UIC Iodinated/Gadolinium Contrast Policy

Preparation for contrast:
NPO status is not required prior to administration of contrast, unless otherwise required by the specific procedure (e.g., enterography). It is recommended to have clear liquids only for two hours prior to an elective procedure.

Routine medications should be taken as prescribed, unless specific instructions to withhold certain medications are given prior to the procedure.

Metformin does not need withheld or renal function checked following contrast administration, unless there is evidence of acute kidney injury, or eGFR <30.

It is safe to continue breast feeding after administration of iodinated and gadolinium contrast agents. If breast feeding is paused, it need not be delayed beyond 24 hours.

There is no evidence that there should be at least 24 hours between contrast doses.

Prophylaxis with volume expansion is recommended for patients with acute kidney injury or eGFR <30. Normal saline is preferred; bicarbonate and N-acetylcystine provide no advantage.

See creatinine screening algorithms in patients with risk factors for renal disease.

Medical concerns:
There is no evidence supporting withholding iodinated contrast from patients with sickle cell disease, myeloma or pheochromocytoma.

There may be a risk of increasing myasthenia gravis symptoms with iodinated contrast injection.

Iodinated contrast can potentiate thyrotoxicosis in patients with acute thyroid storm. Iodinated contrast can affect thyroid uptake in imaging tests of the thyroid or radioactive iodine therapy.

Contrast allergies:
Non-allergic reactions such as nausea/vomiting or self-limited vasovagal events do not imply "contrast allergy," and are not contraindications to contrast administration.

Routine premedication or avoidance of contrast medium for other indications, such as allergic reactions to other substances (including shellfish or contrast media from another class [e.g., gadolinium-based – iodinated]), asthma, seasonal allergies, or multiple drug and food allergies is not recommended.

If there is history of a severe contrast reaction, including anaphylaxis or other conditions requiring supportive therapy or hospitalization, further contrast administration should be avoided in the absence of compelling clinical necessity. Premedication is required if there are no alternatives.

If there is a history of non-severe allergic-type contrast reaction, premedication is required.

It is generally accepted that contrast reactions can occur from use of iodinated contrast in the GI tract, although moderate and severe reactions have been rare.

Oral premedication for allergies is preferred. (If the patient is on corticosteroid medication already, it may be reasonable to reduce the premedication dose by the amount of their current daily dose.)

Rapid IV premedication has not been shown to be effective. IV premedication requires 4-5 hours to be effective.

Changing contrast medium to one different from what caused a prior reaction can help reduce the risk of repeat reaction.

Elective oral premedication regimens:
1. 50 mg prednisone by mouth at 13 hours, 7 hours, and 1 hour before contrast administration, plus 50 mg diphenhydramine intravenously, intramuscularly, or by mouth 1 hour before contrast administration.
Or
2. 32 mg methylprednisolone by mouth 12 hours and 2 hours before contrast administration. 50 mg diphenhydramine may be added.

Accelerated IV premedication regimens (in decreasing order of desirability):
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 administration, plus diphenhydramine 50 mg IV 1 hour before administration. This regimen requires 4-5 hours duration.
2. If allergic to methylprednisolone: Dexamethasone sodium sulfate (e.g., Decadron®) 7.5 mg IV immediately, and then every 4 hours until contrast administration, plus diphenhydramine 50 mg IV 1 hour before administration. This regiment requires 4-5 hours duration.
3. Methylprednisolone sodium succinate (e.g., Solu-Medrol®) 40 mg IV or hydrocortisone sodium succinate (e.g., Solu-Cortef®) 200 mg IV, plus diphenhydramine 50 mg IV, each 1 hour before contrast administration. This regimen, and all other regimens with a duration less than 4-5 hours, has no evidence of efficacy. It may be considered in emergent situations when there are no alternatives.

Creatinine screening:

If a patient is on dialysis, creatinine screening is not useful. **Do not screen**. **Consult radiologist**.

