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Pediatric CT Protocols (18 years old or less)

Ped1: Head CT
Ped2: Cervical spine CT
Ped3: Sinus CT
Ped4: Neck CT
Ped5: Chest CT
Ped6: Abdomen and pelvis CT
Ped7: Thoracic or lumbar spine CT
Ped8: Extremity CT

Ped 1: Head CT (without contrast, or with contrast)

Indications: trauma, headaches, mass.

Contrast parameters	Optional: 1 mL/lb (up to 100 lb), at 2.5 mL/sec
Region of scan	Foramen magnum to vertex, angled to exclude orbits.
Scan delay	If using IV contrast: 60 sec
Detector collimation	Non-helical 16 x 1.5 mm OR helical 64 x 1.2 mm, 32 x 1.2 mm (128 slice)
Slice thickness	4.5 mm OR (helical) 5 mm thick axial reformats. 4 mm OR (helical) 5mm (128 slice)
Filming	1) H30s kernel (axials) and H70s kernels 2) H30s kernel (axials)

Comments:

- Eye shields if able to tolerate.
- Pediatric dose adjustments:
  - 0-23 months: kV 100, mA 300, mAs 120.
  - 2-6 years: kV 120, mA 310, mAs 124.
  - 7-14 years: kV 120, mA 310, mAs 155.
  - >15 years: kV 120, mA 335, mAs 165.

Ped 2: Cervical spine CT without contrast

Indications: trauma.

Contrast parameters	None
Region of scan	Foramen magnum to bottom of T4
Scan delay	NA
Detector collimation	16 x 0.75 mm, 64 x 0.6 mm, 128 x 0.6 mm
Slice thickness	3.0 mm axials, 2.0 mm sagittal and coronal MPR
Filming	B20s, B70s kernels

Comments:

- Thyroid shields should not be placed on C-spine collars.
- Pediatric dose adjustment: 100 kVp; variable mAs via CareDose.
- Siemens C-SpineVol package.
- Field of view: 12-13 cm.
- Trauma criteria: *AJR* 2000; 174:713-717
    - Injury mechanism: high-speed (>35 mph combined) MVA, MVA with death at scene, fall >10 feet.
    - Clinical evaluation: known closed head injury, pelvic or multiple extremity fx, neurologic Sx or C-spine radiculopathy.

Ped 3: Sinus CT without contrast

Indications: sinusitis.

Contrast parameters	None
Region of scan	Frontal sinus to floor of maxillary sinus; patient supine.
Scan delay	NA
Detector collimation	16 x 0.75 mm, 64 x 0.6 mm, 128 x 0.6 mm direct axials
Slice thickness	3.0 axials, 3.0 mm coronal and sagittal reformats.
Filming	H70f kernel

Comments:

- Pediatric dose adjustment: 100 kVp; variable mAs via CareDose.
- Eye and thyroid shields if able to tolerate.

Ped 4: Soft tissue neck CT (with contrast, or without contrast)

Indications: neck masses, infection and abscesses, soft tissue trauma.

Contrast parameters	If using IV contrast: 1 mL/lb up to 125 lbs @ 2.5 mL/sec.
Region of scan	1) Sella to aortic arch 2) Pharynx (angled axials)
Scan delay	(if using IV contrast) 40 sec
Detector collimation	16 x 0.75 mm, 64 x 0.6 mm, 128 x 0.6 mm
Slice thickness	3.0 mm axials and oblique axials; 3.0 mm thick coronal reformats
Filming	B31s kernel

Comments:

- Pediatric dose adjustment: 100 kVp; variable mAs through CareDose.
- Use thyroid shield.
- Siemens NeckVol package.
- If concomitant trauma C-spine evaluation needed, perform additional 3 mm axials, 2mm sagittal and coronal MPR as specified in protocol Sp1, and merge with current study.

Ped 5: Chest CT (without contrast, or with contrast)

Indications: lung, mediastinal and pleural pathology.

