

Contrast Guidelines

ORAL CONTRAST GUIDELINES

Preparation

Adult patients should not eat **4 hours prior to the appointment time**, but may drink clear liquids up until 2 hours prior to the appointment time (unless otherwise instructed). Any medication that is needed should be taken as prescribed with a small amount of water, unless otherwise instructed by the Radiology Department.

Clear Liquids Allowed:

- Tea/black coffee
- Apple or cranberry juice
- Lemon or Lime Jello-O
- Clear Chicken or Beef Broth
- Clear Sodas (7-UP, Sprite, Ginger Ale)
- Water

INTRAVENOUS CONTRAST MEDIA GUIDELINES-ADULT

Policy Statement

To establish guidelines for the prevention, diagnosis and treatment of contrast media reactions after intravascular injection, and to reduce the chance of inducing contrast media nephrotoxicity.

PROCEDURE

I. Intravenous Access

When the power injector is utilized, a 22g or larger needle/cannula 1.25" to 1.5" length is preferred for IV contrast injection.

It is advisable to obtain a good backflow of blood to test adequate positioning of the needle in the vein. Adequate position of the cannula in the vein is checked again, by flushing IV with 10mls of saline flush into the vein before delivering the injection of contrast.

Use of existing access routes:

1. **Only power-injection rated PICC** or central lines are approved for power injection.
2. Pre-existing IV lines will be flushed with 10mls of saline flush, to ensure patency, prior to contrast injection.
3. Port-a-cath to be accessed by R.N. or Radiologist, with training. If no trained staff is available, send patient to the Infusion Center or Cancer Center.

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4. Consult Radiologist/ Radiology RN prior to using any central line catheters. If not power rated, the injection must be hand injection.

Ila. Prevention of Nephrotoxicity with Iodinated Contrast Media

Requirements for CREATININE and Glomerular Filtration Rate (GFR) (if available) testing **prior** to contrast media injections (for the purpose of reducing the chance of contrast-induced renal failure)

A. Patients >60 years of age are to have a recent (**within 6 weeks**) serum Creatinine prior to contrast injection. If there has been significant interval change in the patient's condition, a more recent serum Creatinine should be obtained.

B. Patients <60 years of age do **not** require labs, **UNLESS** the patient has one or more of the following:

- History of renal disease or surgery on the kidneys:
Including dialysis, kidney transplant, single kidney, kidney surgery
- Diabetes mellitus
- History of Hypertension
- Renal Cancer
- Recently (within 3 months) had chemotherapy

C. When clinical findings or history raise doubt about the patient's current renal function, a radiologist will order a STAT Creatinine/eGFR test which should be done prior to injecting contrast media.

D. IODINATED CONTRAST AGENTS (Both ionic and non-ionic contrast agents): If the serum creatinine is > 1.5 mg/dl or GFR is < 50 ml/min/1.73m², the radiologist will be notified. If the creatinine is > 1.5 in a diabetic patient, > 2.0 in a non-diabetic patient, or the GFR is < 30, and the referring physician and radiologist have determined that a contrast-enhanced imaging study must be done to obtain critical medical information, the contrast may be given after considering the following precautions:

1. Discuss the risks, benefits, and alternatives with the patient.
2. Adequate patient hydration must be maintained (See Section E).

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3. Optional treatments include the following:

- Mucomyst (N-acetylcysteine)
Orally, 600 mg twice daily on the day before and the day of the contrast imaging study, or
- Bicarbonate 150 mEq in 1000 cc D5W, 3ml/kg bolus, then 1 ml/kg/hr x 6 hours.

For patients with end stage renal disease who are on chronic peritoneal dialysis, non contrast should be considered and contrast should only be administered after discussion with the patient's nephrologist. This conversation must be documented.

E. Adequate patient hydration is important to minimize the risk of nephrotoxicity. **No patient receiving radiographic contrast should have NPO orders unless they are being properly hydrated with IV fluids.** Patients having a CT with oral contrast should have nothing solid 4 hours prior to the exam, but clear liquids are allowed up until the exam. If the patient cannot take adequate oral fluids, consider adequate intravenous hydration.

F. All patients should be encouraged to drink lots of fluids for several hours after receiving contrast material.

G. Patients taking **Metformin** (ACTOplusmet, Avandamet, Janumet, Fortamet, Glucovance, Glucophage, Glumetza, Riomet, Metaglip, Jentaduetto, Kombiglyze, PrandiMet):

1. Patients taking **Metformin** should not take the medication following the procedure. The medication should be withheld for 48 hours after the procedure and reinstated only after clearance by the patient's ordering doctor.

