**UPH-Meriter Iodinated Contrast Conservation Strategies: Quick Guide**

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| **Tier 1: Green** - Contrast inventory is *concerning, but adequate* to continue with routine practice *^Contrast inventory is >/= 4 weeks on-hand* |
| **Waste Reduction*** IR – spike single-use vial for use with multiple patients (Supplies & workflow according to Risk Assessment)
* CT
	+ Spike single-use vial for use with multiple patients (Supplies & workflow according to Risk Assessment)
	+ Reduce Contrast dose by 20% of weight-calculated dose
	+ Re-bolus exams ONLY after review & approval by Radiologist
	+ Explore with pharmacy the potential repackaging large single use contrast containers into smaller single use containers
		- Institute practice for all contrast agents, including those designated as “alternatives’ for Omnipaque/Visipaque

**Alternative Product:** Minimize use of Omnipaque for non-IV administration (especially oral administration)* CT oral contrast – NO Omnipaque, primary contrast = Barium (if no suspicion for bowel perforation)
	+ Gastrografin/Breeza or NO contrast if suspicion for bowel perforation
* Fluoroscopy – NO Omnipaque, refer to Radiologist-provided chart for alternative
* Cystogram – NO Omnipaque, Alternative = Cystoconray or Cystograffin
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| **Tier 2: Yellow** - Contrast inventory is *insufficient* to continue with routine practice *^Contrast inventory is 2 – 4 weeks on-hand* |
| *In addition to Tier 1 actions, the following will be implemented:***Tier 2(a): 3-4 weeks supply on-hand****Alternative Products:*** IR – use alternative contrast agents as available, each procedure is triaged for appropriate contrast use

**Alternative Protocols/Procedures:** Triage exams with Radiologist to determine alternate appropriate exam with NO IV contrast* Convert to Non-Contrast CT:
	+ Routine Neck for Palpable Lump
	+ Routine Chest for Pulmonary Nodule or Cancer Follow-up
	+ Routine Thoracic OR Abdominal Aortic Aneurysm Surveillance Follow-up (w/Gating)
	+ Trauma Chest with no high-energy trauma (exception – high suspicion for vascular injury)
	+ Abdomen/Pelvis with specified indications (Adults ONLY):
		- Nonspecific/General Abdomen Pain
		- Hernia Concern (w/Valsalva)
		- Diverticulitis, Appendicitis
		- Abdominal Distention/Diarrhea
		- Suspected Abdominal Obstruction (>25 BMI)
		- Adrenal Nodule Follow-up
	+ CT Urograms: Convert to non-contrast CT Abd/Pelvis to assess for stones (specifically for microhematuria and must be approved by Urologist)
	+ Oncologic Exams – single & multi-phase follow-up:
		- Testicular Cancer
		- Prostate Cancer
		- Lymphoma
		- Myeloma
		- Leukemia
* Exams still requiring use of Contrast:
	+ Routine Neck for Infection
	+ Chest CTA during non-staffed MRI hours
	+ Oncologic Exams as follows:
		- GI Malignancies (Esophago-gastric, liver, pancreas, colorectal, GIST, Neuroendocrine)
		- Melanoma
		- Breast Cancer
		- GU malignancies (renal cell carcinoma, bladder cancer, ovarian cancer, endometrial cancer, and cervical cancer)
		- Pancreatic Cancer & Pancreatic Neuroendocrine Tumor
	+ Patients with prior abdominal surgery
	+ Patients with concern for procedural complication
	+ Intra-Abdominal Abscess
	+ Trauma: Patients with HIGH clinical suspicion for solid organ injury after trauma (mechanism of injury is high energy, etc).
* Stroke Protocol & CT Contrast Use
	+ NO contrast: Low suspicion for Stroke (or other neurological entities such as dizziness)
	+ Consider CTA H/N with or without CT Perfusion: Moderate to High Suspicion for Stroke
* Consider Converting to Alternate Modality (please see separate document: “Mitigation/Alternative to CT”):
	+ Chest CTA to Pulmonary MRA during MRI-staffed hours (as deemed appropriate by Radiologist)
	+ Converting CT TAVRs to non-contrast TAVR CT protocol (MRA)
* OP – Triage contrast CT orders
	+ Convert appropriate exams/indications to CT without contrast
	+ Message provider for order change to alternate modality (e.g. MRA) via phones/Epic In-Basket
		- Prior-Authorization must be re-worked
	+ Previously scheduled OP exams – consider non-contrast (Triage with Radiologist)

Fluoroscopy:* Joint Injections: Consider using “air” instead of contrast for fluoroscopically guided therapeutic injections (please discuss with Radiologist prior to performing the procedure).