Contrast parameters	If using IV contrast: 1 mL/lb up to 125lb @ 2.5mL/sec.
Region of scan	Lung apex to posterior costophrenic angles
Scan delay	If using IV contrast: 50 seconds
Detector collimation	16 x 0.75 mm, 64 x 0.6 mm, 128 x 0.6 mm
Slice thickness	5 mm axials, 7 mm coronal & sagittal MIP reformats If younger than 10 years: 3 mm axials instead.
Filming	B30f kernel (axials) B70f kernel (axials, coronal MIP)

Comments:

- Pediatric dose adjustment: use CareDose.
    - Weight < 9 kg: 80 kVp.
    - Weight 10-25 kg: 100 kVp.
    - Weight 26 kg or more:
        - 100 kVp for BMI < 30.
        - 120 kVp for BMI > 30.
- Use breast shields for females.

Ped 6: Abdomen and pelvis CT (with contrast, or without contrast)

Indications: abdominal pain, acute abdomen, abdomen trauma.

Contrast parameters	If using oral: variable volume (see below notes). If using IV contrast: 1 mL/lb up to 125 lb @ 2.5 mL/sec
Region of scan	Diaphragm to symphysis
Scan delay	If using oral: 90 minutes from initial ingestion; 120 min for patients 10 years and younger If using IV contrast: 60 seconds
Detector collimation	16 x 1.5 mm, 64 x 1.2 mm, 32 x 1.2 mm (128 slice)
Slice thickness	5 mm axials; 5 mm coronal & sagittal reformats. If younger than 10 years: 3 mm axials, coronals and sagittals.
Filming	B30f kernel B70f kernel for lung bases.

Comments:

- Pediatric dose adjustment: use CareDose.
    - Weight < 9 kg: 80 kVp.
    - Weight 10-25 kg: 100 kVp.
    - Weight 26 kg or more:
        - 100 kVp for BMI < 25.
        - 120 kVp for BMI > 25.
- Oral contrast by age/weight: Omnipaque, Gastrografin, or barium:
    - Less than 1 year old: 200 mL; 50 mL just before scan.
    - 9-18 kg: 400 mL; 50 mL just before scan.
    - 18-36 kg: 600 mL; 100 mL just before scan.
    - > 36 kg: 900 mL; 100 mL just before scan (same as adults).
- Use breast shields for females.
- Siemens AbdomenVol settings.
- Use 5% Gastrografin solution when there is possible bowel perforation, impending surgery, or suspected bowel obstruction.

- Inguinal/ventral hernia evaluation: patients should perform Valsalva maneuver at end-inspiration to accentuate any hernias.

Ped 7: Thoracic or lumbar spine CT without contrast

Indications: trauma, bone lesions.

Contrast parameters	None
Region of scan	Thoracic spine levels TBD by radiologist. T12 to S1 for lumbar spine scans.
Scan delay	NA
Detector collimation	16 x 0.75 mm, 64 x 0.6 mm, 128 x 0.6 mm
Slice thickness	3.0 mm axials, 3.0 mm sagittal and coronal MPR
Filming	B20s, B70s kernels

Comments:

- Pediatric dose adjustment: 120 kVp; variable mAs through CareDose.
- Use breast shields in female thoracic spine CT's.
- Siemens SpineVol package.
- Oblique axial scan plane, to best parallel the discs as a whole.

Ped 8: Extremity CT without contrast

Indications: fractures, hindfoot coalition, bone lesions.

Contrast parameters	None
Region of scan	Varies according to region of interest.
Scan delay	NA
Detector collimation	16 x 0.75 mm, 16 x 0.6 mm (64 and 128 slice)
Slice thickness	2 mm axials, 2 mm coronal and sagittal reformats
Filming	U90u kernels

Comments:

- Pediatric dose adjustment: use CareDose.
    - Weight 25 kg or less: 100 kVp.
    - Weight 26 kg or more: 120 kVp.