Intravenous Contrast Considerations

For more information or when needed as a reference, see the "ACR Manual on Contrast Media":
https://www.acr.org/Clinical-Resources/Contrast-Manual

Also, refer to the "BWH/ BWFH/DFCI Guidelines for Assessment and Premedication of Imaging Contrast Agent Allergies" for updated department-wide policy.

Contrast Induced Nephropathy (CIN)

1) Pre-existing renal impairment is major determinant
2) If history of renal dysfunction, DM, HTN, SLE, etc., eGFR should be current (within 1 week)
3) If patient is young, no history of possible renal risk, usually don't need current eGFR
4) For both gadolinium based and iodinated contrasts, absolute cutoff is GFR < 30 ml/min/1.73 m^2. However, if patient is on HD, giving contrast is ok if study is essential and patient receives HD following contrast administration (need to confirm the timeline with the provider). Even GFR > 30 ml/min, if GFR is downtrending signifying AKI, do not give contrast unless it is an emergent indication.
5) Only hold Metformin is GFR < 30

Contrast Extravasation

1) Occurs 0.1-0.9% of cases
2) Spectrum of symptoms: from asymptomatic to severe pain, swelling, tightness
3) Major/rare complications: skin ulceration, compartment syndrome
4) Evaluation: 1) stop infusion, remove catheter, elevate extremity. 2) assess how much contrast was actually released (to do that you can look at the scan and estimate percentage of contrast received intravenously based on the degree of enhancement as well as look at the amount of swelling). 3) check for intact pulses, capillary refill, neuro sensation. 4) treat with cold or warm compress (no clear evidence for either), pain meds PRN
5) When to get a plastics consult: if progressive swelling or pain, altered tissue perfusion, change in sensation, skin ulceration or blistering, if more than 100 cc
6) Fill out an incident report, which the technologist can give you, and have the patient sign it

Iodinated Contrast Reactions

1) Acute adverse reaction: Predominantly histamine mediated (very rarely true allergy), occurs within 1 hr (usually quicker), unrelated to amount of contrast administered
   a) Common/benign: warmth, flushing, altered taste
   b) Mild: nausea, vomiting, urticaria, itching
   c) Moderate: more severe N/V, urticaria, bronchospasm, vasovagal
   d) Severe: Hypotensive shock, pulmonary edema, respiratory/cardiac arrest
2) Risk factors: asthma, other severe allergies, **shellfish allergy is NOT a risk factor
   a) Allergy to Povidone-iodine is not a contraindication for use of iodinated contrast material
3) Patients should be observed for at least 1 hr; if Benadryl is given, patient should not drive home
   a) Allergy should be entered into patient's medical record; usually write a short note as well, particularly if treatment is given
   b) If mild allergy, will need to receive premedication prior to future iodinated contrast studies
   c) If moderate allergy, no iodinated contrast should be given until patient seen by the Allergy & Immunology
   d) If severe allergy, no iodinated contrast should be given (even with premedication treatment)

Premedication (Source: "BWH/ BWFH/DFCI Guidelines for Assessment and Premedication of Imaging Contrast Agent Allergies"):

1) Accepted elective pre-medication regimen for outpatients with a history of allergic like reaction to iodinated contrast or gadolinium

I. Three Dose Protocol (Preferred)
• 50mg Prednisone PO 13, 7 and 1 hour(s) before contrast administration.
• And 10 mg Cetirizine* (Zyrtec) PO 1 hour before contrast administration. *or* 50 mg Diphenhydramine (Benadryl) IV within 1 hour of contrast administration

*Cetirizine is considered non-sedating, Diphenhydramine is considered sedating.

2) Accepted elective pre-medication regimens for inpatients/ER patients with a history of mild/moderate allergic like reaction to iodinated contrast or gadolinium

"Expedited" Protocol (Preferred)
• 200 mg Hydrocortisone sodium succinate (Solu-Cortef) 200 mg IV 5 hours and 1 hour prior to the study • 50 mg Diphenhydramine (Benadryl) PO, IM, or IV within 1 hour of contrast administration.

Note: This protocol should not be used in patients with a history of severe prior allergic like reaction without an allergy consultation. Additionally, patients with a gadolinium allergy should undergo the standard 13-hour oral prep.

Gadolinium Contrast Reactions

1) Very Rare
2) Biggest concern is nephrogenic systemic fibrosis – generally gadolinium is contraindicated if patient is on dialysis and if GFR < 30 (though with proper consent we do administer it from time-to-time, but always needs attending discussion)
3) Dotarem is preferred in cases of low GFR - Note that NSF has really only been demonstrated in patients with severe renal failure with the use of older, linear gadolinium agents (OptiMARK, Omniscan, Magnevist)
4) Extravasation is treated as above