

DMS-2301: INTERMEDIATE SONOGRAPHIC SCANNING

Cuyahoga Community College

Viewing: DMS-2301 : Intermediate Sonographic Scanning

Board of Trustees:

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Academic Term:

Fall 2020

Subject Code

DMS - Diagnostic Medical Sonography

Course Number:

2301

Title:

Intermediate Sonographic Scanning

Catalog Description:

Advanced application of transducer manipulations, body mechanics, sonographic scanning techniques, interpersonal communication, recognition of anatomic structures, and practice of patient care skills in laboratory setting under personal supervision of Registered Diagnostic Medical Sonographer. Continue competency in scanning basic exams. Develop scanning skills of intermediate sonographic procedures.

Credit Hour(s):

2

Lab Hour(s):

6

Requisites

Prerequisite and Corequisite

DMS-1311 Initial Sonographic Scanning; and concurrent enrollment in DMS-2401 Abdominal Sonography and concurrent enrollment in DMS-2500 Obstetrical Sonography; or concurrent enrollment in DMS-2602 Echocardiography II; or concurrent enrollment in DMS-2702 Vascular Sonography II.

Outcomes

Course Outcome(s):

Act as a professional in carrying out the functions of a sonographer.

Objective(s):

1. Exhibit proper communication skills with diverse populations in the laboratory environment.
2. Seek to assist and cooperate when opportunity arises.
3. Display an ethic that is considerate to peers.
4. Demonstrate professionalism in the laboratory environment.

Course Outcome(s):

Recognize the importance of the patient.

Objective(s):

1. Adhere to infections control policies and standard precautions.
2. Engage in clear effective communication with diverse populations.
3. Apply patient care and standard precautions.
4. Respect and protect the confidentiality of acquired patient information and patient rights.

Course Outcome(s):

Perform intermediate-level technical functions within the scope of practice of a sonographer.

Objective(s):

1. Apply knowledge of physics and instrumentation.
 2. Perform sonographic imaging of anatomic structures according to the program protocols.
 3. Recognize and identify the normal and abnormal sonographic appearance of anatomic structures.
 4. Demonstrate ability to manipulate probe and equipment to optimize the sonographic image.
 5. Identify and produce quality examinations by using appropriate equipment while maintaining safety.
 6. Demonstrate continuous improvement in skills and behaviors.
 7. Follow principles of good body mechanics and ergonomics.
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Methods of Evaluation:

1. Oral quizzes
2. Homework assignments
3. Lab competency exams
4. Portfolio
5. Image/anatomy identification

Course Content Outline:

1. Concepts
 - a. Exam protocols
 - i. Abdomen according to American Institute of Ultrasound in Medicine (AIUM) Clinical Guidelines
 1. Thyroid
 2. Spleen
 3. Appendix
 4. Breast
 5. Adrenals
 6. Abdominal Doppler
 7. Screening Carotid
 8. Screening Lower Extremity Venous
 - ii. OB/GYN according to American Institute of Ultrasound in Medicine (AIUM) Clinical Guidelines
 1. Uterine exam protocols
 2. Ovarian exam protocols
 3. Spectral Doppler waveforms protocols
 4. Fetal head exam protocols
 5. Fetal abdomen exam protocols
 6. Fetal long bone lengths exam protocols
 7. Fetal heart rate exam protocols
 - iii. Cardiac according to American Society of Echocardiography (ASE) Guidelines and Standards
 1. Parasternal images, measurements, color and spectral Doppler views
 2. Apical images, measurements, color and spectral Doppler views
 3. Subcostal images, measurements, color and spectral Doppler views
 4. Suprasternal images, color and spectral Doppler views
 - iv. Vascular according to Society for Vascular Ultrasound (SVU) Positions and Guidelines (bilaterally where these structures exist)
 1. Venous lower extremities (groin to ankle to include calf veins)
 2. Venous upper extremities
 3. Transcranial Doppler
 4. Abdominal vasculature
 5. Visceral vasculature
 - a. Renal arteries
 - b. Mesenteric/splanchnic
 - c. Hepatoportal
 - b. Lab policies
 - c. Scan planes
 - d. Image orientation
 - e. Basic ultrasound physics
 - f. Physical principles of Doppler
 - g. Patient preparation
 - h. Probe preparation

- i. Lab preparation
 - j. Cooperation
 - k. Quality
 - l. Scope of practice
 - m. Professionalism
 - n. Ergonomics
 - o. Infections control policies
 - p. Communication techniques
2. Skills
- a. Use critical thinking when making judgments
 - b. Demonstrate teamwork in the lab setting
 - c. Annotate exams properly
 - d. Performing a technical exam of:
 - i. Abdomen according to AIUM Clinical Guidelines
 - 1. Thyroid
 - 2. Spleen
 - 3. Appendix
 - 4. Breast
 - 5. Adrenals
 - 6. Abdominal Doppler
 - 7. Screening Carotid
 - 8. Screening Lower Extremity Venous
 - ii. OB/GYN according to AIUM Clinical Guidelines
 - 1. Female Pelvis: gravid and non-gravid
 - 2. Ovarian Doppler
 - 3. Uterine Doppler
 - 4. Fetal Biometry
 - iii. Cardiac according to ASE Guidelines and Standards (able to perform the exam scanning using either hand)
 - 1. Parasternal images, measurements, color and spectral Doppler views
 - 2. Apical images, measurements, color and spectral Doppler views
 - 3. Subcostal images, measurements, color and spectral Doppler views
 - 4. Suprasternal images, color and spectral Doppler measurements
 - iiii. Vascular according to SVU Positions and Guidelines (bilaterally where these structures exist)
 - 1. Venous lower extremities (groin to ankle to include calf veins)
 - 2. Venous upper extremities
 - 3. Abdominal vasculature
 - 4. Visceral vasculature
 - a. Renal arteries
 - b. Mesenteric/splanchnic
 - c. Hepatoportal
 - e. Taking appropriate safety precautions in the lab environment
 - f. Continuing to demonstrate patient care skill taught previously
 - g. Communicating to a diverse population
 - h. Preparing a clean lab for the procedure
 - i. Using proper body mechanics while scanning and positioning patients
 - j. Using ergonomic features of the equipment to your benefit
 - k. Preparing the exam room and equipment for the exam.
 - l. Measuring structures according to protocol (bilaterally where these structures exist)
 - i. Abdomen according to AIUM Clinical Guidelines
 - 1. Thyroid
 - 2. Spleen
 - 3. Appendix
 - 4. Breast
 - 5. Adrenals
 - 6. Abdominal Doppler
 - 7. Screening Carotid
 - 8. Screening Lower Extremity Venous

