TRA-MINW

Routine CT Neck + Chest + Abdomen + Pelvis W
Venous

Reviewed By: Rachael Edwards, MD; Anna Ellermeier, MD; Brett Mollard, MD
Last Reviewed: January 2019

Contact: (866) 761-4200, Option 1

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-MINW outpatient facility requires CT re-imaging, obtain radiologist advice prior to proceeding with the exam.

The following document is an updated CT protocol for all of the sites at which TRA-MINW 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

TRA-MINW

Routine CT Neck + Chest + Abdomen + Pelvis W

Venous

Indication: Cancer surveillance (lymphoma, head and neck cancer)

Patient Position:

- **Chest + abdomen + pelvis:** Supine, feet down with arms above head
- **Neck:** Supine, feet down with arms down

Scan Range (CC z-axis):

- **Chest + abdomen + pelvis:** Lung apices through lesser trochanter
- **Neck:** Top of orbital roof through neck base

Prep: No solids (liquids OK) for 3 hours prior to examination

- Note: Okay to continue examination if prep is incomplete or not done

Oral Contrast:

**For specific volume + dilution based on examination type, see separate Oral Contrast protocol document and/or hospital policy for below indicated agents

- TRA-MINW offices: Dilute Isovue 370
- Hospital sites:
  - ED: Water, if possible (500 mL 15-20 min before examination)
  - Inpatient:
    - Prefer: Dilute Isovue 370
      - If above unavailable: Gastrografin
      - *Avoid Barium (Readi-Cat)*
  - FHS/MHS Outpatient: Gastrografin and/or Barium (Readi-Cat), per hospital/site policy

IV Contrast Dose, Flush, Rate, and Delay:

- **1st Chest + abdomen + pelvis - Position arms up**
  - Dose (modify volume if using something other than Isovue 370)
    - < 200 lbs 75 mL Isovue 370
    - 200-250 lbs 100 mL Isovue 370
    - >250 lbs 125 mL Isovue 370
  - Flush: 40 mL saline
  - Rate: 2.5-3 mL/sec
  - Delay: Venous Chest + Abdomen + Pelvis – 60s

- **2nd Neck – Reposition arms down**
  - Immediately to follow chest + abdomen + pelvis scan
  - Dose: Additional 50 mL Isovue 370 *(do not modify volume if using something other than Isovue 370)*
  - Flush: 20 mL saline
  - Rate: 1.5 mL/sec
  - Delay: Venous Neck – 30s after start of additional contrast injection

Acquisitions: 2 (both post-contrast = 1st chest + abdomen + pelvis with arms up → reposition arms down → reinject → 2nd neck with arms down)

- **Venous phase chest + abdomen + pelvis - 60 second delay- arms up**
  - Single breath, full inspiration
    ** Perform as ***single* axial stack** chest + abdomen + pelvis **
    ** Send as ***single* axial stack** chest + abdomen + pelvis **
- **Venous phase neck - 30 second delay** after additional contrast **- arms down**
  - Reinject immediately after chest + abdomen + pelvis scan (see above)

Series + Reformats:

NOTE: Axial 2-2.5 mm ST kernel CHEST (2a.) and Axial 2-2.5 mm ST kernel ABDOMEN + PELVIS (3a.) should be sent as a ***single axial stack CHEST + ABDOMEN + PELVIS***

1. **Venous phase neck**
   a. Axial 2-2.5 mm ST kernel
   b. Coronal 2 mm ST kernel
   c. Sagittal 2 mm ST kernel
2. **Venous phase chest**
   a. Axial 2-2.5 mm ST kernel *(send in a single axial stack with 3a.)*
   b. Axial 1.2-1.5 mm lung kernel
   c. Axial 10 x 2 mm MIP ST kernel
   d. Coronal 2mm ST kernel
   e. Sagittal 2 mm ST kernel
   f. Axial 1.25 x 1 mm ST kernel (SuperD where doable)
3. **Venous phase abdomen + pelvis**
   a. Axial 2-2.5 mm ST kernel *(send in a single axial stack with 2a.)*
   b. Coronal 2 mm ST kernel
   c. Sagittal 2 mm ST kernel

*****Machine specific protocols are included below for reference**

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

***Soft tissue (ST) Kernel, machine-specific thickness (axial):**

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

***Lung Kernel, machine-specific thickness (axial):**

- GE = 1.25 mm
- Siemens = 1.2 mm (or 1.5 mm on older generation)
- Toshiba = 1.5 mm

TRA-MINW

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^2) **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^2: 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

TRA-MINW

- 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)

- 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