

Course Competency

SON 2401C Echocardiography 2

Course Description

An in-depth course designed to cover all aspects of clinical cardiovascular ultrasound studies. Topics discussed are pathophysiological basis of diseases, clinical presentation and clinical data, Doppler and echocardiographic findings in disease, hemodynamic relationships, scanning pitfalls and differential diagnosis. Prerequisite: SON 2400L. (1 hr. lecture; 2 hr. lab)

Course Competency	Learning Outcomes
Competency 1: Demonstrate knowledge, application, and comprehension of normal and abnormal measurements done in 2D sonography by:	<ol style="list-style-type: none"> 1. Critical thinking 2. Computer / Technology Usage
<ol style="list-style-type: none"> a. Identify normal adult heart anatomy.Discuss normal cardiac circulation, hemodynamics and physiology. b. Identify anatomy displayed on transesophageal echo images. c. List and describe the echocardiographic views performed in a standard adult echo. d. Identify the console controls used to produce and optimize the images in an adult echo. 	
Competency 2: Demonstrate knowledge and comprehension of measurements done on 2D/M mode exam by:	<ol style="list-style-type: none"> 1. Critical thinking 2. Computer / Technology Usage
<ol style="list-style-type: none"> a. List measurements necessary and normal b. ranges of measurements in a 2D exam. c. Measuring walls, ventricular volumes, ejection fractions, cardiac outputs on case presentations. Interpreting the cause of abnormal measurements. d. Differentiate volume and pressure overload and describe the various causes. 	

<p>Competency 3:Demonstrate knowledge and comprehension of measurements done on Doppler by:</p>	<ol style="list-style-type: none"> 1. Critical thinking 2. Computer / Technology Usage
<ol style="list-style-type: none"> a. Listing Doppler measurements done in normal and abnormal cases. b. Listing the normal ranges of measurements done on Doppler exam. c. Interpreting the cause of abnormal measurements on Doppler. d. Performing measurements on case presentations. 	
<p>Competency 4:Demonstrate knowledge and comprehension of the mechanisms of the disease processes that affect the heart, including the cause and appearance of the following; and Discuss signs, symptoms, risk factors and complication of cardiac disease in adults by:</p>	<ol style="list-style-type: none"> 1. Critical thinking 2. Computer / Technology Usage
<ol style="list-style-type: none"> a. Evaluated: <ul style="list-style-type: none"> • Valvular disease in the adult heart. Echo evaluation and findings. • Prosthetic Heart Valves: types of prosthetic heart valves and the related echo findings. • Endocarditis, myocarditis & pericarditis. Discuss how infection can affect the adult heart and related echo findings in adults. • Pericardial disease, pericardial effusion and Tamponade: how to evaluate and related echo findings in an adult. • Coronary Artery Disease and related findings on an echo. • Cardiomyopathies: differentiate the types of cardiomyopathies and describe the related echo findings in adults. • Cardiac Myxomas, Tumors, Masses, Thrombus, and Missiles • Heart Failure. • Diseases of the aorta, aortic arch/thoracic aorta and related echo findings in an adult. • Congenital Heart Disease (Septal defects, PDA, • Endocardial Cushion Defects, PS, Coarctation of the Aorta, Ebstein Anomaly, Tetralogy of Fallot, TGA, HLHS.) • Cardiac Trauma. Valvular disease in the adult heart. Echo evaluation and findings. Prosthetic Heart Valves: types of prosthetic heart valves and the related echo findings. 	

<ul style="list-style-type: none"> • Endocarditis, myocarditis & pericarditis. Discuss how infection can affect the adult heart and related echo findings in adults. • Pericardial disease, pericardial effusion and Tamponade: how to evaluate and related echo findings in an adult. • Coronary Artery Disease and related findings on an echo. • Cardiomyopathies: differentiate the types of cardiomyopathies and describe the related echo findings in adults. • Cardiac Myxomas, Tumors, Masses, Thrombus, and Missiles • Heart Failure. • Diseases of the aorta, aortic arch/thoracic aorta and related echo findings in an adult. • Congenital Heart Disease (Septal defects, PDA, Endocardial Cushion Defects, PS, Coarctation of the Aorta, Ebstein Anomaly, Tetralogy of Fallot, TGA, HLHS.) • Cardiac Trauma. 	
<p>Competency 5:Demonstrate knowledge and comprehension of congenital heart disease by:</p>	<ol style="list-style-type: none"> 1. Critical thinking 2. Computer / Technology Usage
<ol style="list-style-type: none"> a. Discussing embryology and the development of the heart b. List and describe congenital heart defects identified in adults. c. Describing fetal circulation and the changes that occur at birth. d. Defining and identifying congenital anomalies such as PDA, ASD, VSD, PS, Coarctation of the Aorta, Ebstein’s anomaly, Tetralogy of Fallot, TGA, HLHS etc. e. Describing 2D Mode and Doppler findings for each anomaly. f. Discussing surgical repairs for each anomaly. 	
<p>Competency 6: Demonstrate knowledge and comprehension of cardiac surgical procedures and invasive procedures by:</p>	<ol style="list-style-type: none"> 1. Critical thinking 2. Computer / Technology Usage
<ol style="list-style-type: none"> a. List and describe alternative imaging techniques used to evaluate the heart. b. Listing types of valvular replacements. 	

<p>c. Describing pericardiocentesis. Ultrasound guided procedures (i.e TEE, intracardiac echo).</p> <p>d. Listing and defining the types of invasive procedures and their purpose.</p> <p>e Defining the types of cardiac surgical procedures (i.e. CABG, TAVR).</p>	
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