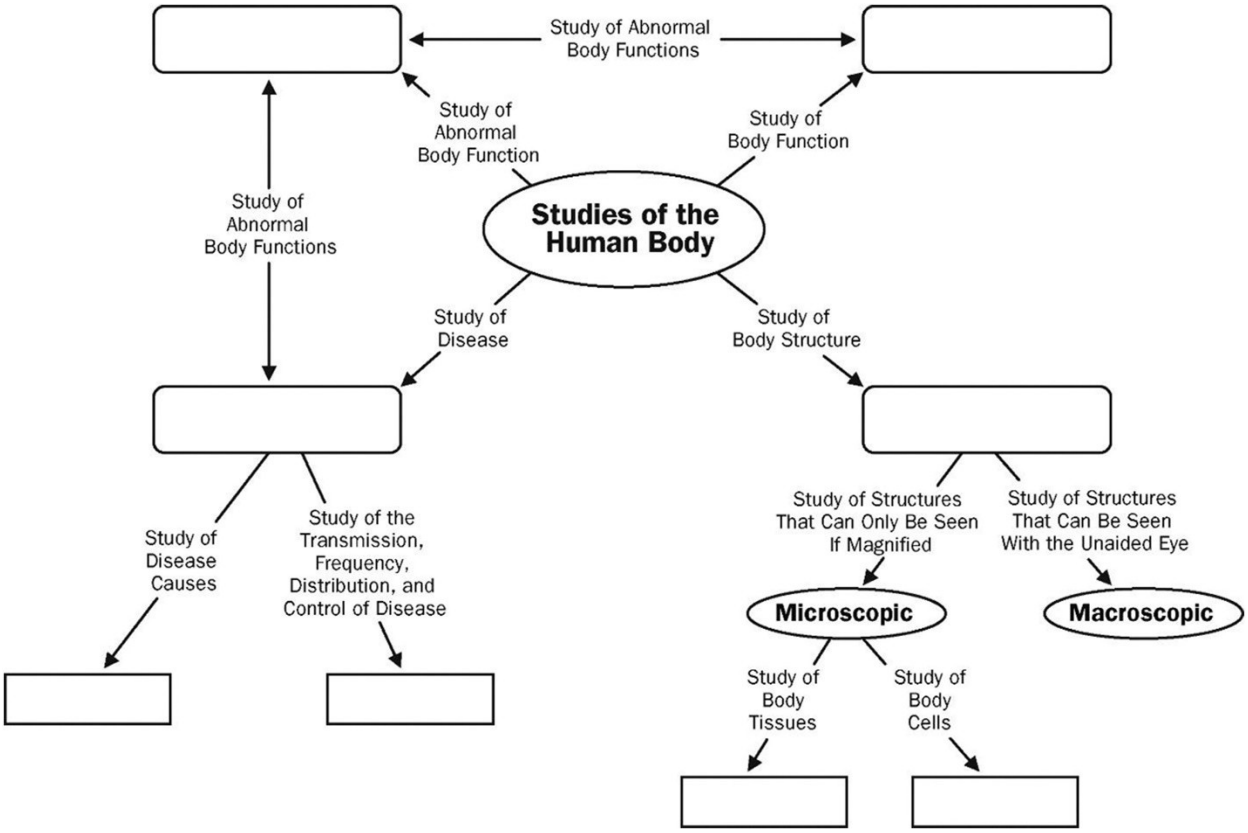
Name

CONCEPT MAP

INSTRUCTIONS: Fill in the empty boxes with an appropriate term using the clues provided.



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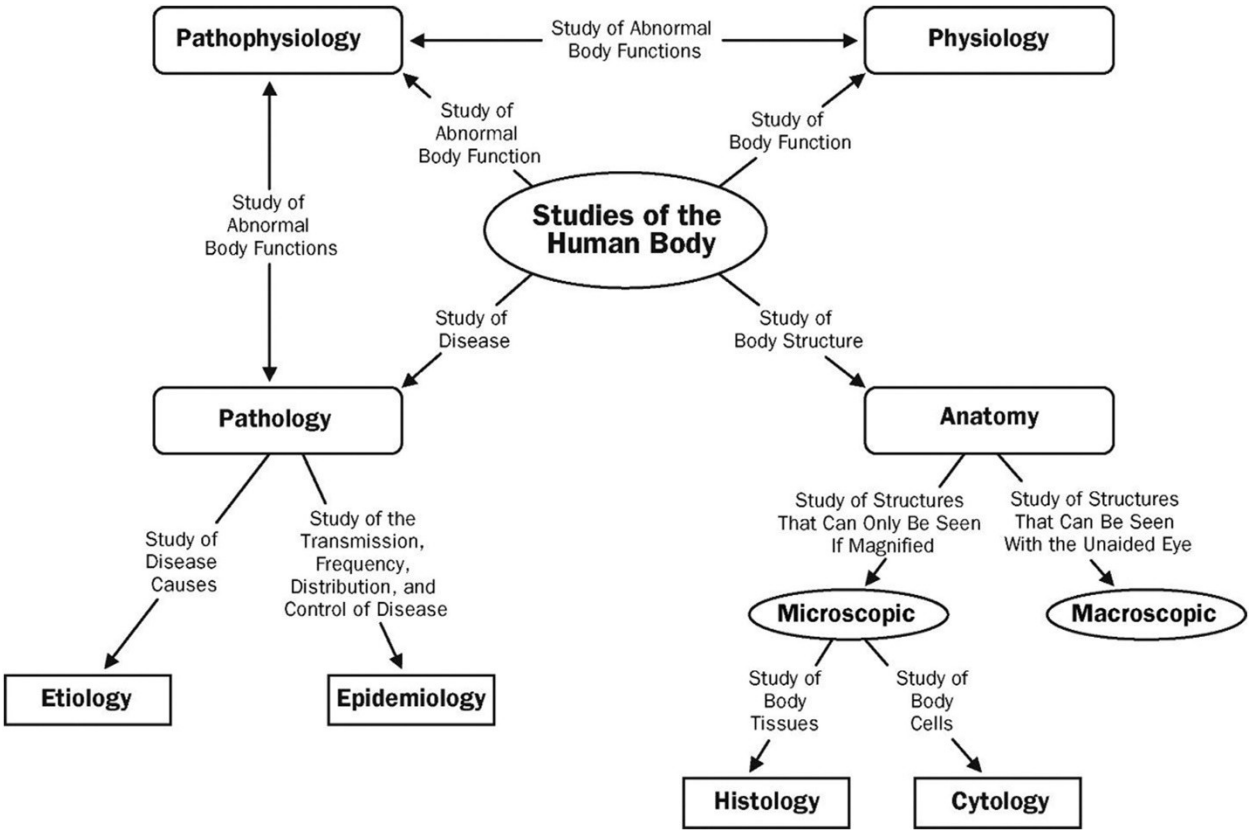
ANSWER KEY



