
Modesto Advanced™
IMAGING CENTER

GE Discovery LS 16 MDCT
BODY CT IMAGING PROTOCOLS

This document is intended to outline standard protocols for body CT imaging at Modesto Advanced Imaging Center. The following CT protocols are meant as a guide for the CT Technologist to facilitate performing high-end body imaging, using the lowest radiation dose possible to achieve superlative diagnostic quality images. The protocols can be altered at the discretion of the Radiologist in order to fit the needs of the patient and answer the clinical question.

Abdominal CT with IV contrast
Abdominal CT without IV contrast
Abdominal CT with and without IV contrast
Pelvic CT with IV contrast
Pelvic CT without IV contrast
Pelvic CT with and without IV contrast
Abdominal and Pelvic CT with IV contrast
Abdominal and Pelvic CT without IV contrast
Abdominal and Pelvic CT with and without IV contrast
Liver CT with IV contrast
Adrenal CT with IV contrast
Pancreas CT with IV contrast
CT Enterography with IV contrast
CT Urogram without IV contrast (low dose)
CT Urogram/Renal Mass with and without IV contrast
Abdomen CTA with IV contrast
Abdomen and Pelvis CTA with IV contrast
Abdomen and Pelvis and Lower Extremities (Run-off) CTA with IV contrast
CTA Endograft Evaluation (Abdomen and Pelvis) with IV contrast
CT Venography Abdomen and Pelvis with IV contrast
CT Venography Abdomen, Pelvis and Lower Extremities (DVT) with IV contrast
Chest, Abdomen and Pelvic CT with IV contrast
Chest CT with or without IV contrast
Pulmonary Artery and Thoracic Aorta CTA with IV contrast
High-Resolution Chest CT without IV contrast

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GE Discovery LS 16 Protocol

Routine ABDOMINAL CT with IV Contrast

Indications: General screening, abdominal/pelvic pain, mass, metastasis, diverticulitis, appendicitis, etc.

Position/Landmark	Head or Feet first, supine/Xiphoid
Topogram Direction	Craniocaudal
Respiratory Phase	Inspiration
Scan Type	Helical
KVp / mA / Rotation Time(s) / Pitch / Speed (mm/rot) / Noise Index	80-120kVp (see BMI chart) / smart mA (100-440) 0.7 sec / 1.75:1 / 35.00mm 24.00
Collimation	1.25mm x 16 = 20mm
Scan Start/End	Post-contrast: 1 cm superior to diaphragm through aortic bifurcation (iliac crests)
IV Contrast	Pre-scan contrast: 25 cc Omni 350 with 60 cc NS Wait 5-8 minutes Inject 100 cc Omni 350 @ 3cc/sec
Oral Contrast	Standard positive contrast
Scan Delay	Post-contrast: 55 sec fixed ***Optional**: 2 minute delay for enhancing liver mass
PACS Output	1. Scout 2. Post-contrast: 2.5mm x 2.5mm axial soft tissue AND lung algorithm 5mm x 5mm (same coverage area). Additional recon for liver delay if needed (2.5mm) 3. Coronal/Sagittal Reformatted Images post-contrast (5mm x 5mm)
Comments	Please look at liver during image acquisition. If there is an enhancing liver mass, get 2 minute delayed images just through the liver. Consult Radiologist as needed.

GE Discovery LS 16 Protocol

Routine ABDOMEN CT without IV Contrast

Indications: General screening in patients with renal insufficiency, screening for AAA, etc.

Position/Landmark	Head or Feet first, supine/Xiphoid
Topogram Direction	Craniocaudal
Respiratory Phase	Inspiration
Scan Type	Helical
KVp / mA / Rotation Time(s) / Pitch / Speed (mm/rot) / Noise Index	80-120kVp (see BMI chart) / smart mA (100-440) 0.7 sec / 1.75:1 / 35.00mm 24.00
Collimation	1.25mm x 16 = 20mm
Scan Start/End	1 cm superior to diaphragm through iliac crest (aortic bifurcation)
IV Contrast	None
Oral Contrast	Standard positive contrast
Scan Delay	None
PACS Output	1. Scout 2. Pre-Contrast: 2.5mm x 2.5mm axial soft tissue AND 5mm x 5mm lung algorithm (same coverage area) 3. Coronal/Sagittal Reformatted Images (5mm x 5mm)
Comments	Consult radiologist as needed.

GE Discovery LS 16 Protocol

Routine ABDOMEN CT w/without IV Contrast

Indications: General screening, abdominal/pelvic pain, mass, metastasis, abscess, etc.

