

CHAPTER 5

CARDIOVASCULAR SYSTEM

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MEDIA LIBRARY

Student DVD-ROM

- Twelve different interactive learning games
- Flash card generator
- Audio Glossary
- Professional Profile videos
 - Cardiovascular Technologist
 - Electrocardiogram Technicians
- Body Rhythms
- Terminology Translator

- Labeling exercises
- Case study
- Additional Professional Profile information
- *New York Times* link for research into specific pathologies
- Web Destination activities
- Audio Glossary
- Link to VangoNotes
- Link to drug updates

Companion Website

- Multiple Choice, True/False, and Fill-in-the-Blank practice questions

IRDVD

- Animations
 - 3D interactive animation of heart anatomy

- Heart chambers
- Blood flow to the atria
- Atrial contraction
- Ventricular contraction
- Systolic and diastolic blood pressure
- Angina pectoris
- Coronary artery disease
- Aneurysms
- Drag-and-drop labeling activity for heart anatomy
- Videos
 - Tachycardia and bradycardia
 - Measuring blood pressure
- Heart attacks
- Electrocardiography
- Defibrillation
- Digital library of all figures from text chapter, labeled and unlabeled
- Test bank with 200 objective questions per chapter plus two short answer questions
- 20 classroom response questions
- PowerPoint presentation for classroom or online utilization

OBJECTIVE 1

Identify and define the combining forms, and suffixes introduced in this chapter.

Text page: 130; PowerPoint slides: 6–9

LECTURE NOTES

Combining Forms

angi/o	vessel
aort/o	aorta
arteri/o	artery
ather/o	fatty substance
atri/o	atrium
cardi/o	heart
coron/o	heart
hemangi/o	blood vessel
phleb/o	vein
sphygm/o	pulse
steth/o	chest
thromb/o	clot
valv/o	valve
valvul/o	valve
vascul/o	blood vessel
vas/o	vessel, duct
ven/o	vein
ventricul/o	ventricle

Suffixes

-manometer	instrument to measure pressure
-ole	small
-tension	pressure
-ule	small

TEACHING STRATEGIES

- Encourage students to add combining forms and suffixes to flash card list.

Medical Terminology Bee

- Create PowerPoint flash cards of new combining forms and suffixes presented in this chapter; have all students stand and then define word part; if student is correct, he or she remains standing; if student is wrong, he or she sits down; continue until only one student is standing.

LEARNING ACTIVITIES

Worksheet 5A

- New Combining Form and Suffix Handout

Worksheet 5C

- Chapter Review

Text

- Practice Exercises

Student DVD-ROM

- Learning games
- Make flash cards

CW

- Practice questions

ASSESSMENTS

Quiz 5A—New Word Parts

Test Bank—Fill-in-the-Blank questions

OBJECTIVE 2

Correctly spell and pronounce medical terms and major anatomical structures relating to the cardiovascular system.

LECTURE NOTES

Pronunciation for medical terms in this chapter can be found:

- In parentheses following key terms
- In Audio Glossary on Student DVD-ROM
- In Audio Glossary at Companion Website

TEACHING STRATEGIES

Emphasize to students:

- Importance of correctly spelling terms.
- How sounding out terms can assist in learning how to spell the terms.

Say each new term in class and have the students repeat it.

Pop Questions

- Use Clicker questions as either a pretest or posttest quiz to gauge student comprehension of spelling strategies.

LEARNING ACTIVITIES

Worksheet 5B

- Medical Term Analysis

Terminology Checklist

- Can be used to practice pronunciation using the Audio Glossary as a reference

Text

- Practice Exercises

Flash cards

- Look at definition and write out/pronounce terms

Student DVD-ROM

- Audio Glossary
- Spelling Challenge game
- Crossword and Word Search puzzles

ASSESSMENTS

Quiz 5B—Spelling Quiz

Suggested terms:

1. oxygenated
2. pericardium
3. interventricular
4. systole
5. sinoatrial
6. atherosclerosis
7. cardiorrhesis
8. phlebotomy
9. auscultation
10. ischemia
11. sphygmomanometer
12. arrhythmia
13. fibrillation
14. infarction
15. coarctation

16. echocardiography
 17. hemorrhoid
 18. catheterization
 19. anastomosis
 20. anticoagulant
- Test Bank**—questions

OBJECTIVE 3

Describe the major organs of the cardiovascular system and their functions.

Text pages: 132–133; PowerPoint slides: 10–15

LECTURE NOTES

- Cardiovascular (CV) system also called **circulatory system**
- Maintains distribution of blood throughout body
- Composed of **heart** and **blood vessels**—**arteries, capillaries, and veins**
- Circulatory system is composed of two parts: **pulmonary circulation** and **systemic circulation**
- Pulmonary circulation, between heart and lungs, transports **deoxygenated** blood to lungs to get oxygen, and then back to heart
- Systemic circulation carries **oxygenated** blood away from heart to tissues and cells, and then back to heart
- See ■ Figure 5.1
- Additional functions: distributes nutrients, such as glucose and amino acids; collects waste products from body's cells and transports them to lungs, liver, and kidneys where they are eliminated from body

TEACHING STRATEGIES

Visual Aids

- Use full-size anatomical charts and models to illustrate organs.

Pop Questions

- Use Clicker questions as either a pretest or posttest quiz to gauge student comprehension during lecture.

LEARNING ACTIVITIES

Worksheet 5C

- Chapter Review

Text

- Labeling exercises 5.A & 5.B1
- Practice Exercises

Student DVD-ROM

- Labeling exercise
- Learning games

CW

- Labeling exercise
- Practice questions

Quizzes 5C and 5D

- May be used as worksheet

ASSESSMENTS

Quizzes 5C and 5D—Labeling Diagrams

Quiz 5G—Chapter Review

Test Bank—questions

OBJECTIVE 4

Describe the anatomy of the heart.

Text pages: 133–135; PowerPoint slides: 16–33

LECTURE NOTES

Heart

- Muscular pump made up of **cardiac muscle** fibers
- Has four chambers, or cavities
- Beats average of 60 to 100 beats per minute (bpm) or about 100,000 times in one day
- Each time cardiac muscle contracts, blood is ejected from heart and pushed throughout body within blood vessels
- Located in mediastinum in center of chest cavity; not exactly centered; more of heart is on left side of mediastinum
- About size of fist and shaped like upside-down pear
- Lies directly behind sternum
- Tip of heart at lower edge is called **apex**
- See ■ Figure 5.2

Heart Layers

- Wall of heart is quite thick and composed of three layers
- See ■ Figure 5.3 and 5.4
 1. **Endocardium**—inner layer; lines heart chambers; very smooth, thin layer; serves to reduce friction as blood passes through heart chambers
 2. **Myocardium**—thick muscular middle layer; contraction develops pressure required to pump blood through blood vessels
 3. **Epicardium**—outer layer; heart enclosed within double-layered pleural sac, called **pericardium**; epicardium is **visceral pericardium**, or inner layer of the sac; outer layer of the sac is **parietal pericardium**; fluid between two layers reduces friction as heart beats

Heart Chambers

- Heart divided into four chambers or cavities—two **atria**, or upper chambers, and two **ventricles**, or lower chambers
- See ■ Figures 5.3 and 5.4
- Chambers divided into right and left sides by walls called **interatrial septum** and **interventricular septum**
- Atria are receiving chambers; blood returning to heart via veins first collects in atria
- Ventricles are pumping chambers; have much thicker myocardium, and contraction ejects blood out of heart and into great arteries

Heart Valves

- Four valves act as restraining gates to control direction of blood flow
- Situated at entrances and exits to ventricles
- See ■ Figures 5.4 and 5.5
- Valves allow blood to flow only in forward direction by blocking it from returning to previous chamber

TEACHING STRATEGIES

Visual Aids

- Use full-size anatomical charts and models to illustrate heart features.