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LECTURE OUTLINE

I. What Is Anatomy and Physiology?

A. Anatomy—the study of body structures (internal and external)

1. Macroscopic anatomy (gross anatomy)—the study of structures visible to the unaided eye

2. Microscopic anatomy (fine anatomy)—the study of structures that can be seen only with magnification aids (like a microscope)

a. Cytology—the study of cellular structure

b. Histology—the study of tissues

3. Morphology—the study of form and structure (shape)

a. Example—morphology of cells describes different cell shapes

B. Physiology—the study of body functions (how muscles contract, how we breathe, etc.)

C. Structure and function are often closely related to one another

II. What Is Disease?

A. Disease—anything that upsets normal body structure or function

1. Pathology—the study of disease

2. Pathophysiology—the study of abnormal body function

B. Terms related to disease

1. Etiology—the cause of disease

2. Epidemiology—the study of the transmission, frequency of occurrence, distribution, and control of a disease

3. Types of diseases

a. Idiopathic disease—a disease for which the cause cannot be determined. Example: healthcare-associated infection

b. Communicable diseases—any disease that has the potential to be spread from person to person

i. Communicable disease—a type of disease that can be spread in a variety of ways (person-to-person, insect-to-person, etc.)

ii. Contagious disease—a type of communicable disease that is *readily* transmitted from one person to another

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iii. Terms applying to the distribution of communicable diseases

- Endemic—a disease that occurs in a specific population or region
- Epidemic—a disease that occurs in large numbers over a specific region
- Pandemic—a disease that spreads countrywide or worldwide

III. Medical Terminology—the language of anatomy, physiology, and disease

A. Basic structure of a medical term

1. Three main "building blocks" of medical terms

a. Word roots—the basic parts (foundation) of a medical term

i. Often given in combining form (word root plus connecting vowel)

b. Prefixes—word parts that come before the root

c. Suffixes—word parts that come after the root

2. These building blocks are combined with each other to make complete terms

a. Building blocks are generally arranged based on suffix or prefix usage:

i. When a term is formed by a suffix attached to a word root, the term is written in the *reverse* order of how its definition is stated (*example: gastrologist is defined as "someone who studies the stomach," where gastr- means "stomach" and -ologist means "one who studies"*)

ii. When a term is formed by a prefix attached to a word root, the term is written in the *same* order of how its definition is stated (*example: bradycardia is defined as "slow heart rate," where brady- means "slow" and -cardia means "heart"*)

B. Common medical word parts and definitions

1. Combining forms (roots)

a. abdomin/o—abdomen

b. aden/o—gland

c. angi/o—vessel

d. arthr/o—joint

e. cardi/o—heart

f. col/o—colon

g. cyan/o—blue

h. cyt/o—cell

i. derm/o—skin

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j. erythr/o—red
k. gastr/o—stomach
l. glyc/o—sugar
m. hemat/o and hem/o—blood
n. hepat/o—liver
o. hist/o—tissue
p. hydr/o—water
q. leuk/o—white
r. mamm/o—breast
s. nephr/o—kidney
t. neur/o—nerve
u. oste/o—bone
v. path/o—disease
w. phag/o—to swallow
x. phleb/o and ven/o—vein
y. pne/o or pnea—to breathe
z. pneumon/o—air or lung
aa. rhin/o—nose

2. Prefixes
   a. a- and an-—without
   b. acro-—extremities
   c. brady-—slow
   d. dia-—through
   e. dys-—difficult
   f. electro-—electric
   g. endo-—within
   h. epi-—upon or over
   i. hyper-—above normal
   j. hypo-—below normal
   k. macro-—large

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l. micro-—small

m. peri-—around

n. sub-—under, below

o. tachy-—fast

3. Suffixes

a. -al and -ic—pertaining to or related to

b. -algia—pain

c. -cyte—cell

d. -ectomy—surgical removal or excision

e. -gram—actual record

f. -graphy—process of recording

g. -ist—one who specializes

h. -itis—inflammation of

i. -megaly—enlargement of

j. -ologist or -logist—one who studies

k. -ology or -logy—study of

l. -oma—tumor

m. -osis—condition of

n. -otomy—cutting into

o. -ostomy—surgically forming an opening

p. -pathy—disease

q. -penia—decrease or lack of

r. -phobia—fear of

s. -plasty—surgical repair

t. -scope—instrument to view or examine

C. Medical abbreviations—commonly used to simplify long or complicated medical terms

1. Common medical abbreviations

a. A&P—anatomy and physiology

b. ACLS—advanced cardiac life support

c. b.i.d.—twice a day

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d. BM—bowel movement

e. BP—blood pressure

f. CA—cancer

g. CAD—coronary artery disease

h. CBC—complete blood count

i. CPR—cardiopulmonary resuscitation

j. CVA—cerebral vascular accident

k. CXR—chest X-ray

l. Dx—diagnosis

m. GI—gastrointestinal

n. ICU—intensive care unit

o. IM—intramuscular

p. IV—intravenous

q. MI—myocardial infarction (heart attack)

r. NPO or n.p.o.—nothing by mouth (from the Latin term *nil per os*)

s. p.o.—orally

t. p.r.n.—when needed; from the Latin *pro re nata,* meaning for an occasion that has arisen.

u. q—every; for example, q2h would be every 2 hours

   Note: q.d. and q.o.d., which means once daily and every other day, respectively, are on the Joint Commission "Do Not Use" List of medical abbreviations as they can be mistaken for each other. The full list is in Appendix B.

