



Mammography

Certification and registration requirements for mammography are based on the results of a comprehensive practice analysis conducted by The American Registry of Radiologic Technologists (ARRT) staff and the Mammography Practice Analysis Committee. The purpose of the practice analysis is to identify job responsibilities typically required of mammographers at entry into the profession. The results of the practice analysis are reflected in this document. The attached task inventory is the foundation for both the clinical experience requirements and the content outline which, in turn, is the foundation for the content specifications and the CQR SSA content specifications.

Basis of Task Inventory

In 2023, ARRT surveyed a large, national sample of mammographers to identify their responsibilities. When evaluating survey results, the committee applied a 40% criterion. That is, to be included on the task inventory, an activity must have been performed by at least 40% of mammographers. The committee could include an activity that did not meet the 40% criterion if there was a compelling rationale to do so (*e.g., a task that falls below the 40% criterion but is expected to rise above the 40% criterion in the near future).

Application to Clinical Experience Requirements

The purpose of the clinical experience requirements is to document that candidates have performed a subset of the clinical procedures within a discipline. Successful performance of these fundamental procedures, in combination with mastery of the cognitive knowledge and skills as documented by the examination requirement, provides the basis for acquisition of the full range of clinical skills required in a variety of settings. An activity must appear on the task inventory to be considered for inclusion in the clinical experience requirements. If an activity is designated as a mandatory requirement, survey results had to indicate that the vast majority of mammographers performed that activity. The committee may designate clinical activities performed by fewer mammographers, or which are carried out only in selected settings, as elective. The *Mammography Clinical Experience Requirements* are available from ARRT's website (www.arrt.org).

Application to Content Specifications

The purpose of the examination requirement is to assess the knowledge and cognitive skills underlying the intelligent performance of the tasks typically required of mammographers for practice at entry level. The content specifications identify the knowledge areas underlying performance of the tasks on the task inventory. Every content category can be linked to one or more activities on the task inventory. Note that each activity on the task inventory is followed by a content category that identifies the section of the content specifications corresponding to that activity. The *Mammography Content Specifications* are available from ARRT's website (www.arrt.org).

* The abbreviation "e.g.," is used to indicate that examples are listed in parentheses, but that it is not a complete list of all possibilities.



Activity		Content Categories PC = Patient Care, IP = Image Production, P = Procedures FOQ = Focus of Questions
Prepare for the mammography procedure by:		
1.	providing premammographic instructions such as changing clothes or removal of deodorant, jewelry, etc.	PC:1.A
2.	reviewing imaging request to verify information is accurate, appropriate, and complete (e.g., patient history, clinical diagnosis, physician's orders).	PC:1.B
3.	evaluating the patient's ability to understand and comply with the requirements for the requested examination (e.g., language barriers, cognitive impairment).	PC:1.A
4.	explaining the importance of having prior breast imaging, if available.	PC:1.B
5.	reviewing previous mammograms and reports prior to exam, if available.	PC:1.B
6.	verifying previous breast imaging is available for interpreting physician.	PC:1.B
7.	asking the patient about prior breast surgery, including surgery related to breast augmentation or reduction.	PC:1.B
8.	obtaining and documenting required information on patient's medical record (e.g., family, clinical, surgical history, and pathology).	PC:1.B
9.	addressing patient anxiety, if needed.	PC:1.A
10.	performing visual breast exam based on patient communication documenting location of area(s) of interest (e.g., lumps, scars, moles, tattoos, breast changes) per protocol.	PC:1.B
Respond as appropriate to questions from patient or patient's family about:		
11.	benefits and risks of mammography screening, including typical patient dose.	PC:1.A
12.	communication method for receiving results (e.g., telephone, chart access, electronic).	PC:1.A
13.	the need for additional imaging.	PC:1.A
14.	the referring physician's role in responding to patient questions about diagnosis or prognosis.	PC:1.A
15.	guidelines for mammography screening (ACS, ACR).	PC:1.A
16.	recommendations for breast self-examination (ACS).	PC:1.A
17.	recommendations for clinical breast examination (ACS).	PC:1.A
18.	incidence and risk factors for breast cancer.	PC:1.B.
19.	gene mutations (e.g., BRCA1 and BRCA2).	PC:1.B
20.	hormone receptor status (e.g., ER+/-, PR+/-, HER2/neu).	PC:1.C
21.	hormone replacement therapy.	PC:1.B,PC:1.C
22.	breast density reporting.	PC:1.A, IP:1.C