IRDVD

- See PowerPoint presentation on the Instructor's Resource DVD for a 3D animation of heart anatomy.
- See PowerPoint presentation on the Instructor's Resource DVD for animations showing the heart chambers.
- See PowerPoint presentation on the Instructor's Resource DVD for a drag-and-drop heart anatomy activity; display on screen and have students discuss and place labels during class.

Pop Questions

- Use Clicker questions as either a pretest or posttest quiz to gauge student comprehension during lecture.

LEARNING ACTIVITIES

Worksheet 5C

- Chapter Review

Text

- Labeling exercise 5.B2
- Practice Exercises

Student DVD-ROM

- Labeling exercise
- Learning games

CW

- Labeling exercise
- Practice questions

Quiz 5D

- May be used as worksheet

ASSESSMENTS

Quiz 5D—Labeling Diagram

Quiz 5G—Chapter Review

Test Bank—questions

- Four valves are as follows:
 1. **Tricuspid valve:** right **atrioventricular valve (AV)**; controls opening between right atrium and right ventricle; once blood enters right ventricle it cannot go back up into atrium again; prefix *tri-*, meaning three, indicates that this valve has three leaflets or **cusps**
 2. **Pulmonary valve:** right **semilunar valve**; prefix *semi-*, meaning half, and term *lunar*, meaning moon, indicate that valve looks like half moon; located between right ventricle and pulmonary artery; prevents blood that has been ejected into pulmonary artery from returning to right ventricle as it relaxes
 3. **Mitral valve:** also called **bicuspid valve**, indicating that it has two cusps; left atrioventricular valve; blood flows through this valve to left ventricle and cannot go back up into left atrium
 4. **Aortic valve:** left semilunar valve; located between left ventricle and aorta; blood leaves left ventricle through this valve and cannot return to left ventricle

OBJECTIVE 5

Describe the flow of blood through the heart.

Text pages: 135–136; PowerPoint slides: 34–45

LECTURE NOTES

- Flow of blood through heart is very orderly
- See ■ Figure 5.6
- Progresses through heart to lungs, where it receives oxygen; then goes back to heart; and then out to body tissues
- Normal blood flow:
 1. Deoxygenated blood from all tissues in body enters relaxed right atrium via two large veins called **superior vena cava** and **inferior vena cava**
 2. Right atrium contracts and blood flows through tricuspid valve into relaxed right ventricle
 3. Right ventricle then contracts and blood is pumped through pulmonary valve into **pulmonary artery**, carries it to lungs for oxygenation
 4. Left atrium receives blood returning to heart after being oxygenated by lungs; blood enters relaxed left atrium from four **pulmonary veins**
 5. Left atrium contracts and blood flows through mitral valve into relaxed left ventricle
 6. Left ventricle contracts, blood is pumped through aortic valve and into **aorta**, the largest artery in body; aorta carries blood to all parts of body
- Heart chambers alternate between relaxing in order to fill and contracting to push blood forward; period of time chamber is relaxed is **diastole**; contraction phase is **systole**

TEACHING STRATEGIES

Visual Aids

- Use full-size anatomical charts and models to illustrate how blood flows into, through, and out of heart.

IRDVD

- See PowerPoint presentation on the Instructor's Resource DVD for animations showing:
 - Blood flow to the atria
 - Atrial contraction
 - Ventricular contraction
- See PowerPoint presentation on the Instructor's Resource DVD for a 3D animation of heart anatomy

Pop Questions

- Use Clicker questions as either a pretest or posttest quiz to gauge student comprehension during lecture.

LEARNING ACTIVITIES

Worksheet 5C

- Chapter Review

Text

- Labeling exercise
- Practice Exercises

Student DVD-ROM

- Learning games

CW

- Practice questions

Quizzes 5C and 5D

- May be used as a worksheet

ASSESSMENTS

Quizzes 5C and 5D—labeling diagram

Quiz 5G—Chapter Review

Test Bank—questions

OBJECTIVE 6

Explain how the electrical conduction system controls the heartbeat.

Text pages: 136–138; PowerPoint slides: 46–51

LECTURE NOTES

- Heart rate regulated by **autonomic nervous system**; we have no voluntary control over beating of heart
- See ■ Figure 5.7
- Special tissue within heart is responsible for conducting electrical impulse stimulating different chambers to contract in correct order
 1. **Sinoatrial (SA) node**, or **pacemaker**; where electrical impulses begins; from sinoatrial node wave of electricity travels through atria, causing them to contract, or go into systole
 2. **Atrioventricular node** is stimulated
 3. Node transfers stimulation wave to **atrioventricular bundle** (formerly called **bundle of His**)
 4. Electrical signal next travels down **bundle branches** within inter-ventricular septum
 5. **Purkinje fibers** out in ventricular myocardium are stimulated, resulting in ventricular systole

TEACHING STRATEGIES

Visual Aids

- Use full-size anatomical charts and models to illustrate structures of conduction system.

IRDVD

- See PowerPoint presentation on the Instructor's Resource DVD for a 3D animation of heart anatomy.

Pop Questions

- Use Clicker questions as either a pretest or posttest quiz to gauge student comprehension during lecture.

LEARNING ACTIVITIES

Worksheet 5C

- Chapter Review

Text

- Practice Exercises

Student DVD-ROM

- Learning games

CW

- Practice questions

ASSESSMENTS

Quiz 5G—Chapter Review

Test Bank—questions

OBJECTIVE 7

List and describe the characteristics of the three types of blood vessels.

Text pages: 138–142; PowerPoint slides: 52–63

LECTURE NOTES

Arteries

- Large, thick-walled vessels
- Carry blood away from heart
- Walls of arteries contain thick layer of smooth muscle that can contract or relax to change size of arterial lumen (see ■ Figure 5.9)
- Pulmonary artery carries deoxygenated blood from right ventricle to lungs
- Largest artery, aorta, begins from left ventricle of heart and carries oxygenated blood to all body systems
- **Coronary arteries** branch from aorta and provide blood to myocardium (see ■ Figure 5.10)
- As arteries travel through body they branch into progressively smaller sized vessels; smallest are called **arterioles** and deliver blood to capillaries
- ■ Figure 5.11 illustrates major systemic arteries

Capillaries

- Network of tiny blood vessels referred to as **capillary bed**
- Arterial blood flows into capillary bed and venous blood flows back out
- See ■ Figure 5.9
- Very thin walled, allowing for diffusion of oxygen and nutrients from blood into body tissues; likewise, carbon dioxide and waste products diffuse out of body tissues and into bloodstream to be carried away
- Since capillaries are small in diameter, blood will not flow as quickly through them as it does through arteries and veins; means that blood has time for exchange of nutrients, oxygen, and waste material to take place
- As blood exits capillary bed, it returns to heart through veins

Veins

- Veins carry blood back to heart
- Blood leaving capillaries first enters small **venules**, which then merge into larger veins
- Have much thinner walls than arteries, causing them to collapse easily; have valves that allow blood to move only toward heart; valves prevent blood from back flowing (see ■ Figure 5.9)
- Two large veins that enter heart are superior vena cava, which carries blood from upper body, and inferior vena cava, which carries blood from lower body
- Blood pressure in veins is much lower than in arteries; skeletal muscle contractions help in the movement of blood through veins
- See ■ Figure 5.12 for illustration of major systemic veins

TEACHING STRATEGIES

- Write sentences on the board using common words; have students substitute correct medical terms.

Visual Aids

- Use full-size anatomical charts and models to illustrate differences between three types of blood vessels and location of major arteries and veins.