v. SOB—shortness of breath

w. STAT—Latin *statim,* which means "immediately"

x. t.i.d.—three times a day

y. ER/ED—emergency room/emergency department

IV. Measurement Systems

A. The Metric System

1. The numerical language of science and medicine

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2. Units of measurements (length, weight, volume, etc.) are all based on units that relate to each other by powers of 10
    a. Calculations with the metric system are much easier than other systems because they only require moving a decimal point to the left or right (multiplying or dividing by 10, 100, 1000, etc.)
    b. Examples of metric units:
        i. Lengths
            - millimeters (mm)
            - centimeters (cm)
        ii. Volumes
            - milliliters (mL)
            - liters (L)
        iii. Weights
            - kilograms (kg)

B. The U.S. Customary System (USCS)—a.k.a. the "English System"
1. A system commonly used by laypeople in America
2. Does not have a common numerical base, so calculations are *very* cumbersome
3. Examples:
    a. Lengths—feet, yards, miles
    b. Volumes—pints, quarts, gallons
    c. Weights—ounces, pounds, tons

V. Anatomy, Physiology, and Disease Concepts

A. Anatomy and physiology concepts
1. Metabolism—all the life-sustaining chemical reactions within the body
    a. Types of metabolism
        i. Anabolism—the building phase of metabolism; when simple substances are used to manufacture larger, more complicated substances
            - Example—using amino acids to build proteins
        ii. Catabolism—the breaking down phase of metabolism; when complex substances are broken down into simpler substances
            - Example—breaking down food into basic nutrients

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b. Clinical Application: Metabolic Syndrome (Syndrome X)

i. A condition affecting nearly one-quarter of all U.S. adults

ii. Diagnosed when a patient has at least three of the following five conditions:

- Hyperglycemia (high blood sugar)
- Hypertension (high blood pressure)
- Abdominal obesity (excessive weight around the abdomen)
- High triglycerides (a lipid substance in the blood)
- Low HDL (HDL is the “good” kind of cholesterol)

iii. People with metabolic syndrome are at risk for:

- Diabetes
- Heart attacks
- Strokes

iv. Metabolic syndrome may be related to

- Poor diet
- Lack of exercise

2. Homeostasis—the physiological processes that monitor and maintain a stable internal environment (maintains equilibrium)

a. Negative feedback loop

i. A way to maintain homeostasis

ii. Stimuli are opposed by the body (when the body senses a change, it tries to reverse it and return to baseline)

- Example—home thermostat
  - When the house gets cold, the thermostat turns the heater on to raise the temperature (to reverse the change)
  - When the house gets too warm, the thermostat turns the air conditioner on to lower the temperature (to reverse the change)
  - In this way, a constant temperature is maintained
- Example—regulation of body temperature
  - Hypothalamus in the brain acts like a thermostat
    a. When the body gets cold, the hypothalamus initiates shivering and peripheral vasoconstriction to raise body temperature

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b. When the body gets hot, the hypothalamus initiates sweating and peripheral vasodilation to lower body temperature

- Clinical Application: “Breaking” a Fever
  - During a fever, the hypothalamus raises the set-point for body temperature
    a. Metabolism is increased, and body temperature increases
  - When the pathogen that caused the fever is gone, the hypothalamus returns the set-point for body temperature to normal
    a. Sweating is initiated to get rid of the excess heat rapidly

b. Positive feedback loop

i. When the body increases the magnitude of a change, which results in continued deviation from the ideal set-point

ii. Does not maintain homeostasis, but is sometimes necessary to complete a specific process

- Example—childbirth
  - Oxytocin released by hypothalamus triggers uterine contractions
  - The pressure increase in the uterus signals the hypothalamus to release more oxytocin
  - Uterine contractions grow progressively stronger until the baby is born

B. Disease concepts

1. Signs—objective, measurable indicators of illness

a. Examples:

i. Fever

ii. Change in color of a mole

b. Vital signs—signs vital to life

i. Includes

- Pulse
- Blood pressure
- Temperature
- Respiratory rate
- Some institutions also include weight as a vital sign

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c. Clinical Application: The Vital Sign of Pulse

i. Procedure

- Pressure applied to radial artery
- Number of beats in 60 seconds is counted

ii. Normal range

- Adult = 60–100 beats/min
- Child = 70–120 beats/min
- Newborn = 90–170 beats/min

2. Symptoms—subjective indicators of illness that are perceived only by the patient

a. Examples:

i. Pain

- Same pinprick may be perceived as mildly or intensely painful depending on the individual experiencing the pain

ii. Dizziness

iii. Itchiness

3. Syndrome—a specific grouping of signs and symptoms related to a specific disease

a. Example—Down syndrome

i. Signs and symptoms include sloping forehead, low-set ears, short broad hands, mild-to-moderate mental retardation, and often cardiac valvular disease

4. Diagnosis—an identification of disease determined by studying the patient's signs, symptoms, history, and results of diagnostic tests

a. Begins by obtaining the chief complaint (CC), which is the reason the individual is seeking medical help

b. Continues as more details are obtained about the problem

5. Prognosis—a prediction about the outcome of a disease

6. Acute conditions—have a rapid onset of signs and symptoms

7. Chronic conditions—have a gradual onset of symptoms over a long period of time

8. Remission—a period of time when signs and symptoms of a chronic disease disappear

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9. Relapses—when a disease recurs
10. Exacerbation—a “flare-up” of signs and symptoms
11. Terminal disease—a disease with a prognosis of death
12. Mortality—number of deaths attributed to a certain disease in a population over a specific period of time
13. Morbidity—measure of disabilities and the extent of illness that is caused by a specific disease
14. Weird signs and symptoms (and the diseases they may be associated with)
    a. Generalized itching—Hodgkin’s disease
    b. Sweating at night—tuberculosis
    c. Desire to eat clay or starchy pasta—iron deficiency
    d. Breath that smells like fruit-flavored chewing gum—diabetes
    e. Magenta tongue—riboflavin deficiency
    f. Lack of “moons” on the fingernails—profound kidney failure
    g. “Hairy” tongue—loss of normal mouth bacteria due to improper antibiotic use
    h. Spoon-shaped fingernails—iron deficiency
    i. Brown linear streaks on the fingernails—melanoma (skin cancer)
    j. Having trouble smelling peanut butter from a distance—early stages of Alzheimer’s disease, Parkinson’s disease, or even multiple sclerosis.
    k. Stabbing heel pain in your heel—herniated disc.
    l. Hiccups lasting more than 48 hours—esophageal cancer
    m. Newfound urge to steal—early signs of a specific type of dementia

