

## **Body CT Protocols**

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Combo 1: Chest, abdomen, and pelvis CT with contrast

Combo 2: Chest and abdomen CT with contrast

## **C 1: Chest CT with contrast**

Indications: mediastinal and pleural pathology.

Contrast parameters	IV: 125mL@ 2.5mL/sec, OR 100mL @ 2.5mL/sec, with 30mL saline flush <i>Venogram option:</i> 140 mL at 4mL/sec, 10% contrast solution (100mL total) at 3mL/sec.
Region of scan	Lung apex to posterior costophrenic angles
Scan delay	50 seconds <i>Venogram option:</i> 60-90 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
Filming	B30f kernel (axials) B70f kernel(axials, coronal MIP)

### Comments:

- Optional CT venogram protocol for SVC syndrome or thrombus; best used with double-barreled power injector.
- Pediatric patients under 10 years of age: reconstructions at 3 mm axials instead; keep 7 mm coronal MIP.
- Optional CT navigational bronchoscopy images: 1 mm x 0.8 mm axial slices, B31F kernel, mediastinal window.

## **C 2: Chest CT without contrast**

Indications: pulmonary nodules, airspace disease.

Contrast parameters	NA
Region of scan	Lung apex to posterior costophrenic angles
Scan delay	NA
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
Filming	B30f kernel (axials) B70f kernel (axials, coronal MIP)

### Comments:

- Pulmonary nodule workup: optional 1.5 mm thick sections through nodules of interest at radiologist's discretion.
- Pediatric patients under 10 years of age: reconstructions at 3 mm axials instead; keep 7 mm coronal MIP.
- Optional CT navigational bronchoscopy images: 1 mm x 0.8 mm axial slices, B31F kernel, mediastinal window.

### **C 3: Chest CT angiogram (pulmonary embolism protocol)**

Indications: suspected pulmonary embolism.

Contrast parameters	IV: 125 mL @ 4 mL/sec, OR 100 mL @ 4 mL/sec, with 30 mL saline flush
Region of scan	1) Lung apex to posterior costophrenic angles 2) Iliac crests to popliteal fossae (optional)
Scan delay	1) CARE bolus: ROI on main pulmonary artery. Delay of peak + 4 sec. 2) 4 minutes (optional)
Detector collimation	1) 16 x 0.75 mm, 64 x 0.6 mm, 128 x 0.6 mm 2) Non-helical 5 mm at 4 cm intervals (optional)
Slice thickness	1) 2 mm axials and 5 mm axials. 7 mm MIP straight coronal & sagittal reformats through entire thorax. 3 mm oblique coronal reformats through right and left pulmonary arteries. 2) 5 mm axials at 4 cm intervals (optional)
Filming	B31fkernel (2 mm axials and all coronal MIP's) B70f kernel (5 mm axials)

Comments:

- Siemens Embolism042s settings.
- CT venography is optional and is done only when specifically requested by the referring clinician.
- Optional CT navigational bronchoscopy images: 1 mm x 0.8 mm axial slices, B31F kernel, mediastinal window.

## **C 4: Chest CT without contrast (lung nodule follow-up, lung CA screening)**

Indications: pulmonary nodule follow-up, minimizing radiation exposure.

Contrast parameters	NA
Region of scan	Lung apex to posterior costophrenic angles
Scan delay	NA
Detector collimation	16 x 0.75 mm, 64 x 0.6 mm, 128 x 0.6 mm
Slice thickness	1.25 mm axials, 7 mm coronal & sagittal MIP reformats.
Filming	B30f kernel (axials) B70f kernel (axials, coronal MIP)

### Comments:

- Siemens LungLowDose settings.
- Utilize when confirming stability of indeterminate nodules over a 2-year period.
- For lung screening CT: patients would need initial requisition from referring provider.
- Optional CT navigational bronchoscopy images: 1 mm x 0.8 mm axial slices, B31F kernel, mediastinal window.

## C 5: High-resolution chest CT

Indications: diffuse lung pathology, inhalational exposure, asbestosis.

Contrast parameters	NA
Region of scan	1) Supine inspiration <i>contiguous</i> scan (apex to posterior costophrenic angles) 2) Dynamic supine expiration (see comments) 3) Prone inspiration <i>contiguous</i> scan (carina to posterior costophrenic angles)
Scan delay	NA
Detector collimation	16 x 0.75 mm, 64 x 0.6 mm, 128 x 0.6 mm
Slice thickness	1) 1.0 mm and 5 mm axials; 7 mm coronal & sagittal MIP reformats. 2) 1.0 mm axials. 3) 1.0 mm axials.
Filming	B70f kernel (1.0 mm axials and 7 mm coronals) B30f kernel (5 mm axials).

