IV Contrast Administration

What you should know when accompanying your patient to a CT or MRI.
Purpose

- To allow an inpatient nurse to hand inject contrast (if appropriate for the exam) through an existing central line in the CT and MRI area.

- This will avoid having to place a new peripheral line in the patient. Most of these situations will occur in MRI.

- This scenario would only be relevant for cases where a patient does not need contrast injected through a power injector and if the patient does not already have an existing peripheral line.
Technologists are not licensed to access central lines other than Power PICCs.

In most situations, the technologist administers the contrast through a peripheral line (typically using a power injector in CT scans).

However, if a patient only has a central line for IV access (and a power injector is not needed for the exam) the current practice requests that a new peripheral IV be placed.

This can be challenging in patients with difficult veins, can delay the procedure, and is a patient dissatisfier.
Types of Contrast

- Contrast is a term describing the substances used to help improve the visualization of internal body structures. Most CT and MRI scans utilize contrast.

- **Isovue (Iopamidol injection)** – Diagnostic Nonionic Radiopaque Contrast Media – used in CT. This type of contrast opacifies vessels in the path of the flow of the contrast medium, permitting radiographic visualization of the internal structures. Typical side effects include a feeling of warmth during administration and a metallic taste. Patients may have a hypersensitivity reaction (i.e. hives), although severe reactions such as anaphylaxis are rare.

- **Multihance (gadobenate dimeglumine)** – paramagnetic agent used as MRI contrast. The contrast enhances the relaxation rates of water protons leading to an increase of signal intensity (brightness) of tissue. Typical side effects include nausea.
Process

- Contrast administration for radiology procedures is defined by protocols that are assigned by the radiologist. In CT, documentation for contrast administration is recorded on the CT protocol sheet. These are standing protocols that are reviewed by the radiologist and approved by pharmacy. In MRI, there is one standard protocol that is used for patients. These protocols are considered standard orders for the associated procedure. The protocols/ standing orders are available in the CT and MRI work areas.

- The Technologist will screen the patient’s allergies, if the patient has a history of contrast allergies, the exam will be postponed until the patient is pre-medicated. Screening also occurs for a patient history of renal disease or if the patient is taking Metformin. If the patient has a history of kidney disease, the primary physician is advised to hydrate the patient. Metformin will be held for 48 hours post contrast administration. The RN should double check for allergies if they are asked to push the contrast through a central line.
The technologist will indicate when the contrast should be administered during the study and will draw up and label the dose in the presence of the nurse.

The nurse will access the central line per the Department of Nursing policy and administer the contrast per rapid IV push using a 10cc syringe or larger. After radiology images are obtained, the nurse will flush the central line according to protocol.

Department of Nursing policies regarding central line use / care include the following:

- Adult patients: N-07.040, N-07.047
- Pediatrics: N-CWS-Peds-08.060, N-CWS-Peds-08.140

A fact sheet reviewing this process and a hard copy reference of central line policies will be available to the nurse in the CT and MRI areas.
Contrast Reactions

- A severe anaphylactic reaction to contrast is rare, but possible. Contrast reactions from MRI contrast is extremely rare.

- If a contrast reaction should occur, the Radiologist will be summoned immediately by the technologist. The radiologist will then manage the treatment.

- Contrast reaction kits (containing Epinephrine 1:1,000 and 1:10,000, Benadryl, Solu-Cortef, and inhaler, and extra IV supplies) are located in each room where contrast is administered. The technologist will obtain and open the kit for use.
Basic review of treatment for acute anaphylactic reactions.

- **Department of Nursing policy, N-08.120**
- **POLICY:**
- Epinephrine 1:1,000 (1 mg/1 ml) will be readily available for immediate administration by qualified personnel on each inpatient unit, outpatient clinic, and diagnostic and procedure area.
  - **A.** If an LIP (licensed independent practitioner) is not in immediate present at the time of an anaphylactic reaction, the epinephrine should be administered first and then the LIP immediately summoned to the scene.
  - **B.** In case of an anaphylactic reaction, epinephrine 1:1000 (1 mg/1 ml) shall be administered intramuscularly according to the appropriate dosage.
## IM Epinephrine

<table>
<thead>
<tr>
<th>Age</th>
<th>Dose</th>
<th>Volume</th>
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</thead>
<tbody>
<tr>
<td>Adult</td>
<td>0.3 mg</td>
<td>0.3 ml</td>
</tr>
<tr>
<td>Pediatric *</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 6 months</td>
<td>0.05 mg</td>
<td>0.05</td>
</tr>
<tr>
<td>6 months–2 years</td>
<td>0.1 mg</td>
<td>0.1 ml</td>
</tr>
<tr>
<td>2 years – 5 years</td>
<td>0.15 mg</td>
<td>0.15 ml</td>
</tr>
<tr>
<td>6 years and over</td>
<td>0.2 – 0.3 mg</td>
<td>0.2 – 0.3 ml</td>
</tr>
</tbody>
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*Pediatric dose formula is 0.01 mg/Kg/dose. The maximum dose is 0.3 ml regardless of age. If a patient’s symptoms are unresolved within 10-15 minutes or upon order from an LIP, repeat epinephrine dosage at a second site.
Things to Remember….

- A power injector is never to be used with any central lines other than Power PICCs.

- If a power injector is required for the study, a peripheral line will be needed (even if the patient does have an existing central line).

- If the patient has a history of an allergic reaction to contrast or has renal insufficiency, the Radiologist should be consulted prior to the exam.
Click the review test link below and answer the questions to record your participation.