

Synergy MRI & CT Contrast Screening & eGFR Requirements (Rev 7-29-24)

Gadolinium MRI contrast

- **Pre-screen all patients for the use of the drug Hydroxyurea:** If the patient is undergoing hydroxyurea therapy, formal laboratory-based creatinine is required, as portable chemical analyzers cannot be used to measure serum creatinine levels.
- **Pregnancy/Nursing:** Screen all patients receiving gadolinium for pregnancy and nursing of an infant. Obtain age if gadolinium is to be injected.
- **Inpatients:** eGFR is required for all patients receiving gadolinium Group II agents and for both inpatients/outpatients receiving Group III agent gadoxetate disodium (**Eovist®**); the last creatinine results should have been performed within 2 days of MRI.
- **Adult Outpatients:**
 - Group II agents (Multihance, Dotarem, Gadavist, Prohance, or Clariscan): **No eGFR needed if no history of renal insufficiency.**
 - Group III agents (Eovist): eGFR test needed if history of renal disease, dialysis, single kidney, or transplant. The eGFR results should be within 7 days of the study.
- **Adult Inpatients (18 years old or older):**
 - eGFR calculated by CKD-EPI formula for all.
 - Creatinine, age, gender, ethnicity needed.
 - New Creatinine if iodinated contrast given after recent one.
 - For eGFR of **greater than or equal to 30 mL/min/1.73m²**, gadolinium chelates can be administered according to standard imaging guidelines.
 - For eGFR **below 30 mL/min/1.73m² and NOT on dialysis**
 - **Consult Radiologist to determine if contrast is necessary or if another imaging study should be recommended.**
 - **For Dialysis patients with eGFR below 30 mL/min/1.73m²**

- **Consult Radiologist to determine if contrast is necessary or if another imaging study should be recommended.**
 - **If gadolinium contrast is considered necessary by the Radiologist, obtain Nephrology consultation before the study.**
 - **If contrast is administered after Nephrology consultation, dialysis should occur within 24 hours after contrast administration. The patient or legal guardian should sign consent to contrast media.**
- **Pediatric patients (under 1 year of age)- Consult with the Radiologist.**
 - Given the evidence that eGFR and Creatinine values may be spuriously abnormal in infants below the age of 1 year due to renal immaturity, the radiologist and referring physician should discuss the necessity of contrast administration and the actual risk of renal dysfunction to determine if an infant can receive gadolinium in the presence of abnormal lab values. In this circumstance, the safest gadolinium agents such as macrocyclic agents (i.e., Gadavist) should be used.
 - **Pediatric patients (ages 1-18)**
 - All pediatric patients should be required to have a guardian sign the appropriate consent unless they are an emancipated minor. In that case, they or their legally responsible person will sign the appropriate consent.
 - The eGFR in children (under 18 years of age) should be calculated by Bedside Schwartz equation using serum Creatinine with calibration traceable to IDMS. All laboratories should be using Creatinine methods calibrated to be IDMS traceable. Bedside IDMS-traceable Schwartz GFR Calculator for Children:

<https://www.niddk.nih.gov/health-information/health-communicationprograms/nkdep/labevaluation/gfr-calculators/children-conventionalunit/Pages/default.aspx>

- In pediatric patients with eGFR less than 60mL/min/1.73m² and those patients with acute renal injury, avoidance of gadolinium contrast agents should be considered unless the benefit of a contrasted exam is felt to outweigh the potential risks. When contrast is needed, the physician will utilize the appropriate gadolinium agent that according to best of available peer reviewed information.
- In pediatric patients with eGFR less than 60mL/min/1.73m², the scan should be reviewed by a radiologist after non contrasted images have been obtained to determine if contrast is still necessary.
- If the pediatric patient has a history of acute kidney injury, postponement of the MRI examination until recovery of renal function will be recommended unless warranted for current clinical condition. Obtain consult from Pediatric Nephrology to ensure that this can be achieved.

- If the pediatric patient has an eGFR of greater than or equal to 30 and less than or equal to 60mL/min/1.73 m², administration of gadolinium chelates should be avoided unless benefits outweigh risks and with the following:
 1. Use of lowest possible dose needed to obtain a diagnostic study is recommended and is appropriate.
 2. If prior administration of Gadolinium has occurred within a week of the study, then a pediatric nephrology consult should be obtained BEFORE repeat gadolinium contrast administration to ensure the safety of further administration.
 3. The physician will utilize the appropriate gadolinium agent that according to best of available peer reviewed information has been associated with the least serious side effects. The ordering physician should be advised.
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CT Iodinated IV Contrast

Adult and pediatric patients

For eGFR of greater than or equal to 30 mL/min/1.73m², iodinated IV contrast can be administered according to standard imaging guidelines.

GFR is required for the following patients with the following:

- History of AKI or CKD
- Dialysis but still produces 100 ml or more of urine daily
- Congestive Heart Failure
- Nephrotoxic medications including chemotherapy
- Acute illness where there is suspicion of dehydration or renal disease
- **IF GFR is 30 mL/Min/1.73m² or below, approval for injection will be required by the radiologist or LIP. Current GFR result should be recorded on the patient history worksheet**

For patients on Metformin receiving iodinated IV contrast:

- Do **not** need to hold metformin in patients with no evidence of AKI and eGFR greater than 30 mL/Min/1.73m²
- 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.

eGFR Calculators:

- www.pubinfo.vcu.edu/pathlabs/calc/gfr_adults.html
- www.qxmd.com/calculate-online/nephrology/ckd-epi-egfr [invalid URL removed]
- <http://www.nephromatic.com/egfr.php>