### Comments:

- Supine expiration images will detect air trapping. Perform a total of 3 scan series (upper, mid, and lower lungs), with each scan series encompassing 4-5 slices while the patient is actively breathing out.
- Prone inspiration series will differentiate early fibrosis from posterior dependent atelectasis.
- Optional CT navigational bronchoscopy images: 1 mm x 0.8 mm axial slices, B31F kernel, mediastinal window.

## **C 6: Chest CT angiogram (pulmonary vein ablation protocol)**

Indications: pre-procedural mapping for pulmonary vein ablation treatment of atrial fibrillation.

Contrast parameters	IV: 125 mL @ 4 mL/sec, OR 100 mL @ 4 mL/sec, with 30 mL saline flush
Region of scan	Lung apex to posterior costophrenic angles (scan from bottom to top)
Scan delay	30 sec
Detector collimation	16 x 0.75 mm, 64 x 0.6 mm, 128 x 0.6 mm
Slice thickness	3 mm axials; 3 mm MIP oblique coronal reformats parallel to right and left pulmonary veins; 7 mm MIP straight coronal & sagittal reformats.
Filming	B31f kernel (axials, oblique coronal reformats) B70f kernel (axials, 7 mm MIP reformats).

### Comments:

- Siemens Embolism042s settings.
- Optional CT navigational bronchoscopy images: 1 mm x 0.8 mm axial slices, B31F kernel, mediastinal window.

## **A 1: Abdomen and pelvis CT with contrast**

Indications: abdominal pain, tumor staging, acute abdomen, penetrating abdomen trauma.

Contrast parameters	Oral: 900 mL (approx 100 mL just before scan) IV: 125 mL at 2.5 mL/sec, OR 100 mL at 2.5 mL/sec, with 30 mL saline flush
Region of scan	Diaphragm to symphysis
Scan delay	Oral: 45-90 minutes from initial ingestion; 120 min for patients 10 years and younger IV: 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.
Filming	B30f kernel B70f kernel for lung bases.

### Comments:

- Siemens AbdomenVol settings.
- Use 5% Gastrografin solution when there is possible bowel perforation, impending surgery, or suspected bowel obstruction.
- Oral contrast delay can be shortened to 45-60 minutes if using Omnipaque.
- Pediatric patients under 10 years of age: 3 mm axials and 3 mm coronals instead.
- Inguinal/ventral hernia evaluation: patients should perform Valsalva maneuver at end-inspiration to accentuate any hernias.



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## **A 1A: Abdomen CT with contrast**

Indications: upper abdominal pain, tumor staging.

Contrast parameters	Oral: 450mL(approx 100 mL just before scan) IV: 125 mL@ 2.5 mL/sec, OR 100 mL @ 2.5 mL/sec, with 30 mL saline flush
Region of scan	Diaphragm to iliac crests
Scan delay	Oral: 45-60 minutes from initial ingestion IV: 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
Filming	B30f kernel B70f kernel for lung bases.

### Comments:

- Siemens AbdomenVol settings.
- Use 5% Gastrografin solution when there is possible bowel perforation, impending surgery, or suspected bowel obstruction.
- Pediatric patients under 10 years of age: 3 mm axials and 3 mm coronals instead.

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## **A 1P: Pelvis CT with contrast**

Indications: lower abdominal pain, inguinal hernias.

Contrast parameters	Oral: 900 mL IV: 125 mL at 2.5 mL/sec, OR 100 mL @ 2.5 mL/sec, with 30 mL saline flush
Region of scan	Iliac crests to symphysis
Scan delay	Oral: 45-90 minutes from initial ingestion; 120 minutes for patients 10 years and younger IV: 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
Filming	B30f kernel

### Comments:

- Siemens AbdomenVol settings.
- Use 5% Gastrografin solution when there is possible bowel perforation, impending surgery, or suspected bowel obstruction.
- Oral contrast delay can be shortened to 45-60 minutes if using Omnipaque.
- Pediatric patients under 10 years of age: 3 mm axials and 3 mm coronals instead.

## **A 2: Abdomen and pelvis CT with contrast (trauma protocol)**

Indications: blunt abdomen injury.

Contrast parameters	Oral: none IV: 125 mL at 2.5 mL/sec, OR 100 mL @ 2.5 mL/sec, with 30 mL saline flush
Region of scan	1) Diaphragm to symphysis 2) Opt: kidneys to symphysis after 10-minute delay
Scan delay	Oral: NA IV: 60 seconds, optional 10-minute delay
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.
Filming	B30f kernel B70f kernel for lung bases and sagittal reformats.