Pop Questions

- Use Clicker questions as either a pretest or posttest quiz to gauge student comprehension during lecture.

LEARNING ACTIVITIES

Worksheet 5C

- Chapter Review

Text

- Labeling exercise
- Practice Exercises

Student DVD-ROM

- Labeling exercise
- Learning games

CW

- Labeling exercise
- Practice questions

ASSESSMENTS

Quiz 5G—Chapter quiz

Test Bank—questions

OBJECTIVE 8

Define pulse and blood pressure.

Text page: 141; PowerPoint slides: 64–66

LECTURE NOTES

- **Blood pressure** (BP) is measurement of force exerted by blood against wall of blood vessel
- During ventricular systole, blood is under a lot of pressure from ventricular contraction, giving highest blood pressure reading—**systolic pressure**
- **Pulse** felt at wrist or throat is surge of blood caused by heart contraction; pulse rate is normally equal to heart rate
- During ventricular diastole, blood is not being pushed by heart at all and blood pressure reading drops to lowest point—**diastolic pressure**
- To see full range of what is occurring with blood pressure, both numbers are required
- Blood pressure is also affected by several characteristics of blood and blood vessels; including elasticity of arteries, diameter of blood vessels, viscosity of blood, volume of blood flowing through vessels, and amount of resistance to blood flow

TEACHING STRATEGIES

- Write sentences on the board using common words; have students substitute correct medical terms.

IRDVD

- See PowerPoint presentation on the Instructor's Resource DVD for an animation showing systolic and diastolic blood pressure.
- See PowerPoint presentation on the Instructor's Resource DVD for a video on the topic of measuring blood pressure.

Demonstration

- Bring sphygmomanometer and stethoscope to class; either demonstrate on student or (if you have enough equipment) have students pair up and learn to measure blood pressure on each other.

Pop Questions

- Use Clicker questions as either a pretest or posttest quiz to gauge student comprehension during lecture.

LEARNING ACTIVITIES

Worksheet 5C

- Chapter Review

Text

- Labeling exercise
- Practice Exercises

Student DVD-ROM

- Labeling exercise
- Learning games

CW

- Labeling exercise
- Practice questions

ASSESSMENTS

Quiz 5G—Chapter Review

Test Bank—questions

OBJECTIVE 9

Build and define cardiovascular system medical terms from word parts.

Text pages: 141–143; PowerPoint slides: 67–74

LECTURE NOTES

Combining

Form	Medical Term	Definition
angi/o	angiogram	record of vessel
	angiitis	inflammation of vessel
	angioplasty	surgical repair of vessel
	angiospasm	involuntary muscle contraction of vessel
	angiostenosis	narrowing of vessel
aort/o	aortic	pertaining to aorta
arteri/o	arterial	pertaining to artery
	arteriole	small artery
	arteriorrhexis	ruptured artery
ather/o	atherectomy	removal of fatty substance
	atheroma	fatty substance tumor/growth
atri/o	atrial	pertaining to atrium
	interatrial	pertaining to between atria
cardi/o	cardiac	pertaining to heart
	bradycardia	state of slow heart
	electrocardiogram	record of heart electricity
	cardiomegaly	enlarged heart
	myocardial	pertaining to heart muscle
	cardiologist	specialist in heart
	cardiorrhexis	ruptured heart
	tachycardia	state of fast heart
coron/o	coronary	pertaining to heart
phleb/o	phlebitis	inflammation of vein
valv/o	valvoplasty	surgical repair of valve
valvul/o	valvulitis	inflammation of valve
	valvular	pertaining to valve
vascul/o	vascular	pertaining to blood vessel
ven/o	venous	pertaining to vein
	venule	small vein
	venogram	record of vein
ventricul/o	ventricular	pertaining to ventricle
	interventricular	pertaining to between ventricles

TEACHING STRATEGIES

- Reinforce how many terms in the cardiovascular system can be constructed from word parts.
- Read aloud cardiovascular system terms that are made up of word parts; have students identify parts and define terms, either aloud or individually on paper.
- Write sentences on the board using common words; have students substitute correct medical terms.

Pop Questions

- Use Clicker questions as either a pretest or posttest quiz to gauge student comprehension during lecture.

LEARNING ACTIVITIES

- Before next class meets, have students listen to other people speak, TV, and radio, or read newspaper for examples of using “common” cardiovascular terms (i.e. heart attack, high blood pressure, heart problems); have them make list and write correct medical term and bring to class and discuss.

Worksheet 5A

- New Combining Form and Suffix Handout

Worksheet 5B

- Medical Term Analysis

Worksheet 5C

- Chapter Review

Quiz 5E

- May be used as a worksheet

Text

- Practice Exercises
- Terminology Checklist

Student DVD-ROM

- Learning games
- Flash cards

CW

- Practice questions

ASSESSMENTS

Quiz 5E—Word Building Quiz

Test Bank—questions

OBJECTIVE 10

Identify and define cardiovascular system vocabulary terms.

Text pages: 143–144; PowerPoint slides: 75–81

LECTURE NOTES

Term	Definition
auscultation	process of listening to sounds within body by using stethoscope
cardiology	branch of medicine involving diagnosis and treatment of conditions and diseases of cardiovascular system; physician is <i>cardiologist</i>
catheter	flexible tube inserted into body for purpose of moving fluids into or out of body; in cardiovascular system catheter is used to place dye into blood vessels so they may be visualized on X-rays
infarct	area of tissue within an organ that undergoes necrosis (death) following the loss of its blood supply
ischemia	localized and temporary deficiency of blood supply due to obstruction to circulation
murmur	abnormal heart sound such as soft blowing sound or harsh click; it may be quiet and heard only with stethoscope, or so loud it can be heard several feet away; also referred to as <i>bruit</i>
orthostatic hypotension	sudden drop in blood pressure person experiences when standing up suddenly
palpitations	pounding, racing heartbeats
plaque	yellow, fatty deposit of lipids in artery that are hallmark of atherosclerosis
regurgitation	to flow backwards; in cardiovascular system refers to backflow of blood through valve
sphygmomanometer	instrument for measuring blood pressure; also referred to as <i>blood pressure cuff</i>
stent	stainless steel tube placed within blood vessel or duct to widen lumen
stethoscope	instrument for listening to body sounds (auscultation), such as chest, heart, or intestines

TEACHING STRATEGIES

- Write sentences on the board using common words; have students substitute correct medical terms.

Jeopardy Game

- Have students create questions for terms in this section for a Jeopardy game to be played in class—may be combined with Pathology, Diagnostic, & Therapeutic terms.

Pop Questions

- Use Clicker questions as either a pretest or posttest quiz to gauge student comprehension during lecture.

LEARNING ACTIVITIES

Worksheet 5C

- Chapter Review

Text

- Practice Exercises
- Terminology Checklist
- Medical Record Analysis
- Chart Note Transcription

Student DVD-ROM

- Learning games
- Flash cards

CW

- Practice questions
- Case Study

ASSESSMENTS

Quiz 5G—Chapter Review

Test Bank—questions

OBJECTIVE 11

Identify and define selected cardiovascular pathology terms.