Position/Landmark	Head or Feet first, supine/Xiphoid
Topogram Direction	Craniocaudal
Respiratory Phase	Inspiration
Scan Type	Helical
KVp / mA / Rotation Time(s) / Pitch / Speed (mm/rot) / Noise Index	80-120kVp (see BMI chart) / smart mA (100-440) 0.7 sec / 1.75:1 / 35.00mm 24.00
Collimation	1.25mm x 16 = 20mm
Scan Start/End	1 cm superior to diaphragm through aortic bifurcation (iliac crests)
IV Contrast	Pre-contrast: None Pre-scan contrast: 25 cc Omni 350 with 60 cc NS Wait 5-8 minutes Inject 100 cc Omni 350 @ 3cc/sec
Oral Contrast	Standard positive contrast
Scan Delay	Post-contrast: None Post-contrast: 55 sec fixed ***Optional**: 2 minute delay for enhancing liver mass
PACS Output	1. Scout 2. Pre-contrast: 2.5mm x 2.5mm axial soft tissue AND lung algorithm 5mm x 5mm (same coverage area). 3. Post-contrast: 2.5mm x 2.5mm axial soft tissue. Additional recon for liver delay if needed (2.5mm) 4. Coronal/Sagittal Reformatted Images ONLY post-contrast (5mm x 5mm)
Comments	Two phase acquisition unless additional liver images. Please look at liver during image acquisition. If there is an enhancing liver mass, get 2 minute delayed images just through the liver. Consult Radiologist as needed.

GE Discovery LS 16 Protocol

Routine PELVIC CT with IV Contrast

Indications: General screening, inguinal hernia, pelvic pain, ovarian/adnexal mass, metastasis, etc.

Position/Landmark	Head or Feet first, supine/Iliac Crest
Topogram Direction	Craniocaudal
Respiratory Phase	Inspiration
Scan Type	Helical
KVp / mA / Rotation Time(s) / Pitch / Speed (mm/rot) / Noise Index	80-120kVp (see BMI chart) / smart mA (100-440) 0.7 sec / 1.75:1 / 35.00mm 24.00
Collimation	1.25mm x 16 = 20mm
Scan Start/End	Post-contrast: 1 cm superior to iliac crests through greater trochanters
IV Contrast	Pre-scan contrast: 25 cc Omni 350 with 60 cc NS Wait 5-8 minutes Inject 100 cc Omni 350 @ 3cc/sec
Oral Contrast	Standard positive contrast
Scan Delay	Post-contrast: 65 sec fixed
PACS Output	1. Scout 2. Post-contrast: 2.5mm x 2.5mm axial soft tissue AND 2.5mm x 2.5mm bone algorithm (same coverage area) 3. Coronal/Sagittal Reformatted Images post-contrast 5mm x 5mm
Comments	Consult Radiologist as needed

GE Discovery LS 16 Protocol

Routine PELVIC CT without IV Contrast

Indications: Generalized screening, pelvic pain in renal insufficiency patient, pelvic fractures, etc.

Position/Landmark	Head or Feet first, supine/Iliac crest
Topogram Direction	Craniocaudal
Respiratory Phase	Inspiration
Scan Type	Helical
KVp / mA / Rotation Time(s) / Pitch / Speed (mm/rot) / Noise Index	80-120kVp (see BMI chart) / smart mA (100-440) 0.7 sec / 1.75:1 / 35.00mm 24.00
Collimation	1.25mm x 16 = 20mm
Scan Start/End	1 cm superior to iliac crests through lesser trochanters
IV Contrast	None
Oral Contrast	Standard positive contrast (if needed)
Scan Delay	None
PACS Output	1. Scout 2. Pre-Contrast: 2.5mm x 2.5mm axial soft tissue AND 2.5mm x 2.5mm bone algorithm (same coverage area) 3. Coronal/Sagittal Reformatted Images (3.75mm x 3.75mm) +/- 3D reconstructions of the hips for trauma
Comments	Consult Radiologist as needed

GE Discovery LS 16 Protocol

Routine PELVIC CT w/without IV Contrast

Indications: General screening, pelvic pain, adnexal/ovarian mass, metastasis, abscess, etc.

Position/Landmark	Head or Feet first, supine/Xiphoid
Topogram Direction	Craniocaudal
Respiratory Phase	Inspiration
Scan Type	Helical
KVp / mA / Rotation Time(s) / Pitch / Speed (mm/rot) / Noise Index	80-120kVp (see BMI chart) / smart mA (100-440) 0.7 sec / 1.75:1 / 35.00mm 24.00
Collimation	1.25mm x 16 = 20mm
Scan Start/End	1 cm superior to aortic bifurcation (iliac crests) through lesser trochanters
IV Contrast	Pre-contrast: None Pre-scan contrast: 25 cc Omni 350 with 60 cc NS Wait 5-8 minutes Inject 100 cc Omni 350 @ 3cc/sec
Oral Contrast	Standard positive contrast
Scan Delay	Post-contrast: None Post-contrast: 65 sec fixed
PACS Output	1. Scout 2. Pre-contrast: 2.5mm x 2.5mm axial soft tissue AND lung algorithm 5mm x 5mm (same coverage area) 3. Post-contrast: 2.5mm x 2.5mm axial soft tissue 4. Coronal/Sagittal Reformatted Images ONLY post-contrast (5mm x 5mm)
Comments	Two phase acquisition. Consult Radiologist as needed.