### Comments:

- Siemens AbdomenVol settings.
- Perform optional 10-minute delayed imaging through the GU system if gross hematuria or if renal trauma is seen.
- For *stable* patients with penetrating abdomen injuries, protocol A1 is preferred. Unstable patients should not be imaged.
- Pediatric patients under 10 years of age: 3 mm axials and 3 mm coronals instead.

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### **A 3: Abdomen and pelvis CT without intravenous contrast**

Indications: abdominal pain; estimated GFR too low for IV contrast.

Contrast parameters	Oral: 900 mL(approx 100 mL just before scan) IV: none
Region of scan	Diaphragm to symphysis
Scan delay	Oral: 45-90 minutes; 120 minutes for patients 10 years old or younger
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
Filming	B30f kernel B70f kernel for lung bases

Comments:

- Siemens AbdomenVol settings.
- Oral contrast delay can be shortened to 45-60 minutes if using Omnipaque.
- Pediatric patients under 10 years of age: 3 mm axials and 3 mm coronals instead.

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### **A 3A: Abdomen CT without intravenous contrast**

Indications: upper abdomen pain; estimated GFR too low for IV contrast.

Contrast parameters	Oral: 450 mL (approx 100 mL just before scan) IV: none
Region of scan	Diaphragm to iliac crests
Scan delay	Oral: 45-60 minutes
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
Filming	B30f kernel B70f kernel for lung bases

Comments:

- Siemens AbdomenVol settings.
- Pediatric patients under 10 years of age: 3 mm axials and 3 mm coronals instead.

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### **A 3P: Pelvis CT without intravenous contrast**

Indications: lower abdomen pain; estimated GFR too low for IV contrast.

Contrast parameters	Oral: 900 mL(approx 100 mL just before scan) IV: none
Region of scan	Iliac crests to symphysis
Scan delay	Oral: 45-90 minutes; 120 minutes for patients 10 years old or younger
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
Filming	B30f kernel

Comments:

- Siemens AbdomenVol settings.
- Oral contrast delay can be shortened to 45-60 minutes if using Omnipaque.
- Pediatric patients under 10 years of age: 3 mm axials and 3 mm coronals instead.

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## **A 4: Abdomen and pelvis CT without contrast (hematoma protocol)**

Indications: ruptured AAA, post-catheterization groin hematomas.

Contrast parameters	Oral: none IV: none
Region of scan	Diaphragm to symphysis
Scan delay	NA
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
Filming	B30f kernel B70f kernel for lung bases

### Comments:

- Siemens AbdomenVol settings.
- Pediatric patients under 10 years of age: 3 mm axials and 3 mm coronals instead.

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## **A 5: Pre- and post-contrast abdomen CT (liver protocol)**

Indications: liver lesion characterization; HCC screening in cirrhosis.

Contrast parameters	Oral: none IV: 125 mL at 4cc/sec, OR 100 mL @ 4 mL/sec, with 30 mL saline flush
Region of scan	Diaphragm to iliac crests
Scan delay	1) Non-contrast 2) Arterial phase: 25 sec after IV contrast 3) Portal venous phase: 70 sec after IV contrast 4) Delayed phase: 5 min after IV contrast
Detector collimation	1) 16 x 1.5 mm, 64 x 1.2 mm, 32 x 1.2 mm (128 slice) 2) 16 x 0.75 mm, 64 x 0.6 mm, 128 x 0.6 mm 3) 16 x 1.5 mm, 64 x 1.2 mm, 32 x 1.2 mm (128 slice) 4) 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 (portal venous phase only)
Filming	B30f kernel B70f kernel for lung bases

### Comments:

- Siemens AbdMultiPhase settings.



## **A 6: Pre- and post-contrast abdomen CT (pancreas protocol)**

Indications: pancreatic mass; NOT for initial pancreatitis workup.

Contrast parameters	Oral: 400 mL water IV: 125 mL at 4 mL/sec, OR 100 mL @ 4 mL/sec, with 30 mL saline flush
Region of scan	1) T12 to L2 vertebral bodies 2) T12 to L2 vertebral bodies 3) Diaphragm to iliac crests
Scan delay	1) Non-contrast: 15 minutes after water 2) Pancreatic phase: 45 sec after IV contrast 3) Portal venous phase: 70 sec after IV contrast
Detector collimation	1) 16 x 0.75 mm, 64 x 0.6 mm, 128 x 0.6 mm 2) 16 x 0.75 mm, 64 x 0.6 mm, 128 x 0.6 mm 3) 16 x 1.5 mm, 64 x 1.2 mm, 32 x 1.2 mm (128 slice)
Slice thickness	1) 3 mm axials 2) 3 mm axials; 3 mm coronal & sagittal reformats 3) 5 mm axials
Filming	B30f kernel B70f kernel for lung bases

Comments:

- Siemens AbdMultiPhase settings.
- For pancreatitis, perform protocol A1 instead.

