

# DMS-2401: ABDOMINAL SONOGRAPHY II

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## Cuyahoga Community College

**Viewing: DMS-2401 : Abdominal Sonography II**

**Board of Trustees:**

May 2020

**Academic Term:**

Fall 2020

**Subject Code**

DMS - Diagnostic Medical Sonography

**Course Number:**

2401

**Title:**

Abdominal Sonography II

**Catalog Description:**

Continuation of normal anatomy and anatomic variants, physiology, pathology, and pathophysiology of various anatomic structures and organ systems as visualized by ultrasound including: adrenal glands, spleen, breast, neck, thyroid, musculoskeletal, male reproductive system, carotid artery and lower extremity venous vasculature. Also covers the normal anatomy and anatomic variants, physiology, pathology and pathophysiology of pediatric hip, spine, and head as visualized by ultrasound. Study of Doppler and color Doppler applications of above mentioned organs and systems. Correlation to other imaging modalities. Discuss imaging specifics related to medical and surgical interventions that are more often associated with specific populations.

**Credit Hour(s):**

4

**Lecture Hour(s):**

4

## Requisites

**Prerequisite and Corequisite**

DMS-1401 Abdominal Sonography I; and concurrent enrollment in DMS-2301 Intermediate Sonographic Scanning.

## Outcomes

**Course Outcome(s):**

Assess the indications for and follow the protocols of an ultrasound examinations of the adrenal, splenic, musculoskeletal, male reproductive system, superficial structures, pediatric hip, spine, and head.

**Essential Learning Outcome Mapping:**

Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

**Objective(s):**

1. List and explain the indications for performing adrenal glands, spleen, musculoskeletal, male reproductive, and superficial structures, and pediatric hip, spine, and head ultrasound exams.
2. Describe the standard exam scanning protocols for performing adrenals, spleen, musculoskeletal, male reproductive, superficial structures, and pediatric hip, spine, and head ultrasound exams.
3. Explain the patient exam preparation and its purpose for an ultrasound examination of adrenals, spleen, musculoskeletal, male reproductive, superficial structures, and pediatric hip, spine, and head exam, and any variation allowable for age or medical conditions.

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**Course Outcome(s):**

Provide technical findings for the adrenal, splenic, musculoskeletal, male reproductive system, superficial structures, pediatric hip, spine, and head ultrasound exams.

**Essential Learning Outcome Mapping:**

Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

**Objective(s):**

1. Recognize and identify the sonographic appearance of normal anatomic structures of the adrenals, spleen, musculoskeletal, male reproductive, superficial structures, and pediatric hip, spine, and head.
2. Recognize and identify the sonographic appearance of abnormalities, disease, pathology, and pathophysiology of the adrenals, spleen, musculoskeletal, male reproductive, superficial structures, and pediatric hip, spine, and head.
3. State the normal measurement adult and pediatric values for the adrenals, spleen, musculoskeletal, superficial structures, male reproductive, and pediatric hip, spine, and head.
4. Define the purpose of Doppler and color Doppler applications for the adrenals, spleen, musculoskeletal, superficial structures, male reproductive, and pediatric hip, spine, and head.
5. Provide a sonographic impression based on assessing and evaluating pertinent related medical data and image information for proposed adrenals, spleen, musculoskeletal, male reproductive, superficial structures, and pediatric hip, spine, and head clinical patient scenarios.

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**Course Outcome(s):**

Apply introductory knowledge of the carotid artery and lower extremity venous vasculature to an ultrasound exam.

**Essential Learning Outcome Mapping:**

Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

**Objective(s):**

1. Describe the standard exam scanning protocols for performing a carotid artery and lower extremity venous vasculature ultrasound exam.
2. Recognize and identify the sonographic appearance of normal anatomic structures of the carotid artery and lower extremity venous vasculature.
3. Define the purpose of Doppler and color Doppler applications for a carotid artery and lower extremity venous vasculature ultrasound exam.
4. List and explain the indications for performing a carotid artery and lower extremity venous vasculature ultrasound exam.

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**Methods of Evaluation:**

1. Written tests/quizzes
2. Midterm and final exam
3. Research paper/project
4. Oral presentation

**Course Content Outline:**

1. Concepts
  - a. Exam scanning protocols
  - b. Scope of Practice
  - c. Preparation
  - d. Critical thinking
  - e. Disease processes
  - f. Hemodynamics
  - g. Anatomic structures of Carotid artery
  - h. Anatomic structures of lower extremity venous vasculature
    - i. Adrenal anatomic structures
    - j. Splenic anatomic structures
  - k. Superficial structures
    - l. Musculoskeletal system anatomic structures
- m. Pediatric hip, spine, and head anatomic structures
  - n. Age variables
  - o. Medical condition variables
  - p. Normal adult measurements
  - q. Normal pediatric measurements