GE Discovery LS 16 Protocol

Routine ABDOMEN/PELVIS CT with IV Contrast

Indications: General screening, abdominal/pelvic pain, mass, metastasis, diverticulitis, appendicitis, abscess, etc.

Position/Landmark	Head or Feet first, supine/Xiphoid
Topogram Direction	Craniocaudal
Respiratory Phase	Inspiration
Scan Type	Helical
KVp / mA / Rotation Time(s) / Pitch / Speed (mm/rot) / Noise Index	80-120kVp (see BMI chart) / smart mA (100-440) 0.7 sec / 1.75:1 / 35.00mm 24.00
Collimation	1.25mm x 16 = 20mm
Scan Start/End	Post-contrast: 1 cm superior to diaphragm through lesser trochanters
IV Contrast	Pre-scan contrast: 25 cc Omni 350 with 60 cc NS Wait 5-8 minutes Inject 100 cc Omni 350 @ 3cc/sec
Oral Contrast	Standard positive contrast
Scan Delay	Post-contrast: 55 sec fixed ***Optional**: 2 minute delay for enhancing liver mass
PACS Output	1. Scout 2. Post-contrast: 2.5mm x 2.5mm axial soft tissue AND lung algorithm 5mm x 5mm (same coverage area). Additional recon for liver delay if needed (2.5mm) 3. Coronal/Sagittal Reformatted Images (5mm x 5mm)
Comments	Please look at liver during image acquisition. If there is an enhancing liver mass, get 2 minute delayed images just through the liver. Consult Radiologist as needed.

GE Discovery LS 16 Protocol

Routine ABDOMEN/PELVIS CT without IV Contrast

Indications: General screening in patients with renal insufficiency, screening for AAA, etc.

Position/Landmark	Head or Feet first, supine/Xiphoid
Topogram Direction	Craniocaudal
Respiratory Phase	Inspiration
Scan Type	Helical
KVp / mA / Rotation Time(s) / Pitch / Speed (mm/rot) / Noise Index	80-120kVp (see BMI chart) / smart mA (100-440) 0.7 sec / 1.75:1 / 35.00mm 24.00
Collimation	1.25mm x 16 = 20mm
Scan Start/End	1 cm superior to diaphragm through lesser trochanters
IV Contrast	None
Oral Contrast	Standard positive contrast
Scan Delay	None
PACS Output	1. Scout 2. Pre-Contrast: 2.5mm x 2.5mm axial soft tissue AND 5mm x 5mm lung algorithm (same coverage area) 3. Coronal/Sagittal Reformatted Images (5mm x 5mm)
Comments	Consult radiologist as needed.

GE Discovery LS 16 Protocol

Routine ABDOMEN/PELVIS CT w/without IV Contrast

Indications: General screening, abdominal/pelvic pain, mass, metastasis, diverticulitis, appendicitis, abscess, etc.

Position/Landmark	Head or Feet first, supine/Xiphoid
Topogram Direction	Craniocaudal
Respiratory Phase	Inspiration
Scan Type	Helical
KVp / mA / Rotation Time(s) / Pitch / Speed (mm/rot) / Noise Index	80-120kVp (see BMI chart) / smart mA (100-440) 0.7 sec / 1.75:1 / 35.00mm 24.00
Collimation	1.25mm x 16 = 20mm
Scan Start/End	Post-contrast: 1 cm superior to diaphragm through lesser trochanters
IV Contrast	Pre-contrast: None Pre-scan contrast: 25 cc Omni 350 with 60 cc NS Wait 5-8 minutes Inject 100 cc Omni 350 @ 3cc/sec
Oral Contrast	Standard positive contrast
Scan Delay	Post-contrast: None Post-contrast: 55 sec fixed ***Optional**: 2 minute delay for enhancing liver mass
PACS Output	1. Scout 2. Pre-contrast: 2.5mm x 2.5mm axial soft tissue AND lung algorithm 5mm x 5mm (same coverage area). 3. Post-contrast: 2.5mm x 2.5mm axial soft tissue. Additional recon for liver delay if needed (2.5mm) 4. Coronal/Sagittal Reformatted Images ONLY post-contrast (5mm x 5mm)
Comments	Two phase acquisition unless additional liver images. Please look at liver during image acquisition. If there is an enhancing liver mass, get 2 minute delayed images just through the liver. Consult Radiologist as needed.

GE Discovery LS 16 Protocol

Routine LIVER CT with IV Contrast

Indications: HCC, cirrhosis, hypervascular liver lesions, etc.