C. Concepts related to communicable disease (in addition to those previously discussed)
1. Pathogen—any disease-producing microorganism
    a. Sometimes an organism is considered pathogenic only when it is found in certain body locations
        i. Example—*E. coli* is normal in the intestines, but pathogenic if found in the bloodstream
2. Portal of entry—body openings where pathogens can enter

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3. Body's defenses against infection
   a. Skin—the first line of defense
      i. Provides mechanical barrier (if unbroken)
      ii. Is slightly acidic, which makes environment inhospitable to some pathogens
   b. Immune response—kicks in if pathogens get through the skin
      i. Microscopic body cells activate
         - Some attack and "eat" pathogens
         - Some release powerful chemicals that disintegrate parts of pathogens
      ii. If body has been attacked by that pathogen before, substances can be produced that specifically target that pathogen
   c. Inflammatory response—occurs whenever body tissues are injured
      i. Possible triggers:
         - Physical injury
         - Intense heat
         - Chemical irritation
         - A reaction to invading germs
      ii. Signs and symptoms of inflammation
         - Redness
         - Increased temperature at the affected site
         - Swelling (edema)
         - Pain
      iii. Has a protective function
         - Isolates the injured area
         - Increases blood flow to restore normal function
   d. Allergies (hypersensitivity reactions)
      i. An immune reaction that goes too far, resulting in
         - Tissue damage
         - Impairment of normal function

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4. Routes of disease transmission
    a. Vectors—when a disease is spread by an insect, or other nonhuman animal
        i. Biological vector—a pathogen that is living inside an animal or insect is spread to a person (*example: malaria*)
        ii. Mechanical vector—a pathogen present on the surface of an animal or insect is spread to a person (*example: a fly that lands on cow feces, and then on a person's food*)
    b. Contact transmission
        i. Direct contact—when a person becomes sick due to direct contact with a contagious pathogenic source (*example: becoming sick from touching another person's infected wound*)
        ii. Indirect contact—when a person becomes sick due to contact with a contaminated object (*example: catching the flu by picking up germs from a doorknob*)
    c. Common vehicles—when consumable goods (such as food) become contaminated; results in several people simultaneously developing the same infection
    d. Airborne transmission—when droplets containing a pathogen are spread through the air
5. Preventing the spread of communicable disease
    a. Requires breaking the chain of infection (interrupting the spread of disease from outside source into the body)
    b. Strategies to "break the chain"
        i. Proper hand washing
        ii. Standard Precautions
            - A set of standard actions/procedures designed to prevent the transmission of disease between the patient and health care provider
            - Based on the assumption that every person could have some kind of communicable disease
            - Includes the use of gloves, gowns, goggles, masks, and other protective equipment in appropriate situations
            - Figure 1–7: complete universal precautions guidelines

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VI. Clinical Application: The Geriatric Patient

A. Anatomy and physiology changes with age

1. Results in altered nutritional and drug dose requirements
2. May result in altered mental function
3. May also result in a role reversal, where the caretaker parent gradually becomes dependent on their adult child

TEACHING STRATEGIES

1. Take every opportunity to use medical terminology, and have students dissect the words to determine what they mean.
2. When medical terminology is used, have students learn the abbreviations for the terms.
3. Make flash cards for students to learn to define medical terminology. Put root words on blue paper, suffixes on red paper, and prefixes on yellow paper. Then tape one of each to the board, asking students to define the term. Remove the suffix or prefix, replace it with another one, and ask them to define how the term changed.
4. List some familiar diseases on the board. Examples might include colds, asthma, food poisoning, HIV, or arthritis. Have students attempt to describe the following for each disease:
   a. What anatomical parts are involved?
   b. What is the normal physiology of those body parts?
   c. What is the pathophysiology of this disease? (What is abnormal about the functioning of the body infected with this disease?)
   d. What is the etiology of this disease?
   e. What is the epidemiology of this disease? (What groups of people tend to get the disease? How is it transmitted?)
5. List some familiar communicable diseases on the board. Examples might include colds, stomach flu, HIV, strep throat, gonorrhea, pinkeye, or athlete's foot. Have students attempt to describe the following for each disease:
   a. How do you think this disease is transmitted?
   b. What are some things you can do to protect yourself from getting this disease?
   c. If a patient comes into the doctor's office with this disease, what are some things that can be done to prevent other patients from contracting the disease?

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Classroom Discussion Questions

1. How could the information learned about a disease's epidemiology be used to protect public health? You can discuss this concept one of two ways:
   a. Try to give some examples related to specific diseases, such as outbreaks of *E. coli,* local rates of STDs, cases of tuberculosis, cases of antibiotic-resistant infections, and endemic distribution of diseases like hepatitis A. Then ask students to consider:
      i. What kind of epidemiological information would a public health official want to know about this situation?
      ii. What actions might they take based on this information? Depending on the disease, answers may include
         - Locating a contaminated food source and issuing a recall
         - Quarantining individuals with a contagious disease until they are no longer infectious
         - Finding individuals who have come in contact with infected patients and notifying them of the exposure so that they can seek treatment
         - Recommending vaccinations or other prescriptions prior to travel in an area where a particular disease is endemic
         - Implementing health educational programs so that the public is aware of how to prevent disease
   b. Make up an imaginary new, previously undiscovered disease. Give students information about signs and symptoms that have been observed. Have students pretend to be public health officials charged with determining the etiology and appropriate prevention/treatment of this disease. Let them ask you questions to learn the epidemiological features of the disease. Challenge them to come up with an appropriate etiology. Once this is accomplished, ask them to consider what steps should be taken to protect the general public from contracting this new disease.
2. What might happen if the wrong conclusions were drawn about the etiology of a disease? Discuss how HIV was mistakenly characterized as a "homosexual" disease when it was first discovered in the 1980s.