Text pages: 144–148; PowerPoint slides: 82–100

LECTURE NOTES

Term	Definition
Heart angina pectoris	condition of severe chest pain with sensation of constriction around heart; caused by deficiency of oxygen to heart muscle
arrhythmia	irregularity in heartbeat; comes in many different forms; some are not serious, while others are life threatening
bundle branch block (BBB)	occurs when electrical impulse is blocked from traveling down bundle branches; results in ventricles beating at different rate than atria; also called a <i>heart block</i>
cardiac arrest	complete stopping of heart activity
cardiomyopathy	disease of myocardium; can be caused by alcohol abuse, parasites, viral infection, and congestive heart failure; one of most common reasons for heart transplant
congenital septal defect (CSD)	hole, present at birth, in septum between two heart chambers; results in mixing of oxygenated and deoxygenated blood; can be <i>atrial septal defect (ASD)</i> or <i>ventricular septal defect (VSD)</i>
congestive heart failure (CHF)	pathological condition of heart in which there is reduced outflow of blood from left side of heart because left ventricle myocardium has become too weak to efficiently pump blood; results in weakness, breathlessness, and edema
coronary artery disease (CAD)	insufficient blood supply to heart muscle due to obstruction of one or more coronary arteries; may be caused by atherosclerosis and may cause angina pectoris and myocardial infarction
endocarditis	inflammation of lining of heart; may be due to bacteria or to abnormal immunological response; in bacterial endocarditis, mass of bacteria that forms is referred to as <i>vegetation</i>
fibrillation	extremely serious arrhythmia characterized by abnormal quivering or contraction of heart fibers; if occurs in ventricles, cardiac arrest and death can occur; emergency equipment to defibrillate, or convert heart to normal beat, is necessary
flutter	arrhythmia in which atria beat too rapidly, but in a regular pattern

TEACHING STRATEGIES

- Select two students to do 5-minute presentations of their Internet research in class.
- Write sentences on the board using common words; have students substitute correct medical terms.

IRDVD

- See PowerPoint presentation on the Instructor's Resource DVD for animations showing
 - Angina pectoris
 - Coronary artery disease
 - Aneurysms
- See PowerPoint presentation on the Instructor's Resource DVD for a video on the topic of heart attacks.

Jeopardy Game

- Have students create questions for terms in this section for a Jeopardy game to be played in class—may be combined with Vocabulary, Diagnostic, and Therapeutic terms.

Pop Questions

- Use Clicker questions as either a pretest or posttest quiz to gauge student comprehension during lecture.

LEARNING ACTIVITIES

Internet Research

- Have students select a specific pathology and use Internet resources to research its symptoms, diagnosis, and treatments.

Worksheet 5C

- Chapter Review

Text

- Practice Exercises
- Terminology Checklist
- Medical Record Analysis
- Chart Note Transcription

Student DVD-ROM

- Learning games
- Flash cards

CW

- Practice questions
- Case Study
- Web Destination activity on myocardial infarction and cardiomyopathy
- *New York Times* link for research into specific pathologies

heart valve prolapse	cusps of heart valve are too loose and fail to shut tightly, allowing blood to flow backward through valve when heart chamber contracts; most commonly occurs in mitral valve, but may affect any heart valve
heart valve stenosis	cusps of heart valve are too stiff; unable to open fully, making it difficult for blood to flow through; or shut tightly, allowing blood to flow backward; may affect any heart valve
myocardial infarction (MI)	condition caused by partial or complete occlusion of one or more coronary arteries; symptoms include angina pectoris; delay in treatment could result in death; also called <i>heart attack</i>
myocarditis	inflammation of muscle layer of heart
pericarditis	inflammation of pericardial sac around heart
tetralogy of Fallot	combination of four congenital anomalies: pulmonary stenosis, interventricular septal defect, improper placement of the aorta, and hypertrophy of the right ventricle; needs immediate surgery to correct

Blood Vessels

aneurysm	weakness in wall of artery resulting in localized widening of artery; may develop in any artery, but common sites include aorta in abdomen and cerebral arteries in brain
arteriosclerosis	thickening, hardening, and loss of elasticity of walls of arteries; often due to atherosclerosis
atherosclerosis	most common form of arteriosclerosis; caused by formation of yellowish plaques of cholesterol on inner walls of arteries
coarctation of the aorta (CoA)	severe congenital narrowing of aorta
embolus	obstruction of blood vessel by blood clot that has broken off from thrombus somewhere else in body and traveled to point of obstruction; if occurs in coronary artery, may result in myocardial infarction
hemorrhoid	varicose veins in anal region
hypertension (HTN)	blood pressure above normal range; <i>essential</i> or <i>primary hypertension</i> occurs directly from cardiovascular disease; <i>secondary hypertension</i> refers to high blood pressure resulting from another disease such as kidney disease
hypotension	decrease in blood pressure; can occur in shock, infection, cancer, anemia, or as death approaches
patent ductus arteriosus (PDA)	congenital heart anomaly in which fetal connection between pulmonary artery and aorta fails to close at birth; requires surgery
peripheral vascular disease (PVD)	any abnormal condition affecting blood vessels outside heart; symptoms may include pain, pallor, numbness, and loss of circulation and pulses
polyarteritis	inflammation of several arteries

ASSESSMENTS

Quiz 5G—Chapter Review

Test Bank—questions

Raynaud's phenomenon	periodic ischemic attacks affecting extremities of body, especially fingers, toes, ears, and nose; affected extremities become cyanotic and very painful; attacks are brought on by arterial constriction due to extreme cold or emotional stress
thrombophlebitis	inflammation of vein resulting in formation of blood clots within vein
thrombus	blood clot forming within blood vessel; may partially or completely occlude blood vessel
varicose veins	swollen and distended veins, usually in legs

OBJECTIVE 12

Identify and define selected cardiovascular system diagnostic procedures.

Text pages: 148–149; PowerPoint slides: 101–108

LECTURE NOTES

Term	Definition
Clinical Laboratory Tests	
cardiac enzymes	blood test to determine level of enzymes specific to heart muscles in blood; increase in enzymes may indicate heart muscle damage such as myocardial infarction; enzymes include creatine phosphokinase (CPK), lactate dehydrogenase (LDH), and glutamic oxaloacetic transaminase (GOT)
serum lipoprotein level	blood test to measure amount of cholesterol and triglycerides in blood; indicator of atherosclerosis risk
Diagnostic Imaging	
angiography	X-rays taken after injection of opaque material into blood vessel; performed on aorta as an angiogram, on heart as angiocardigram, and on brain as cerebral angiogram
cardiac scan	patient given radioactive thallium intravenously and then scanning equipment is used to visualize heart; especially useful in determining myocardial damage
Doppler ultrasonography	measurement of sound-wave echoes as they bounce off tissues and organs to produce an image; in this system, used to measure velocity of blood moving through blood vessels to look for blood clots or deep vein thromboses
echocardiography	noninvasive diagnostic method using ultrasound to visualize internal cardiac structures; cardiac valve activity can be evaluated using this method
venography	X-ray of veins by tracing venous pulse; used to identify thrombus; also called <i>phlebography</i>

TEACHING STRATEGIES

- Write sentences on the board using common words; have students substitute correct medical terms.

IRDVD

- See PowerPoint presentation on the Instructor's Resource DVD for a video on the topic of electrocardiography.

Jeopardy Game

- Have students create questions for terms in this section for a Jeopardy game to be played in class—may be combined with Vocabulary, Pathology, and Therapeutic terms.

Pop Questions

- Use Clicker questions as either a pretest or posttest quiz to gauge student comprehension during lecture.

Guest Speaker

- Invite an EKG technician to speak to class about the EKG machine, conducting EKGs, and to share examples of abnormal EKGs.