- r. Doppler application purposes
- s. Color Doppler applications purposes
- 2. Skills
  - a. Reporting technical findings of sonographic images
  - b. Correlating medical data
  - c. Communicating the exam findings
  - d. Using critical thinking to determine the normal versus abnormal
- 3. Issues
  - a. Medical ethics
  - b. Exam preparation
  - c. Physician interaction
  - d. Patient interaction
  - e. Atypical patients
  - f. Knowledge retention
  - g. Verbal and non-verbal communication limitations
  - h. Surgical intervention and therapeutic intervention in diverse patient populations

#### Topical Outline

- 1. Adrenal
  - a. Anatomy
  - b. Physiology
  - c. Pathology/pathophysiology
  - d. Tests and lab values
  - e. Exam indications
  - f. Exam protocol and preparation
  - g. Normal and abnormal sonographic appearance
  - h. Normal measurement values (adult and pediatric)
- 2. Spleen system
  - a. Anatomy
  - b. Physiology
  - c. Pathology/pathophysiology
  - d. Tests and lab values
  - e. Exam indications
  - f. Exam protocol and preparation
  - g. Normal, normal variants, and abnormal sonographic appearance
  - h. Normal measurement values (adult and pediatric)
- 3. Neck, thyroid, and parathyroid
  - a. Anatomy
  - b. Physiology
  - c. Pathology/pathophysiology
  - d. Tests and lab values
  - e. Exam indications
  - f. Exam protocol and preparation
  - g. Normal and abnormal sonographic appearance
  - h. Normal measurement values (adult and pediatric)
- 4. Breast
  - a. Anatomy
  - b. Physiology
  - c. Pathology/pathophysiology
  - d. Tests and lab values
  - e. Exam indications
  - f. Exam protocol and preparation
  - g. Normal and abnormal sonographic appearance
- 5. Male reproductive system
  - a. Anatomy
  - b. Physiology
  - c. Pathology/pathophysiology
  - d. Tests and lab values
  - e. Exam indications

- f. Exam protocol and preparation
  - g. Normal and abnormal sonographic appearance
  - h. Normal measurement values (adult and pediatric)
  - i. Doppler exam protocols and values
6. Musculoskeletal
- a. Anatomy
  - b. Physiology
  - c. Pathology/pathophysiology
  - d. Tests and lab values
  - e. Exam indications
  - f. Exam protocol and preparation
  - g. Normal and abnormal sonographic appearance
  - h. Normal measurement values (adult and pediatric)
7. Pediatric hip
- a. Anatomy
  - b. Physiology
  - c. Pathology/pathophysiology
  - d. Tests and lab values
  - e. Exam indications
  - f. Exam protocol and preparation
  - g. Normal and abnormal sonographic appearance
  - h. Normal measurement values
8. Pediatric spine
- a. Anatomy
  - b. Physiology
  - c. Pathology/pathophysiology
  - d. Tests and lab values
  - e. Exam indications
  - f. Exam protocol and preparation
  - g. Normal and abnormal sonographic appearance
  - h. Normal measurement values
9. Pediatric Head
- a. Anatomy
  - b. Physiology
  - c. Pathology/pathophysiology
  - d. Tests and lab values
  - e. Exam indications
  - f. Exam protocol and preparation
  - g. Normal and abnormal sonographic appearance
  - h. Normal measurement values
10. Carotid artery
- a. Anatomy
  - b. Pathology/pathophysiology
  - c. Tests and lab values
  - d. Exam indications
  - e. Exam protocol and preparation
  - f. Normal, normal variants, and abnormal sonographic appearance
  - g. Normal measurement values
  - h. Doppler exam protocols and values
11. Lower extremity venous vasculature
- a. Anatomy
  - b. Pathology/pathophysiology
  - c. Tests and lab values
  - d. Exam indications
  - e. Exam protocol and preparation
  - f. Normal, normal variants, and abnormal sonographic appearance

- g. Normal measurement values
- h. Doppler exam protocols and values

## Resources

Rumack, Carol M., Stephanie R. Wilson, and J. William Charboneau, eds. *Diagnostic Ultrasound*. 5th ed. Philadelphia: Elsevier, 2018.

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Curry, Reva Arnez, and Betty Bates Tempkin. (2015) *Sonography: Introduction to Normal Structures and Function*, St. Louis: Sanders.

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

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Sanders, Roger C. and Thomas C. Winter III, eds. (2015) *Clinical Sonography: A Practical Guide*, Philadelphia: Lippincott Williams Wilkins.

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Hagen-Ansert, Sandra L. *Textbook of Diagnostic Ultrasonography*. 8th ed. 2 Volumes. St. Louis: Mosby, 2018.

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Krebs, Carol, Charles Odwin, and Arthur C. Fleischer. (2011) *Appleton and Lange's Review for the Ultrasonography Examination*, New York: McGraw Hill.

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Stephenson, S. R. (2012) *Obstetrics and Gynecology*, Lippincott Williams.

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Bhargava, S. & Bhargava, S. K. (2019) *Differential Diagnosis in Ultrasound*, New Delhi: Jaypee Brothers Medical Pub.

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Penny, S. M. (2018) *Examination Review for Ultrasound: Abdomen & Obstetrics and Gynecology*, China: Wolters Kluwer.

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