Position/Landmark	Head or Feet first, supine/Xiphoid
Topogram Direction	Craniocaudal
Respiratory Phase	Inspiration
Scan Type	Helical
KVp / mA / Rotation Time(s) / Pitch / Speed (mm/rot) / Noise Index	80-120kVp (see BMI chart) / smart mA (100-440) 0.7 sec / 1.75:1 / 35.00mm 24.00
Collimation	1.25mm x 16 = 20mm
Scan Start/End	Pre and post-contrast: 1 cm superior to diaphragm through aortic bifurcation (iliac crests)
IV Contrast	Inject 100 cc Omni 350 @ 4cc/sec
Oral Contrast	Standard negative (H20) contrast
Scan Delay	Pre-contrast: None Post-contrast (arterial): 40 sec fixed Post-contrast (venous): 70 sec fixed
PACS Output	1. Scout 2. Pre-contrast: 3.75mm x 3.75mm axial soft tissue AND lung algorithm 5.0mm x 5.0mm (same coverage area). 3. Post-contrast: 2.5mm x 2.5mm axial soft tissue. Both arterial and portovenous phases. 4. Coronal/Sagittal Reformatted Images post-contrast, both phases (5mm x 5mm)
Comments	This is a three phase exam of the liver including NC, arterial, and portovenous phases. Note the standard IV injection protocol and timings above.

GE Discovery LS 16 Protocol

Routine ADRENAL CT with IV Contrast

Indications: Adrenal mass.

Position/Landmark	Head or Feet first, supine/Xiphoid
Topogram Direction	Craniocaudal
Respiratory Phase	Inspiration
Scan Type	Helical
KVp / mA / Rotation Time(s) / Pitch / Speed (mm/rot) / Noise Index	80-120kVp (see BMI chart) / smart mA (100-440) 0.7 sec / 1.375:1 / 13.75mm 30.5
Collimation	0.625mm x 16 = 10mm
Scan Start/End	Pre and post-contrast: 1 cm superior to diaphragm through liver/kidneys
IV Contrast	Inject 100 cc Omni 350 @ 3cc/sec
Oral Contrast	Standard negative (H20) contrast
Scan Delay	Pre-contrast: None Post-contrast (cortical): 60 sec fixed Post-contrast (delayed): 15 min fixed
PACS Output	1. Scout 2. Pre-contrast: 2.5mm x 2.5mm axial soft tissue AND lung algorithm 5mm x 5mm (same coverage area). 3. Post-contrast: 2.5mm x 2.5mm axial soft tissue Both arterial and delayed phases. 4. Coronal/Sagittal Reformatted Images post-contrast, both phases (3mm x 3mm)
Comments	This is a three phase exam of the adrenal glands including NC, cortical, and 15 min delayed phases. Note the coverage is just of the adrenal area with slightly changed Pitch/Speed/Noise index.

GE Discovery LS 16 Protocol

Routine PANCREAS CT with IV Contrast

Indications: Pancreatic mass.

Position/Landmark	Head or Feet first, supine/Xiphoid
Topogram Direction	Craniocaudal
Respiratory Phase	Inspiration
Scan Type	Helical
KVp / mA / Rotation Time(s) / Pitch / Speed (mm/rot) / Noise Index	80-120kVp (see BMI chart) / smart mA (100-440) 0.7 sec / 1.75:1 / 35.00 mm 24.00
Collimation	1.25mm x 16 = 20mm
Scan Start/End	Pre and post-contrast: 1 cm superior to diaphragm through aortic bifurcation (iliac crests)
IV Contrast	Inject 100 cc Omni 350 @ 4cc/sec
Oral Contrast	1 bottle Volumen followed by 8 oz H20 15-20 min prior to exam
Scan Delay	Pre-contrast: None Post-contrast (arterial): 35 sec fixed Post-contrast (venous): 70 sec fixed
PACS Output	1. Scout 2. Pre-contrast: 3.75mm x 3.75mm axial soft tissue AND lung algorithm (same coverage area) 3. Post-contrast: 2.5mm x 2.5mm axial soft tissue. Both arterial and venous phases. 4. Coronal/Sagittal Reformatted Images post-contrast, both phases (3mm x 3mm)
Comments	This is a three phase exam of the pancreas including NC, arterial, and venous phases. The patient should have one bottle of Volumen and a cup of H20 15-20 min prior to the exam. An injection rate of 4cc/sec is a must.

GE Discovery LS 16 Protocol

Routine CT ENTEROGRAPHY with IV Contrast

Indications: Evaluate small bowel mucosa/wall.

Position/Landmark	Head or Feet first, supine/Xiphoid
Topogram Direction	Craniocaudal
Respiratory Phase	Inspiration
Scan Type	Helical
KVp / mA / Rotation Time(s) / Pitch / Speed (mm/rot) / Noise Index	80-120kVp (see BMI chart) / smart mA (100-440) 0.7 sec / 1.75:1 / 35.00mm 24.00
Collimation	1.25mm x 16 = 20mm
Scan Start/End	Post-contrast: 1 cm superior to diaphragm through lesser trochanters
IV Contrast	Pre-scan contrast: 25 cc Omni 350 with 120 cc NS Wait 5-8 minutes Inject 100 cc Omni 350 @ 3cc/sec
Oral Contrast	2 bottles Volumen, 16 oz. H20 prior to patient getting on CT table
Scan Delay	Post-contrast: 55 sec fixed
PACS Output	1. Scout 2. Post-contrast: 2.5mm x 2.5mm axial soft tissue AND lung algorithm 5mm x 5mm (same coverage area) 3. Coronal/Sagittal Reformatted Images post-contrast (5mm x 3mm)
Comments	CT enterography is a specialized study to evaluate the small bowel. This is a standard Abd/Pel CT with a special oral contrast prep. Drink one bottle Volumen, establish IV access, drink 2nd bottle Volumen. This should take approximately 30 minutes. The patient should drink 16 oz. of H20 immediately prior to getting onto CT scanner. Consult Radiologist as needed.