H. No other medications should be stopped for patients received radiographic contrast media. **Important, unless specifically instructed by their physician, patients should continue taking their regular prescribed medications for diabetes (Insulin, etc), cardiac, and other medical conditions.**

IIb. Use of Gadolinium Based Contrast Agents in Patients with Renal Insufficiency or Failure

Gadolinium-based contrast agents using a standard dose (0.2 ml/kg [0.1 mmol/kg]) are very safe in patients with normal renal function. However, Gd-based contrast agents have been implicated in causing Nephrogenic Systemic Fibrosis (NSF). Reported cases were patients with severe renal dysfunction (on dialysis or eGFR < 30 ml/min), and most patients received double or triple doses of gadodiamide (Omniscan, Amersham/GE). Therefore, we have set the following guidelines for giving Gd-based contrast agents.

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Requirements for CREATININE and GFR testing **prior** to contrast media injections:

A. Patients **>60** years of age are to have a recent (**within 6 weeks**) serum Creatinine and GFR prior to contrast injection. If there has been significant interval change in the patient's condition, a more recent serum Creatinine and GFR should be obtained.

B. Patients **<60** years of age do **not** require labs, **UNLESS** the patient has one or more of the following:

- History of renal disease or surgery on the kidneys:
- Including dialysis, kidney transplant, single kidney, kidney surgery
- Diabetes mellitus
- History of Hypertension
- Renal Cancer
- Recently (within 3 months) had chemotherapy

C. If GFR is **> 30 ml/min**, then gadolinium can be given. It is important to avoid the use of Omniscan, Magnevist, and OptiMARK in high risk patients. If GFR is **< 30 ml/min**, **DO NOT** give gadolinium unless in the judgment of the radiologist, the anticipated benefits exceed the potential risks. If both the radiologist and clinician decide that contrastenhancement is necessary, the Gd-based contrast agent can be given with the following precautions:

1. Discuss the risks, benefits, and alternatives with the patient.
2. Obtain signed consent from the patient. If patient is unable to give consent, follow Medical Center policy regarding informed consent. The radiologist must write the order for Gadolinium, including the specific agent, dose, and reason for taking the risk.
3. Dose at no more than 0.2 ml/kg (0.1 mmol/kg). Use "half" dose if adequate for the MR study.

D. **Patients who are on dialysis:** The clinical indications for the study should be assessed. If gadolinium is not necessary, a non-contrast MRI should be performed, and the referring physician should be informed about the change in the ordered exam. If gadolinium might be helpful, the referring physician should be called to discuss the risks and benefits of giving gadolinium to the patient. If both the radiologist and clinician decide that contrastenhancement is necessary, the Gd-based contrast agent can be given following the guidelines in section C above. In addition, hemodialysis should be done as soon as possible after the scan (ACR guidelines).

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E. Any patients receiving double or triple doses of Gd-based contrast agent should be screened with serum creatinine and eGFR:

1. If the GFR is normal, then the double or triple dose of Gadolinium can be given.
2. If the GFR is not normal but > 30 ml/min, no more than single dosage should be given.
3. If the GFR is < 30 ml/min, **DO NOT** give gadolinium unless absolutely medically necessary, following guidelines in section C above.

III. Allergic Type Contrast Reaction Prevention

A. For patients receiving iodinated or gadolinium contrast media, obtain a complete history of any prior reactions to dyes or contrast used in X-ray, CT, or MRI.

1. The patient is to fill in questionnaire.
2. The technologist is to review the questionnaire with the patient prior to injection.
3. The questionnaire is part of the patient's medical record. The Technologist is to complete the information regarding type and volume of contrast and reactions, then sign questionnaire, post injection

B. For patients receiving iodinated or gadolinium contrast media, pre-treatment to prevent or lessen reactions should be given under the following guidelines:

1. Patients with history of
 - Prior moderate or severe contrast reaction
 - Severe asthmatics with active wheezing or acute shortness of breath

C. For patients requiring pre-treatment, consider calling the referring physician to discuss the following options:

1. Perform a non-contrast study only,
2. Perform an alternative imaging study (if available), or
3. Pre-treat according to the protocol below before giving the contrast agent.

Note: If an asthmatic patient is under the care of a pulmonary physician or if a patient has a history of psychotic reaction to steroids, check with their physician prior to prescribing steroids.

Standard Pre-Medication Dosing:

Prednisone Steroid 50 mg p.o. 13 hrs, 7 hrs, and 1 hr prior to injection

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Diphenhydramine Antihistamine 50 mg p.o. 1 hr prior to injection

- If a patient arrives without being pre-treated, it is preferable to reschedule the exam to allow steroid treatment. Alternative options are at the discretion of the Radiologist. If there is a history of moderate to severe contrast reaction, another radiological procedure (MRI, non-contrast CT, US or Nuclear Medicine) should be considered as an alternative.
- Patients will be required to arrange transportation so they do not have to drive after taking premedication.