LEARNING ACTIVITIES

Worksheet 5C

- Chapter Review

Text

- Practice Exercises
- Terminology Checklist
- Medical Record Analysis
- Chart Note Transcription

Student DVD-ROM

- Learning games
- Flash cards

Cardiac Function Tests

cardiac catheterization	passage of thin catheter through blood vessel leading to heart; to detect abnormalities, to collect cardiac blood samples, and to determine the blood pressure within heart
electrocardiography (ECG, EKG)	record of electrical activity of heart; diagnosis of abnormal cardiac rhythm and heart muscle (myocardium) damage
Holter monitor	portable ECG monitor worn by a patient for period of few hours to few days to assess heart and pulse activity as person goes through activities of daily living; to assess patient who experiences chest pain and unusual heart activity during exercise and normal activities
stress testing	method for evaluating cardiovascular fitness; patient placed on treadmill or bicycle and then subjected to steadily increasing levels of work; EKG and oxygen levels are taken while the patient exercises; stopped if abnormalities occur on the EKG; also called <i>exercise test</i> or <i>treadmill test</i>

CW

- Practice questions
- Case Study
- *New York Times* link for research into specific diagnostic procedures

ASSESSMENTS

Quiz 5G—Chapter Review

Test Bank—questions

OBJECTIVE 13

Identify and define selected cardiovascular system therapeutic procedures.

Text pages: 150–151; PowerPoint slides: 109–118

LECTURE NOTES

Term

Medical Procedures

Term	Definition
cardiopulmonary resuscitation (CPR)	procedure to restore cardiac output and oxygenated air to lungs for person in cardiac arrest; combination of chest compressions (to push blood out of heart) and artificial respiration (to blow air into lungs) performed by one or two CPR-trained rescuers
defibrillation	procedure that converts serious irregular heartbeats, such as fibrillation, by giving electric shocks to heart using instrument called defibrillator; also called <i>cardioversion</i> .
extracorporeal circulation (ECC)	during open-heart surgery, routing of blood to heart-lung machine so it can be oxygenated and pumped to rest of body
implantable cardioverter-defibrillator	device implanted in heart that delivers electrical shock to restore normal heart rhythm; particularly useful for persons who experience ventricular fibrillation

TEACHING STRATEGIES

- Write sentences on the board using common words; have students substitute correct medical terms.

IRDVD

- See PowerPoint presentation on the Instructor's Resource DVD for a video on the topic of defibrillation.

Jeopardy Game

- Have students create questions for terms in this section for a Jeopardy game to be played in class—may be combined with Vocabulary, Pathology, and Diagnostic terms.

Pop Questions

- Use Clicker questions as either a pretest or posttest quiz to gauge student comprehension during lecture.

Guest Speaker

- Invite an EMT to speak to the class about CPR and defibrillation and show a defibrillator.

pacemaker implantation	electrical device that substitutes for natural pacemaker of heart; controls beating of the heart by a series of rhythmic electrical impulses; external pacemaker has electrodes on outside of body; internal pacemaker has electrodes surgically implanted within chest wall
thrombolytic therapy	process in which drugs, such as streptokinase (SK) or tissue-type plasminogen activator (tPA), are injected into blood vessel to dissolve clots and restore blood flow

Surgical Procedures

aneurysmectomy	surgical removal of an aneurysm
arterial anastomosis	surgical joining together of two arteries; performed if artery is severed or if damaged section of artery is removed
coronary artery bypass graft (CABG)	open-heart surgery in which blood vessel from another location in body (often leg vein) is grafted to route blood around blocked coronary artery
embolectomy	removal of embolus from blood vessel
endarterectomy	removal of diseased or damaged inner lining of artery; performed to remove atherosclerotic plaques
heart transplantation	replacement of diseased or malfunctioning heart with donor's heart
intracoronary artery stent	placing of stent within coronary artery to treat coronary ischemia due to atherosclerosis
ligation and stripping	surgical treatment for varicose veins; damaged vein is tied off (ligation) and removed (stripping)
percutaneous transluminal coronary angioplasty (PTCA)	method for treating localized coronary artery narrowing; balloon catheter is inserted through skin into coronary artery and inflated to dilate narrow blood vessel
valve replacement	removal of diseased heart valve and replacement with artificial valve

LEARNING ACTIVITIES

Worksheet 5C

- Chapter Review

Text

- Practice Exercises
- Terminology Checklist
- Medical Record Analysis
- Chart Note Transcription

Student DVD-ROM

- Learning games
- Flash cards

CW

- Practice questions
- Case Study
- *New York Times* link for research into specific treatment procedures

ASSESSMENTS

Quiz 5G—Chapter Review

Test Bank—questions

OBJECTIVE 14

Identify and define selected medications relating to the cardiovascular system.

Text pages: 151–152; PowerPoint slides: 119–122

LECTURE NOTES

Classification	Action	Generic and Brand Names
ACE inhibitor drugs	produce vasodilation and decrease blood pressure	benazepril, Lotensin; catopril, Capoten
antiarrhythmic	reduces or prevents cardiac arrhythmias	flecainide, Tambocor; ibutilide, Corvert
anticoagulant	prevent blood clot formation	warfarin sodium, Coumadin, Warfarin
antilipidemic	reduces amount of cholesterol and lipids in blood-stream; treats hyperlipidemia	atorvastatin, Lipitor; simvastatin, Zocor
Beta-blocker drugs	treats hypertension and angina pectoris by lowering heart rate	metoprolol, Lopressor; propranolol, Inderal
Calcium channel blocker drugs	treats hypertension, angina pectoris, and congestive heart failure by causing heart to beat less forcefully and less often	diltiazem, Cardizem; nifedipine, Procardia
cardiotonic	increases force of cardiac muscle contraction; treats congestive heart failure	digoxin, Lanoxin
diuretic	increases urine production by kidneys, works to reduce plasma and therefore blood volume resulting in lower blood pressure	furosemide, Lasix
thrombolytic	dissolves existing blood clots	clopidogrel, Plavix; alteplase, Activase
vasoconstrictor	contracts smooth muscle in walls of blood vessels; raises blood pressure	metaraminol, Aramine
vasodilator	relaxes smooth muscle in walls of arteries, thereby increasing diameter of blood vessel; used for two main purposes: increasing circulation to ischemic area and reducing blood pressure	nitroglycerine, Nitro-Dur; isoxsuprine, Vasodilan

TEACHING STRATEGIES

Pop Questions

- Use Clicker questions as either a pretest or posttest quiz to gauge student comprehension during lecture.

LEARNING ACTIVITIES

- Have students use a PDR and/or the Internet to look up additional information regarding these medications, such as dosage, side effects, and contraindications.

Worksheet 5C

- Chapter Review

Text

- Practice Exercises
- Terminology Checklist

Student DVD-ROM

- Learning games
- Flash cards

CW

- Practice questions

ASSESSMENTS

Quiz 5G—Chapter Review

Test bank—questions

OBJECTIVE 15

Define selected abbreviations associated with the cardiovascular system.

Text page: 152; PowerPoint slides: 123–129

LECTURE NOTES

AF	atrial fibrillation
AMI	acute myocardial infarction
AS	arteriosclerosis
ASD	atrial septal defect
ASHD	arteriosclerotic heart disease
AV, A-V	atrioventricular
BBB	bundle branch block (L for left; R for right)
BP	blood pressure
bpm	beats per minute
CABG	coronary artery bypass graft
CAD	coronary artery disease
cath	catheterization
CC	cardiac catheterization, chief complaint
CCU	coronary care unit
CHF	congestive heart failure
CoA	coarctation of the aorta
CP	chest pain
CPK	creatine phosphokinase
CPR	cardiopulmonary resuscitation
CSD	congenital septal defect
CV	cardiovascular
DVT	deep vein thrombosis
ECC	extracorporeal circulation
ECG, EKG	electrocardiogram
ECHO	echocardiogram
GOT	glutamic oxaloacetic transaminase
HTN	hypertension
ICU	intensive care unit
IV	intravenous
LDH	lactate dehydrogenase
LVAD	left ventricular assist device
LVH	left ventricular hypertrophy
MI	myocardial infarction, mitral insufficiency
mm Hg	millimeters of mercury
MR	mitral regurgitation
MS	mitral stenosis
MVP	mitral valve prolapse
P	pulse

TEACHING STRATEGIES

- Emphasize the importance of learning abbreviations and their full meanings; point out how some abbreviations, such as MI, CHF, EKG, and ASHD are typically used rather than full terms.
- Encourage students to add abbreviations to their flash cards.
- Write sentences on the board using medical terms; have students substitute correct abbreviations for the terms.