GE Discovery LS 16 Protocol

Routine CT UROGRAM without IV Contrast

Indications: Urolithiasis evaluation only. Low dose.

Position/Landmark	Head or Feet first, supine/Xiphoid
Topogram Direction	Craniocaudal
Respiratory Phase	Inspiration
Scan Type	Helical
KVp / mA / Rotation Time(s) / Pitch / Speed (mm/rot) / Noise Index	80-120kVp (see BMI chart) / smart mA (100-440) 0.7 sec / 1.75:1 / 35.00mm 28.00
Collimation	1.25mm x 16 = 20mm
Scan Start/End	1 cm superior to diaphragm through lesser trochanters
IV Contrast	None
Oral Contrast	Standard negative (H20) contrast
Scan Delay	None
PACS Output	1. Scout 2. Pre-Contrast: 2.5mm x 2.5mm axial soft tissue AND 5mm x 5mm lung algorithm (same coverage area) 3. Coronal/Sagittal Reformatted Images (5mm x 5mm)
Comments	Notice the change in the Noise index as this study is specifically for urolithiasis evaluation

GE Discovery LS 16 Protocol

Routine CT UROGRAM/RENAL MASS with IV Contrast

Indications: Hematuria (Non-contrast and dual Nephrographic phase) AND Renal Mass (NC, dual Corticomedullary AND Nephrographic phases).

Position/Landmark	Head or Feet first, supine/Xiphoid
Topogram Direction	Craniocaudal
Respiratory Phase	Inspiration
Scan Type	Helical
KVp / mA / Rotation Time(s) / Pitch / Speed (mm/rot) / Noise Index	80-120kVp (see BMI chart) / smart mA (100-440) 0.7 sec / 1.75:1 / 35.00mm 24.00
Collimation	1.25mm x 16 = 20mm
Scan Start/End	Pre-contrast: 1 cm superior to diaphragm through lesser trochanters Post-Contrast: Kidneys, ureters and bladder
IV Contrast	Non-contrast exam FIRST Pre-scan contrast: 25 cc Omni 350 with 120 cc NS Wait 5-8 minutes Inject 100 cc Omni 350 @ 3cc/sec
Oral Contrast	Standard negative (H20) contrast
Scan Delay	Non-contrast: None Post-contrast Renal Mass: 30 sec fixed (***optional**) Post-contrast: 140 sec fixed
PACS Output	1. Scout 2. Pre-contrast: 3.75mm x 3.75mm axial soft tissue AND lung algorithm 5mm x 5mm (same coverage area) 3. Post-contrast: 2.5mm x 2.5mm axial soft tissue (nephrographic AND corticomedullary phases if needed) 4. Coronal/Sagittal Reformatted Images pre and post-contrast (all phases) 5mm x 5mm 5. Ureters: 10mm x 3 mm MIP oblique (coronal) of each ureter
Comments	This is an adult patient only protocol. A non-contrast urolithiasis CT is followed by a nephrographic, dual phase post-contrast exam. IF this is a Renal Mass evaluation, add a Corticomedullary phase of ONLY the kidneys at 30 seconds post contrast, in addition to the more delayed nephrographic phase at 140 sec (2 total post-contrast acquisitions)

GE Discovery LS 16 Protocol

Routine CTA ABDOMEN with IV Contrast

Indications: Evaluate AAA, dissection, Penetrating Atherosclerotic Ulcer, Renal Artery Stenosis, general vascular disease, etc.

Position/Landmark	Head or Feet first, supine/Xiphoid
Topogram Direction	Craniocaudal
Respiratory Phase	Inspiration
Scan Type	Helical
KVp / mA / Rotation Time(s) / Pitch / Speed (mm/rot) / Noise Index	80-120kVp (see BMI chart) / smart mA (100-440) 0.7 sec / 1.75:1 / 35.00mm 24.00
Collimation	1.25mm x 16 = 20mm
Scan Start/End	Post-contrast: 1 cm superior to diaphragm through iliac crest
IV Contrast	Inject 125 cc Omni 350 @ 4cc/sec
Oral Contrast	None
Scan Delay	Smart prep proximal abdominal aorta 40 mA, 4sec monitoring delay, ISD 2.5, 80 HU, 8sec Diagnostic Delay
PACS Output	1. Scout 2. Post-contrast: 2.5mm x 2.5mm axial soft tissue AND lung algorithm 5mm x 5mm (same coverage area) 3. Coronal/Sagittal Reformatted Images post-contrast of aorta and branch vessels (2mm x 2mm)
Comments	Smart prep at approximately the level of the celiac artery/SMA. Note the 8 second diagnostic delay (after triggering at 80 HU) as well as the 4cc/sec injection rate

GE Discovery LS 16 Protocol

Routine CTA ABDOMEN/PELVIS with IV Contrast

Indications: Evaluate AAA, dissection, Penetrating Atherosclerotic Ulcer, Renal Artery Stenosis, general vascular disease, etc.

