ARDMS
American Registry for Diagnostic Medical Sonography

Breast Sonography Examination Content Outline

(Outline Summary)

#	Domain	Subdomain	Percentage
1	**Anatomy and Physiology**	• Normal anatomy and physiology	**15%**
2	**Pathology**	• Abnormal perfusion and function • Benign vs. suspicious findings	**34%**
3	**Integration of Data**	• Incorporation of outside data	**19%**
4	**Protocols**	• Clinical standards and guidelines • Measurement techniques	**13%**
5	**Ultrasound Physics**	• Artifacts • Hemodynamics • Imaging Instruments	**12%**
6	**Emerging Technology and Treatment**	• New technologies • Interventional procedures	**7%**

(Detailed Outline)

1	Anatomy and Physiology 15%	Knowledge and/or skill related to anatomy and physiology
1.A	**Normal anatomy and physiology**	
1.A.1	Distinguish lymph nodes related to the breast	• Knowledge of lymph node anatomy and various locations • Ability to differentiate between normal and abnormal lymph nodes • Knowledge of age-related or hormonal sonographic changes of the breast • Knowledge of breast anatomy at various life cycles (e.g., tissue composition, layers, terminal duct lobular units (TDLU), lobes, lobules) • Knowledge of female breast anatomy
1.A.2	Assess lymph node anatomy	
1.A.3	Identify age-related or hormonal sonographic changes of the breast tissue and its components	
1.A.4	Identify functional units of the breast (e.g., lobes, ducts)	
1.A.5	Identify the components comprising each tissue layer of the breast	
1.A.6	Identify the tissue layers within the breast	
2	**Pathology 34%**	**Knowledge and/or skill related to pathology**
2.A	**Abnormal perfusion and function**	
2.A.1	Evaluate for vascularity related to a mass/lesion (e.g., using spectral, color, or power Doppler)	• Knowledge of vascularity characteristics related to a mass/lesion (e.g., as shown using spectral, color, or power Doppler)

2.B	**Benign vs. suspicious findings**	
2.B.1	Evaluate characteristics of infectious processes	• Knowledge of benign, infectious, indeterminate, and suspicious characteristics of findings • Knowledge of terminology related to patient reports (e.g., BI-RADS classification, pathology, surgical notes) • Knowledge of surface characteristics of masses • Ability to identify breast tissue patterns surrounding benign and malignant tumors • Knowledge of malignant processes including breast-specific malignancies (e.g., ductal, lobular, medullary) • Knowledge of premalignant and atypical breast processes (e.g., atypical hyperplasia) • Ability to evaluate postoperative and post-interventional sites for complications (e.g., seroma, hematoma, fat necrosis) • Ability to evaluate postoperative breast tissue changes • Knowledge of implant types and related complications (e.g., silicone, saline, subpectoral) • Ability to differentiate between benign and malignant masses, calcifications, infectious processes, associated features, and various other findings • Ability to access pathology related to nipple discharge • Knowledge of male breast anatomy
2.B.2	Evaluate lesions classified by Breast Imaging Reporting and Data System (BI-RADS)	
2.B.3	Assess masses by evaluating surface characteristics	
2.B.4	Evaluate patterns on breast tissues that surround malignant tumors or inflammatory reactions	
2.B.5	Evaluate malignant processes including breast-specific malignancies (e.g., ductal, lobular, medullary)	
2.B.6	Evaluate premalignant and atypical breast processes (e.g., atypical hyperplasia)	
2.B.7	Evaluate postoperative biopsy site for complications (e.g., seroma, hematoma, fat necrosis)	
2.B.8	Evaluate postoperative breast tissue changes	
2.B.9	Evaluate implant integrity (e.g., silicone, saline, subpectoral)	
2.B.10	Evaluate benign findings including benign pathologies (e.g., fibroadenomas, fibrocystic changes, hamartomas, lipomas)	
2.B.11	Assess nipple discharge	
2.B.12	Evaluate the male breast	
3	**Integration of Data 19%**	**Knowledge and/or skill related to integration of data**
3.A	**Incorporation of outside data (e.g., clinical assessment, history and physical (H&P) examination information, lab values)**	
3.A.1	Apply results/findings of the mammogram to guide scanning of the breast tissue	• Knowledge of mammographic findings to guide scanning of the breast tissue • Knowledge of mammographic terminology and findings • Ability to understand and apply information obtained from different modalities • Knowledge of factors for breast disease (e.g., clinical history, medications, treatments, other diseases) • Ability to recognize signs, symptoms, and locations of breast disease on visual assessment (e.g., skin changes, characteristics of nipple discharge) • Knowledge of pathological correlation
3.A.2	Correlate ultrasound findings with mammography	
3.A.3	Correlate ultrasound findings with magnetic resonance imaging (MRI) results	
3.A.4	Obtain pertinent clinical history from the patient and/or the medical records (e.g., risk factors)	
3.A.5	Use the patient's signs and symptoms to help guide the ultrasound exam	
3.A.6	Obtain pathology correlation	

4	Protocols 13%	Knowledge and/or skill related to protocols
4.A	**Clinical standards and guidelines**	
4.A.1	Evaluate the breast using various scan planes (e.g., longitudinal/transverse, radial/antiradial)	• Ability to analyze the breast using various scan planes (e.g., longitudinal/transverse, radial/antiradial) • Ability to analyze the breast using various scan techniques (e.g., palpation, standoff pad, transducer pressure, fremitus) • Knowledge of optimal patient positions for the exam being performed (e.g., oblique, supine, upright) • Ability to document standard imaging protocols (e.g., quadrants, clockface, distance from the nipple)
4.A.2	Evaluate the breast using various scan techniques (e.g., palpation, standoff pad, transducer pressure, fremitus)	
4.A.3	Evaluate the breast with the patient in various positions (e.g., oblique, supine, upright)	
4.A.4	Document the breast exam using standard imaging protocols (e.g., quadrants, clockface, distance from nipple)	
4.B	**Measurement techniques**	
4.B.1	Perform various measurements to assess breast anatomy and pathology	• Knowledge of caliper placement to achieve desired measurement
5	**Ultrasound physics 12%**	**Knowledge and/or skill related to ultrasound physics**
5.A	**Artifacts**	
5.A.1	Identify common artifacts seen on breast ultrasound	• Ability to identify artifacts and modify the exam as appropriate
5.B	**Hemodynamics**	
5.B.1	Adjust transducer pressure when using Doppler	• Knowledge of appropriate transducer pressure when using Doppler
5.C	**Imaging instruments**	
5.C.1	Adjust console settings to optimize the image	• Knowledge of knobology, physics and instrumentation
5.C.2	Select the appropriate transducer	• Ability to select the appropriate transducer and frequency for a given examination and body habitus
6	**Emerging Technology and Treatment 7%**	**Knowledge and/or skill related to emerging technology and treatment**
6.A	**New technologies**	
6.A.1	Understand various breast cancer treatments (e.g., brachytherapies, adjuvant therapies)	• Knowledge of brachytherapies and adjuvant therapies • Knowledge of three-dimensional imaging when evaluating the breast • Knowledge of elastography when evaluating the breast • Knowledge of automated whole-breast ultrasound when evaluating the breast
6.A.2	Use three-dimensional imaging when evaluating the breast	
6.A.3	Use elastography when evaluating the breast	
6.A.4	Use automated whole-breast ultrasound when evaluating the breast	
6.B	**Interventional procedures**	
6.B.1	Obtain images during interventional procedures, including specimen imaging and sentinel lymph node procedures	• Knowledge of sentinel lymph node and related procedures • Knowledge of image acquisition during ultrasound-guided interventional procedures