TRA-MINW

Neuro CT Imaging Protocols

Reviewed By: Scott Walker, MD
Last Reviewed: March 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.**

General Comments

The following document is an updated list of the Neuroradiology CT protocols for all of the CT sites at which TRA Medical Imaging is responsible for the administration, quality and interpretation of Neuroradiology CT examinations.

- Please send scout images for all cases
- All reformats should be made from thinnest acquisition
- If GE scan at 1.25 mm instead of 2 mm

Sections

1. Head CT
2. CTA Head
3. Sinus Complete CT
4. Limited paranasal sinus CT:
5. Temporal Bone CT
6. Facial Bone CT
7. Orbit CT
8. Mandible CT
9. Neck CT
10. CTA Neck
11. CTA Neck/Head

12. Cervical Spine CT
13. Thoracic Spine CT
14. Lumbar spine CT
15. 4D Neck-Parathyroid

1. Head CT:

- 1 mm axial brain
- 5 mm axial brain
- 1 mm axial bone
- If with contrast:
    - 1 mm axial postcontrast brain
    - 5 mm axial postcontrast brain
- 1 mm sagittal and coronal reconstructions of brain in brain windows

2. Head CTA:

- should be performed with concurrent neck CTA unless specifically ordered only head CTA
- 0.5/0.625 mm axial soft tissue
- coronal MIP
- sagittal MIP
- axial MIP
- coronal MPR
- sagittal MPR
- if no recent noncontrast head CT (w/in 12 hours)
    - 1 mm axial brain noncontrast
    - 5 mm axial brain noncontrast
    - 1 mm axial bone noncontrast
- 1 mm sagittal and coronal reconstructions of brain in brain windows

3. Sinus Complete:

- noncontrast unless requested with contrast
- 0.5/0.625 mm axial bone
- 1 mm coronal reformat bone
- 1 mm sagittal reformat bone
- 1 mm axial reformat soft tissue
- place a horizontally orientated skin marker (eg. paper clip) on the patient's skin surface at the right zygomatic arch

4. Limited paranasal sinus CT: not Done at TRA

- directly acquired 2.5/3 mm coronal bone
- place a horizontally orientated skin marker (eg. paper clip) on the patient's skin surface at the right zygomatic arch

5. Temporal bone CT:

- Image 1cm inferior to mastoid tip-1cm superior to the petrous bones
- 2 mm axial soft tissue (includes both temporal bones within FOV)
- thin (0.5/0.625/1 mm) axial reformat bone Bilat(includes both temporal bones within FOV)
- thin (0.5/0.625/1 mm) axial reformat bone Right
- thin (0.5/0.625/1 mm) axial reformat bone Left
- thin (0.5/0.625/1 mm) coronal reformat bone (includes both temporal bones within FOV)
- thin (0.5/0.625/1 mm) coronal reformat bone with small FOV Right
- thin (0.5/0.625/1 mm) coronal reformat bone with small FOV Left
- If indication is superior semicircular canal (SSC) dehiscence:
    - 1 mm oblique plane of Stenver reformat bone
    - 1 mm oblique plane of Poschl reformat bone

- Place a horizontally orientated skin marker (eg. paper clip) on the patient's skin surface at the right zygomatic arch

6. Facial Bones CT

- include entire orbits through mandible
- thin (0.5/0.625/1 mm) axial bone
- 1 mm axial soft tissue
- 2 mm coronal reformat soft tissue
- 1 mm coronal reformat bone
- 1 mm sagittal reformat bone

7. Orbit CT

- include entire orbits through maxilla
- thin (0.5/0.625/1 mm) axial bone
- 2 mm axial soft tissue
- 2 mm coronal reformat soft tissue
- 2 mm sagittal reformat soft tissue

8. Mandible CT

- include entire glenoid fossa through inferior mandible
- thin (0.5/0.625/1 mm) axial bone
- 2 mm axial soft tissue
- 1 mm coronal reformat bone
- 1 mm sagittal reformat bone
- 3D surface rendering if ordered (attempt to get order before exam)

9. Neck CT (standard)

- with contrast unless contraindicated or specifically requested without
    - 50 cc (40% total volume) inject at 1.5 cc/sec, wait 90 sec
    - then 75 cc (remaining volume) inject at 2.5 cc/sec then image
- include entire orbits to aortic arch
- 2 mm axial soft tissue
- 2 mm coronal reformat soft tissue
- 2 mm sagittal reformat soft tissue

Neck CT (hoarseness/laryngeal mass)

- with contrast unless contraindicated or specifically requested without
  - 50 cc (40% total volume) inject at 1.5 cc/sec, wait 90 sec
  - then 75 cc (remaining volume) inject at 2.5 cc/sec then image
- include entire orbits to pulmonary arteries (through caudal aspect of aortic arch)
- 2 mm axial soft tissue
- 2 mm coronal reformat soft tissue
- 2 mm sagittal reformat soft tissue

10. Neck CTA:

- from aortic arch through circle of Willis (not through entire head)
- 0.5/0.625 mm axial soft tissue
- coronal MIP
- sagittal MPR
- bilateral oblique MPR through carotid bifurcations, angled to bifurcation

11. CTA Head/Neck

- from aortic arch through top of head
- 0.5/0.625 mm axial soft tissue
- coronal MIP Brain
- sagittal MIP Brain
- axial MIP Brain
- coronal MPR Brain
- sagittal MPR Brain
- coronal MIP Neck
- sagittal MPR Neck
- bilateral oblique MPR through carotid bifurcations, angled to bifurcation
- if no recent noncontrast head CT (w/in 12 hours)
  - 1 mm axial brain noncontrast
  - 5 mm axial brain noncontrast
  - 1 mm axial bone noncontrast
- 1 mm sagittal and coronal reconstructions of brain in brain windows

12. Cervical Spine CT

- image skull base to T1-T2
- thin (0.5/0.625/1) mm axial bone (small field of view centered over spine)
- 2 mm axial soft tissue (small field of view centered over spine)
- 2 mm coronal reformat bone
- 2 mm sagittal reformat bone
- 2 mm sagittal reformat soft tissue
- 2 mm coronal reformat soft tissue
- reformations should be angled to spine axis as necessary and include entire spine (through transverse processes)

13. Thoracic Spine CT

- image C7 through L1
- thin (0.5/0.625/1) mm axial bone (small field of view centered over spine)
- 2 mm axial soft tissue (small field of view centered over spine)
- 2 mm coronal reformat bone
- 2 mm sagittal reformat bone
- 2 mm sagittal soft tissue
- 2 mm coronal reformat soft tissue
- reformations should be angled to spine axis as necessary and include entire spine (through transverse processes)

14. Lumbar Spine CT

- image T12-L1 through S1-S2
- thin (0.5/0.625/1) mm axial bone (small field of view centered over spine)
- 2 mm axial soft tissue (small field of view centered over spine)
- 2 mm coronal reformat bone
- 2 mm sagittal reformat bone
- 2 mm sagittal reformat soft tissue
- 2 mm coronal reformat soft tissue
- reformations should be angled to spine axis as necessary and include entire spine (through transverse processes)

15. Neck 4D-Parathyroid

- Neck- image from upper palette to carina
- Chest- image from 1cm superior to apices to mid heart
- 2 mm axial soft tissue neck without contrast
- 2 mm axial soft tissue neck with contrast -50second delay
    - 125ml Isovue 370@1.5ml/sec
    - 2 mm coronal reformat
    - 2mm sagittal reformat
- 2 mm limited chest-Arms up small FOV
    - 1 mm axial lung
    - 2 mm coronal reformat
    - 2mm sagittal reformat