Position/Landmark	Head or Feet first, supine/Xiphoid
Topogram Direction	Craniocaudal
Respiratory Phase	Inspiration
Scan Type	Helical
KVp / mA / Rotation Time(s) / Pitch / Speed (mm/rot) / Noise Index	80-120kVp (see BMI chart) / smart mA (100-440) 0.7 sec / 1.75:1 / 35.00mm 24.00
Collimation	1.25mm x 16 = 20mm
Scan Start/End	Post-contrast: 1 cm superior to diaphragm through lesser trochanters (diaphragm through iliac crest for abdomen CTA only)
IV Contrast	Inject 125 cc Omni 350 @ 4cc/sec
Oral Contrast	None
Scan Delay	Smart prep proximal abdominal aorta 40 mA, 4sec monitoring delay, ISD 2.5, 80 HU, 8sec Diagnostic Delay
PACS Output	1. Scout 2. Post-contrast: 2.5mm x 2.5mm axial soft tissue AND lung algorithm 5mm x 5mm (same coverage area) 3. Coronal/Sagittal Reformatted Images post-contrast of aorta and branch vessels (2mm x 2mm)
Comments	Smart prep at approximately the level of the celiac artery/SMA. Note the 8 second diagnostic delay (after triggering at 80 HU) as well as the 4cc/sec injection rate

GE Discovery LS 16 Protocol

Routine CTA RUNOFF with IV Contrast

Indications: Evaluate for peripheral arterial disease.

Position/Landmark	Head or Feet first, supine/Xiphoid
Topogram Direction	Craniocaudal
Respiratory Phase	Inspiration
Scan Type	Helical
KVp / mA / Rotation Time(s) / Pitch / Speed (mm/rot) / Noise Index	80-120kVp (see BMI chart) / smart mA (100-440) 0.7 sec / 1.75:1 / 35.00mm 16.00
Collimation	1.25mm x 16 = 20mm
Scan Start/End	Post-contrast: diaphragm through feet/ankles
IV Contrast	Inject 125 cc Omni 350 @ 4cc/sec
Oral Contrast	None
Scan Delay	Smart prep proximal abdominal aorta 40 mA, 12 sec monitoring delay, ISD 2.5, 150 HU, 8sec Diagnostic Delay
PACS Output	1. Scout 2. Post-contrast: 2.5mm x 2.5mm axial soft tissue 3. Coronal/Sagittal Reformatted Images post-contrast (3 sets) of abd/pel, thigh, and lower leg (2mm x 2mm) 4. 3D reconstructions (3 sets) of abd/pel, thigh, and lower leg
Comments	Smart prep at approximately the level of the celiac artery/SMA. Note the 8 second diagnostic delay (after triggering at 150 HU) as well as the 4cc/sec injection rate. Have an additional acquisition of just the calves ready to scan in case the bolus is outrun.

GE Discovery LS 16 Protocol

Routine CTA ENDOGRAFT EVALUTION with IV Contrast

Indications: Evaluate endovascular (stent graft/endograft) repair of a AAA.

Position/Landmark	Head or Feet first, supine/Xiphoid
Topogram Direction	Craniocaudal
Respiratory Phase	Inspiration
Scan Type	Helical
KVp / mA / Rotation Time(s) / Pitch / Speed (mm/rot) / Noise Index	80-120kVp (see BMI chart) / smart mA (100-440) 0.7 sec / 1.75:1 / 35.00mm 24.00
Collimation	1.25mm x 16 = 20mm
Scan Start/End	Pre and Post-contrast (arterial): 1 cm superior to diaphragm through lesser trochanters Post-contrast (delayed): Endograft ONLY
IV Contrast	Inject 125 cc Omni 350 @ 4cc/sec
Oral Contrast	None
Scan Delay	1. Pre-contrast: None. 2. Post-contrast (arterial): Smart prep proximal abdominal aorta (40 mA, 4 sec monitoring delay, ISD 2.5, 80 HU, 8 sec Diagnostic Delay) 3. Post-contrast (delayed): 100 sec scan delay
PACS Output	1. Scout 2. Pre-contrast: 5mm x 5mm axial soft tissue AND lung algorithm 5mm x 5mm (same coverage area) 3. Post-contrast (arterial): 2.5mm x 2.5mm axial soft tissue 4. Post-contrast (delayed): 5mm x 5mm axial soft tissue 5. Coronal/Sagittal Reformatted Images both post-contrast phases of aorta and branch vessels (3mm x 3mm)
Comments	Smart prep at approximately the level of the celiac artery/SMA for arterial phase. Note the 8 sec diagnostic delay (after triggering at 80 HU) as well as the 4cc/sec injection rate. The delayed phase images at 100 sec post-injection are of the endograft ONLY.