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23.	surgical treatment options for breast cancer (e.g., breast-conserving surgery, mastectomy).	PC:1.C.
24.	sentinel lymph node biopsy.	PC:1.C
25.	nonsurgical treatment options for breast cancer including:	
	a. radiation therapy.	PC:1.C
	b. chemotherapy.	PC:1.C
	c. hormonal therapy.	PC:1.C
26.	breast reconstructive surgery (breast implants).	PC:1.C
27.	external and internal anatomy, histology, and pathology of the breast.	P:1.B, P:1.C, P:1.D
28.	benign, high risk, and malignant conditions of the breast.	P:1.E
29.	other breast imaging examinations including:	
	a. digital breast tomosynthesis (DBT).	P:2.C
	b. breast ultrasound.	P:2.C
	c. breast MRI.	P:2.C
Understand, verify, or apply mammography guidelines and regulatory information including:		
30.	BI-RADS® categories.	P:1.E
31.	audit outcomes and reporting.	IP:1.C
32.	MQSA regulations including:	
	a. EQUIP (e.g., review of image quality, positioning, and establishment of corrective procedures).	IP:1.C
	b. personnel requirements (technologist).	IP:1.C
	c. timeliness of receiving results.	IP:1.C
	d. process for documenting and resolving patient complaints.	IP:1.C
	e. inspection process (e.g., frequency, exam counts, CE requirements, QA/QC).	IP:1.C
33.	mammographic image identification according to ACR guidelines.	IP:1.C
34.	accreditation of mammography facilities (ACR).	IP:1.C
Perform and complete mammographic screening and diagnostic examinations by:		
35.	selecting equipment appropriate to the patient and the examination to be performed including:	
	a. magnification stand.	IP:1.A



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	b. fixed compression paddle.	IP:1.A
	c. flexible compression paddle.	IP:1.A
	d. curved compression paddle.	IP:1.A
	e. spot compression paddle.	IP:1.A
	f. implant paddle.	IP:1.A
36.	positioning patient and equipment to obtain the appropriate mammographic views including:	
	a. craniocaudal (CC).	P:2.A
	b. mediolateral oblique (MLO).	P:2.A
	c. 90° mediolateral (ML).	P:2.A
	d. 90° lateromedial (LM).	P:2.A
	e. exaggerated craniocaudal lateral (XCCL).	P:2.A
	f. exaggerated craniocaudal medial (XCCM).	P:2.A
	g. cleavage (CV).	P:2.A
	h. axillary tail (AT).	P:2.A
	i. tangential (TAN).	P:2.A
	j. rolled views (RL, RM, RI, RS).	P:2.A
	k. implant displaced views (CCID, MLOID).	P:2.A
	l. nipple in profile.	P:2.A
	m. anterior compression.	P:2.A
	n. spot compression.	P:2.A
	o. magnification.	P:2.A
37.	locating an area of interest using triangulation.	P:1.A
38.	positioning patients with special situations (e.g., males, kyphotic patients, wheelchair bound, body habitus) to obtain appropriate mammographic images.	P:2.B
39.	confirming exposure factors, target/filter combination, and AEC mode based upon breast tissue density, compressed thickness, and patient characteristics.	IP:1.E
40.	instructing patient in proper breathing prior to exposure.	PC:1.A
41.	acquiring the 2D image.	IP:1.B
42.	acquiring the 3D (digital breast tomosynthesis) image.	IP:1.B
43.	verifying image is of diagnostic quality, and taking corrective action as needed.	IP:1.E



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44.	interacting with patient information (e.g., HIS/RIS, EMR).	IP:1.B
45.	interacting with PACS (e.g., troubleshooting issues, importing/exporting images).	IP:1.B
46.	recognizing the role of computer aided detection (CAD) in mammographic interpretation.	IIP:1.B
Maintain mammographic equipment by:		
47.	recognizing frequency and purpose of QC tests performed by the physicist.	FOQ
48.	reviewing the physicist's mammography annual survey report.	IP:1.D
49.	identifying and documenting mammographic unit malfunctions.	IP:1.E
50.	performing, evaluating, and documenting the results of the following QC tests including:	
	a. phantom image quality.	FOQ, IP:1.D
	b. visual checklist.	IP:1.D
	c. repeat analysis.	IP:1.D
	d. monitor cleanliness.	IP:1.D
	e. viewing conditions (e.g., room lighting).	IP:1.D
	f. compression force.	IP:1.D
	g. compression thickness indicator.	IP:1.D
	h. manufacturer detector calibration (e.g., artifact evaluation).	IP:1.D
	i. system resolution test including:	
	1. spatial resolution (e.g., line pair pattern).	IP:1.D
	2. modulation transfer function (MTF).	IP:1.D
	3. signal-to-noise ratio (SNR).	IP:1.D
	4. contrast-to-noise ratio (CNR).	IP:1.D
	j. radiologist workstation monitor QC:	
	1. SMPTE.	IP:1.D
	2. TG18.	IP:1.D
Prepare for interventional procedures by:		
51.	verifying informed consent, as necessary.	P:2.D
52.	participating in preprocedural time out activity.	P:2.D
53.	using sterile or aseptic technique when indicated.	P:2.D
54.	following environmental protection standards for handling and disposing of biohazardous materials (e.g., sharps, blood, body fluids).	P:2.D



Assist with the following interventional procedures:		
55.	ultrasound core biopsy with clip placement.	P:2.D
56.	stereotactic core biopsy with clip placement (e.g., prone, upright).	P:2.D
57.	needle localization (wire).	P:2.D
Perform the following interventional imaging:		
58.	stereotactic breast specimen imaging post core needle biopsy:	
	a. intraprocedurally.	P:2.D
	b. post core needle biopsy.	P:2.D
59.	surgical breast specimen imaging.	P:2.D
60.	tissue marker clip placement imaging.	P:2.D
61.	needle localization imaging.	P:2.D