



ST. PAUL & ZALE LIPSHY
Imaging Department
Intravenous Contrast Administration and
Urgent Response

Policy No: 4-415
Last Revised: 6/2007

RADIOLOGY POLICY & PROCEDURE MANUAL

POLICY STATEMENT:

In order to prevent morbidity and complications associated with the administration of intravenous contrast, the Radiology Department has outlined the following procedures. These procedures apply to procedures performed in the main University Hospital's Radiology suites.

PREADMINISTRATION PRECAUTIONS:

1. Patients considered to be at high risk will be required to have pre-administration renal function testing within 60 days for outpatients and within 7 days for inpatients before receiving contrast. High risk categories are indicated in item 7 below.
2. Standard IV contrast will be used with serum creatinine levels ≤ 1.5 and a normal calculated GFR (normal greater than 50mL/min / 1.73m² BSA), if the calculated GFR is reported. However, repeating the creatinine to obtain a GFR is not required. If the serum creatinine level is above 1.5 the ordering service will be notified.
3. Patients with a serum creatinine 1.6 - 1.9 and/or calculated GFR less than 60 ml/min require the prior approval of a Radiologist prior to administration. These patients will receive Iodixanol (Visipaque®).
4. Patients with serum creatinine values ≥ 2.0 and GFR less than 60mL/min require approval by a Radiologist for the injection of contrast in addition to confirming with the ordering service that the exam needs to proceed. (See **Appendix A** for additional details).
5. All patients will be screened for diabetic medications that include metformin, including the following branded medications or their generic equivalent: Glucophage®/ Glucovance® /Avandamet®/ Metaglip®/ Metformin / Riomet®/ Fotamet®. All patients receiving metformin will be placed on the metformin protocol. (See **Appendix B**)

- A. For Out-Patients
 - i. The schedulers will screen the patient for diabetic medications to determine if the patient is taking one of the Metformin-containing medications. The patient will be instructed to bring a list of current medications they are taking to their Radiology appointment.
 - ii. At the time of scheduling a patient, the physician's office is provided the Instructions for patients taking diabetic medications. (**Appendix B**)
 - iii. Metformin products will be stopped the day of the exam. Radiology staff will verify that the patient has been instructed when to restart their medications and verify that the patient was given a Post Contrast form at the completion of the exam. (See **Appendix C**).
 - 1. Patients taking Metformin will have a serum creatinine done 2 days after receiving IV contrast. This lab test is ordered by the patient's physician. If serum creatinine level is normal, the patient can resume medication. If not normal, they will need to make an appointment with their physician.
- 6. All patients will be screened for a history of contrast allergy. When appropriate, arrangements for pre-medication will be made through the ordering physician. (See Appendix E)
- 7. Patients considered to be at high risk for contrast induced nephropathy include patients with any one or more of the following medical history/conditions:
 - A. Renal insufficiency / disease or prior elevated creatinine level
 - B. Diabetic
 - C. Multiple myeloma
 - D. Recurrent Urinary Tract Infections
 - E. Nephrotoxic drug history, if known (i.e. chemotherapy). Treatment with any of the following: NSAIDs, cyclosporin, aminoglycosides, amphotericin B
 - F. Severe debilitation or over age 70
 - G. Hypertension
 - H. Renal stone disease
 - I. Contrast injection/administration within the previous 72 hours
 - J. Congestive cardiac failure

- K Liver cirrhosis
- L Nephrotic syndrome
- M Peripheral vascular disease
- N Diuretic use, especially furosemide, bumetanide and torsemide
- O Hyperuricemia or hypercholesterolemia

ADMINISTRATION:

1. Access for contrast injection must adhere to the following guidelines:

- A. Infusion ports will not be used for power injections, due to risk of fracturing the device.
- B. PICC lines will only be used for power injection if they are compatible. (ie. Power PICC)
- C. Permacaths may be used only with approval of an Interventional Radiologist.
- D. Triple lumen central lines can be used at a rate up to 2cc per second. If a particular study needs a faster rate of injection, a peripheral IV must be started.
- E. Power contrast injection should only be made through an upper extremity peripheral IV (18-22g needle) after confirming blood return. **IV must be started per procedure protocol.**
- F. If access is in the lower extremities, please notify a Radiologist prior to commencing the procedure. It may be necessary to start a new peripheral IV and adjust injection rate and timing of image acquisition.
- G. For CT Angiography, an 18g antecubital IV is preferred because of high injection rates of 3-5 cc per second, however, a 22g antecubital IV is acceptable.
- H. If a patient has an indwelling catheter or unfamiliar central line, a manufacturer specifications rating must be obtained/verified. If specification ratings from the manufacturer can not be obtained/verified,, a peripheral IV must

be started.

I. The IV must be flushed with normal saline to assure proper patent access prior to injection.

2. The Technologist shall document the drug, dose, route (oral, IV, etc.) and time of dosage in the Medical Record. Additionally, all incidents of extravasation will be documented in the progress notes.

3. In the course of or following a Radiology procedure with any complications or that may result in any type of contrast reaction, the Technologist will follow the guidelines outlined in the following procedure:

A. In the event of a minor medical condition or contrast reaction (ie,fall, rash, itching, sneezing, etc)

- i. A Radiologist will be notified immediately to check the patient and initiate any therapy/treatment, which might be required.
- ii. The Technologist assigned to the patient will be responsible for notifying the nursing unit and the attending physician or the physician of record, that the patient requires medical assessment, and alert them to any orders written by the Radiologist.
- iii. If any medications are given, they will be noted in the patient's chart.

B. In the event of an acute change (ie.heart rate change, respiratory change or any acute change in the patient condition that alarms the Technologist. (See Rapid Response Policy)

- i. The Technologist taking care of the patient will be responsible for notifying the Rapid Response Team. The RRT Nurse will contact the Radiologist on call for treatment orders when necessary. Emergency treatment kits are located in each room where contrast is administered.
- ii. The number to call is the STAT PAGE OPERATOR – Ext 3333 (at both UH-Zale Lipshy and UH-St Paul). The Technologist making the call will state Rapid Response and building location (ie.UH-SP – CT room 2, 2nd floor,)
- iii. If any medications are given, they will be noted in the patient's chart by the RRT Nurse.

C. In the event of an urgent medical need and/or severe contrast reaction (ie.difficulty breathing, cardiac arrest, chest discomfort), the Technologist will initiate Code Blue. (See Code Blue Policy)

- i. The number to call is the STAT PAGE OPERATOR Ext 3333 (at both UH-Zale Lipshy and UH-St. Paul) The Technologist making the call will

state Code Blue and building location (ie. UH-SP-CT room 2, 2nd floor).
If the patient is pediatric (under age 14), a Pedi STAT Code Blue will be initiated as per the Code Blue Policy.

- ii. The Radiologist on call should be notified by the Technologist if any reaction occurs.

Medical Director

Date

Administrative Director

Date

- Appendix A: Creatinine Parameters
- Appendix B: Metformin Protocol
- Appendix C: Instructions for Patients Taking Diabetic Medications: METFORMIN.
- Appendix D: Contrast Dosage Chart
- Appendix E: Pre-medication of Contrast-Allergic Patients
- Appendix F: IV Contrast Screening Form
- Appendix G: MRI Gadolinium Usage

Approved: May 2005

Revised: June 2007