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CLASSROOM ACTIVITIES

1. A *Jeopardy!*-like game is a wonderful game to play to teach students medical terminology. Categories can include root words, prefixes, suffixes, medical terms, abbreviations, and medical definitions.
2. Have students create their own medical terms using their prefixes, suffixes, and roots. Have the rest of the class guess what the word term should mean.
3. List some common diseases on the board. Have students give examples of signs and symptoms for each disease. Be sure that students clarify which are signs and which are symptoms.
4. Give students a list of body processes, and ask them to determine if it is anabolism or catabolism.
5. Have students give examples of negative and positive feedback loops, or give them examples, and have them decide if they are negative or positive feedback loops.
6. Play medical terminology bingo. Make bingo cards for the students that contain medical terms or abbreviations. Call out definitions, and have students mark the matching term on their cards. Prizes for getting “bingo” can include extra credit points, treats, etc.
7. List some common diseases on the board. Ask students to determine if these diseases would be classified as acute or chronic. Are there any diseases that might be classified as both? Lead this into a discussion of disease exacerbations and remissions.
8. Have students visit the Website for the CDC’s weekly publication, *Morbidity and Mortality Weekly Report.* Each week have one student or group of students visit this Website, find an interesting epidemiological article, and report back to the class.
9. Assign the following crossword puzzle and word search.

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WORD SEARCH

Fill in the blanks within the clues below and then find the words in the puzzle.

V	D	N	S	F	V	I	V	Y	E	D	I	A	G	N	O	S	I	S	V	E	E
P	L	N	I	T	S	N	P	A	X	K	M	G	L	A	C	U	T	E	O	Z	P
A	P	A	T	H	O	G	E	N	A	M	D	D	X	A	J	R	W	R	O	W	V
N	M	A	B	S	K	C	Q	Q	C	R	R	E	M	I	S	S	I	O	N	D	N
D	P	T	T	Y	W	C	Q	C	E	E	N	F	L	Y	S	W	N	M	A	E	A
E	Y	G	L	M	Q	I	G	K	R	V	X	S	E	S	A	V	I	T	S	O	P
M	D	F	H	P	E	O	Q	N	B	U	E	Z	C	P	B	Q	L	N	H	A	K
I	J	W	E	T	P	D	D	Z	A	C	U	N	C	W	W	V	Y	Z	V	X	M
C	A	D	P	O	I	I	J	T	T	H	O	H	D	T	O	G	Q	G	C	E	B
T	H	D	I	M	D	S	I	Z	I	R	Y	R	K	E	P	K	O	S	I	G	N
O	E	B	D	P	E	A	Z	R	O	M	S	R	Y	S	M	U	B	I	J	Z	R
R	O	A	E	X	M	L	O	Q	N	N	Y	C	C	I	D	I	F	C	I	B	P
P	R	G	M	O	I	H	C	T	G	B	U	T	T	T	O	U	C	Z	M	Z	I
R	K	G	I	E	C	I	T	H	K	T	H	O	M	E	O	S	T	A	S	I	S
O	V	I	O	W	L	M	C	A	R	D	P	M	E	T	A	B	O	L	I	S	M
G	P	R	L	P	N	D	E	N	L	O	K	G	V	Q	T	P	T	R	K	X	B
N	G	Y	O	E	N	K	E	Z	Y	A	N	E	B	U	Q	T	T	L	D	R	D
O	Z	V	G	Z	F	Y	X	G	L	T	L	I	W	O	O	H	Z	C	Y	T	E
S	D	F	Y	Z	O	O	K	Z	E	B	E	I	C	P	E	C	V	Z	Y	D	D
I	Q	A	E	E	T	I	O	L	O	G	Y	K	S	D	G	H	P	Q	U	M	K
S	N	K	R	P	A	T	H	O	P	H	Y	S	I	O	L	O	G	Y	C	K	F
V	B	P	T	U	O	M	M	U	F	L	X	R	E	E	Q	M	L	M	A	V	F

_____ 1. A prediction about the expected outcome of a disease
_____ 2. An identification of disease determined by studying the patient's signs, symptoms, etc.
_____ 3. Objective, measurable indicators of disease
_____ 4. Subjective indicators of illness that are perceived only by the patient
_____ 5. A disease that has a rapid onset of signs and symptoms
_____ 6. A disease that has a gradual onset of symptoms over a long period of time
_____ 7. When a disease occurs in large numbers in a specific region
_____ 8. A disease that occurs in a specific population or region
_____ 9. When a disease spreads country- or worldwide
_____ 10. A "flare-up" of signs and symptoms
_____ 11. A period of time when signs and symptoms of disease disappear
_____ 12. The cause of a disease
_____ 13. The study of the transmission, frequency, distribution, and control of a disease
_____ 14. A disease-causing microorganism
_____ 15. The study of abnormal body function
_____ 16. The physiological process that monitors and maintains a stable internal environment
_____ 17. All the life-sustaining chemical reactions within the body

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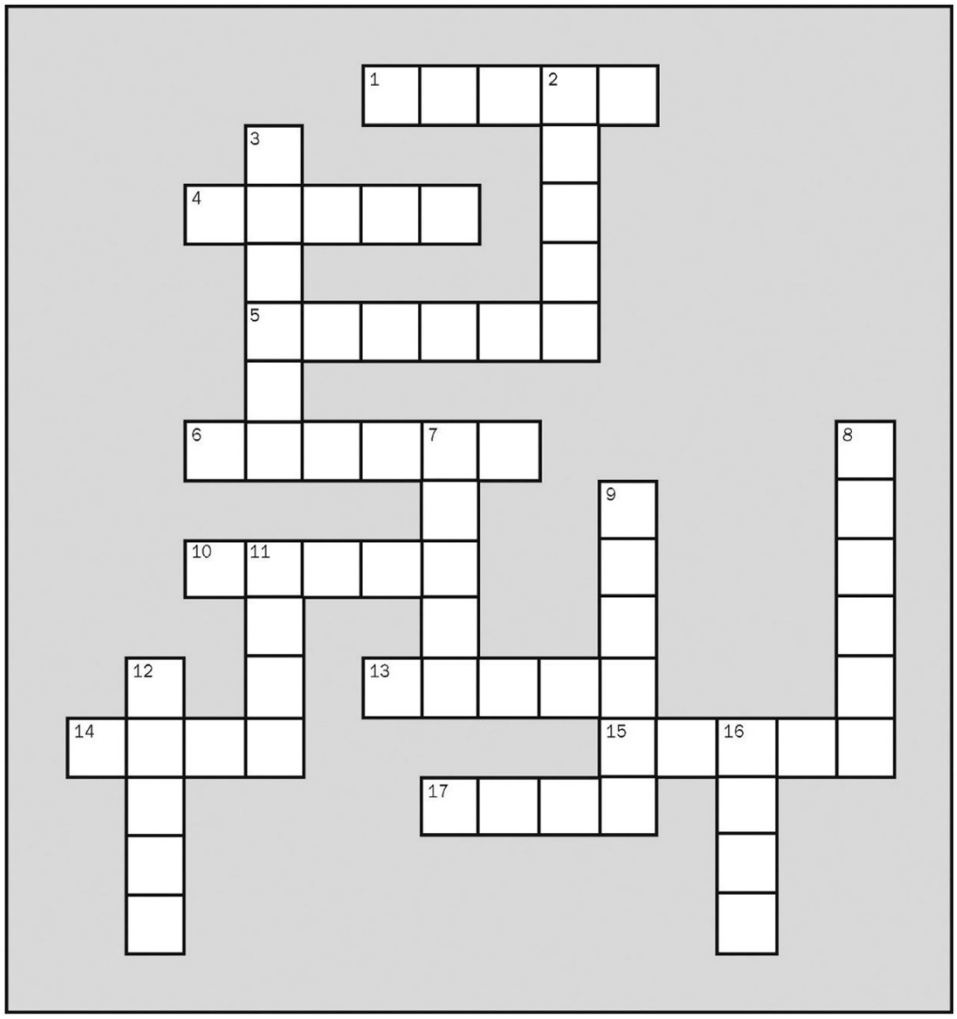
Name