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## **A 7: Abdomen and pelvis CT with contrast (enterography protocol)**

Indications: Crohn's disease, ischemic bowel, small bowel tumors.

Contrast parameters	Oral: 1350 mL Volumen (see comments) IV: 125 mL at 2.5 mL/sec, OR 100 mL @ 2.5 mL/sec, with 30 mL saline flush
Region of scan	Diaphragm to symphysis
Scan delay	Oral: 60 minutes from contrast ingestion IV: 45 seconds
Detector collimation	16 x 1.5 mm, 64 x 1.2 mm, 32 x 1.2 mm (128 slice)
Slice thickness	3 mm axials; 3 mm coronal & sagittal reformats (at 2 mm intervals)
Filming	B30f kernel B70f kernel for lung bases

### Comments:

- Siemens AbdomenVol settings.
- Volumen timing: drink 450 mL 60 minutes before scan, another 450 mL 40 minutes before scan, 225 mL at 20 minutes before scan, and last 225 mL at 10 minutes before scan.
- Warn patients about watery bowel movements (but not diarrhea) afterwards; Volumen is not absorbed by the intestinal lining.

## **GU 1: Abdomen and pelvis CT without contrast (CT-KUB)**

Indications: flank pain and hematuria; suspected renal colic.

Contrast parameters	Oral: none IV: none
Region of scan	Diaphragm to symphysis
Scan delay	NA
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
Filming	B30f kernel B70f kernel for lung bases

### Comments:

- Siemens AbdomenVol settings
- Obtain plain film KUB either before or after CT scan.
- Pediatric patients under 10 years of age: 3 mm axials and coronals instead.
- Low-dose CT-KUB option: 120 kV and 30 mAs. To be used only in the setting of known kidney stones detected on a prior study (CT or US), and must be ordered specifically as a low-dose study by urology. NOT recommended for patients with BMI >25.

## **GU 2: Pre- and post-contrast abdomen and pelvis CT (CT-IVP)**

Indications: painless hematuria, renal mass or transitional cell CA evaluation

Contrast parameters	Oral: 1000 mL water for hydration 15-20 min before. IV: 80 mL at 2.5 mL/sec, wait 8 minutes. 60 mL at 2.5 mL/sec, wait 2 minutes.
Region of scan	1) Diaphragm to symphysis pubis (optional) 2) Diaphragm to symphysis pubis
Scan delay	1) Non-contrast (CT-KUB): (optional) 2) Nephrographic/urographic phase: 10 min after IV contrast
Detector collimation	1) 16 x 1.5 mm, 64 x 1.2 mm, 32 x 1.2 mm (128 slice) 2) 16 x 0.75 mm, 64 x 0.6 mm, 128 x 0.6 mm
Slice thickness	1) 5 mm axials 2) 5 mm axials, 2 mm thick coronal MPR, 5 mm thick sagittal reformats.
Filming	B30f kernel B70f kernel for lung bases

### Comments:

- Siemens AbdMultiPhase settings.
- Low-dose CT-KUB option: 120 kV and 30 mAs. Use if pt has already had CT-KUB in last 2 months (but not recommended if patient BMI >25).

### **GU 3: Pre- and post-contrast abdomen CT (adrenal protocol)**

Indications: distinguish between adenoma and metastasis.

Contrast parameters	Oral: none IV: 125 mL at 2.5 mL/sec, OR 100 mL @ 2.5 mL/sec, with 30 mL saline flush
Region of scan	1) Diaphragm to iliac crests 2) Diaphragm to iliac crests 3) Adrenals and kidneys
Scan delay	1) Non-contrast: NA 2) Venous phase: 75 sec after IV contrast 3) Delayed phase: 10 min after IV contrast
Detector collimation	1) 16 x 1.5 mm, 64 x 1.2 mm, 32 x 1.2 mm (128 slice) 2) 16 x 1.5 mm, 64 x 1.2 mm, 32 x 1.2 mm (128 slice) 3) 16 x 1.5 mm, 64 x 1.2 mm, 32 x 1.2 mm (128 slice)
Slice thickness	1) 3 mm axials 2) 3 mm axials; 5 mm coronals and sagittal reformats. 3) 3 mm axials
Filming	B30f kernel B70f kernel for lung bases

Comments:

- Siemens AbdMultiPhase settings.
- Pre-contrast attenuation < 0 HU supercedes the washout profile in adenoma characterization. Non-hemorrhagic, non-calcified masses > 43 HU are suspicious for malignancy. Absolute percentage washout of 52% distinguishes benign from malignant lesions. Radiology 2006; 238: 578-585.

