Bone Densitometry

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

Basis of Task Inventory

In 2020, the ARRT surveyed a large, national sample of bone densitometrists 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 bone densitometrists. 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 verify that candidates have completed a subset of the clinical procedures within a modality. Successful performance of these fundamental procedures, in combination with mastery of the cognitive knowledge and skills covered by the certification examination, provides the basis for the 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 bone densitometrists performed that activity. The committee may designate clinical activities performed by fewer bone densitometrists, or which are carried out only in selected settings, as elective. The *Bone Densitometry 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 whether individuals have obtained the knowledge and cognitive skills underlying the intelligent performance of the tasks typically required in bone densitometry 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 *Bone Densitometry 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.
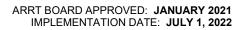
	Activity	**Content Categories** Legend: PC = Patient Care, IP = Image Production, P = Procedures
1.	Perform routine QC tests on scanning equipment according to manufacturer guidelines.	IP.1.G.
2.	Record results of QC tests in binder, chart, or database.	IP.1.G.
3.	Inspect and interpret results of routine QC tests and determine need for corrective action.	IP.1.G.4.
4.	Arrange for corrective action or repairs based on the results of QC tests as needed.	IP.1.H.
5.	Coordinate software upgrades with manufacturer when recommended.	IP.1.H.4.
6.	Troubleshoot equipment errors (e.g., contact manufacturer for guidance) if needed.	IP.1.H.4.
7.	Troubleshoot computer software errors (e.g., contact manufacturer for guidance) as needed.	IP.1.H.4.
8.	Inspect equipment to make sure it is operable and safe (*e.g., cables, cords, table pads).	IP.1.H.2.
9.	Ensure that cross-calibration between new/existing machines is performed as needed.	IP.1.H.3.
10.	Clean and disinfect work area facilities and equipment.	PC.1.B.1.F.
11.	Verify current clinical indications meet specifications of CMS billing and coding guidelines if appropriate.	PC.1.A.4.
12.	Import previously archived or baseline studies for direct comparison.	IP.1.I.
13.	Educate new residents, staff technologists, ancillary staff, or students regarding bone densitometry.	PC.1.A.
14.	Answer basic questions put forth by patient, patient's family, or authorized representative (or refer them to appropriate resources) concerning bone health, fall prevention, exercise, and nutrition.	PC.1.A.
15.	Direct patients to where they can find more information about low bone density.	PC.1.A.
16.	Educate patients about drug therapies related to bone health.	PC.1.A.5.C.
17.	Provide assistance to patients with disabilities or limited mobility.	PC.1.B.1.
18.	Use proper body mechanics and/or ergonomic devices to promote personnel safety.	PC.1.B.1.B.
19.	Explain procedure of DXA exam including positioning, duration, and notification policy of results.	PC.1.B.1.C.
20.	Review patient records and provider's request to determine appropriate anatomical sites to scan.	PC.1.B.1.D.
21.	Record patient history relevant to bone densitometry.	PC.1.B.1.D.
22.	Ask patients about their peak height, maximum height, or height loss.	PC.1.B.1.D.1.
23.	Measure and record patient's current height.	PC.1.B.1.D.2.
24.	Measure and record patient's current weight.	PC.1.B.1.D.2.
25.	Determine if patient has recently received a radiopaque contrast agent or radionuclide.	PC.1.B.1.D.4.
26.	Determine if patient has recently ingested contraindicated medications or supplements (e.g., calcium).	PC.1.B.1.D.4.
27.	Screen female patients of childbearing age about the possibility of pregnancy.	PC.1.B.D.5.

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28.	Enter accurate patient data necessary to initiate scan to utilize correct reference data.	PC.1.B.1.E.1.
29.	Review prior scans and reproduce patient positioning during follow-up scan appointments.	P.1.A.2.B., P.1.B.2.C., P.1.C.2.C.
30.	Ensure that artifact-producing objects (e.g., zippers, buttons, jewelry, medical devices) within scan area have been removed from the patient when possible.	PC.1.B.1.E.2.
31.	Determine if patient anatomy, pathology, or other limitations require special consideration in patient positioning.	P.1.A.3., P.1.B.3., P.1.C.3.
32.	Position patient to scan desired region of interest (ROI) using bony landmarks and surface anatomical features.	P.1.A.2., P.1.B.2., P.1.C.2.
33.	Use positioning aids as needed to reduce patient movement and/or promote patient safety.	P.1.A.2.B.1., P.1.B.2.C.3., P.1.C.2.C.2.
34.	Record positioning details in patient records to ensure consistency.	IP.1.F.4.A.
35.	Take appropriate precautions to minimize occupational radiation exposure.	PC.1.B.2.A.
36.	Take appropriate precautions to minimize radiation exposure to the patient.	PC.1.B.2.B.
37.	Keep all unnecessary persons out of the immediate area during radiation exposure.	PC.1.B.2.
38.	Select appropriate scan mode and perform necessary scans.	IP.1.
39.	Perform bone densitometry scans using a fan beam system.	IP.1.C.
40.	Perform and analyze bone densitometry scans of the lumbar spine – PA utilizing DXA equipment.	P.1.A.
41.	Perform and analyze bone densitometry scans of the proximal femur utilizing DXA equipment.	P.1.B.
42.	Perform and analyze bone densitometry scans of the forearm utilizing DXA equipment.	P.1.C.
43.	Perform and analyze bone densitometry scans of the spine – VFA (vertebral fracture assessment) utilizing DXA equipment.	IP.1.E.5.
44.	Perform and analyze bone densitometry scans on pediatric patients (ages 5-19) utilizing DXA equipment.	IP.1.E.6.
45.	Enhance or modify image appearance.	P.1.A.4., P.1.B.4., P.1.C.4.
46.	Evaluate automatic placement of region of interest (ROI) and modify if necessary (e.g., vertebral body exclusions, hardware).	P.1.A.4.A., P.1.B.4.A., P.1.C.4.A.
47.	Review scan results to identify bone density measurements that may be inaccurate due to artifacts, unusual anatomy, pathology, or positioning errors and rescan if necessary.	P.1.A.1., P.1.B.1., P.1.C.1.
48.	Evaluate scan results for technical problems (e.g., incorrect scan mode or site) and take corrective action.	IP.1.F.

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49.	Review scan results to determine if scanning an additional site is required in order to obtain more precise bone density measurements.	P.1.A.4., P.1.B.4., P.1.C.4.
50.	Evaluate accuracy of vertebral labels and intervertebral markers for scan of lumbar spine and modify if necessary.	P.1.A.4.
51.	Compare bone density measurements from two different occasions (for same patient) to assess changes over time.	IP.1.F.4.
52.	Identify bone density measurements that require interpreting provider's attention (e.g., low T-score, unreliable results).	IP.1.E.
53.	Identify exam-limiting patient anatomy or pathology that requires interpreting provider's attention (e.g., scoliosis, severe arthritis).	IP.1.F.
54.	Perform an in vivo precision study.	IP.1.F.3.E.
55.	Operate electronic digital imaging devices and record keeping information technology system devices including PACS and medical information systems.	IP.1.I.
56.	Conduct system backup and archive as recommended by the manufacturer (e.g., external hard drive, DVD).	IP.1.I.
57.	Utilize FRAX® tool to assess 10-year fracture risk.	IP.1.E.4.