WORD PARTS



Across

1. Disease (combining form)
4. Slow (prefix)
5. Liver (combining form)
6. Specialist (suffix)
10. Nerve (combining form)
13. Skin (combining form)
14. Below normal (prefix)
15. Small (prefix)
17. Study of (suffix)

Down

2. Tissue (combining form)
3. Joint (combining form)
7. Instrument for viewing (suffix)
8. Heart (combining form)
9. Removal (suffix)
11. Within (prefix)
12. Above normal (prefix)
16. Cell (combining form)

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WORD SEARCH ANSWER KEY

Fill in the blanks within the clues below and then find the words in the puzzle.

V	D	N	S	F	V	I	V	Y	E	D	I	A	G	N	O	S	I	S	V	E	E
P	L	N	I	T	S	N	P	A	X	K	M	G	L	A	C	U	T	E	O	Z	P
A	P	A	T	H	O	G	E	N	A	M	D	D	X	A	J	R	W	R	O	W	V
N	M	A	B	S	K	C	Q	Q	C	R	R	E	M	I	S	S	I	O	N	D	N
D	P	T	T	Y	W	C	Q	C	E	E	N	F	L	Y	S	W	N	M	A	E	A
E	Y	G	L	M	Q	I	G	K	R	V	X	S	E	S	A	V	I	T	S	O	P
M	D	F	H	P	E	O	Q	N	B	U	E	Z	C	P	B	Q	L	N	H	A	K
I	J	W	E	T	P	D	D	Z	A	C	U	N	C	W	W	V	Y	Z	V	X	M
C	A	D	P	O	I	I	J	T	T	H	O	H	D	T	O	G	Q	G	C	E	B
T	H	D	I	M	D	S	I	Z	I	R	Y	R	K	E	P	K	O	S	I	G	N
O	E	B	D	P	E	A	Z	R	O	M	S	R	Y	S	M	U	B	I	J	Z	R
R	O	A	E	X	M	L	O	Q	N	N	Y	C	C	I	D	I	F	C	I	B	P
P	R	G	M	O	I	H	C	T	G	B	U	T	T	T	O	U	C	Z	M	Z	I
R	K	G	I	E	C	I	T	H	K	T	H	O	M	E	O	S	T	A	S	I	S
O	V	I	O	W	L	M	C	A	R	D	P	M	E	T	A	B	O	L	I	S	M
G	P	R	L	P	N	D	E	N	L	O	K	G	V	Q	T	P	T	R	K	X	B
N	G	Y	O	E	N	K	E	Z	Y	A	N	E	B	U	Q	T	T	L	D	R	D
O	Z	V	G	Z	F	Y	X	G	L	T	L	I	W	O	O	H	Z	C	Y	T	E
S	D	F	Y	Z	O	O	K	Z	E	B	E	I	C	P	E	C	V	Z	Y	D	D
I	Q	A	E	E	T	I	O	L	O	G	Y	K	S	D	G	H	P	Q	U	M	K
S	N	K	R	P	A	T	H	O	P	H	Y	S	I	O	L	O	G	Y	C	K	F
V	B	P	T	U	O	M	M	U	F	L	X	R	E	E	Q	M	L	M	A	V	F

Prognosis _____ 1. A prediction about the expected outcome of a disease

Diagnosis _____ 2. An identification of disease determined by studying the patient's signs, symptoms, etc.

Sign _____ 3. Objective, measurable indicators of disease

Symptom _____ 4. Subjective indicators of illness that are perceived only by the patient

Acute _____ 5. A disease that has a rapid onset of signs and symptoms

Chronic _____ 6. A disease that has a gradual onset of symptoms over a long period of time

Epidemic _____ 7. When a disease occurs in large numbers in a specific region

Endemic _____ 8. A disease that occurs in a specific population or region

Pandemic _____ 9. When a disease spreads country- or worldwide

Exacerbation _____ 10. A "flare-up" of signs and symptoms

Remission _____ 11. A period of time when signs and symptoms of disease disappear

Etiology _____ 12. The cause of a disease

Epidemiology _____ 13. The study of the transmission, frequency, distribution, and control of a disease

Pathogen _____ 14. A disease-causing microorganism

Pathophysiology _____ 15. The study of abnormal body function

Homeostasis _____ 16. The physiological process that monitors and maintains a stable internal environment

