



## Radiology Department Administrative Policy and Procedure

Title: <b>CONTRAST SAFETY &amp; CONTRAST ORDER GUIDELINES FOR CLINICAL PROVIDERS</b>	Policy Number: <b>RAD 111</b>
Regulation Reference: American College of Radiology Contrast Safety Manual, 2019	Effective Date: <b>8/5/2019</b>

**Policy Statement:** Uniform and standardized utilization of contrast safety guidelines as published in the American College of Radiology Contrast Safety Manual is an important safeguard for patients and promotes excellence in practice for our staff and clinical providers.

### Procedure & Guidelines for Safe Practice:

**Allergy:** Patients who have had a prior allergic-like reaction to contrast medium have an approximately 5-fold increased risk of developing a future allergic-like reactions when re-exposed. Premedication with steroids/antihistamines may mitigate the risk of a repeat reaction. “Breakthrough reactions” of equal or worse severity can occur in spite of premedication. A previous severe contrast reaction (anaphylaxis, etc.) is a contraindication to administration of the same type of contrast media irrespective of premedication regimens. Pre-treatment is **not** indicated for patients with non-contrast related allergies, asthma, shell fish or Betadine allergy.

#### **Specific Recommended Premedication Regimens**

##### *Elective Premedication (13-hour oral premedication)*

1. Prednisone-based: 50 mg prednisone by mouth at 13 hours, 7 hours, and 1 hour before contrast medium administration, plus 50 mg diphenhydramine intravenously, intramuscularly, or by mouth 1 hour before contrast given.

##### **Accelerated IV Premedication**

1. Methylprednisolone sodium succinate (e.g., Solu-Medrol®) 40 mg IV or hydrocortisone sodium succinate (e.g., Solu-Cortef®) 200 mg IV immediately, and then every 4 hours until contrast medium administration, plus diphenhydramine 50 mg IV 1 hour before contrast medium administration. This regimen usually is 4-5 hours in duration.

**Note:** Premedication regimens less than 4-5 hours in duration (oral or IV) have **not** been shown to be effective.

**Contrast Induced Nephropathy (CIN):** The most important risk factor for development of CIN is pre-existing renal insufficiency. There is very little evidence that IV iodinated contrast material is an independent risk factor for acute kidney injury in patients with eGFR  $\geq$  30 mL / min/1.73m<sup>2</sup>.

The following patients should be screened for pre-existing renal insufficiency within 30 days of the imaging exam:

1. Age > 60 years old
2. Prior history of renal disease; dialysis, solitary kidney, transplant kidney, kidney surgery
3. Hypertension requiring medical therapy
4. Diabetes mellitus



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### Estimated GFR Thresholds and Intervention for contrast enhanced CT exams:

- $\geq 60$  mL/min/1.73m<sup>2</sup>; no restrictions
- $\geq 30$  mL/min/1.73m<sup>2</sup> but  $< 60$  mL/min/1.73m<sup>2</sup>. Encourage oral hydration of 2 cups water before CT and 1 cup water/hour for 8 hours after the CT.
- $< 30$  mL/min/1.73m<sup>2</sup> is a contraindication for enhanced CT and approval from a radiology faculty member is required before contrast is given.
- Anuric renal failure requiring chronic dialysis: No restrictions on contrast.

**Metformin:** In patients with no evidence of AKI and with eGFR  $\geq 30$  mL / min/1.73m<sup>2</sup>, there is no need to discontinue metformin either prior to or following the intravenous administration of iodinated contrast media, nor is there an obligatory need to reassess the patient's renal function following the test or procedure. In patients taking metformin who are known to have acute kidney injury or severe chronic kidney disease (stage IV or stage V; i.e., eGFR  $< 30$ ) metformin should be temporarily discontinued at the time of or prior to the procedure, and withheld for 48 hours subsequent to the procedure and reinstated only after renal function has been re-evaluated and found to be normal.

