

LUNG PERFUSION SCAN  
UPDATED: MARCH 2011

CPT CODE: 78596, 78588, 78428

### Indications:

- Regional perfusion prior to lung resection (requires FEV<sub>1</sub>) for tumor, or various pulmonary diseases (abscess, bronchiectasis)
- Diagnosis of pulmonary embolism
- Follow-up pulmonary embolism (perfusion scan only)
- Assessment of relative ventilation and perfusion in various congenital, degenerative, or iatrogenic diseases

### Patient Prep:

- Patient must have had a chest radiograph within 24 hours of the scan (within 4 hours when acutely ill).
- CXR must accompany the patient to our department, if VA patient.

### Scheduling:

- No special conditions.
- Allow 45 minutes of imaging time. See special consideration above.

### Radiopharmaceutical

#### & Dose:

4.0 (+/- 20%) mCi Tc-99m-MAA (macroaggregated albumin) with 200-700 K particles per dose. Dose adjusted for patient weight (refer to NMIS or nomogram). Dispense in a volume of 1 ml, dilute with 0.9% NaCl Inj if necessary.

If performed with a ventilation lung scan, the minimum dose is 4.0 (+/- 20%) mCi.

#### Caution:

- Severe adverse reactions including deaths have been reported when patients with severe (patient with visible difficulty breathing) pulmonary hypertension were administered Tc-MAA. In patients with severe pulmonary hypertension, a kit compounded within the last 4 hours should be used to maintain minimal particle administration. **The maximum dose is 4 mCi +/- 20%.**
- In right-to-left shunt studies, MAA must be recently prepared and have very little free pertechnetate (98% purity).

### Imaging Device:

Gamma camera with LEHR collimator.

### Imaging Procedure:

- Inject patient in supine position. When contraindicated, consult with a Nuclear Medicine physician, and make a notation denoting the position used for injection.
- Prior to injection, have the patient take several deep breaths to increase the alveolar tension.
- Begin imaging immediately post injection.
- Use predefined acquisition called LungPerf (GE) or LungQuant (Philips) that includes view, time, and counts for each image.

The following eight views are routinely required:

1. Anterior
2. Posterior (*both 800 K*)
3. Right lateral
4. Left lateral (*both 600 K*)
5. RPO 45°\*
6. LPO 45°\*
7. RAO 45°\*
8. LAO 45°\* (*all: 700 K*)

\* Patient must be at a 45° angle to detector regardless of what the P-scope image looks like.

- When using the Philips camera on the Xeleris, run User Application/Philips LungRename.

**PACS:**

Send all raw data and save screens.

**Interpretation:**

- If the study is indicated to follow patients with proven or suspected PE, and previous V/Q or perfusion scans are available, then perfusion scanning alone may be appropriate provided there is no reason to suspect mucus plugging or any other cause that might result in change in ventilation.
- The tracer will be in the systemic and pulmonary circulation. Both anterior and posterior computer acquisitions will allow quantitation of the degree of shunting. The brain and kidneys are sites easily recognized on the images if shunting is minimal.

**Comments:**

A Nuclear Medicine staff or resident physician should be consulted to determine if additional views are indicated.

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