Metabolism _____ 17. All the life-sustaining chemical reactions within the body

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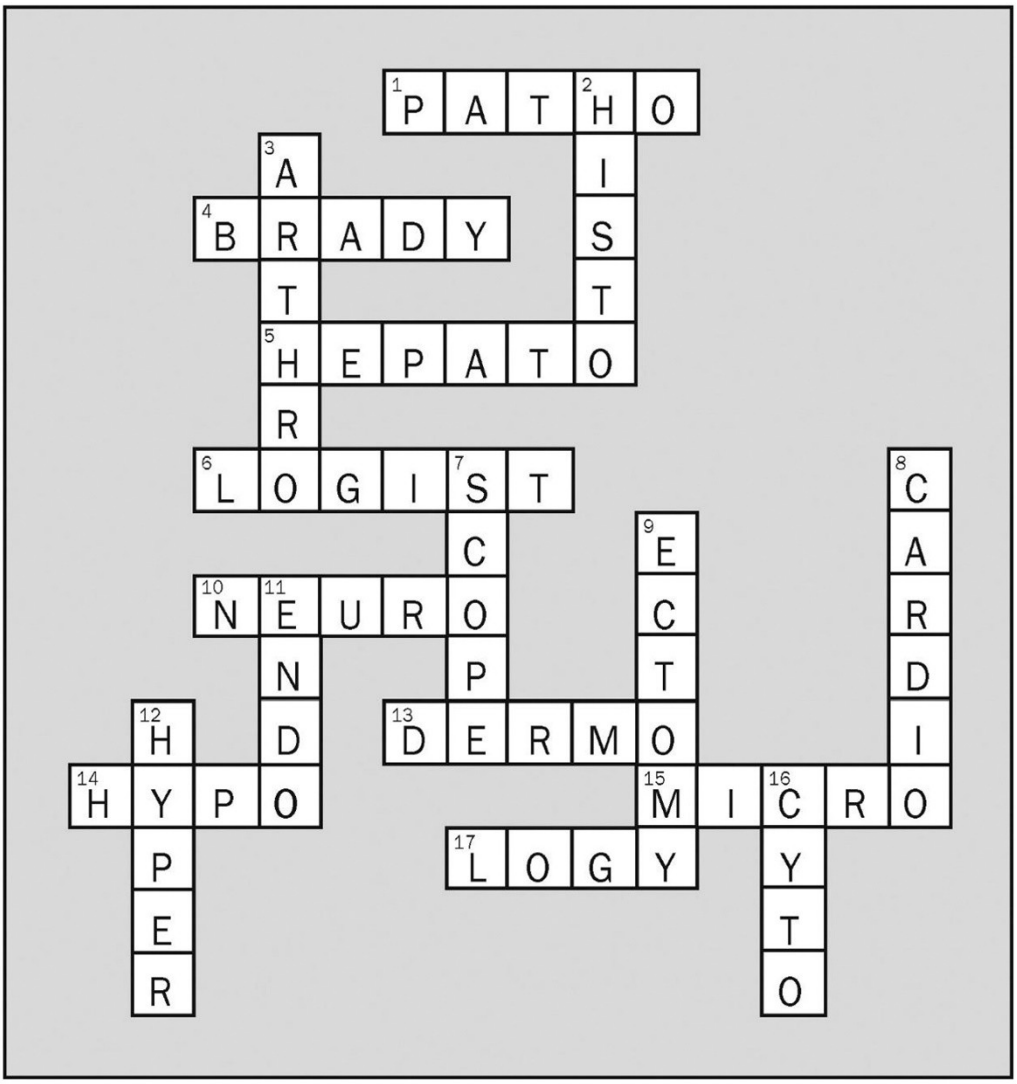
WORD PARTS ANSWER KEY



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FACTOIDS

1. Hospitals regulate abbreviations used in medical documentation to maintain legality of the record. Each hospital has a standardized list of acceptable abbreviations, including things like HOB (head of bed), ROM (range of motion), HS (hours of sleep), and QID (four times a day).
2. Many medical terms originate from the Latin language. Before the 1970s, students entering medical fields were encouraged to take Latin in high school. Latin is an extremely difficult language to learn, and few high schools even offer this subject today.
3. The CDC (Centers for Disease Control and Prevention) does much more than just monitor diseases caused by pathogens. It monitors *all* types of disease, including disease related to environmental exposures, workplace exposures, nutrition, smoking, and even traumatic events like school violence.
4. As the field of medicine advances, our understanding of the etiology of disease often changes. For instance, we now know that the mental illness schizophrenia is related to an imbalance of certain brain chemicals. In the past, this disease was attributed to possession by evil spirits!
5. The term *vector* applies to more than just infectious disease. In the field of physics, a "vector" maps the magnitude and direction of a force.

ETHICAL DILEMMAS

1. It is virtually impossible to understand the meaning of every medical term, no matter how long you are in the profession, because you will always run into a new word you've not heard before. Have students discuss the ethical consequences of "guessing" what a term means instead of taking the time to look up the definition.
2. Hospitals are required to have a legally acceptable list of abbreviations that can be used in patient documentation. Ask students to explain what could happen if an abbreviation was used that others didn't understand. Have students explain both the legal and ethical considerations of following this acceptable list of abbreviations.

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CHAPTER 1—WORKSHEET #1

Multiple Choice

1) The study of body structures is:
   A) anatomy
   B) physiology
   C) pathology
   D) etiology
2) The study of body functions is:
   A) anatomy
   B) physiology
   C) pathology
   D) etiology
3) The study of disease is:
   A) cytology
   B) histology
   C) physiology
   D) pathology
4) The physiological processes that maintain a state of balance in the body is:
   A) homeostasis
   B) idiopathic
   C) communicable
   D) pathological

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Fill in the Blank

For each of the following abbreviations, please write out the whole term.

5) P.R.N.
6) SOB
7) A&P
8) BP
9) Dx
10) NPO

Worksheet #1—p. 1 of 2

Matching

Please match the following word parts with the appropriate definition.

11)	____ -graphy	A.	Below
12)	____ cardi/o	B.	Small
13)	____ sub-	C.	Tumor
14)	____ hyper-	D.	Above normal
15)	____ arthr/o	E.	Process of recording
16)	____ -logist	F.	Tissue
17)	____ brady-	G.	Specialist
18)	____ micro-	H.	Cell
19)	____ -megaly	I.	Disease
20)	____ -oma	J.	Nose
21)	____ endo-	K.	Within
22)	____ hist/o	L.	Slow
23)	____ cyt/o	M.	Joint
24)	____ rhin/o	N.	Heart
25)	____ path/o	O.	Enlargement

Worksheet #1—p. 2 of 2

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CHAPTER 1—WORKSHEET #2

Multiple Choice

1) Any disease that has the potential to be spread from person to person is called:
   A) idiopathic
   B) communicable
   C) terminal
   D) chronic
2) The study of cells is called:
   A) anatomy
   B) pathology
   C) cytology
   D) etiology
3) The study of tissues is:
   A) histology
   B) cytology
   C) epidemiology
   D) physiology
4) Closely related to anatomy, the study of shape by observing the form and structure of organisms is called:
   A) physiology
   B) morphology
   C) cytology
   D) histology
5) An anatomy student has been studying enthusiastically all afternoon and has not eaten since lunch. His blood sugar begins to drop. Hunger sets in, and he goes to the kitchen for a snack. In a few minutes, his blood sugar is back up to normal. This is an example of:
   A) the U.S. Customary System
   B) negative feedback
   C) positive feedback
   D) epidemiology

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Circle Exercise

In each of the following pairs, please circle the measurement that is in metric units.

