

 SELECT RADIOLOGY SOLUTIONS A Division of Radiology Imaging Associates	Bone Scan		
	Approval: K. Shamlou, MD	rev:2	7/15/2026

**BONE SCAN
WHOLE BODY, THREE PHASE, and SPECT**

Radiopharmaceutical: 99mTc-Methylene Diphosphonate (MDP, or Medronate)

Dose: 25 mCi

T1/2: 6 hours

Energy: 140 keV

CPT: 78305 (multiple areas); 78306 (whole body); 78315 (3 phase); 78320 (SPECT)

HCPCS: A9503 (Tc99m-MDP)

Indications include, but are not limited to:

1. Primary and metastatic bone neoplasms.
2. Disease progression or response to therapy.
3. Paget's disease of bone.
4. Stress and/or occult fractures.
5. Trauma – accidental and non-accidental (i.e. child abuse)
6. Osteomyelitis.
7. Musculoskeletal inflammation or infection.
8. Bone viability following grafts, or due to infarcts or necrosis.
9. Metabolic bone disease.
10. Arthritis.
11. Prosthetic joint loosening and/or infection.
12. Bone pain.
13. Myositis ossificans.
14. Complex regional pain syndrome (CRPS)/Reflex sympathetic dystrophy (RSD).
15. Abnormal radiographic or laboratory findings (i.e. alkaline phosphatase or tumor markers).
16. To localize distribution of osteoblastic activity prior to administration of skeletal therapeutic radiopharmaceuticals.

Procedures

- Whole Body Bone Scan
- Three Phase Bone Scan
- Bone SPECT

Patient Instruction:

1. There is no preparation patient needs to follow.
2. Obtain pertinent patient history including any history of recent injury, cancer history, orthopedic surgeries, as well as location of any prior imaging studies of affected area.
3. Set intravenous line for injection of radiopharmaceutical.
4. Administer radiopharmaceutical, imaging flow and blood pool for three phase bone scans, or immediately acquire blood pool for wholebody scan.
5. Patient to return 2 to 4 hours following injection for delayed imaging.
6. Instruct patient to drink 2-3 glasses of fluids during waiting period.
7. Patient needs to void bladder as needed and just prior to delayed imaging.

Radiopharmaceutical

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1. 25 mCi ^{99m}Tc-MDP
2. For pediatric patients, administer 200 µCi/kg of body weight.

Equipment

1. GE 830 Discovery

Procedure

Whole Body Bone Scan

- Administer radiopharmaceutical and flush with 20 mL of normal saline.
- Perform whole body blood pool study immediately following injection at a scan speed of 25 cm/min, ensuring 2 million total counts.
- Inform patient of time to return for delayed imaging.
- When patient returns, have them void bladder just before imaging. Perform delayed whole body acquisition at a scan speed of 8 to 10 cm/min, ensuring 2 million total counts.
- Static images should be acquired as needed in oblique or lateral views to better visualize possible pathology or anatomy that was missed during whole body imaging.
- For prostate cancer, a recent PSA level is required. Also, a tail-on-detector image should be included.

Three Phase Bone Scan

- Position area of interest in field of view, inject radiopharmaceutical, and image perfusion.
- Perform static blood pool images in a minimum of two different planes.
- If patient has a history of cancer, a whole body blood pool scan should be performed at a speed of 25 cm/min.
- Inform patient of time to return for delayed imaging.
- When patient returns, perform same static images. If patient has a history of cancer, whole body scan should be performed at speed of 8 to 10 cm/min.

Bone SPECT

- SPECT should be performed as ordered or indicated (i.e. unexplained back pain, spondylosis, etc.)
- Position area of interest in field of view and image for 20 sec/frame for 128 frames.

Acquisition Parameters

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Bone Flow

- Matrix size: 128 x 128
- Flow: 90 frames at 1 sec/frame
- Zoom: 1.0 (Full Field)

Statics

- Matrix size: 256 x 256
- Blood pool statics: 300 sec or 1,000 kcounts
- Delay statics: 300 sec or 1,000 kcounts
- Zoom: 1.0 (Full Field)

Whole Body scans

- Matrix size: Default
- Blood pool scan speed: 30 cm/min
- Delay scan speed: 16.6 cm/min
- Zoom: 0.92