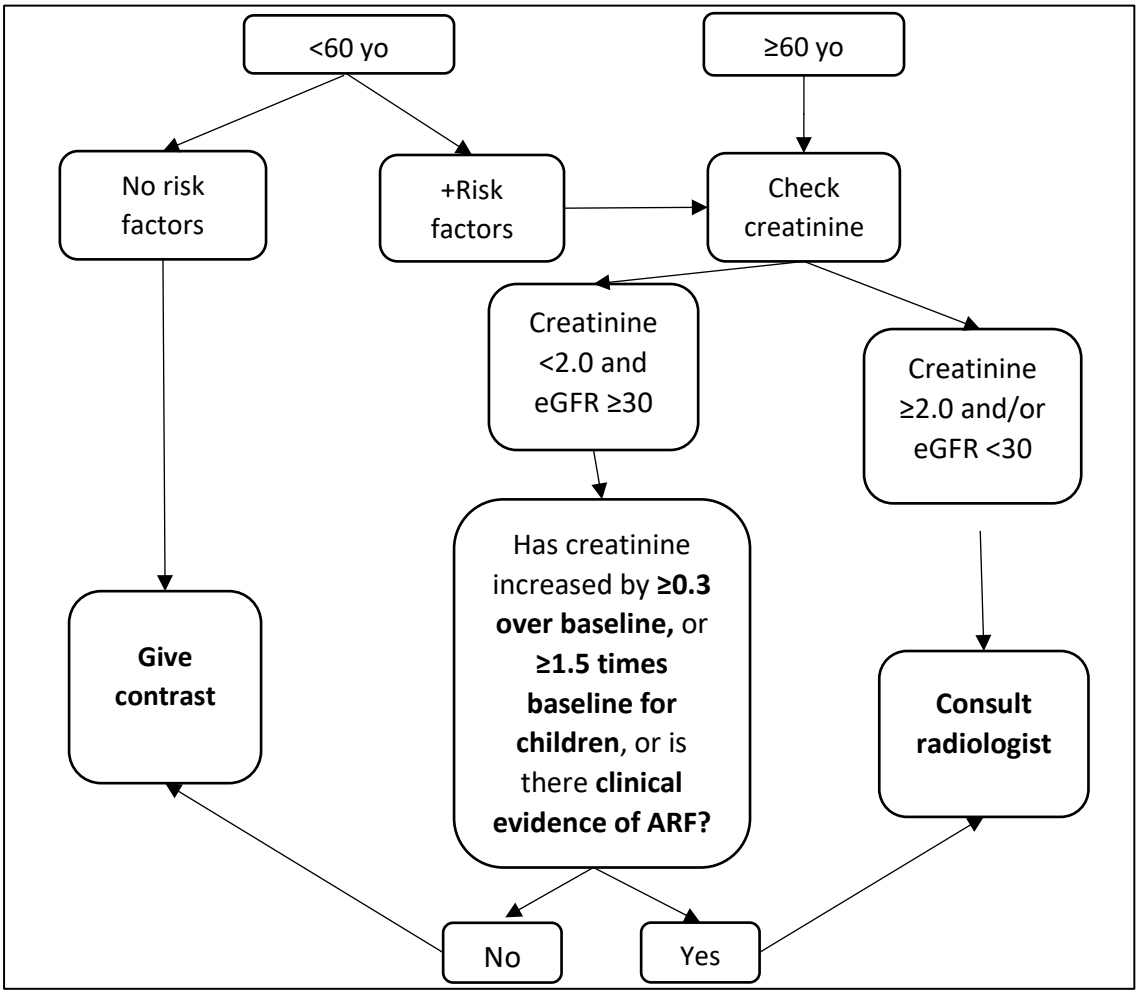
If the patient is known to have acute renal failure, creatinine screening is not reliable, and contrast should be avoided unless clinically necessary based on risk/benefit assessment. If the patient is recovering from recent acute renal failure, **check creatinine and consult radiologist**.

Inpatients need a serum creatinine within the last 2 days. If not, check creatinine.
ER patients need current creatinine.
Outpatients ≥60 years old, or of any age with at least one risk factor require serum creatinine within the last 30 days, or even more recently in the setting of **acute renal failure**.

Risk factors:

1. Renal disease, renal transplantation, nephrectomy, prior serum creatinine >1.2 mg/dL.
2. Undergoing chemotherapy.
3. Hypertension.
4. Diabetes.
5. Metformin therapy.
6. Acute illness (i.e., inpatients and ER patients, though this can be foregone in the setting of acute medical necessity.)

Outpatients <60 years old without risk factors do not require baseline serum creatinine.



Adapted from ACR Contrast Manual. https://www.acr.org/-/media/ACR/Files/Clinical-Resources/Contrast_Media.pdf
Revised 12/6/2021

CT Contrast Protocol:

The purpose of creatinine screening prior to iodinated contrast administration is to identify patients at risk for **contrast-induced nephropathy**.

All patients with creatinine <2.0 mg/dL and eGFR ≥30 are eligible to receive intravenous contrast. Patients with creatinine ≥2.0 mg/dL or eGFR <30 require discussion with the radiologist. Alternatives should be discussed with the patient and ordering physician, and documented consent should be considered.

