

## Medical Center's Policy for Gadolinium Contrast Use in Radiology

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### I. Basic Considerations

#### A. Gadolinium Contrast Use

Gadolinium contrast agents are medications that can be administered relatively safely. Patients without renal disease or with stage 1 or stage 2 chronic renal disease do not require additional screening. Patients with stage 3 or worse renal disease (CrCl under 60 mL/min/1.73 m<sup>2</sup>) need additional screening and careful consideration prior to contrast administration. Patients with severe hepatic dysfunction or a liver transplant and those under the age of 1 year also need additional evaluation.

#### B. Patient Screening and Serum Creatinine

All patients to whom contrast agents are to be administered will be screened for renal and severe hepatic dysfunction. A serum creatinine concentration (SCr) will be obtained for the following patients:

- a. Those over 60 years of age without an SCr in the past 30 days.
- b. Those receiving chemotherapy or nephrotoxic drugs without an SCr their last drug administration.
- c. Those with known renal dysfunction.

#### C. Contrast Record Keeping

The contrast agent and amount of contrast given to every patient should be included in the radiology report and the nursing sheet documenting contrast history. This information should be attached to the patient exam in PACS.

#### D. Cumulative Gadolinium Dose

Administration of gadolinium contrast within the past 3 months should be considered in the risk–benefit assessment, especially for stage 4 and stage 5 chronic kidney disease.

#### E. Nephrogenic Systemic Fibrosis (NSF)

Patients with NSF or suspected NSF should not receive gadolinium contrast agents.

### Gadolinium Contrast Use in Patients with Kidney Disease

#### II. Mild Stage 3 Chronic Kidney Disease (CrCl greater than 45 mL/min/1.73 m<sup>2</sup>)

No restrictions, but the need for contrast use should be reconsidered.

#### III. Advanced Stage 3 Chronic Kidney Disease (CrCl 30–45 mL/min/1.73 m<sup>2</sup>)

The following procedure should be followed:

- a. If the patient's poor renal function is temporary, consideration should be given to delaying the contrasted portion of the study.
- b. The study should be monitored and the need to administer gadolinium should be confirmed after review of the noncontrast portion of the study.
- c. If contrast is deemed necessary by the appropriate radiologist, then the smallest effective dose of gadobenate dimeglumine (MultiHance, Bracco Diagnostics Inc.) should be administered.

*Note:* Because of the improved relaxivity of gadobenate dimeglumine, a dosage one half that of other agents (or a reduced dosage appropriate for the application) should be considered. For example, if a study required 0.1 mmol/kg of Gd-DTPA, then 0.05 mmol/kg of gadobenate dimeglumine would be used (i.e., 10 mL instead 20 mL as the maximum single dose).

- d. The radiologist should state in the report that contrast was deemed necessary and was administered after review of the noncontrast portion of the study.

#### IV. Stage 4 Chronic Kidney Disease (CrCl 15–30 mL/min/1.73 m<sup>2</sup>)

Gadolinium administration should be avoided if at all possible. If, after assessment of the potential risks and benefits, the radiologist believes that gadolinium administration is indicated, the following procedures should be followed:

- a. If the patient's poor renal function is temporary, consideration should be given to delaying the contrasted portion of the study.
  - b. The case should be discussed with the referring physician.
  - c. The procedure, including the potential risk of NSF and the benefits of gadolinium administration, should be discussed with the patient. The patient must give written informed consent for the contrast administration. The act of obtaining consent should be included in the report.
  - d. A specific order from the radiologist for the contrast administration should be written and signed.
  - e. The study should be monitored, and the need to administer gadolinium should be confirmed after review of the noncontrast portion of the study.
  - f. The smallest effective dose of gadobenate dimeglumine (MultiHance, Bracco Diagnostics Inc.) should be administered. See section III.
  - g. Nephrology should be consulted about possible dialysis for patients not currently on dialysis. For patients on dialysis, the timing of the MRI study and subsequent immediate dialysis should be arranged prior to the start of the study.
- V. Stage 5 Chronic Kidney Disease (CrCl less than 15 mL/min/1.73 m<sup>2</sup>)**  
Gadolinium use should be avoided unless no reasonable alternative imaging study exists and a noncontrast MRI does not provide sufficient information. If gadolinium is used, the procedures outlined above for stage 4 disease are to be followed.

## Summary of Gadolinium Use Policy

(X = Needed Action)

<b>Chronic Kidney Disease Stage</b> Creatinine Clearance (CrCl) in mL/min/1.73 m <sup>2</sup>	<b>1 or 2</b> >60	<b>3 Mild</b> 45–60	<b>3 Adv</b> 30–45	<b>4</b> 15–30	<b>5</b> <15
Document contrast agent and amount	X	X	X	X	X
Radiologist review of contrast screening form		X	X	X	X
Radiologist review of serum creatinine concentration and eGFR		X	X	X	X
Review clinical indication for contrast		X	X	X	X
Consider 3-month total cumulative gadolinium dose		X	X	X	X
Review noncontrast MRI exam; then use contrast only if needed			X	X	X
Consider delay if in acute phase of renal failure			X	X	X
Use half (reduced) dose MultiHance as contrast agent			X	X	X
Document contrast needed after noncontrast MRI on report			X	X	X
Avoid contrast use if possible				X	X
Discuss with referring attending physician				X	X
Nephrology consult prior to contrast exam				X	X
Radiologist signed order for contrast				X	X
Get informed consent and document on report				X	X
Contrast prohibited unless no alternative					X