## **GU 4: Pelvis CT with contrast (CT cystogram)**

Indications: assess for intra- or extraperitoneal bladder rupture.

Contrast parameters	300 mL diluted contrast instilled by gravity through existing Foley catheter (or as much as patient can tolerate)
Region of scan	1) Iliac crests or bladder dome to symphysis 2) Iliac crests or bladder dome to symphysis
Scan delay	1) Non-contrast 2) No delay after instillation of contrast
Detector collimation	1) 16 x 1.5 mm, 64 x 1.2 mm, 32 x 1.2 mm (128 slice) 2) 16 x 1.5 mm, 64 x 1.2 mm, 32 x 1.2 mm (128 slice)
Slice thickness	1) 5 mm axials 2) 5 mm axials; 5 mm coronal & sagittal reformats
Filming	B30f kernel

### Comments:

- Siemens AbdVol settings.
- Foley catheter should be inserted by Emergency Dept or Urology prior to arriving in CT.
- Dilute 50 mL contrast in 500 mL normal saline before instilling.
- Pediatric patients under 10 years of age: 3 mm axials and coronals instead.

## **GU 5: Pre- and post-contrast abdomen CT (renal protocol)**

Indications: renal mass evaluation or followup.

Contrast parameters	Oral: 1000 mL water for hydration 15-20 min before. IV: 80 mL at 2.5 mL/sec, wait 8 minutes. 60 mL at 2.5 mL/sec, wait 2 minutes.
Region of scan	1) Diaphragm to iliac crests (optional) 2) Diaphragm to iliac crests 3) Diaphragm to iliac crests
Scan delay	1) Non-contrast (may omit for follow-up scans) 2) Arterial phase: 30 seconds 2) Nephrographic/urographic phase: 10 minutes
Detector collimation	1) 16 x 0.75 mm, 64 x 0.6 mm, 128 x 0.6 mm 2) 16 x 0.75 mm, 64 x 0.6 mm, 128 x 0.6 mm 3) 16 x 0.75 mm, 64 x 0.6 mm, 128 x 0.6 mm
Slice thickness	1) 5 mm axials 2) 5 mm axials; 5 mm thick coronal reformats 3) 2 mm coronal & sagittal reformats.
Filming	B30f kernel B70f kernel for lung bases

### Comments:

- Siemens AbdMultiPhase settings.
- Pre-contrast component is optional; omit if scan is done for follow-up of known lesion, OR if urology deems it not necessary.

## **Combo 1: Chest, abdomen, and pelvis CT with contrast**

Indications: tumor staging.

Contrast parameters	Oral: 900 mL (approx 100 mL just before scan) IV: 125 mL at 2.5 mL/sec, OR 100 mL @ 2.5 mL/sec, with 30 mL saline flush
Region of scan	Lung apices to symphysis
Scan delay	Oral: 45-90 minutes from initial ingestion; 120 min for patients 10 years and younger IV: 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 7 mm coronal MIP through the lungs.
Filming	B30f kernel B70f kernel for lungs (including MIP reformats).

### Comments:

- Siemens AbdomenVol settings.
- For trauma scans: omit oral contrast. Perform sagittal reformats in B70f kernel, to include the anterior chest wall.
- Oral contrast delay can be shortened to 45-60 minutes if using Omnipaque.
- Pediatric patients under 10 years of age: 3 mm axials and coronals instead. Keep 7 mm coronal MIP's.
- Optional CT navigational bronchoscopy images: 1 mm x 0.8 mm axial slices, B31F kernel, mediastinal window.



## **Combo 2: Chest and abdomen CT with contrast**

Indications: tumor staging.

Contrast parameters	Oral: 900 mL (approx 100 mL just before scan) IV: 125 mL at 2.5 mL/sec, OR 100 mL @ 2.5 mL/sec, with 30 mL saline flush
Region of scan	Lung apices to iliac crests
Scan delay	Oral: 45-60 minutes from initial ingestion IV: 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 7 mm coronal MIP through the lungs.
Filming	B30f kernel B70f kernel for lungs (including MIP reformats).

Comments:

- Siemens AbdomenVol settings.
- Pediatric patients under 10 years of age: 3 mm axials and coronals instead. Keep 7 mm coronal MIP's.
- Optional CT navigational bronchoscopy images: 1 mm x 0.8 mm axial slices, B31F kernel, mediastinal window.