

## CTA Abdomen and Pelvis with Bilateral Runoffs

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*In accordance with the ALARA principle, TRA policies and protocols promote the utilization of radiation dose reduction techniques for all CT examinations. For scanner/protocol combinations that allow for the use of automated exposure control and/or iterative reconstruction algorithms while maintaining diagnostic image quality, those techniques can be employed when appropriate. For examinations that require manual or fixed mA/kV settings as a result of individual patient or scanner/protocol specific factors, technologists are empowered and encouraged to adjust mA, kV or other scan parameters based on patient size (including such variables as height, weight, body mass index and/or lateral width) with the goals of reducing radiation dose and maintaining diagnostic image quality.*

If any patient at a TRA outpatient facility requires CT re-imaging, obtain radiologist advice prior to proceeding with the exam.

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The following document is an updated CT protocol for all of the sites at which TRA is responsible for the administration, quality, and interpretation of CT examinations.

### Include for ALL exams

- **Scout:** Send all scouts for all cases
- **Reformats:** Made from *thinnest source* acquisition
  - Scroll Display
    - Axial recons - Cranial to caudal
    - Coronal recons - Anterior to posterior
    - Sagittal recons - Right to left
  - Chest reformats should be in separate series from Abdomen/Pelvis reformats, where applicable
- **kVp**
  - 100 @ <140lbs
  - 120 @ >140lbs
- **mAs**
  - Prefer: Quality reference mAs for specific exam, scanner and patient size
  - Auto mAs, as necessary

## CTA Abdomen and Pelvis With Run-Offs CTA Abdominal Aorta + Run-Offs

**Indication:** Peripheral arterial disease (PAD), claudication, cold foot, trauma, etc.

**\*NOTES\*:**

- **Delayed phase:** Aortic bifurcation to feet, *immediately* after arterial
- **Post processing:** Auto-route arterial axial recons (thin and thick) to Via or Tera Recon

**Patient Position:** Supine, feet down with arms above head

**Scan Range (CC z-axis):** Top of hepatic dome through feet

**IV Contrast Dose, Flush, Rate, and Delay:**

- Dose: (modify volume if using something other than Isovue 370)
  - < 200 lbs            100 mL Isovue 370
  - > 200 lbs            125 mL Isovue 370
- Flush: 50 mL saline
- Rate: 3-4cc/sec (20g or larger IV, at least 4 inches above wrist or pressure injectable line)
- Delay:  
Arterial: Trigger off of Aorta at top slice of coverage (threshold 100 HU)  
Delayed acquisition: Immediately following arterial acquisition

**Acquisitions: 3** (non contrast, arterial, delay)

**NOTES:**

- **Non contrast phase**
  - Coverage: Hepatic dome to feet
  - Acquisition helical thickness (slice) 1 - 1.25 mm
- **Arterial phase**
  - Coverage: Hepatic dome to feet
  - Trigger bolus off abdominal aorta, threshold 100 HU. If trigger bolus not possible, use delay of 30sec.
  - Acquisition helical thickness (slice) 0.6 mm - 1 mm
- **Delay phase**
  - Coverage: aortic bifurcation (L4) to feet
  - Scanned craniocaudal, immediately after arterial scan (no separate breathing instructions)
  - Acquisition helical thickness (slice) 0.6 - 1 mm

**Series + Reformats (machine specific slice thicknesses below):**

- **Non-contrast**
  - Axial 1 - 1.25 mm soft tissue kernel (“Noncon”)
- **Arterial**
  - Axial 0.6 – 1 mm vascular or soft tissue kernel “AxThin”
  - Axial 2 - 2.5 mm vascular or soft tissue kernel “AxThick”
  - Coronal Ab/Pel (through femoral head) 2 x 2 mm soft tissue kernel “AP COR”
  - Sagittal Ab/Pel (through femoral head) 2 x 2 mm soft tissue kernel “AP SAG”
  - Coronal Lower extremities (top of femoral head to feet) 2 x 2 mm soft tissue kernel
  - Sagittal Lower extremities (top of femoral head to feet) 2 x 2 mm soft tissue kernel
  - Coronal MIP 5 x 2 mm entire field “MIPS”
- **Delay** (Ao bifurcation to toes)
  - Axial 0.6 – 1 mm soft tissue kernel; please label “Delay”

