CVT A205: INTRODUCTION TO ECHOCARDIOGRAPHY LAB

Item	Value
Curriculum Committee Approval Date	11/15/2023
Top Code	121300 - Cardiovascular Technician
Units	1 Total Units
Hours	54 Total Hours (Lab Hours 54)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	Yes
Basic Skills	Not Basic Skills (N)
Repeatable	No
Grading Policy	Standard Letter (S)

Course Description

Skill development in using echocardiographic imaging equipment, machine adjustments, and obtaining correct views on M-mode, 2-dimensional, Doppler and color flow echocardiograms under direct supervision. Includes exercises in recognition of cardiac anatomy and pathology found in diagnostic ultrasound imaging evaluation for cardiac function. COREQUISITE: CVT A200. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

1. Demonstrate the ability to acquire and critique satisfactory diagnostic ultrasound images of the heart, quantify using M-Mode and 2-Dimensional measurements for diagnostic quality as defined by the ASE.

Course Objectives

- 1. Demonstrate proper equipment and patient setup, data entry, and image adjustments.
- 2. Identify and obtain correct transducer positioning for image acquisition.
- 3. Differentiate cardiac structures as seen in each view.
- 4. Identify each cardiac structure and its orientation or anatomical relationship.
- 5. Assess cardiac images for quality and diagnostic presentation.
- 6. Perform measurements of cardiac structures/chambers accurately for diagnostic evaluation.
- 7. Distinguish normal calculations from improper measurements.
- 8. Maintain a digital recording and prints of all imaging performed.
- 9. Describe weekly progress of imaging cardiac structures in course syllabus.
- 10. Submit for evaluation an echocardiographic exam on digital media and completed syllabus towards final grade.

Lecture Content

This is a lab only class.

Lab Content

The student is given a comprehensive introduction to the imaging equipment components, i.e., transducers, display monitors, data entry key-board, file storage and transfer. Proper equipment use, care, and safety is also addressed. Equipment knob adjustments for optimal image display is demonstrated and instructed throughout course duration. Transducer placement for image acquisition is demonstrated and instructed. The student is required to perform lab assignments to demonstrate progress in image acquisition with M-mode, 2D and Doppler calculations in measurment and calculation packages. Machine adjustments, and imaging subject positioning. Maintaining a digital file of each imaging exam allows instructor and student to review for demonstration, learning, and progress evaluation. A completed lab syllabus is submitted by the student at the end of the course for evaluation and grade. The echocardiograph Theory of ultrasound imaging Components/care/safety Machine adjustments Obtaining echocardiographic views/transducer placement Parasternal long axis Parasternal short axis Apical views Subcostal/suprasternal views Recognizing cardiac anatomy Cardiac structures in each view Normal and abnormal anatomy Digital examples M-mode and 2D calculations Cardiac chamber dimensions Cardiac myocardial wall dimensions Valvular assessments Ventricular hemodynamics and function Diagnostic significance of calculations

Method(s) of Instruction

- Lab (04)
- DE Live Online Lab (04S)

Instructional Techniques

Equipment and imaging demonstrations; board illustrations, digital examples, questions/discussion sessions, paired/group measurement exercises, direct supervision

Reading Assignments

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Out-of-class Assignments

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Demonstration of Critical Thinking

Imaging skills demonstration, problem solving in cardiac calculations exercises, digital recording and syllabus demonstrating identified imaging standards

Required Writing, Problem Solving, Skills Demonstration

Measurement and calculations of cardiac structures. Mid-term and Final skills demonstration of correctly imaging cardiac anatomy per the ASE protocol guidlines.

Eligible Disciplines

Cardiovascular technology: Any bachelors degree and two years of professional experience, or any associate degree and six years of professional experience.

Other Resources

1. Ultrasound Imaging Equipment (M-mode, 2D, Doppler, Color Flow Doppler, digital recording , printer. 2. USB digital drives