Lymphoscintigraphy for Extremity Edema

<table>
<thead>
<tr>
<th>Special Instructions</th>
<th>Prior to administering the radiopharmaceutical, the radiologist will protocol the site to be injected (typically between the 1st and 2nd interspace of the feet for lower extremity edema and between the 1st and 2nd interspace of the hands for upper extremity edema.</th>
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</thead>
<tbody>
<tr>
<td><strong>Radiopharmaceutical:</strong></td>
<td>Tc-99m sulfur colloid in 5 syringes (4 provided to the administering physician, 1 held in reserve)</td>
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<td><strong>Dose (Adult/Pediatric):</strong></td>
<td>Refer to Nuclear Medicine Dose Chart</td>
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<td><strong>Route of Administration:</strong></td>
<td>Intradermal</td>
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<td><strong>Patient Preparation:</strong></td>
<td>No special preparation for lymphoscintigraphy prior to appointment. Lymphoscintigraphy patients should arrive 1 hour prior to the examination to have EMLA cream placed over the planned injection site per physician protocol. (Longer times are preferred when possible; EMLA cream is most effective when in place for 1-2 hours.) Follow the instructions on the package insert for application of the EMLA cream. Injection sites will typically be in the 1st and 2nd interspaces of both extremities (toes for lower extremities, fingers for upper extremities)</td>
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<td><strong>Equipment Setup:</strong></td>
<td>Collimator: LEAP (Orbiter) or High resolution (all others) Computer set up: 30-minute dynamic study: Dynamic acquisition, 128 x 128 matrix, 60 frames, 30 secs/frame, for 30 minutes (transmission images obtained intermittently as part of the dynamic scan) Sweep (region to be specified by radiologist; likely torso through toes for lower extremity injections and torso through fingertips for upper extremity injections): All (except Orbiter): 256 x 1024 matrix, scan 8 cm/min 1- and 2-hour delayed views (if needed; also check with the radiologist for longer delays): Static acquisition, 256 x 256 matrix, 5 min/view without transmission, 1 min/view with transmission</td>
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<td><strong>Patient Positioning:</strong></td>
<td>Supine</td>
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**Procedure:**

The radiopharmaceutical is prepared in 5 syringes: 4 provided to the administering physician, 1 held in reserve. Lidocaine (WITHOUT epinephrine) should be added to each syringe, with goal of total volume roughly 0.2 ml/syringe. Using 1% lidocaine (without epinephrine), add 1 part lidocaine (~0.1 mL) and 1 part sulfur colloid (~0.1 mL) to total ~0.2 mL/syringe.

The injection of the radiopharmaceutical is performed by a radiologist.

Injection sites: between the 1st and 2nd interspace of the feet for lower extremity edema or of the hands for upper extremity edema.

Movement of the tracer away from the injection sites to the lymph nodes is slower with a subcutaneous injection than with an intradermal injection. Under most circumstances, it is preferable to attenuate the activity coming from the injection site itself (with lead).

Immediately following the injections, a 60-frame (30 seconds per frame) dynamic study of the distal extremities is obtained for 30 minutes in an effort to identify lymphatic channels. During the dynamic acquisition, the body outline can be demarcated by brief (10-20 seconds) transmission imaging with a Co-57 flood source. A 5-minute static anterior image of the inguinal regions (or axillary regions for upper extremity injections) should be obtained 30 minutes following the injection.

Following each 5-minute static image, immediate post dynamic and delay, a 1 minute transmission image is obtained using a flood source as described above.

Exercise stimulates lymphatic flow, so patients with lower extremity edema should be encouraged to walk between images, and patients with upper extremity edema should be encouraged to open and close their hands between images.

Check images with the radiologist. At approximately 1 hour, perform a sweep of the distal extremity through the inguinal region (for lower extremity) and axillary region (for upper extremity).

Repeat anterior images of the distal extremity and the draining lymph nodes should be obtained promptly at 1 and 2 hours after the injection.

3-4 hour images may be needed, at the discretion of the attending radiologist.

When preparing images, label the injection site and anatomy (e.g., left/right, pelvis, etc) as appropriate.

**Items Required For Complete Study:**

- Lightboxes/savescreens of all images. Label the injection site and anatomy (e.g., left/right, pelvis, etc) as appropriate
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- Transfer of all digital images to PACS
- Complete the examination in RIS