**Tier 2(b): 2 – 3 weeks supply on-hand*** IR –defer non-emergent procedures
* OP – Triage contrast CT orders, all routine (non-urgent) exams delayed until August 2022
	+ Previously scheduled OP exams –Exams triaged with Radiologist & rescheduled
	+ Triage the following types of cases with a Radiologist for rescheduling to a later date (examples):
		- Routine Subacute Cases (potentially delayed 1-3 weeks without significantly affecting patient care)
			* Chronic Infection requiring regular follow-up
			* Cancer patients in clinical trials or needing study to determine next step in management.
		- Routine Delayed Subacute Cases (potentially delayed 4-6 weeks without significantly affecting patient care).
			* Cancer follow-up in patients responding to treatment on previous exam without new or concerning symptoms.
			* Unexplained Chronic hematuria
		- Chronic Cases (Delaying 2-3 months is unlikely to result in significant patient harm)
			* Annual cancer or lesion follow-up in patients with remission or uneventful clinical status.
			* Annual follow-up of syndromic condition with no new symptoms or clinical concerns.
			* Adrenal work-up in an asymptomatic patient without history of cancer.
			* Characterization or follow-up of a renal mass < 2 cm in size (can also consider MRI).
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| **Tier 3: Red** - Contrast inventory levels are *insufficient* to meet the needs of patients with non-elective indications and/or the needs of all patients *^Contrast Inventory < 2 weeks supply on-hand* |
| *In addition to Tier 1 & Tier 2:***Tier 3(a): 10 – 14 days supply on-hand*** IR: reserve contrast use for procedures with emergent indications (list?). Triage to other specialties?
* ER/IP/OP: delay the following types of cases to a later date (Exams triaged in coordination with Radiologist & Ordering Provider)
	+ Urgent Cases (delaying 1-6 days may not affect patient care)
	+ Non-contrast CT exams, alternative modalities (please see separate document regarding “Mitigation/Alternative to CT")
		- New cancer work-up in stable patients (such as aggressive cancer types, including large renal cell, pancreatic, and invasive melanoma)
		- Transplant Work-Up
		- Suspected Infection in a Stable Patient
		- Suspected Post-Procedural Complication in a Stable Patient
		- Pre-Operative Work-Up for a patient scheduled for surgery > 24 hours

**Tier 3(b): 7 – 9 days supply on-hand** *\*ALL CT Contrast exams reviewed & approved by Radiologist\*** ER/IP: Delay the following types of cases to a later date (Exams triaged in coordination with Radiologist & Ordering Provider).
	+ Emergent Cases (delaying will likely result in significant patient harm)
	+ Implement use of non-contrast CT, alternative modalities
		- Stroke
		- Level 1 Trauma
		- Acute MI
		- Aortic Dissection/Aortic Rupture
		- Patients with HIGH suspicion of active bleeding/hemodynamic instability.
		- Septic Shock
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| **Tier 4: Purple** – Contrast Inventory is either at *critical or critically depleted* levels and cannot meet the needs of patients with emergent indications.  *^Contrast Inventory < 1 week on-hand* |
| *In addition to Tiers 1, 2 & 3:***\*Contrast is reserved for procedures where there is potential life/limb-saving benefits\*****\*\*All contrast use is determined and approved by designated Triage Officer\*\**** IR: Procedures only to be done for life or limb-saving purposes (All cases triaged with IR Provider)
* Radiology (Non-IR)
	+ Defer all diagnostic imaging examinations to only examinations where there is clear diagnostic AND therapeutic benefit
		- Radiologist & Ordering provider to consult on whether other non-contrast CT or other imaging modalities have diagnostic value
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*^Contrast Inventory will also include incoming inventory considerations*