- i. OB/GYN according to AIUM Clinical Guidelines
 - 1. Uterus
 - 2. Ovaries
 - 3. Spectral Doppler (uterine and adnexal)
 - 4. Fetal head
 - 5. Fetal abdomen
 - 6. Fetal long bones
 - 7. Fetal heart rate
 - ii. Cardiac according to ASE Guidelines and Standards
 - 1. Parasternal images, measurements, color and spectral Doppler views
 - 2. Apical images, measurements, color and spectral Doppler views
 - 3. Subcostal images, measurements, color and spectral Doppler views
 - 4. Suprasternal images, measurements, color and spectral Doppler
 - 5. M-mode
 - 6. 2D cardiac structures
 - iii. Vascular according to SVU Positions and Guidelines
 - 1. Venous lower extremities
 - 2. Venous upper extremities
 - 3. Abdominal vasculature
 - 4. Visceral vasculature
 - a. Renal arteries
 - b. Mesenteric/splanchnic
 - c. Hepatoportal
 - m. Manipulating equipment controls for a quality exam.
 - n. Selecting the proper equipment to perform a procedure.
3. Issues
- a. Ethics
 - b. Legal
 - c. Standards of practice
 - d. Diversity
 - e. Standard precautions
 - f. Safety
 - g. Quality
 - h. Scope of practice
 - i. Practice
 - j. Ergonomics
 - k. Body habitus
 - l. Retention of learned knowledge and skills

Topical Outline

- 1. Scan lab policies
 - a. Safety precautions
 - b. Exam protocols
 - c. Standard precautions
 - d. Professionalism/Teamwork in the lab environment
- 2. Image labeling and annotation
 - a. Proper format
 - b. Abbreviations
 - c. Scanning planes
- 3. Exam protocol
 - a. Abdomen according to AIUM Clinical Guidelines
 - i. Thyroid
 - ii. Spleen
 - iii. Appendix
 - iv. Breast
 - v. Adrenals
 - vi. Abdominal Doppler
 - vii. Screening Carotid
 - viii. Screening Lower Extremity Venous

- b. OB/GYN according to AIUM Clinical Guidelines
 - i. Uterus
 - ii. Ovary
 - iii. Spectral Doppler wave forms
 - iv. Fetal head
 - v. Fetal abdomen
 - vi. Fetal long bone lengths
 - vii. Fetal heart rate
- c. Cardiac according to ASE Guidelines and Standards
 - i. Parasternal spectral Doppler views
 - ii. Apical spectral Doppler views
 - iii. Subcostal spectral Doppler views
 - iv. Suprasternal spectral Doppler
- d. Vascular according to SVU Positions and Guidelines (bilaterally where these structures exist)
 - i. Venous lower extremities (groin to ankle to include calf veins)
 - ii. Venous upper extremities
 - iii. Transcranial Doppler
 - iv. Abdominal vasculature
 - v. Visceral vasculature
 - 1. Renal arteries
 - 2. Mesenteric/splanchnic
 - 3. Hepatoportal
- 4. Ultrasound lab equipment
 - a. Instrumentation controls and effects
 - b. Measurement and reporting capabilities
 - c. Recording capabilities
 - d. Care and maintenance
 - e. Quality control
- 5. Transducer
 - a. Purpose
 - b. Selection criteria
 - i. Patient type
 - ii. Procedure
 - c. Preparation
- 6. Body mechanics and ergonomic techniques and devices

Resources

Morton, Mary E. *Callen's Ultrasonography in Obstetrics and Gynecology*. 6th ed. Philadelphia: Saunders, 2016.

Stephenson, Susan. *Diagnostic Medical Sonography: Obstetrics & Gynecology*. 4th ed. Philadelphia: Lippincott Williams & Wilkins, 2017.

Curry, Reva Arnez and Betty Bates Tempkin. (2015) *Workbook and Lab Manual for Sonography: Introduction to Normal Structure and Function*, St. Louis: Saunders.

Daigle, Robert J. (2014) *Techniques in Noninvasive Vascular Diagnosis: An Encyclopedia of Vascular Testing*, Littleton, CO: Summer.

Harry, M. and Behrends, T. (2014) *Essentials of Echocardiography: An Illustrative Guide*, Colorado Springs, CO: Cardiac Ultrasound Consulting.

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Silverman, D. Manning, W. (2012) *The Complete Guide to Echocardiography*, Sandbury, MA: Jones and Bartlett Publishing.

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Kendoll, Rachel. (2018) *Workbook for Diagnostic Medical Sonography: A Guide to the Vascular System*, Philadelphia: Wolters Kluwer.

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