

Appendix D: Standard Trauma Imaging CT Protocols

- All CT scans can be obtained helical with 1mm or less acquisition thickness in transverse plane
- Bold faced protocols are part of the Standard Whole Body CT protocol
- Where IV contrast is indicated, exception is made if patient has a history of allergy to iodinated contrast and no other imaging modality is available

| Protocol | Clinical Indication | Contrast | Algorithm | Reformats (mm) | 3D/Volumetric |
|---|---|--|-------------------|---|---------------|
| HEAD PROTOCOLS | | | | | |
| CT Head Non-Contrast | Assess for traumatic brain injury | No | Standard | Transverse 2-3 | -- |
| | | | Bone | Transverse 2-3 | -- |
| Optional Head Protocols | | | | | |
| CTA Circle of Willis (COW) | Headache with SAH and minor trauma, query ruptured aneurysm | 4-5cc/sec of 320-350 concentration for 120-150cc or equivalent iodine amount | Standard or Angio | Transverse 1-2 Coronal 1-2 Sagittal 1-2 Transverse MIP 5/1 | -- |
| CT Facial Bones/Mandible | Complex fractures involving facial bones and mandible | No | Bone | Transverse 1-2 Coronal 1-2 Sagittal 1-2 | -- |
| CERVICAL SPINE or NECK PROTOCOLS | | | | | |
| CT Cervical Spine Non-Contrast | If radiography ordered based on Canadian C-Spine Rule, minimum views needed: - Lateral to include C7-T1 - AP - Open mouth odontoid Obliques not necessary | No | Standard | Transverse 2-3 | -- |
| | | | Bone | Transverse 2-3 Coronal 2-3 Sagittal 2-3 | -- |

| Optional C-Spine/Neck Protocols | | | | | |
|---|---|---|---|--|--------------------------|
| CT Angiography Carotid Arteries CT Angiography Carotid Arteries (cont'd) | Penetrating or Blunt Vascular Cervical Injury (See Appendix E) | 4-5cc/sec of 320-350 concentration for 120-150cc or equivalent iodine amount | Standard or Angio Standard or Angio (cont'd) | Transverse 1-2 Coronal 1-2 Right and Left Sagittal Obliques 1-2 | -- |
| CHEST PROTOCOLS | | | | | |
| Chest CT Aortogram | Aortic and Chest injuries | 4-5cc/sec of 320-350 concentration for 120-150cc or equivalent iodine amount | Standard | Transverse 2-3 Coronal 2-3 Oblique Aorta 2-3 | Yes, for flail chest |
| | | | Lung | Transverse 2-3 | -- |
| | | | Bone | Sagittal 2-3 for Thoracic Spine | -- |
| Optional Chest Protocols | | | | | |
| Delayed Phase CT | Consider if patient hemodynamically unstable and chest suspected to be source of active bleeding | Delay: 2-5 min. after injection | Standard | Transverse 2-3 Coronal 2-3 | -- |
| ABDOMEN and PELVIS PROTOCOLS | | | | | |
| CT Abdomen and Pelvis | | 4-5cc/sec of 320-350 concentration for 120-150cc or equivalent iodine amount | Standard | Transverse 2-3 Coronal 2-3 | Yes, for pelvic fracture |
| | | | Bone | Sagittal 2-3 for Lumbar Spine | -- |
| Optional Abdominal Protocols | | | | | |
| CT Cystogram | Suspected bladder rupture associated with severe pelvic fracture & hematuria Usually antegrade with delays through bladder, but can be retrograde if clinician places Foley catheter | If no Foley catheter, antegrade with delays through bladder (15-20 min. after injection) If Foley catheter present, can be retrograde with contrast: <ul style="list-style-type: none"> 300cc iohalamate meglumine injection USP 17.2% (Cysto-Conray®), or | Standard | Transverse 2-3 Coronal 2-3 | -- |

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|--|---|---|-------------------|--|----|
| | | <ul style="list-style-type: none"> 300-500cc mixture of one part Iohexol (Omnipaque 350®) to 2.5 parts water | | | |
| Delayed Phase CT Abdomen/Pelvis | Consider if patient hemodynamically unstable and abdomen/pelvis suspected to be source of active bleeding | Delay: 2-5 min. after injection | Standard | Transverse 2-3 Coronal 2-3 | -- |
| CT Urography/IVP | Consider if patient has hematuria from suspected urinary collecting system injury | Antegrade with delays through entire urinary collecting system (15-20 min. after injection) | Standard | Transverse 2-3 Coronal 2-3 | |
| With Rectal Contrast | Consider in penetrating wound to flank Requires rectal tube | Aqueous contrast such as gastrograffin 500cc at 2% through rectal tube Mix 20cc gastrograffin (Telebrix®) with 480cc water for a total of 500cc 500cc should be adequate to fill the colon via a rectal tube | | Given prior to portal venous CT scanning of abdomen & pelvis | -- |
| With Oral Contrast | Anterior penetrating wounds in the epigastric region to assess for gastric injury Consider danger of aspiration if patient has a decreased LOC, or nasogastric tube to be used if patient unable to take voluntarily | Aqueous such as gastrograffin 500cc at 2% if patient is able to ingest Mix 20cc gastrograffin (Telebrix®) with 480cc water for a total of 500cc Consider administering through nasogastric tube if patient is unable to ingest (e.g. with decreased level of consciousness) 250cc should be adequate to fill the stomach | | Given prior to portal venous CT scanning of abdomen & pelvis | -- |
| EXTREMITY VASCULAR or MUSCULOSKELETAL PROTOCOLS | | | | | |
| Optional Extremity Protocols | | | | | |
| CT Angiography of Extremities | Pulseless or avascular extremity | 4-5cc/sec of 320-350 concentration for 120-150cc or equivalent iodine amount | Standard or Angio | Transverse 1-2 Coronal 1-2 | -- |

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|---------------|--|----|------|---|---|
| CT MSK Injury | Injured extremity Can be obtained when patient stabilized after treatment for initial CT findings | No | Bone | Transverse 1-3 Coronal 1-3 Sagittal 1-3 | Reformat thickness dependent on joint/bone involved |
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