GE Discovery LS 16 Protocol

Routine CT VENOGRAM ABD/PEL with IV Contrast

Indications: IVC filter interrogation, IVC/iliac thrombus evaluation, May-Thurner Syndrome.

Position/Landmark	Head or Feet first, supine/Xiphoid
Topogram Direction	Craniocaudal
Respiratory Phase	Inspiration
Scan Type	Helical
KVp / mA / Rotation Time(s) / Pitch / Speed (mm/rot) / Noise Index	80-120kVp (see BMI chart) / smart mA (100-440) 0.7 sec / 1.75:1 / 35.00mm 24.00
Collimation	1.25mm x 16 = 20mm
Scan Start/End	Post-contrast: Lesser trochanters through 1 cm superior to diaphragm (caudal-cranial direction)
IV Contrast	Inject 150 cc Omni 350 @ 3cc/sec
Oral Contrast	None
Scan Delay	Post-contrast: 100 sec fixed
PACS Output	1. Scout 2. Post-contrast: 2.5mm x 2.5mm axial soft tissue AND lung algorithm 5mm x 5mm (same coverage area) 3. Coronal/Sagittal Reformatted Images post-contrast 5mm x 5mm
Comments	Note the scan is in the caudal-cranial direction. Consult Radiologist as needed.

GE Discovery LS 16 Protocol

Routine CT VENOGRAM ABD/PEL/LE with IV Contrast

Indications: Lower extremity DVT evaluation, vascular malformation, IVC filter interrogation, IVC/iliac thrombus evaluation, May-Thurner Syndrome.

Position/Landmark	Feet first, supine/Xiphoid
Topogram Direction	Craniocaudal
Respiratory Phase	Inspiration
Scan Type	Helical
KVp / mA / Rotation Time(s) / Pitch / Speed (mm/rot) / Noise Index	80-120kVp (see BMI chart) / smart mA (100-440) 0.7 sec / 1.75:1 / 35.00mm 24.00
Collimation	1.25mm x 16 = 20mm
Scan Start/End	Post-contrast (abd/pel): lesser trochanters through diaphragm Post-contrast (lower extremities): Ankle through iliac crests
IV Contrast	Inject 150 cc Omni 350 @ 3cc/sec
Oral Contrast	None
Scan Delay	Post-contrast (abd/pel): 100 sec fixed Post-contrast (lower extremities): 180 sec fixed
PACS Output	1. Scout 2. Post-contrast (both acquisitions): 2.5mm x 2.5mm axial soft tissue AND lung algorithm 5mm x 5mm (same coverage area) 3. Coronal/Sagittal Reformatted Images post-contrast 5mm x 5mm (both acquisitions)
Comments	Note the scan is in the caudal-cranial direction, with separate abd/pel and LE acquisitions. If a vascular malformation is to be evaluated, please add an arterial phase to the above. Consult Radiologist as needed.

GE Discovery LS 16 Protocol

Routine CT CHEST/ABDOMEN/PELVIS with IV Contrast

Indications: General screening, mass, metastasis, lymphoma, abscess, etc.

Position/Landmark	Head or Feet first, supine/Sternal Notch
Topogram Direction	Craniocaudal
Respiratory Phase	Inspiration
Scan Type	Helical
KVp / mA / Rotation Time(s) / Pitch / Speed (mm/rot) / Noise Index	80-120kVp (see BMI chart) / smart mA (100-440) 0.7 sec / 1.75:1 / 35.00mm 24.00
Collimation	1.25mm x 16 = 20mm
Scan Start/End	Post-contrast: 1 cm superior to lung apices through lesser trochanters
IV Contrast	Pre-scan contrast: 25 cc Omni 350 with 60 cc NS Wait 5-8 minutes Inject 100 cc Omni 350 @ 3cc/sec
Oral Contrast	Standard positive contrast
Scan Delay	Post-contrast: 50 sec fixed ***Optional**: 2 minute delay for enhancing liver mass
PACS Output	1. Scout 2. Post-contrast: 2.5mm x 2.5mm axial soft tissue whole body AND lung algorithm 5mm x 1.25mm just of chest. Add 5mm x 5mm bone algorithm of abd/pel. Additional 2.5mm x 2.5mm soft tissue recon for liver delay if needed 3. Coronal/Sagittal Reformatted Images post-contrast (separate chest and abd/pel) 5mm x 5mm
Comments	Please look at liver during image acquisition. If there is an enhancing liver mass, get 2 minute delayed images just through the liver. Consult Radiologist as needed.

GE Discovery LS 16 Protocol

Routine CHEST CT with or without IV Contrast

Indications: General screening, pneumonia, pulmonary nodule, mass, effusion, empyema, etc.