Memory Game

- Have students assist in creating a memory game to play in class.

Pop Questions

- Use Clicker questions as either a pretest or posttest quiz to gauge student comprehension during lecture.

LEARNING ACTIVITIES

Worksheet 5C

- Chapter Review

Quiz 5F

- May be used as a worksheet

Text

- Practice Exercises

Student DVD-ROM

- Learning games
- Flash cards

CW

- Practice questions

ASSESSMENTS

Quiz 5F—Abbreviations Quiz

Quiz 5G—Chapter Review

Test Bank—questions

PAC	premature atrial contraction
PDA	patent ductus arteriosus
PTCA	percutaneous transluminal coronary angioplasty
PVC	premature ventricular contraction
S1	first heart sound
S2	second heart sound
SA, S-A	sinoatrial
SGOT	serum glutamic oxaloacetic transaminase
SK	streptokinase
tPA	tissue-type plasminogen activator
Vfib	ventricular fibrillation
VSD	ventricular septal defect
VT	ventricular tachycardia

Worksheet 5A

New Combining Form and Suffix Handout

Directions: For each combining form and suffix below, write out its meaning. Then locate a new term from the chapter that uses the combining form or suffix.

Combining Forms	Meaning	Chapter Term	Meaning
1. angi/o	_____	_____	_____
2. aort/o	_____	_____	_____
3. arteri/o	_____	_____	_____
4. ather/o	_____	_____	_____
5. atri/o	_____	_____	_____
6. cardi/o	_____	_____	_____
7. coron/o	_____	_____	_____
8. hemangi/o	_____	_____	_____
9. phleb/o	_____	_____	_____
10. sphygm/o	_____	_____	_____
11. steth/o	_____	_____	_____
12. thromb/o	_____	_____	_____
13. valv/o	_____	_____	_____
14. valvul/o	_____	_____	_____
15. vascul/o	_____	_____	_____
16. vas/o	_____	_____	_____
17. ven/o	_____	_____	_____
18. ventricul/o	_____	_____	_____
Suffixes			
19. -manometer	_____	_____	_____
20. -ole	_____	_____	_____
21. -tension	_____	_____	_____
22. -ule	_____	_____	_____

Worksheet 5B

Medical Term Analysis

Directions: Below are terms built from word parts used in this chapter that are not analyzed in the Word Building Table. Many are built from word parts you have learned in previous chapters. Analyze each term presented below and list and define the word parts used to build each term.

Medical Term	Word Part Analysis
1. pulmonary	_____ _____
2. atrioventricular	_____ _____
3. cardiology	_____ _____
4. arteriosclerosis	_____ _____
5. atherosclerosis	_____ _____
6. hypotension	_____ _____
7. thrombophlebitis	_____ _____
8. angiography	_____ _____
9. venography	_____ _____
10. electrocardiography	_____ _____
11. cardiopulmonary	_____ _____

(Continued)

- 12. thrombolytic _____

- 13. sphygmomanometer _____

- 14. cardiomyopathy _____

- 15. myocarditis _____

- 16. hypertension _____

- 17. intracoronary _____

Worksheet 5C

Chapter Review

Anatomy and Physiology

1. The _____ circulation transports deoxygenated blood to the lungs to get oxygen.
2. The _____ is the muscular middle layer of the heart.
3. The _____ are the upper chambers of the heart, and the _____ are the lower pumping chambers.
4. The _____ and _____ valves are atrioventricular valves.
5. Another name for the mitral valve is the _____ valve.
6. Blood ejected from the right ventricle enters the _____, and blood ejected from the left ventricle enters the _____.
7. The sinoatrial node is known as the _____ of the heart.
8. _____ are the blood vessels carrying blood away from the heart, and _____ are the blood vessels carrying blood toward the heart.
9. The narrowest blood vessels are the _____.
10. The _____ arteries carry blood to the heart muscle.

Word Building

Build a term that means:

1. narrowing of a vessel _____
2. enlarged heart _____
3. heart specialist _____
4. surgical repair of a valve _____
5. small vein _____
6. pertaining to between ventricles _____
7. heart muscle disease _____

(Continued)

8. insufficient tension
9. process of recording a vessel
10. removal of fatty substance

Matching

- | | |
|--------------------------|---|
| _____ 1. systolic | a. racing, pounding heartbeat |
| _____ 2. auscultation | b. thin flexible tube inserted into body |
| _____ 3. infarct | c. chest pain |
| _____ 4. murmur | d. bacterial infection of inner layer of heart |
| _____ 5. palpitations | e. congenital narrowing of aorta |
| _____ 6. angina pectoris | f. high blood pressure |
| _____ 7. cardiac arrest | g. highest blood pressure reading |
| _____ 8. prolapse | h. portable EKG |
| _____ 9. MI | i. floating blood clot |
| _____ 10. aneurysm | j. stainless steel tube placed within vessel |
| _____ 11. embolus | k. varicose vein in anal region |
| _____ 12. hypotension | l. area of necrosis in an organ |
| _____ 13. catheter | m. left ventricle is too weak to pump efficiently |
| _____ 14. plaque | n. increases force of cardiac muscle contraction |
| _____ 15. stent | o. listening to body sounds |
| _____ 16. regurgitation | p. heart attack |
| _____ 17. endocarditis | q. uses radioactive thallium |
| _____ 18. CoA | r. loose heart valve |
| _____ 19. flutter | s. to flow backwards |
| _____ 20. hemorrhoid | t. also called a bruit |
| _____ 21. HTN | u. atria beat too fast but in regular pattern |
| _____ 22. cardiac scan | v. deposit of fatty lipids in an artery |
| _____ 23. CHF | w. localized widening of an arterial wall |
| _____ 24. Holter monitor | x. low blood pressure |
| _____ 25. cardiogenic | y. complete stopping of heart activity |

Quiz 5A

New Word Parts

Directions: Define the combining form or suffix in the spaces provided.

1. angi/o _____
2. ather/o _____
3. cardi/o _____
4. atri/o _____
5. hemangi/o _____
6. phleb/o _____
7. sphygm/o _____
8. steth/o _____
9. thromb/o _____
10. valvul/o _____
11. vascul/o _____
12. vas/o _____
13. ven/o _____
14. ventricul/o _____
15. aort/o _____
16. arteri/o _____
17. coron/o _____
18. valv/o _____
19. -ule _____
20. -ole _____
21. -manometer _____
22. -tension _____