Bone SPECT

- Matrix size: 128 x 128
- Zoom: 1.0 (Full Field)
- View angle: 3
- Number of angles: 120
- Time per angle: 12 sec
- SPECT mode: Step
- Orbit type: Body Contour
- Rotation Direction: Clockwise
- Acquire during motion: ON
- H-mode

Processing/Data sets for PACS

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Whole body:

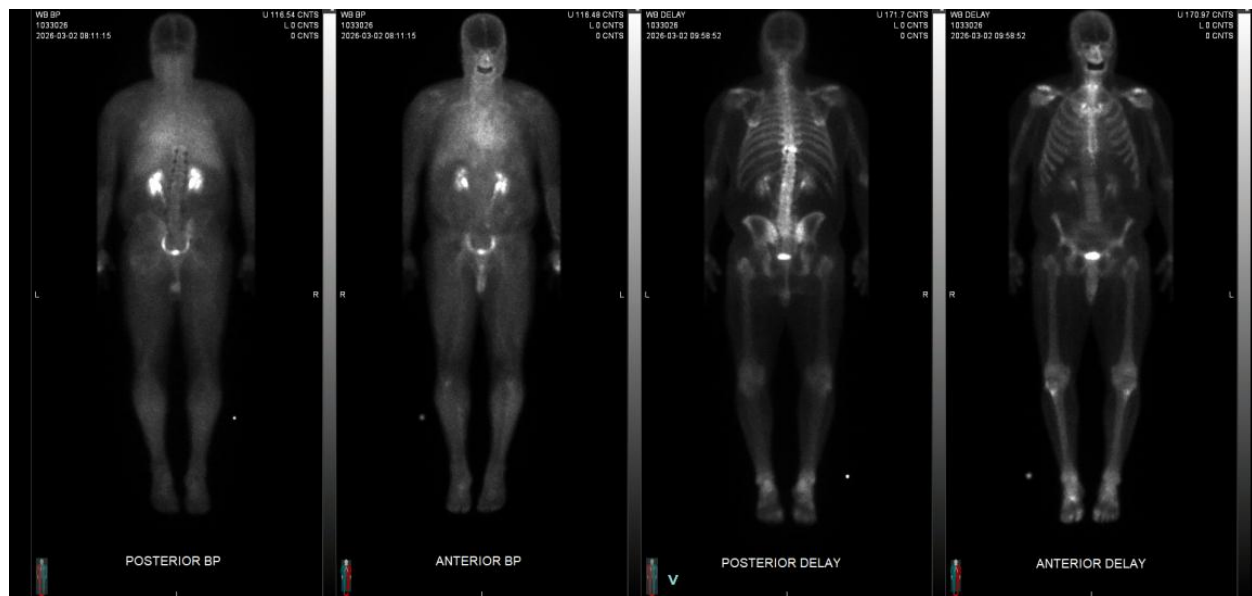
- Screenshot of posterior and anterior blood pool and delays.
- Screenshot of any statics.

3-phase:

- Composite screen shot of the dynamic flow data reformatted into summed frames (5 frames per image – every 3 frames)
- Screen shot of blood pool and delay images
- Raw dynamic data

SPECT:

- Axial, coronal, and sagittal dynamic SPECT datasets
- Composite screen shot of the dynamic SPECT data reformatted into summed frames (3 frames per image) – Axial, coronal, and sagittal
- Raw projection dataset & Volume SPECT reconstruction

