

Cerebral Blood Flow

Special Instructions	<p>The attending radiologist who will interpret this study should be notified prior to beginning the study.</p> <p>The angiogram portion of this examination is critical. The patient should be positioned so that the chin is at the bottom of the field of view, with a portion of the neck visible, while attempting to keep cardiac and subclavian activity out of the image. Make sure the head is positioned symmetrically. Positioning should be confirmed by tracing the outline of the head with the isotope. For pediatric patients, magnification may be necessary.</p> <p>Tc-99m ECD or <u>stabilized</u> HMPAO is preferred. If clinically feasible, image the patient on a SPECT or SPECT-CT camera. CT is generally not necessary.</p> <p>Consult with the attending radiologist if ECD or stabilized HMPAO is not available.</p> <p>To be performed at UNMH. To be performed at SRMC on a case by case basis with Attending Radiologist approval.</p>
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Radiopharmaceutical:	Preferred: Tc-99m ECD or stabilized HMPAO. Alternate: Tc-99m pertechnetate may be used if requested by the attending radiologist or if Tc-99m ECD or stabilized HMPAO are not available.
Dose (Adult/Pediatric):	Refer to Nuclear Medicine Dose Chart
Route of Administration:	Intravenous
Patient Preparation:	None
Equipment Setup:	<u>Collimator:</u> LEAP (Orbiter) or High resolution (all others) <u>Computer set up:</u> <ul style="list-style-type: none">• Choose brain flow and immediate• Start acquisition simultaneously with injection <u>Angiogram:</u> <ul style="list-style-type: none">• 64 x 64 matrix• 1 sec/image for 60 secs• ZOOM 1.0 (more if needed for pediatric patients)

Cerebral Blood Flow (continued)

Static images:

- 128 x 128 matrix
- each image for minimum 500K counts
- **ZOOM 1.0 (more if needed for pediatric patients)**

Tc-99m pertechnetate:

- Obtain statics immediately after the angiogram.

Tc-99m HMPAO or ECD:

- Obtain statics (and SPECT or SPECT/CT) at least **20 minutes** after radiopharmaceutical administration
- Consult with radiologist about use of SPECT or SPECT-CT.

SPECT or SPECT/CT (if requested by the attending radiologist; for ECD or stabilized HMPAO):

- Select Brain SPECT or Brain SPECT/CT protocol
- 128 x 128 matrix
- Choose non-circular orbit, 15 sec/image
- **If SPECT is needed, SPECT only (without CT) is generally acceptable; confirm with the attending radiologist**

Patient Positioning:

Supine; make sure that head is positioned symmetrically.

Place camera head as close to the patient's face as possible for each view.

Procedure:

- Must have excellent bolus (central line preferred; however, **use of an IJ line is discouraged, as it may interfere with assessment of carotid flow**). Use a double-syringe technique with 3-way stopcock, first injecting the radiopharmaceutical, then chasing bolus with normal saline flush (10cc < 5 years, 20 cc ≥ 5 years).
- The angiogram portion of this examination is critical. The patient should be positioned so that the chin is at the bottom of the field of view, with a portion of the neck visible, while attempting to keep cardiac and subclavian activity out of the image. Make sure the head is positioned symmetrically. Positioning should be confirmed by tracing the outline of the head with the isotope. For pediatric patients, ZOOM may be necessary.

Orbiter:

- Angiogram in anterior projection
- Statics in anterior and best accessible lateral projection (anterior/posterior and bilateral laterals, if feasible, for ECD/HMPAO).

Cerebral Blood Flow (continued)

All others (dual-head):

- Angiogram in anterior/posterior projections; Statics in anterior/posterior and bilateral lateral projections, as accessible.
- If Tc-99m ECD or HMPAO is used, SPECT (or SPECT-CT) images may be obtained as requested by the attending radiologist.

Processing:

- Note that truncation may be necessary to adequately display the carotid artery flow if initial bolus is in field of view.

Items Required For Complete Study:

- Raw data of angiogram (dynamic) and immediate (static) images
- Lightboxes/savescreens of angiogram (dynamic) and immediate (static) images
- Transfer of all digital images to PACS
- Complete the examination in RIS