



# 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 density technologists at entry into the profession. The results of the practice analysis are reflected in this document. The attached task inventory is the foundation for 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 2024, ARRT surveyed a large, national sample of bone density technologists to identify their responsibilities. When evaluating survey results, the committee considered tasks performed by 40% of respondents to be “typically required for practice” and included them on the task inventory, excluding those performed by fewer than 40%. However, the committee could elect to include some tasks below the threshold, either due to the criticality of the task or an expectation that the number of bone density technologists performing the task would increase in the near future. Similarly, the committee could exclude tasks surveyed above the threshold if no longer relevant or if they expected the number of bone density technologists performing the task would soon drop below the threshold.

## 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 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. For an activity to be designated as a mandatory requirement, survey results had to indicate that bone density technologists performed that activity. The committee designated clinical activities performed by fewer bone density technologists, 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](http://www.arrt.org)).

## Application to Content Specifications

The purpose of the examination is to assess 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](http://www.arrt.org)).



<b>Activity</b>		<b>Content Categories</b> PC= Patient Care IP= Image Production P= Procedures
1.	Perform routine QC tests on scanning equipment according to manufacturer guidelines.	<b>IP:1.G.</b>
2.	Record results of QC tests in binder, chart, or electronic database.	<b>IP:1.G.</b>
3.	Interpret results of routine QC tests and determine the need for corrective action.	<b>IP:1.G.</b>
4.	Arrange for corrective action or repairs based on the results of QC tests, as needed.	<b>IP:1.H.</b>
5.	Coordinate manufacturer software upgrades with field service engineer, when recommended.	<b>IP:1.H.</b>
6.	Perform software updates, when prompted.	<b>IP:1.H.</b>
7.	Troubleshoot equipment errors (e.g.,* contact manufacturer for guidance), if needed.	<b>IP:1.H.</b>
8.	Troubleshoot computer software errors (e.g., contact manufacturer for guidance), as needed.	<b>IP:1.H.</b>
9.	Inspect equipment (e.g., cables, cords, table pads) to make sure it is operable and safe.	<b>IP:1.H.</b>
10.	Clean and disinfect work area, facilities, and equipment.	<b>PC:1.B.</b>
11.	Educate staff technologists, ancillary staff, or students regarding bone densitometry.	<b>PC:1.B.</b>
12.	Verify current clinical indications meet specifications of billing and coding guidelines, if appropriate.	<b>PC:1.A.</b>
13.	Review the examination request to verify information is accurate, appropriate, complete (e.g., patient history, clinical diagnosis, provider's orders), and determine anatomical sites to scan.	<b>PC:1.B.</b>
14.	Import previously archived or baseline studies for direct comparison.	<b>IP:1.I.</b>
15.	Explain examination instructions (e.g., positioning, duration, policy of results notification) to the patient, patient's family, or authorized representative.	<b>PC:1.B.</b>
16.	Inform patients regarding basic supplements/drug therapies related to bone health or refer them to appropriate resources.	<b>PC:1.A.</b>
17.	Answer basic questions the patient, the patient's family, or authorized representative asks (or direct them to appropriate resources) concerning bone health, fall prevention, exercise, and nutrition.	<b>PC:1.A.</b>
18.	Answer basic questions the patient, the patient's family, or authorized representative asks (or direct them to appropriate resources) concerning radiation dose and its effects.	<b>PC:1.B.</b>
19.	Determine if the patient has had previous studies that may interfere with DXA.	<b>PC:1.B.</b>
20.	Determine if the patient has recently ingested contraindicated medications or supplements (e.g., calcium).	<b>PC:1.B.</b>

\*e.g. is used to indicate examples of the topics covered, but not a complete list