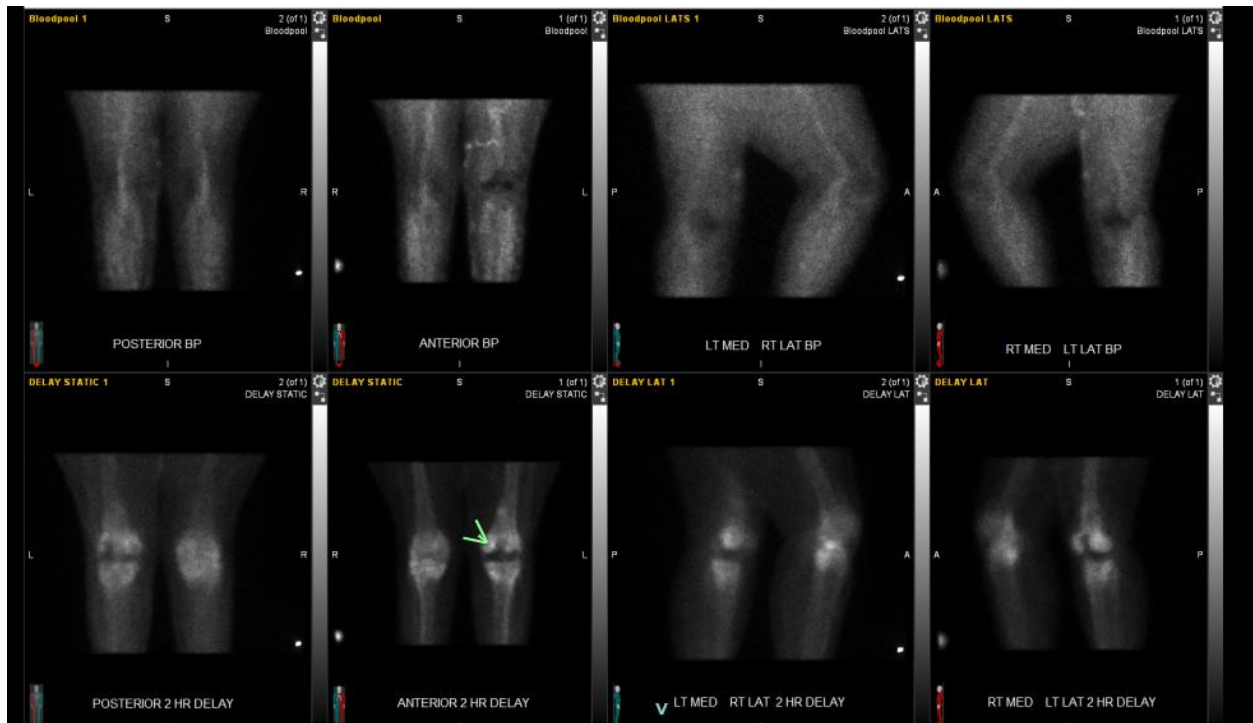
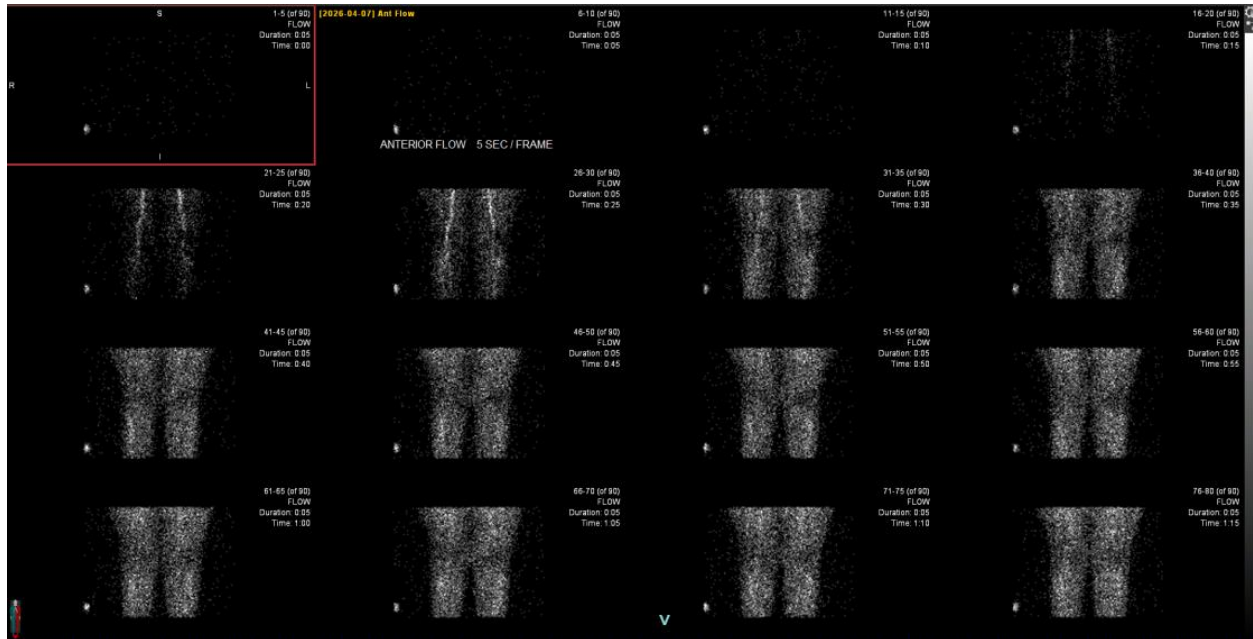


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