Quiz 5B

Spelling Quiz

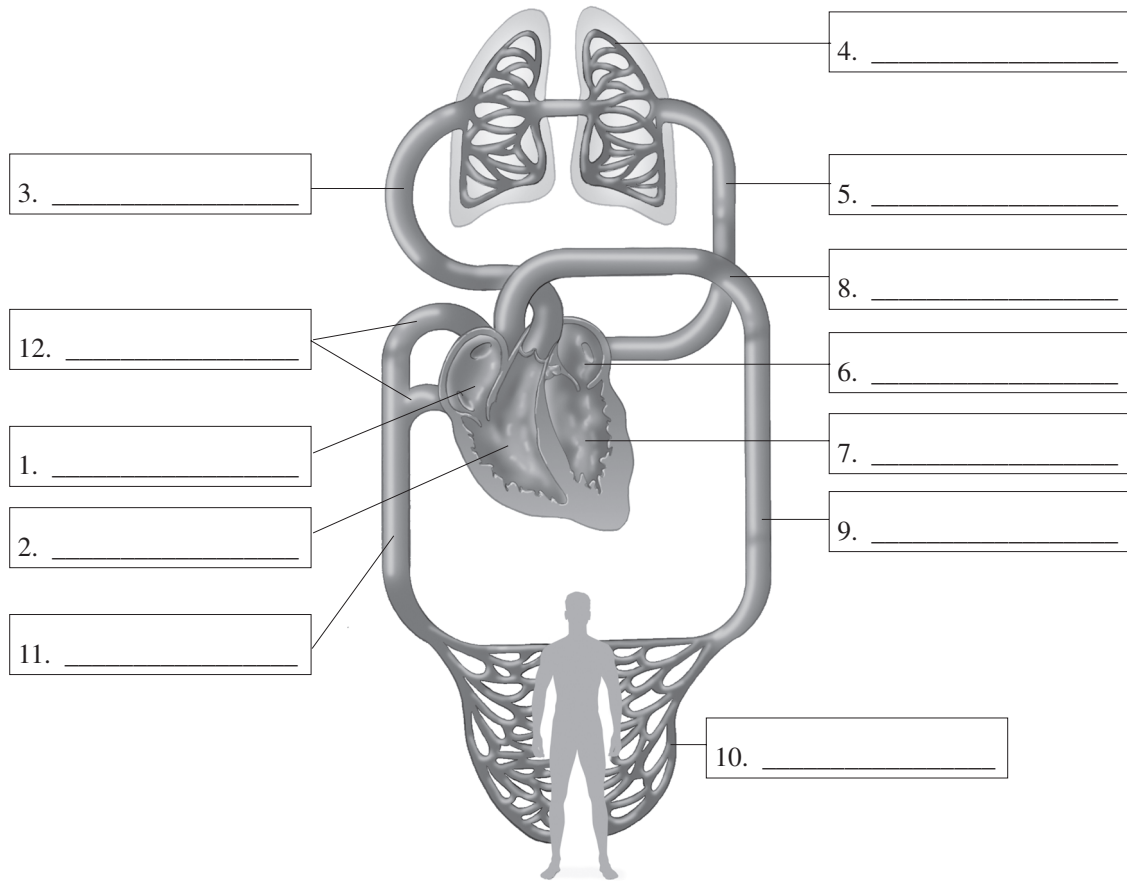
Directions: Write each term as your instructor pronounces it.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____

Quiz 5C

Labeling Diagram

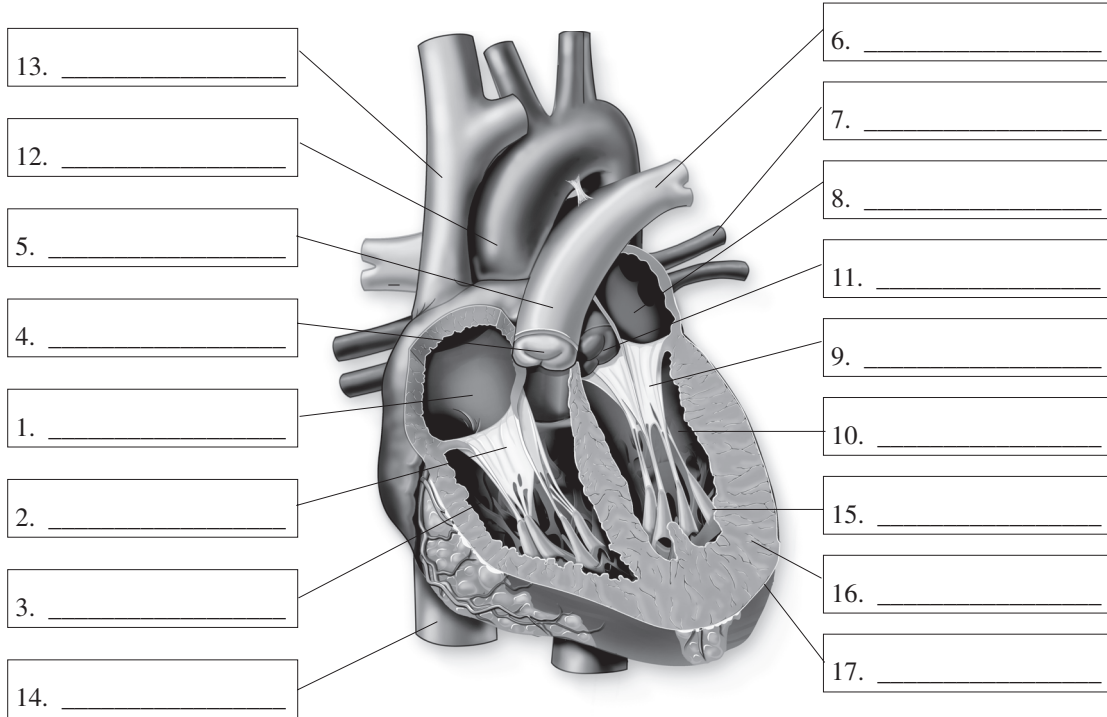
Directions: Label the path of blood flow through the body.



Quiz 5D

Labeling Diagram

Directions: Label the internal structures of the heart.



Quiz 5E

Word Building Quiz

Directions: Build a single medical term for each phrase below.

1. involuntary muscle contraction of a vessel _____
2. narrowing of a vessel _____
3. small artery _____
4. fatty substance tumor/growth _____
5. ruptured artery _____
6. pertaining to ventricles _____
7. pertaining to atria _____
8. state of fast heart _____
9. enlarged heart _____
10. surgical repair of valve _____
11. pertaining to an artery _____
12. pertaining to the aorta _____
13. pertaining to a blood vessel _____
14. pertaining to vein _____
15. pertaining to between ventricles _____
16. study of the heart _____
17. heart muscle disease _____
18. inflammation around heart _____
19. artery hardening _____
20. inflammation of many arteries _____
21. record of a vessel _____
22. process of recording heart electricity _____
23. pertaining to within the heart _____
24. clot destruction _____
25. pertaining to heart and lungs _____

Quiz 5F

Abbreviations Quiz

Directions: Write the medical term for which each abbreviation stands.

1. P _____
2. AF _____
3. MI _____
4. BP _____
5. ASHD _____
6. CHF _____
7. CABG _____
8. CAD _____
9. CoA _____
10. CPR _____
11. CSD _____
12. HTN _____
13. LDH _____
14. MR _____
15. PDA _____
16. PVC _____
17. tPA _____
18. SK _____
19. S1 _____
20. MS _____
21. IV _____
22. CCU _____
23. CV _____
24. DVT _____
25. ECC _____

Quiz 5G

Chapter Review

PART I: Multiple Choice

Directions: Circle the correct answer.

- The pacemaker of the heart is the
 - sino-atrial node.
 - bundle of His.
 - atrioventricular node.
 - mitral valve.
- Which circulation loop carries oxygenated blood from the heart to the cells of the body?
 - systolic circulation
 - pulmonary circulation
 - diastolic circulation
 - systemic circulation
- Which vessel(s) bring blood to the left atrium?
 - aorta
 - pulmonary veins
 - pulmonary arteries
 - vena cavae
- The large, thick-walled blood vessels are the
 - capillaries.
 - veins.
 - arterioles.
 - arteries.
- The term ischemia is defined as
 - yellowish, fatty plaque.
 - tissue death.
 - deficiency of blood supply.
 - abnormal heart sound.
- Abnormal quivering of heart muscle fibers is
 - palpitations.
 - murmur.
 - fibrillation.
 - angiospasm.
- The medical term for a heart attack is
 - angina pectoris.
 - congestive heart failure.
 - arteriosclerosis.
 - myocardial infarction.
- The congenital anomaly characterized by a connection between the pulmonary artery and the aorta is called
 - tetralogy of Fallot.
 - Raynaud's phenomenon.
 - patent ductus arteriosus.
 - congenital septal defect.
- The expansion and contraction produced by blood as it moves through an artery produces the
 - pulse.
 - blood pressure.
 - aneurysm.
 - phlebotomy.
- What diagnostic procedure is also known as a stress test?
 - cardiac catheterization
 - auscultation
 - Holter monitor
 - treadmill

(Continued)

PART II: Matching

Directions: Match the term with its definition.