Machine specific recons (axial ranges given above for machine variability):

\*AXIAL NON CON PHASE - machine-specific thickness (axial):

- GE = 1.25 mm
- Siemens = 1-1.25 mm
- Toshiba = 1 mm

\*AXIAL ARTERIAL THIN - machine-specific thickness (axial):

- GE = 0.625 mm
- Siemens = 0.75 – 0.8 mm
- Toshiba = 1 mm

\*AXIAL ARTERIAL NOT THIN - machine-specific thickness (axial):

- GE = 2.5 mm
- Siemens = 2 mm
- Toshiba = 2 mm

\*AXIAL DELAYED PHASE - machine-specific thickness (axial):

- GE = 0.625 mm
- Siemens = 0.75 – 0.8 mm
- Toshiba = 1 mm

## General Comments

**NOTE:**

Use of IV contrast is preferred for most indications *aside from*: pulmonary nodule follow-up, HRCT, lung cancer screening, and in patients with a contraindication to iodinated contrast (see below).

### Contrast Relative Contraindications

- **Severe contrast allergy:** anaphylaxis, laryngospasm, severe bronchospasm
  - If there is history of severe contrast allergy to IV contrast, avoid administration of oral contrast
- **Acute kidney injury (AKI):** Creatinine increase of greater than 30% over baseline
  - Reference hospital protocol (creatinine cut-off may vary)
- **Chronic kidney disease (CKD) stage 4 or 5** (eGFR < 30 mL/min per 1.73 m<sup>2</sup>) **NOT** on dialysis
  - Reference hospital protocol

### Contrast Allergy Protocol

- Per hospital protocol
- Discuss with radiologist as necessary

### Hydration Protocol

- For eGFR **30-45 mL/min** per 1.73 m<sup>2</sup>: Follow approved hydration protocol

### IV Contrast (where indicated)

- Isovue 370 is the default intravenous contrast agent
  - See specific protocols for contrast volume and injection rate
- If Isovue 370 is unavailable:
  - Osmolality 350-370 (i.e., Omnipaque 250): Use same volume as Isovue 370
  - Osmolality 380-320 (i.e., Isovue 300, Visipaque): Use indicated volume + **25 mL** (*not to exceed 125 mL total contrast*)

### Oral Contrast

- Dilutions to be performed per site/hospital policy (unless otherwise listed)
- Volumes to be given per site/hospital policy (unless otherwise listed)
- TRA-MINW document is available for reference if necessary (see website)

### Brief Summary

- Chest only
  - ✓ Chest W, Chest WO
  - ✓ CTPE
  - ✓ HRCT
  - ✓ Low Dose Screening/Nodule
    - None
- Pelvis only
  - ✓ Pelvis W, Pelvis WO
    - Water, full instructions as indicated
- Routine, excluding chest only and pelvis only
  - ✓ Abd W, Abd WO
  - ✓ Abd/Pel W, Abd/Pel WO
  - ✓ Chest/Abd W, Chest/Abd WO
  - ✓ Chest/Abd/Pel W, Chest/Abd/Pel WO
  - ✓ Neck/Chest/Abd/Pel W, Neck/Chest Abd Pel WO
  - ✓ CTPE + Abd/Pel W
    - TRA-MINW offices: Dilute Isovue-370
    - Hospital sites:
      - ED: Water, if possible

- Inpatient: prefer Dilute Isovue 370
    - Gastrografin OK if Isovue unavailable
    - Avoid Barium (Readi-Cat)
  - FHS/MHS Outpatient: Gastrografin and/or Barium (Readi-Cat)
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- Multiphase abdomen/pelvis
    - ✓ Liver, pancreas
      - Water, full instructions as indicated
    - ✓ Renal, adrenal
      - None
  - CTA abdomen/pelvis
    - ✓ Mesenteric ischemia, acute GI bleed, endograft
      - Water, full instructions as indicated
  - Enterography
    - Breeza, full instructions as indicated
  - Esophogram
    - Dilute Isovue 370, full instructions as indicated
  - Cystogram, Urogram
    - None
  - Venogram
    - Water, full instructions as indicated