



## MR Contrast Use in Chronic Kidney Disease Patients

### BACKGROUND:

Epidemiologic data strongly suggest a link between a rare disease, nephrogenic systemic fibrosis (NSF) and MR contrast agents. NSF is generally severely disabling and in some cases fatal. Gadolinium, which is a toxic magnetic metal, is made safe for injection when it is bound to a chelating agent. In patients with stages 3 to 5 renal failure, the gadolinium has time to dissociate from its chelate in the body before it is excreted, potentially contributing to the development of NSF.

### DEFINITIONS:

Stage 1 renal disease: estimated GFR  $\geq 90$  mL/min/1.73 m<sup>2</sup> BSA with microalbuminuria

Stage 2 renal disease (mild): estimated GFR  $\geq 60 \leq 89$  mL/min/1.73 m<sup>2</sup> BSA, microalbuminuria and WHO anemia

Stage 3 renal disease (moderate): estimated GFR  $\geq 30 \leq 59$  mL/min/1.73 m<sup>2</sup> BSA

Stage 4 renal disease (severe): estimated GFR  $\geq 15 \leq 29$  mL/min/1.73 m<sup>2</sup> BSA

Stage 5 renal disease (end stage): estimated GFR  $< 15$  mL/min/1.73 m<sup>2</sup> BSA

### POLICY AND PROCEDURE:

1. Stage 1 or 2 chronic kidney disease patients can undergo contrast MR examinations.
2. Stage 3 chronic kidney disease patients must be assessed by the radiologist to determine the benefit to risk ratio before MR with contrast is used. If MRI with contrast is deemed necessary, half the usual dose of Magnevist will be utilized if possible. At the present time, data are insufficient for advising hemodialysis for all stage 3 chronic renal disease patients that receive MR with contrast. The FDA recommends considering immediate hemodialysis for these patients. Hemodialysis will be determined on a case by case basis.
3. Stage 4 and 5 chronic kidney disease patients should be under a nephrologists care. These patients must also be assessed by a radiologist and an order given by the radiologist if contrast is absolutely necessary. Alternative imaging techniques will be used if at all possible. If MRI with contrast is deemed necessary, half the usual dose of Magnevist will be utilized, if possible. The FDA recommends considering immediate hemodialysis for these patients. The ACR recommends immediate hemodialysis for patients on chronic hemodialysis. Our policy is for all Stage 4 and 5 patients to receive immediate hemodialysis (to begin within 2 hours of contrast administration). Repeat hemodialysis within 24 hours is also strongly recommended.
4. CAPD and CCPD are not effective enough in clearing gadolinium from the body. Immediate hemodialysis should be considered if these patients need MR contrast.
5. Patients less than 1 year of age must be assessed by a radiologist and will receive MR contrast only if absolutely necessary.
6. For patients with acute kidney injury as the cause of the low GFR, every attempt will be made to postpone the examination until kidney function recovers.