6) liter gallon

7) inch millimeter

8) ounce kilogram

9) centimeter pint

10) milliliters quart

Worksheet #2—p. 1 of 2

Matching

Please match the following terms with the most appropriate definitions.

11)	____ etiology	A.	When a disease spreads country- or worldwide
12)	____ epidemiology	B.	A disease that occurs in a specific population or region
13)	____ epidemic	C.	All the life-sustaining chemical reactions in the body
14)	____ endemic	D.	When simple substances are used to build larger, more complex ones
15)	____ pandemic	E.	The cause of a disease
16)	____ idiopathic	F.	When complex substances are broken down into simpler ones
17)	____ metabolism	G.	When a disease occurs suddenly in large numbers in a specific region
18)	____ catabolism	H.	A disease for which the cause cannot be determined
19)	____ anabolism	I.	The study of the transmission, frequency, distribution, and control of disease

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Fill in the Blank

Please indicate if each of the following is an example of a sign or a symptom.

20) temperature

21) itching

22) nausea

23) weight

24) swelling

Please indicate if each of the following is an example of a diagnosis or a prognosis.

25)“Mr. S., I believe you have diabetes.” _____

26)“Ms. M., I expect your sprained ankle will be back to normal within a few weeks.” _____

Worksheet #2—p. 2 of 2

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ANSWER KEYS

Chapter 1—Worksheet #1

1) A
2) B
3) D
4) A
5) as needed
6) shortness of breath
7) anatomy and physiology
8) blood pressure
9) diagnosis
10) nothing by mouth
11) E
12) N
13) A
14) D
15) M
16) G
17) L
18) B
19) O
20) C
21) K
22) F
23) H
24) J
25) I

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Chapter 1—Worksheet #2

1) B
2) C
3) A
4) B
5) B
6) liter
7) millimeter
8) kilogram
9) centimeter
10) milliliter
11) E
12) I
13) G
14) B
15) A
16) H
17) C
18) F
19) D
20) sign
21) symptom
22) symptom
23) sign
24) sign
25) diagnosis
26) prognosis

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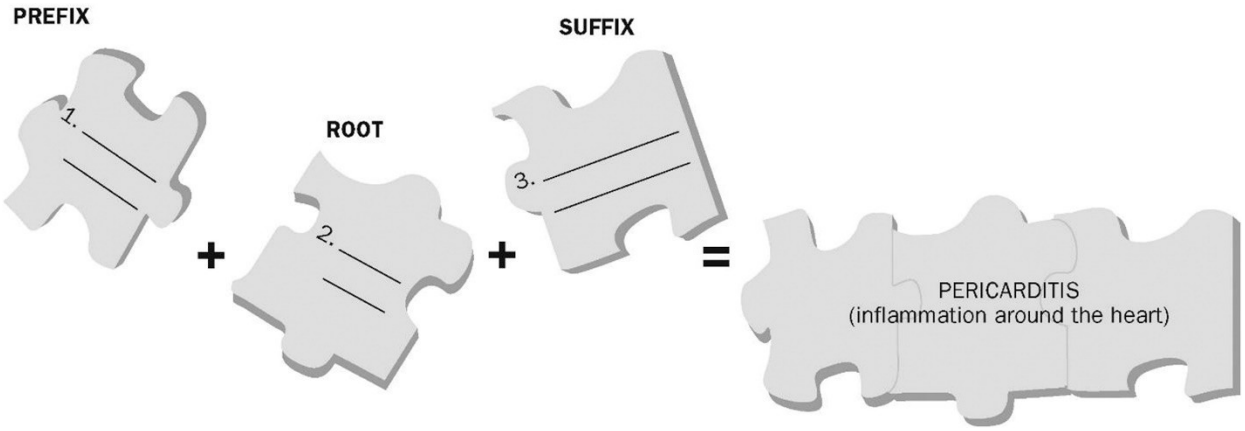
LABELING ACTIVITY #1

INSTRUCTIONS: Please label the image below. You may refer to Figure 1–2 in your text for assistance.



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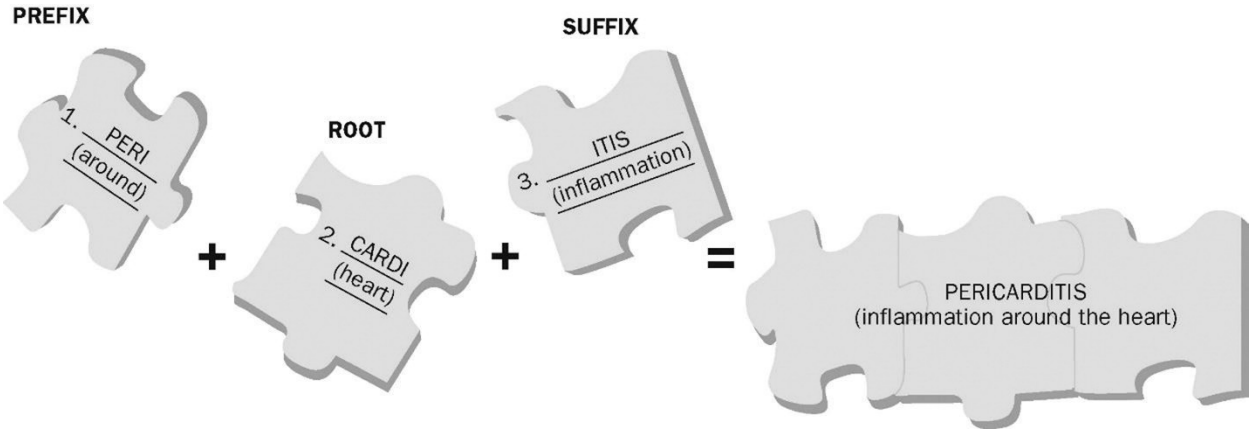
LABELING ACTIVITY #1 ANSWER KEY



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