**Nephrogenic Systemic Fibrosis (NSF):** Nephrogenic systemic fibrosis (NSF) is a disease primarily involving the skin and subcutaneous tissues but may also involve other organs. Symptoms and signs may develop and progress rapidly and it may rarely be fatal. The association between NSF development and exposure to Gadolinium Based Contrast Agents (GBCAs) in patients with acute kidney injury or severe chronic kidney disease is widely accepted. It is, however, now known that there are differences in the likelihood of a patient developing NSF after exposure to different formulations of GBCAs. University Medical Center and The Hospitals of Providence Transmountain Campus only use the safest contrast agents with the lowest risk of development of NSF.

Prohance: For children 2-6 years old. Adults with eGFR  $\geq 30$ .

Multihance: eGFR  $\geq 30$

Eovist: eGFR  $\geq 40$

The following patients will have a screening creatinine with calculated eGFR not more than 30 days old

\*Age  $> 60$  years old

\*History of renal disease, renal surgery, hypertension, or diabetes

Acute renal failure is a contraindication for IV gadolinium. Patients on chronic dialysis should have hemodialysis accomplished as soon as possible after gadolinium administration.



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### ORDERING GUIDELINES FOR CT AND MRI EXAMS

COMPUTERIZED TOMOGRAPHY (CT)		IV IODIDNATED CONTRAST		
EXAM TYPE	INDICATION	W/O	WITH	W/O & WITH
Brain	Mass, Infection, Seizure			X
	Stroke, TIA, Bleed, Headache, Vertigo			X
	Shunt, Hydrocephalus	X		
Sinus/Face	Trauma, Sinusitis, Salivary stone	X		
	Mass, Soft tissue infection		X	
Orbit	Trauma, Foreign Body	X		
	Mass, Infection, Inflammation			X
T-bone/IAC/Skull	Hearing loss/tinnitus, Trauma	X		
	Infection/Tumor		X	
Neck	Any indication		X	
Chest	Neoplasm		X	
	Infection/Inflammation		X	
	Pulmonary embolus		X	
	Pulmonary nodule	X		
	Interstitial lung disease (HI-RES)	X		
	Aortic aneurysm/dissection			X
Abd/Pelvis	Infection, Inflammation		X	
	Liver mass			X
	Bowel obstruction		X	
	Renal stones	X		
	Renal or Urothelial Neoplasm, hematuria			X
	Retroperitoneal hematoma	X		
	Hernia	X		
MSK	Trauma	X		
	Infection/Neoplasm		X	
Spine	Pain, trauma, radiculopathy	X		
	Post-op, Mass, Infection, Inflammation			X
CT Angiogram	Any			X
MAGNETIC RESONANCE IMAGING (MRI)		IV GADOLINIUM CONTRAST		
EXAM TYPE	INDICATION	W/O	WITH	W/O & WITH
Screening Brain	Trauma, Headache, Altered Mental Status, Hydrocephalus, Chronic seizure			X
Brain	Mass, Infection, Stroke, Multiple Sclerosis, New Seizure, New bleed			X
Pituitary	Any			X
IAC	Any			X
Orbit	Any			X
Temporal bone	Any			X
Sinus/Face	Any			X



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EXAM TYPE	INDICATION	W/O	WITH	W/O & WITH
Neck	Any			X
<b>MAGNETIC RESONANCE IMAGING (MRI)</b>		<b>IV GADOLINIUM CONTRAST</b>		
Chest	Any			X
Abdomen	Gallstones/Duct Dilation – MRCP	X		
	Adrenal nodule/adenoma	X		
	Mass, Metastases, Inflammation			X
	Inflammatory bowel, Mass, Infection			X
Pelvis (not MSK)	Any (male and female)			X
Spine	Pain, trauma, radiculopathy	X		
	Post-op, Mass, Infection, Inflammation			X
MRI MSK	Trauma/Pain	X		
	Infection/neoplasm			X
MR Angiogram	Any			X

**Approval authority:**

This policy is approved by the Chairman of the Department of Radiology

**Responsibility and Revisions:**

The Chairman of the Department of Radiology will review and initiate revision on this policy when necessary.

Policy Number: <b>RAD 111</b>	Original Approval Date: <b>8/5/2019</b>
Version Number: <b>01</b>	
Signatory approval on file by:	<p>Thomas M. Dykes, M.D. Chair of Radiology , Texas Tech University Health Sciences Center El Paso</p> 