

Diversified Radiology of Colorado Guidelines for the administration of IV Gadolinium based contrast media

Background

Diversified Radiology Guidelines represent a tool to assist radiologists in providing appropriate care for patients. These guidelines are not inflexible rules or requirements of practice and are not intended, nor should they be used to establish a legal standard of care. Diversified Radiology cautions against the use of this document in litigation in which the clinical decisions of a practitioner are called into question.

The ultimate judgment regarding the propriety of any specific procedure or course of action must be made by the practitioner in light of all the circumstances presented. Thus, an approach that differs from the guidance in this document, standing alone, does not necessarily imply that the approach was below the standard of care. To the contrary, a conscientious practitioner may responsibly adopt a course of action different from that set forth in this document when, in the reasonable judgment of the practitioner, such course of action is indicated by the condition of the patient, limitations of available resources, or advances in knowledge or technology subsequent to publication of this document.

The practice of medicine involves not only the science, but also the art of dealing with the prevention, diagnosis, alleviation, and treatment of disease. The variety and complexity of human conditions make it impossible to always reach the most appropriate diagnosis or to predict with certainty a particular response to treatment. Therefore, it should be recognized that adherence to the guidance in this document will not assure an accurate diagnosis or a successful outcome. All that should be expected is that the practitioner will follow a reasonable course of action based on current knowledge, available resources, and the needs of the patient to deliver effective and safe medical care. The sole purpose of this document is to assist practitioners in achieving this objective.

The decision to administer contrast in patients undergoing MRI should always be a matter of clinical judgment; based on the individual circumstances of the patient. Patients with chronic kidney disease (CKD) are at risk of nephrogenic systemic fibrosis (NSF), an extremely rare fibrosing disease that may be fatal. . The only known risk factor for NSF is administration of Gadolinium in a patient either on dialysis or with chronic end stage CKD or Acute Kidney injury.

There is also an association between high doses of gadolinium based contrast agent (GBCA) and multiple doses of GBCA and development of NSF.

Importantly, most patient with severe CKD exposed to high doses and/or many doses of GBCAs do not develop NSF.

Patients at risk for NSF

- On Dialysis (of any form)
- Severe (CKD 4 eGFR 15-29) or End-stage (CKD 5 eGFR <15) CKD without dialysis
- eGFR 30-40 without dialysis
- AKI

Screening for patients at Risk for NSF prior to GBCA injection:

Outpatients:

Diversified Radiology recommends routinely screening patients undergoing MRI examinations to identify those individuals with CKD and thus at potential risk of NSF. Patients should be screened by asking these four questions:

1. What is your current age?
 2. Do you have diabetes?
 3. Do you have hypertension requiring medication?
 4. Do you have ANY problems with your kidneys (such as transplant, single kidney, kidney cancer, kidney surgery, dialysis)?
- *If patient is less than 60 years of age and answers NO to questions 2-4, IV GBCA contrast will be administered.*
 - *If a patient is older than 60 years of age and/or answers YES to any of these questions, an assessment of renal function should be performed as detailed below, before administering IV GBCA contrast.*

Inpatients:

- **ALL** inpatients should have eGFR within 2 days of any GBCA administration.

Timing of eGFR for OUTPATIENTS at risk for NSF

- No prior eGFR or last eGFR was >60 – new eGFR within 6 weeks.
- Prior eGFR 30-59 – need new eGFR within 2 weeks
- Prior eGFR <30 – need new eGFR within 1 week

GBCA administration with eGFR >40

- GBCA can be safely administered

GBCA administration with eGFR <40 or AKI

- Once a patient at risk for NSF is identified, alternative diagnostic examinations that do not employ GBCA should be considered. In nonemergent or nonurgent cases if the potential benefits of a GBCA enhanced MRI are felt to outweigh the risk of NSF in an individual patient and there is no suitable alternative, the referring physician and patient should be informed of the risks of GBCA administration, and both should agree with the decision to proceed. In emergent or urgent cases it may not always be possible to inform the patient or referring physician prior to GBCA administration.
- If the decision is made to administer GBCA, the supervising radiologist should document the reason for the examination and the rationale for the use of IV GBCA.

GBCA administration in patients on chronic dialysis:

- In addition to recommendations for patients with eGFR <40:
- Exam should be performed, as closely before hemodialysis as is possible, as prompt post-procedural hemodialysis, although unproven to date, may reduce the likelihood that NSF will develop. Peritoneal dialysis should not be considered protective.

NOTE: Exceptions to the above recommendations may be made at the discretion of the supervising radiologist, such as in the rare instance of an acute, life-threatening condition, and after consultation with the referring health care professional. However, the supervising radiologist in the medical record should document the rationale for the exception. There is no absolute threshold eGFR or Creatinine at which GBCA will be withheld if considered medically imperative and the risks and benefits have been weighed and determined by ordering physician and radiologist.

***Group I: Agents associated with the greatest number of NSF cases:**

- Gadodiamide (Omniscan)
- Gadopentetate dimeglumine (Magnevist)
- Gadoversetamide (OptiMark)

Group II: Agents associated with few, if any, unconfounded cases of NSF:

- Gadobenate dimeglumine (MultiHance)
- Gadobutrol (Gadavist)
- Gadoterate meglumine (Dotarem)
- Gadoteridol (ProHance)

Group III: Agents that have only recently appeared on the market:

- Gadofosveset trisodium (Ablavar)
- Gadoxetate disodium (Eovis)