Identification of **acute renal failure** is the primary goal of creatinine screening. If the patient has known acute renal failure, further creatinine screening is not necessary, and the situation should be discussed with a radiologist. If there are risk factors for acute renal failure which is not yet known, such as severe dehydration, or significantly decreased urine output for 6 hours, creatinine should be screened and the situation discussed with a radiologist. In all patients in whom creatinine is assessed, the current value should be compared with the most recent prior value to detect potential trends. If this value has increased by **≥0.3 mg/dL**, or **≥1.5 times baseline for children**, the situation should be discussed with a radiologist. Alternative tests, and hydration before or after the procedure should be considered.

Stage 4 or 5 CKD (eGFR <30) is the other screening target.

Algorithm:
Any patient on dialysis, or with known acute renal failure: **Do not screen**. **Consult radiologist**.

Any pregnant patient: **Consult radiologist.**

Inpatients need a serum creatinine within the last two days. If not, drawn new creatinine.

ER patients need current creatinine. If not already drawn by the ER, drawn new creatinine.

Outpatients <60 years old without risk factors: **give contrast**.

Outpatients ≥60 years old, or of any age with a risk factor or acute illness: drawn new creatinine and eGFR.

Creatinine ≥2.0 and/or eGFR <30: **consult radiologist**.

Creatinine <2.0 and eGFR ≥30, and creatinine has increased by **≥0.3 over baseline,** or **≥1.5 times baseline for children: consult radiologist**.

Creatinine <2.0 and eGFR ≥30, and creatinine has **not** increased by **≥0.3,** or **≥1.5 times baseline for children: give contrast**.

FOR RADIOLOGISTS:
The presence of a solitary kidney should not independently influence decision making regarding the risk of contrast induced kidney injury.

In patients at risk of kidney injury, lowering the dose of contrast medium is not recommended—the minimum routine clinical diagnostic dose should be used.

In patients on dialysis, creatinine screening is not useful. Patients who are **anuric** without a functioning transplant may have contrast. Patients who are **oliguric** (produce at least 100 mL urine/day) remain at risk for contrast-induced nephropathy and loss of remaining renal function and urine output. Contrast administration can be performed based on risk/benefit assessment. In oliguric patients receiving contrast, follow up dialysis should be arranged by the nephrology service.

Adapted from ACR Contrast Manual. https://www.acr.org/-/media/ACR/Files/Clinical-Resources/Contrast_Media.pdf
Revised 12/6/2021

MR Contrast Protocol:

The purpose of creatinine screening prior to gadolinium contrast administration is to identify patients at risk for **nephrogenic systemic fibrosis**.

Risk factors:
1. Stage 4 or 5 CKD (eGFR <30)
2. Acute renal failure.
3. Hemodialysis, recent vascular surgery, systemic inflammation/sepsis, metabolic acidosis, immunosuppression, and hepatorenal syndrome have been variably associated with increased risk in patients with concurrent renal failure.

Algorithm MR:
Any patient on dialysis, or with known acute renal failure: **Do not screen**. **Consult radiologist**.

Any pregnant patient: **Consult radiologist.**

Inpatients need a serum creatinine within the last two days. If not, drawn new creatinine.

ER patients need current creatinine. If not already drawn by the ER, drawn new creatinine.

Outpatients <60 years old without risk factors: **give contrast**.

Patient ≥60 years old, or of any age with a risk factor or acute illness: check creatinine and eGFR.

Creatinine ≥2.0 and/or eGFR <30: **consult radiologist**. Type I agents contraindicated.
Creatinine <2.0 and eGFR ≥30, and creatinine has increased by **≥0.3 over baseline,** or **≥1.5 times baseline for children: consult radiologist**. Type I agents contraindicated.
Creatinine <2.0 and eGFR ≥30, and creatinine has **not** increased by **≥0.3,** or **≥1.5 times baseline for children: give contrast**.

FOR RADIOLOGISTS:
If patient eGFR <30, or on dialysis, or in acute renal failure:

Group 1 agents (Magnevist, Omniscan and OptiMARK) are **contraindicated**.

Group 3 agents (Eovist) can be administered in patients without hepatic failure, based on risk benefit/assessment.

Group 2 agents (Gadavist, Dotarem, ProHance or MultiHance) can be considered in minimal effective dose based on risk/benefit assessment.

In patients on hemodialysis, the exam ideally should be scheduled prior to the next dialysis, but there is no need to alter dialysis schedule based on a group 2 agent administration.

On label dosing of group II agents does not imply clinically important risk of nephrotoxicity.

If multiple urgent group II or III doses are indicated, subsequent doses should not be delayed for concern of NSF. If not urgent, delaying further doses by 24 hours could be considered.