

Thyroid Cancer Imaging

Special Instructions	For diagnostic imaging of thyroid cancer patients with I-123, make sure the patient is confirmed, and has received Thyrogen or thyroid hormone withdrawal, prior to ordering the I-123. I-131 for diagnostic thyroid cancer imaging or thyroid cancer therapy requires a written directive by an Authorized User (attending physician). To be performed UNMH only.
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Radiopharmaceutical: I-131 sodium iodide (typically for post-therapy imaging; may be used for diagnostic imaging only at the discretion of the radiologist)
I-123 sodium iodide (for diagnostic imaging)

Dose (Adult/Pediatric): Post-therapy imaging (I-131 sodium iodide): Determined by Authorized User written directive (attending physician); administered at an earlier date for therapy

Diagnostic imaging (I-123 sodium iodide or I-131 sodium iodide): Refer to Nuclear Medicine Dose Chart. **I-131 requires an Authorized User written directive.**

Route of Administration: Oral

Patient Preparation: Please ensure the following:

- Prior to I-131 or I-123 administration, the patient should either withdraw from thyroid hormone for several weeks (typically to achieve TSH > 30) or receive two Thyrogen shots (rhTSH). Patients also usually adhere to a low-iodine diet for 1-2 weeks prior to I-131 therapy or I-123 imaging.

For patients receiving Thyrogen, the following schedules are typically used:

- a) Imaging only (no therapy planned):
- Day 1: Thyrogen injection
 - Day 2: Thyrogen injection
 - Day 3: Administer diagnostic radioiodine (usually I-123)
 - Day 4 (I-123) or Day 5 (I-131 diagnostic dose): Imaging
- b) Imaging followed by therapy:
- Day 1: Thyrogen injection
 - Day 2: Thyrogen injection followed by diagnostic radioiodine (usually I-123)
 - Day 3: Imaging followed by possible therapy

Schedule is determined by the attending radiologist protocol. Confirm with

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the radiologist if there are questions.

Equipment Setup:

Collimator (SPECT-CT):

- I-131: High energy
- I-123: Medium energy

Computer setup:

Whole-body (anterior/posterior):

- Static acquisition
- 256 x 1024 matrix
- **ZOOM 1.0**
- 6 cm/min

SPECT-CT images:

- 128 x 128 matrix
- **ZOOM 1.0**
- 180 degrees, CW (clockwise)
- 64 steps, **20** sec/step
- Noncircular, continuous

Patient Positioning:

Feet first, supine

Arms down for whole-body images and neck SPECT-CT; arms up for chest, abdomen, or pelvis SPECT-CT

Procedure:

Imaging time post administration:

- 5-7 days after a therapeutic administration of I-131
 - 24 hours after a diagnostic administration of I-123
 - Typically 48 hours after a diagnostic administration of I-131 (consult with the attending radiologist)
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- Have patient drink a glass of water immediately prior to whole-body images.
 - Acquire planar anterior/posterior whole-body images (**top of head through feet, arms down**)
 - Check with the radiologist for region(s) to SPECT-CT (typically the neck with arms down).

Processing:

Whole-body anterior/posterior: Dual-intensity display

SPECT-CT:

- Follow automatic processing workflow
- Process CT in soft tissue (B30) and bone (B60) algorithm
- Should have attenuation corrected and non-attenuation corrected SPECT tomo files

Items Required For Complete Study:

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- Processing and transfer of all images to PACS and/or Leonardo as appropriate
 - Raw data of all planar images to PACS
 - Planar:
 - Lightbox/savescreen of planar images to PACS
 - SPECT-CT:
 - Attenuation Corrected and Non Attenuation Corrected Tomo Reconstructions, CT (B30 and B60) to PACS and Leonardo. Rename SPECT and CT files to include region imaged (e.g., Reconstructed Tomo- AC - NECK)
- Complete the examination in RIS