



BAKER COLLEGE
STUDENT LEARNING OUTCOMES
CAS1050 Introduction to Cardiac Sonography
6 semester credit hours

Student Learning Outcomes and Enabling Objectives

1. Discuss the basic 2D and M-mode echo exam
 - a. Identify basic 2D views
 - b. Identify Echo windows
 - c. Identify Echo scan plans
 - d. Identify M-mode views
 - e. Identify M-mode measurements
 - f. Identify Basic 2D measurements
 - g. Discuss indications for echo exam

2. Recognize normal adult cardiac anatomy in relationship to 2D and m-mode views
 - a. Identify cardiac valves, chambers and walls in parasternal views
 - b. Identify cardiac valves, chambers and walls in Apical views
 - c. Identify cardiac valves, chambers and walls in Subcostal views
 - d. Identify vessels in Suprasternal notch views

3. Differentiate between the systemic, pulmonary and coronary circulation
 - a. Identify coronary arteries and distribution
 - b. Compare normal pressures and O₂ saturations within the different systems
 - c. Identify the order of blood flow as it travels through the cardiovascular system

4. Discuss normal cardiac hemodynamics
 - a. Define cardiac output, stroke volume and cardiac index
 - b. Define the four components of cardiac output: preload, afterload, inotropic and chronotropic force.
 - c. Describe the Frank Starling Law

5. Discuss the ECG and the relationship to the cardiac cycle
 - a. Identify ECG waveforms, intervals and segments
 - b. Identify systole and diastole on ECG

- c. Describe electrical pathway through the heart
 - d. Describe the flow of electrical current through the heart muscle
 - e. Describe the mechanical function of the chambers and valves throughout the cardiac cycle
6. Interpret ECG rhythm strips
- a. Recognize normal rhythms
 - b. Recognize Sinus, Atrial, Junctional and Ventricular dysrhythmias
 - c. Recognize AV blocks
7. Interpret 12 lead ECG
- a. Recognize ST depression and elevation
 - b. Recognize LBBB and RBBB
 - c. Recognize q waves
8. Discuss Pacemaker technology
- a. Identify different types of pacemakers
 - b. Identify type of pacemaker on a rhythm strip
9. Differentiate between different stress testing protocols
- a. Describe indications and contraindications for stress testing
 - b. Compare exercise versus pharmacological stress testing
 - c. Compare nuclear versus echocardiographic stress testing
 - d. Describe basic protocols for different types of stress testing
10. Discuss normal color and spectral doppler patterns
- a. Explain positive versus negative flow patterns
 - b. Explain color flow scale
 - c. Compare PW and CW doppler
11. Demonstrate a basic 2D and M-mode exam
- a. Perform parasternal, apical, subcostal and suprasternal 2D views
 - b. Perform 2D measurements in the PLAX
 - c. Perform m-mode tracings of AV, MV and LV
 - d. Perform m-mode measurements
 - e. Show proper basic knobology skills
 - f. Show proper ergonomics while scanning
12. Perform a 12 lead ECG
- a. Demonstrate proper lead placement
 - b. Demonstrate proper use of ECG machine

13. Perform an accurate blood pressure
 - a. Demonstrate proper cuff placement and use
 - b. Demonstrate accurate BP measurement within 5 mm/hg

Big Ideas and Essential Questions

Big Ideas

- 2D echo views
- 2D windows
- 2D scan planes
- M-mode echo
- Doppler
- 12 lead ECG
- Blood Pressure
- Cardiac Anatomy
- Cardiac cycle
- Rhythm interpretation
- Stress Testing
- Pacemakers

Essential Questions

1. How do you properly perform a basic normal transthoracic exam?
2. How is a 12 lead ECG performed?
3. How are basic arrhythmias interpreted?
4. How does the cardiac cycle relate to the mechanical action of the heart?
5. How is a blood pressure measurement performed?
6. What are the different protocols for stress testing?
7. How does a pacemaker function?

These SLOs **are not** approved for experiential credit.

Effective: Summer 2023