Position/Landmark	Head or Feet first, supine/Substernal notch
Topogram Direction	Craniocaudal
Respiratory Phase	Inspiration
Scan Type	Helical
KVp / mA / Rotation Time(s) / Pitch / Speed (mm/rot) / Noise Index	80-120kVp (see BMI chart) / smart mA (100-440) 0.7 sec / 1.75:1 / 35.00mm 24.00
Collimation	1.25mm x 16 = 20mm
Scan Start/End	Pre or post-contrast: 1 cm superior to lung apices through adrenal glands
IV Contrast	Inject 100 cc Omni 350 @ 3cc/sec
Oral Contrast	None
Scan Delay	Pre-contrast: None Post-contrast: 40 sec fixed delay
PACS Output	1. Scout 2. Pre-contrast: 2.5mm x 2.5mm axial soft tissue AND lung algorithm 5mm x 1.25mm (same coverage area) 3. Post-contrast: 2.5mm x 2.5mm axial soft tissue AND lung algorithm 5mm x 1.25mm (same coverage area). 4. Coronal/Sagittal Reformatted Images pre or post-contrast (5mm x 5mm)
Comments	Do not perform a chest CT with AND without contrast without consulting the Radiologist first. Typically only post-contrast images are needed for above indications apart from pulmonary nodule follow up which typically is only a non-contrast exam.

GE Discovery LS 16 Protocol

Routine CTA CHEST/PE Protocol with IV Contrast

Indications: Evaluate Pulmonary Embolism, Thoracic Aortic Dissection, Penetrating Atherosclerotic Ulcer, general vascular disease, etc.

Position/Landmark	Head or Feet first, supine/Substernal notch
Topogram Direction	Craniocaudal
Respiratory Phase	**Small breath in, no valsalva**
Scan Type	Helical, caudal-cranial direction
KVp / mA / Rotation Time(s) / Pitch / Speed (mm/rot) / Noise Index	80-120kVp (see BMI chart) / smart mA (100-440) 0.7 sec / 1.75:1 / 35.00mm 24.00
Collimation	1.25mm x 16 = 20mm
Scan Start/End	Post-contrast: Inferior to lung bases through 1 cm superior to lung apices
IV Contrast	Inject 125 cc Omni 350 @ 4cc/sec
Oral Contrast	None
Scan Delay	1. ***Optional** Pre-contrast: For IMH (see Comments) 2. Post contrast (arterial): Smart prep right ventricle (PA) or Ascending aorta (Thoracic aorta)- 40 mA, 4 sec monitoring delay, ISD 2.5, 80 HU, 8sec Diagnostic Delay 3. ***Optional** Post-Contrast (delayed): 120 sec fixed delay
PACS Output	1. Scout 2. ***Optional** pre-contrast: Radiologists' discretion 3. Post-contrast (arterial and ***Optional** delayed): 2.5mm x 2.5mm axial soft tissue AND lung algorithm 5.0mm x 1.25mm (same coverage area) 4. Coronal/Sagittal Reformatted Images post-contrast of aorta and branch vessels (5mm x 5mm)
Comments	Smart prep at the right ventricle for a PE study and at the ascending aorta for a thoracic aorta evaluation. If the patient is being evaluated for endovascular repair or intramural hematoma, consider adding pre-contrast and/or delayed imaging per the Radiologists' discretion. Also, note the breath hold is not full inspiration, but a small breath in without valsalva

GE Discovery LS 16 Protocol

Routine HIGH RESOLUTION CHEST CT (no contrast)

Indications: Interstitial lung disease, emphysema, restrictive lung disease, bronchiectasis, asbestosis (NOT intended for pulmonary nodule evaluation)

Position/Landmark	Head or Feet first, supine or prone/Substernal notch
Topogram Direction	Craniocaudal
Respiratory Phase	Inspiration and Expiration
Scan Type	Helical and Axial
KVp / mA / Rotation Time(s) / Pitch / Speed (mm/rot) / Noise Index	120kVp / smart mA (100-440) 0.7 sec / 1.75:1 / 35.00mm 24.00
Collimation	1.25mm x 16 = 20mm (Helical) 0.625mm x 2 = 1.25 mm (Axial)
Scan Start/End	1 cm superior to lung apices through lung bases for helical supine inspiration, axial supine expiration, and axial prone inspiration (if needed)
IV Contrast	None
Oral Contrast	None
Scan Delay	None
PACS Output	1. Scout 2. Helical (supine-inspiration): 2.5mm x 2.5mm axial soft tissue AND lung algorithm 5.0mm x 1.25mm (same coverage area) 3. Helical (supine-inspiration): 1.25mm x 10mm recon bone+ 4. Axial (supine-expiration): 1.25mm x 10mm bone+ 5. Axial (inspiration-prone): 1.25mm x 10mm bone+ (if needed) 6. Coronal/Sagittal Reformatted Images helical inspiration ONLY (5mm x 5mm)
Comments	This is a 2+ acquisition scan. Please notify radiologist after inspiration series acquired to possibly omit axial prone inspiration images if no evidence of ILD on supine images