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21.	Screen patients of childbearing age for the possibility of pregnancy and take appropriate action.	<b>PC:1.B.</b>
22.	Record patient history relevant to bone densitometry.	<b>PC:1.B.</b>
23.	Ask adult patients about their peak height, maximum height, or height loss.	<b>PC:1.B.</b>
24.	Measure and record the patient's current height and weight.	<b>PC:1.B.</b>
25.	Use proper body ergonomics and patient transfer devices to promote patient and personnel safety.	<b>PC:1.B.</b>
26.	Assist patients with disabilities or limited mobility.	<b>PC:1.B.</b>
27.	Review prior scans and reproduce patient positioning during follow-up scan appointments.	<b>IP:1.F., P:1.A., P:1.B., P:1.C.</b>
28.	Determine if patient anatomy, pathology, or other limitations require special consideration in patient positioning.	<b>P:1.A., P:1.B., P:1.C.</b>
29.	Use positioning aids as needed to enhance the examination and promote patient comfort and/or safety.	<b>P:1.A., P:1.B., P:1.C.</b>
30.	Position the patient to scan desired region of interest (ROI) using bony landmarks and surface anatomical features.	<b>P:1.A., P:1.B., P:1.C.</b>
31.	Record positioning details in patient records to ensure consistency.	<b>IP:1.I.</b>
32.	Ensure that artifact-producing objects (e.g., zippers, buttons, jewelry, medical devices) within scan area have been removed from the patient, when possible.	<b>PC:1.B.</b>
33.	Enter accurate patient data necessary to initiate the scan so the correct reference data is used.	<b>PC:1.B.</b>
34.	Take appropriate radiation safety precautions to minimize occupational and patient exposure.	<b>PC:1.B.</b>
35.	Keep all unnecessary people out of the immediate area during radiation exposure.	<b>PC:1.B.</b>
36.	Select appropriate scan mode and perform necessary scans.	<b>P:1.A., P:1.B., P:1.C.</b>
37.	Perform bone densitometry scans using a fan beam system.	<b>IP:1.A., IP:1.B., IP:1.C.</b>
38.	Perform and analyze bone densitometry scans of the lumbar spine – PA using DXA equipment.	<b>P:1.A., IP:1.D.</b>
39.	Perform and analyze bone densitometry scans of the spine – VFA (vertebral fracture assessment) using DXA equipment.	<b>IP:1.E., IP:1.D.</b>
40.	Perform and analyze bone densitometry scans of the proximal femur using DXA equipment.	<b>P:1.B., IP:1.D.</b>
41.	Perform and analyze bone densitometry scans of the forearm using DXA equipment.	<b>P:1.C., IP:1.D.</b>
42.	Perform postprocessing analysis to create the trabecular bone score (TBS).	<b>IP:1.E.</b>
43.	Perform and analyze bone densitometry scans on pediatric patients (ages 5-19) using DXA equipment.	<b>IP:1.E., IP:1.D.</b>



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44.	Perform and analyze bone densitometry scans of pediatric patients – total body less head (TBLH) using DXA equipment.	IP:1.E., IP:1.D.
45.	Perform and analyze bone densitometry scans of the whole body (e.g., determine body composition, determine bone density).	IP:1.E., IP:1.D.
46.	Enhance or modify image appearance (e.g., adjust window level).	P:1.A., P:1.B., P:1.C.
47.	Evaluate automatic placement of region of interest (ROI) (e.g., vertebral body exclusions, hardware) and modify, if necessary.	IP:1.F., P:1.A., P:1.B., P:1.C.
48.	Review scan results to identify bone density measurements that may be inaccurate due to artifacts, variant anatomy, pathology, or positioning errors and rescan if necessary.	IP:1.F., P:1.A., P:1.B., P:1.C.
49.	Evaluate scan results for technical problems (e.g., incorrect scan mode or site) and take corrective action.	IP:1.F., P:1.A., P:1.B., P:1.C.
50.	Review scan results/analysis to determine if scanning an additional site is required to obtain more precise bone density measurements.	IP:1.F., P:1.A., P:1.B., P:1.C.
51.	Evaluate accuracy of vertebral labels and intervertebral markers for scan of lumbar spine and modify, if necessary.	P:1.A.
52.	Compare follow-up bone density measurements from two different occasions (for the same patient) to assess changes over time.	IP:1.F., P:1.A., P:1.B., P:1.C.
53.	Identify bone density measurements that require interpreting provider's attention (e.g., low T-score, unreliable results, change in patient history – new medication, recent fracture).	IP:1.D., IP:1.E., P:1.A., P:1.B., P:1.C.
54.	Identify exam-limiting patient anatomy or pathology (e.g., scoliosis, severe arthritis) that requires the interpreting provider's attention.	PC:1.B., P:1.A., P:1.B., P:1.C.
55.	Use FRAX® tool to assess 10-year fracture risk.	IP:1.E.
56.	Operate electronic digital imaging devices and record-keeping information technology system devices, including PACS/MIMPS and medical information systems (e.g., HIS, RIS, EMR).	IP:1.I.
57.	Reconfigure the report settings (e.g., disable/enable auto analysis), as needed (may need to contact the manufacturer for guidance).	IP:1.H.
58.	Conduct system backup and archive (e.g., external hard drive, DVD, network/PACS/MIMPS, DICOM, cloud system) as recommended by the manufacturer.	IP:1.I.
59.	Perform an in vivo precision study to calculate least significant change (LSC).	IP:1.F.