- | | |
|--------------------------|---|
| _____ 1. tricuspid | a. lipid deposit in an artery |
| _____ 2. auscultation | b. identifies deep vein thromboses |
| _____ 3. plaque | c. increase indicates heart muscle damage |
| _____ 4. thrombus | d. a heart arrhythmia |
| _____ 5. cardiac enzymes | e. an atrioventricular heart valve |
| _____ 6. Doppler US | f. surgical joining of two arteries |
| _____ 7. defibrillation | g. blood clot forming within blood vessel |
| _____ 8. anastomosis | h. medication to treat hypertension |
| _____ 9. flutter | i. uses a stethoscope |
| _____ 10. beta-blocker | j. converts irregular heartbeats back to normal |

PART III: Abbreviations

Directions: Write the full meaning of the following abbreviations.

1. CPR _____
2. ECHO _____
3. cath _____
4. CABG _____
5. VT _____

Chapter 5 Answer Keys

Worksheet 5A Answer Key

1. vessel
2. aorta
3. artery
4. fatty substance
5. atrium
6. heart
7. heart
8. blood vessel
9. vein
10. pulse
11. chest
12. clot
13. valve
14. valve
15. blood vessel
16. vessel, duct
17. vein
18. ventricle
19. instrument to measure pressure
20. small
21. pressure
22. small

Worksheet 5B Answer Key

1. pulmon/o = lung; -ary = pertaining to
2. atri/o = atrium; ventricul/o = ventricle; -ar = pertaining to
3. cardi/o = heart; -logy = study of
4. arteri/o = artery; -sclerosis = hardening
5. ather/o = yellow, fatty substance; -sclerosis = hardening
6. hypo- = insufficient; -tension = pressure
7. thromb/o = clot; phleb/o = vein; -itis = inflammation
8. angi/o = vessel; -graphy = process of recording
9. ven/o = vein; -graphy = process of recording
10. electr/o = electricity; cardi/o = heart; -graphy = process of recording
11. cardi/o = heart; pulmon/o = lung; -ary = pertaining to
12. thromb/o = clot; -lytic = destruction
13. sphygm/o = pulse; -manometer = instrument to measure pressure
14. cardi/o = heart; my/o = muscle; -pathy = disease
15. my/o = heart; cardi/o = heart; -itis = inflammation
16. hyper- = excessive; -tension = pressure
17. intra- = within; coron/o = heart; -ary = pertaining to

Worksheet 5C Answer Key

Anatomy and Physiology

1. pulmonary
2. myocardium
3. atria; ventricles
4. aortic; pulmonary
5. bicuspid
6. pulmonary artery; aorta
7. pacemaker
8. arteries; veins
9. capillaries
10. coronary

Word Building

1. angiostenosis
2. cardiomegaly
3. cardiologist
4. valvoplasty
5. venule
6. interventricular
7. cardiomyopathy
8. hypotension
9. angiography
10. atherectomy

Matching

- | | |
|-------|-------|
| 1. g | 14. v |
| 2. o | 15. j |
| 3. l | 16. s |
| 4. t | 17. d |
| 5. a | 18. e |
| 6. c | 19. u |
| 7. y | 20. k |
| 8. r | 21. f |
| 9. p | 22. q |
| 10. w | 23. m |
| 11. i | 24. h |
| 12. x | 25. n |
| 13. b | |

Quiz 5A Answer Key

- | | |
|--------------------|------------------------------------|
| 1. vessel | 12. vessel, duct |
| 2. fatty substance | 13. vein |
| 3. heart | 14. ventricle |
| 4. atrium | 15. aorta |
| 5. blood vessel | 16. artery |
| 6. vein | 17. heart |
| 7. pulse | 18. valve |
| 8. chest | 19. small |
| 9. clot | 20. small |
| 10. valve | 21. instrument to measure pressure |
| 11. blood vessel | 22. pressure |

Quiz 5B Answer Key

- | | |
|---------------------|----------------------|
| 1. oxygenated | 11. sphygmomanometer |
| 2. pericardium | 12. arrhythmia |
| 3. interventricular | 13. fibrillation |
| 4. systole | 14. infarction |
| 5. sinoatrial | 15. coarctation |
| 6. atherosclerosis | 16. echocardiography |
| 7. cardiorrhesis | 17. hemorrhoid |
| 8. phlebotomy | 18. catheterization |
| 9. auscultation | 19. anastomosis |
| 10. ischemia | 20. anticoagulant |

Quiz 5C Answer Key

- | | |
|------------------------|-----------------------------|
| 1. right atrium | 7. left ventricle |
| 2. right ventricle | 8. aorta |
| 3. pulmonary arteries | 9. systemic arteries |
| 4. capillary bed lungs | 10. systemic capillary beds |
| 5. pulmonary veins | 11. systemic veins |
| 6. left atrium | 12. vena cavae |

Quiz 5D Answer Key

1. right atrium
2. tricuspid valve
3. right ventricle
4. pulmonary valve
5. pulmonary trunk
6. pulmonary artery
7. pulmonary vein
8. left atrium
9. mitral or bicuspid valve
10. left ventricle
11. aortic valve
12. aorta
13. superior vena cava
14. inferior vena cava
15. endocardium
16. myocardium
17. pericardium

Quiz 5E Answer Key

1. angiospasm
2. angiostenosis
3. arteriole
4. atheroma
5. arteriorrhexis
6. ventricular
7. atrial
8. tachycardia
9. cardiomegaly
10. valvoplasty
11. arterial
12. aortic
13. vascular
14. venous
15. interventricular
16. cardiology
17. cardiomyopathy
18. pericarditis
19. arteriosclerosis
20. polyarteritis
21. angiogram
22. electrocardiography
23. intracoronary
24. thrombolytic
25. cardiopulmonary

Quiz 5F Answer Key

1. pulse
2. atrial fibrillation
3. myocardial infarction, mitral insufficiency
4. blood pressure
5. arteriosclerotic heart disease
6. congestive heart failure
7. coronary artery bypass graft
8. coronary artery disease
9. coarctation of the aorta
10. cardiopulmonary resuscitation
11. congenital septal defect
12. hypertension
13. lactate dehydrogenase
14. mitral regurgitation
15. patent ductus arteriosus
16. premature ventricular contraction
17. tissue-type plasminogen activator
18. streptokinase
19. first heart sound
20. mitral stenosis
21. intravenous
22. coronary care unit
23. cardiovascular
24. deep vein thrombosis
25. extracorporeal circulation

Quiz 5G Answer Key

Multiple Choice

- | | |
|------|-------|
| 1. A | 6. C |
| 2. D | 7. D |
| 3. B | 8. C |
| 4. D | 9. A |
| 5. C | 10. D |

Matching

- | | |
|------|-------|
| 1. e | 6. b |
| 2. i | 7. j |
| 3. a | 8. f |
| 4. g | 9. d |
| 5. c | 10. h |

Abbreviations

- | | |
|----------------------------------|---------------------------------|
| 1. cardiopulmonary resuscitation | 4. coronary artery bypass graft |
| 2. echocardiogram | 5. ventricular tachycardia |
| 3. catheterization | |