# Thyroid Cancer Imaging

<table>
<thead>
<tr>
<th><strong>Special Instructions</strong></th>
<th>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.</th>
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<td>I-131 for diagnostic thyroid cancer imaging or thyroid cancer therapy requires a written directive by an Authorized User (attending physician).</td>
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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)

- 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